Michigan Department of Environment, Great Lakes, and Energy

FISCAL YEAR 2019 FEDERAL SUPERFUND LEGISLATIVE REPORT

Left: Installation of the In-situ Thermal Treatment System at the Velsicol Chemical Superfund Site.

Summary of Hazardous Substance Cleanups Funded by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 1980 PL 96-510, as Amended by the Superfund Amendments and Reauthorization Act (SARA), 1986 PL 99-499, and the Small Business Liability Relief and Brownfields Revitalization Act, 2002 PL 107-118.

Right: Installation of wells at the Sturgis Municipal Wells Superfund Site that will be used as part of the Soil Vapor Extraction and Air Sparge System.

Prepared By:
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION, SUPERFUND SECTION
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Authority:
2018 PA 207

Liesl Eichler Clark, Director
Michigan.gov/EGLE

FEDERAL SUPERFUND PROGRAM REPORT

EXECUTIVE SUMMARY

The federal Superfund Program was created in 1980 to respond to releases of hazardous substances that may endanger public health or the environment. The Superfund Program protects the public and the State's resources, making communities safer, healthier, and more economically viable.

Superfund sites represent some of the most significant, complex, and expensive sites of environmental contamination. Michigan currently has 65 sites listed on Superfund's National Priorities List (NPL). The McLouth Steel Corp site in Trenton was added to the NPL in 2019. An additional 20 sites were previously on the list and have been deleted because all necessary response actions have been completed. The Duell & Gardner Landfill was deleted from the NPL in 2019.

Sites in the Superfund Program may be managed in different ways. The United States Environmental Protection Agency (EPA), the State, or private parties may implement the cleanup. The Superfund law has provisions to allow for enforcement actions to compel private parties responsible for the contamination to conduct the cleanup. Where there are viable responsible parties, the EPA may take the enforcement lead with the State providing support (36 sites in Michigan), or the State may take the site as a State-enforcement lead (10 sites in Michigan).

Where the responsible parties are bankrupt, or no longer able to fund necessary cleanup actions, federal funds are used for necessary actions at the site. For the sites where the State has the lead, the federal money is given directly to the State through a grant (there are currently 5 State-lead federally-financed sites in Michigan). If the EPA has the lead, then they expend the funds directly on site activities (there are currently 14 EPA-lead federally-financed sites in Michigan) using a Superfund State Contract (SSC) between the State and the EPA for situations where State match is required (Michigan has 7 active SSCs).

Because Superfund sites are frequently large and complex, they are sometimes broken down into operable units to facilitate site work. This can result in sites being in multiple categories and/or activities simultaneously. For example, one site in Michigan has a federal-lead enforcement component, a State enforcement component, a State-funded operation and maintenance component, and a federally-financed State-lead remedial action component.

For non-enforcement NPL sites, the federal Superfund Program pays 100 percent of the cost of site investigation and design of the cleanup plan, and 90 percent of the cost of the cleanup (remedial action). The EPA also pays 90 percent of the first year of operation for a soil remedy and 90 percent of the first 10 years of operation for a groundwater remedy.

After that, the State is responsible for 100 percent of the cost of the operation and maintenance of the site remedy.

Pursuant to the Superfund law, the State is required to pay a match of 10 percent of the cleanup construction costs and of the long-term remedial action costs. The EPA cannot conduct remedial actions at a site without a commitment from the State to pay the required matching funds and to accept responsibility for the ongoing operation and maintenance of the remedy at the site.

Since the beginning of the Superfund Program, approximately $430 million in federal funding has been committed to Michigan Superfund sites through grants and SSCs with a State match amount of approximately $44 million. In fiscal year (FY) 2019 more than $8.3 million in federal funds were spent on cleanup actions at 6 Superfund sites in Michigan with a State match amount over $928 thousand. These numbers do not capture direct federal expenditures for investigations and design, nor do they include non-site-specific grants.

Approximately $6 million per year of State funding is needed to match federal construction work and finance the operation and maintenance of ongoing treatment systems. This amount does not factor in the Velsicol Chemical Corporation Superfund site, a national mega-site, where the construction costs are expected to exceed $145 million, the 10-year operation of the remedy is estimated at $50 million, and State-funded operation and maintenance of the remedy is anticipated to cost up to $4.6 million per year.

In 2019, the State had 9 Superfund sites in the operation and maintenance phase. The State continues to work with the EPA to further evaluate and enhance the remedies in place at 6 of these sites with the goal of reducing both the costs and the duration of the ongoing operation and maintenance of the remedies.

The 2019 Superfund Legislative Report has been prepared pursuant to the requirements of Section 216 of Article VII, Part 2, of 2018 PA 207, the FY 2019 appropriations bill for the Michigan Department of Environment, Great Lakes, and Energy (EGLE). (Please note that EGLE was formerly known as the Michigan Department of Environmental Quality or MDEQ). The report details the federal Superfund appropriations awarded during FY 2019 for use at specific National Priorities List sites. In addition, the report summarizes the federal funding history and cleanup activities at each site.

Please direct your comments or questions to Mr. Mike Neller, Director, Remediation and Redevelopment Division, EGLE, at 517-512-5859 or NellerM@Michigan.gov.

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	Bendix Corp./Allied Automotive	27
	Electrovoice	36
Branch	Bronson Reel Company	44
	L.A. Darling Subarea	48
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	Scott & Fetzer Corporation	62
Calhoun	Albion-Sheridan Township Landfill	68
	McGraw Edison Corporation	75
	Verona Well Field	80
Cass	U.S. Aviex	93
Charlevoix	Charlevoix Municipal Well Field	103
Chippewa	Cannelton Industries, Inc.	109
Clare	Clare Water Supply	117

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Eaton	Parsons Chemical Works, Inc.	126
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Genesee	Forest Waste Products	142
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Mason	Mason County Landfill	400
Muskegon	Bofors Nobel, Inc.	407
	Duell & Gardner Landfill	418
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FEDERAL SUPERFUND PROGRAM IN MICHIGAN

INTRODUCTION

Superfund Program Background

The Superfund Remedial Program protects the public and its resources, making communities safer, healthier, and more economically viable. It is responsible for implementing the federal program aimed at longer term cleanup at the nation's largest, most complex contaminated sites.

The Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA), was passed by the United States Congress in 1980 and authorized the federal government to respond directly to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. The CERCLA also established a trust fund (referred to as the "Superfund"), which can be used to pay for the cleanup of hazardous substance contamination. State involvement in the Superfund Program is also specifically provided for in the CERCLA and is further explained under the Michigan Participation section, on pages I-2 through I-4, of this report. The United States Environmental Protection Agency (EPA) is the federal agency responsible for implementing the CERCLA.

Pursuant to the CERCLA, the EPA can take legal enforcement action against the parties responsible for the contamination to conduct a cleanup. If potentially responsible parties (PRPs) cannot be found, or are unwilling to cooperate, the EPA can use money from the Superfund to complete a cleanup at sites on the National Priorities List (NPL). Under these circumstances, the EPA can later sue the PRPs for reimbursement of cleanup costs to the Superfund; plus, if the PRPs have refused to follow an order to perform the cleanup, a penalty of up to three times the EPA's cost of the cleanup can be imposed.

The Superfund Process

When the State determines that a site should be evaluated for its potential to be designated as a Superfund site, it requests the EPA to place it on the candidate site list. A Preliminary Assessment is conducted using existing information on the site in order to determine if there have been releases of hazardous substances from the site that may pose threats to human health or the environment. If additional data are needed, a Site Inspection is completed. The Site Inspection may involve sampling of soil, groundwater, surface water, air, or wastes at the site. The data from the Site Inspection are used to justify an emergency removal or non-time-critical removal action and/or score the site using the Hazard Ranking System. If the site score is high enough and has the

Governor's concurrence, the site can be listed on the NPL, a list of the most seriously contaminated sites in the nation. Sites listed on the NPL are eligible for cleanup using Superfund money if there are no PRPs willing or able to conduct the cleanup. It should be noted that if site cleanup is proposed or implemented pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), at any time during the Superfund evaluation process prior to nomination to the NPL, investigation using the Superfund process can be deferred.

The Preliminary Assessment/Site Inspection process may reveal that the site poses an imminent and substantial endangerment to public health or the environment that would justify an Emergency Removal. An example of such an endangerment situation would be abandoned drums or lagoons of hazardous waste, which are easily accessed by humans or wildlife. Resources are available through the EPA's Superfund Emergency Removal Program to quickly eliminate the immediate hazards at a site whether or not it is on the NPL. If placed on the NPL, the site would then proceed through the normal Superfund cleanup process to deal with any concerns beyond those addressed by the emergency removal.

The first step of the process toward cleanup of an NPL site is to conduct a thorough investigation of the nature and extent of contamination at the site. This is referred to as a Remedial Investigation (RI). Based on this information, an evaluation of possible cleanup technologies, known as a Feasibility Study (FS), is completed and an appropriate remedy for cleaning up the site is proposed by the EPA or the State. After the public has had an opportunity to comment on the RI/FS and the proposed remedy, the EPA or the State selects a final remedy and documents this selection in a Record of Decision (ROD). Next, the plans and specifications for the cleanup, known as the Remedial Design (RD), are prepared, and the Remedial Action (RA) is implemented. For groundwater restoration remedies, the ten years of operation following the RA construction and shakedown are known as Long-Term Response Action (LTRA).

It may take many years for the RA to completely clean up the site. During this period, and after the LTRA, Operation and Maintenance (O & M) of the remediation system is required. After the cleanup goals have been achieved, the site can be deleted from the NPL.

Michigan Participation

The CERCLA specifically provides for State involvement in the Superfund Program. For example, State acceptance of the proposed cleanup remedy is one criterion which the EPA must evaluate before selecting a site remedy. States must also concur with the EPA that the cleanup is complete before a site can be removed from the NPL. States are required to fund 10 percent of the cost of any RA paid for by the Superfund. In

addition, the State is required to fund 100 percent of the O & M costs after the first year of operation of the RA for source control measures and after the ten years of LTRA for groundwater restoration measures. RAs funded by Superfund cannot be implemented unless the State signs a contract providing assurance that the State will provide both the 10 percent required funding, referred to as State match funding, and a commitment to provide for long-term O & M. Thus, both States and the EPA have recognized the necessity for State involvement in the Superfund Program.

The CERCLA provides a funding source for State involvement through Cooperative Agreements (CAs). Through Multi-Site CAs, Michigan receives funding to assist the EPA with the management of site activities. Activities covered may include on-site assistance, review of technical documents and issues, community relations activities, legal assistance during negotiations with the PRPs, or oversight of cleanup activities conducted by the PRPs. The CERCLA also allows States to take primary responsibility for the management of a cleanup through a Site-Specific CA. Under a Site-Specific CA, the EPA provides funding to the State to assume any or all of the functions that the EPA would normally perform while managing a site cleanup. Non-site-specific activities that develop and maintain a State's ability to participate in the CERCLA response program are funded with Superfund Core Program CAs. Also funded through a CA, the Michigan Department of Environment, Great Lakes, and Energy (EGLE, previously known as the Michigan Department of Environmental Quality or MDEQ) conducts Preliminary Assessments/Site Inspections and site scoring activities on behalf of the EPA and nominates the most serious and potentially costly sites to be listed on the NPL. In fiscal year (FY) 2019 EGLE completed 1 Pre-CERCLA Screening, 3 Preliminary Assessments, 1 Site Inspection, and 2 Site Reassessments. EGLE also supported the EPA in the generation of a Hazard Ranking Scoring package for the Michner Plating – Mechanic Street site and provided support to the EPA at two emergency response sites.

Michigan participates fully with the EPA in the Superfund Program through EGLE, Remediation and Redevelopment Division, Superfund Section. Michigan has had up to 85, and currently has 65, sites on the NPL (See map, Figure 1). The McLouth Steel Corporation Site in Trenton, Michigan, was added to the NPL on May 15, 2019. There have been 20 sites deleted from the NPL. The Duell & Gardner Landfill site in Muskegon County, Michigan, was deleted from the NPL on September 30, 2019. EGLE has, or has had, lead agency responsibility for response actions at many of these sites. Addressing the worst sites through the Superfund Program conserves State funds that can then be used to address other Michigan sites of environmental contamination using the authority of Part 201. To further conserve State funds that are used to address site emergencies, EGLE frequently recommends appropriate sites to the EPA's Emergency Removal Program. In addition, EGLE participates with the EPA in the Regional Response Team, which conducts contingency planning activities for spills of oil and other hazardous substances and coordinates spill response actions. In addition to performing response actions at State-lead sites, EGLE provides assistance at the EPA

and PRP managed sites to ensure that Michigan cleanup requirements, such as Part 201, are met.

Michigan's involvement in Superfund is also necessary to evaluate the RA and O & M costs of cleanup remedies proposed by the EPA. EGLE's participation in the remedy selection process favors remedies that attain cleanup standards and minimize State match and O & M costs. The average cost for Superfund remedies nationwide is approximately $30 million, and the range of costs for remedies selected at Superfund sites in Michigan is from $1 million to $210 million. The cost for O & M at individual sites can reach as high as $4.6 million per year. It is in Michigan's financial interest to ensure that remedies are selected that meet State requirements and minimize State match and O & M costs. In addition, it is imperative that the State participates in the design and construction of the facilities that the State will be required to fund, operate, and maintain for long periods of time.

Superfund Money in Michigan

Since the beginning of the program in 1980, federal Superfund money has been awarded to the State to address NPL sites. Page I-8 lists the federal grant dollars awarded in FY 2019. In FY 2019 the State committed to $4,886,606.163 in State-funded site response actions at Superfund sites, not including the match commitments identified in Table 1. A summary of Superfund funding in Michigan can be found in Table 1 below.

TABLE 1
SUPERFUND FUNDING IN MICHIGAN

FUNDING SOURCE	FUNDS PRIOR TO FY 2019	FUNDS IN FY 2019	TOTAL BY SOURCE
SUPERFUND STATE CONTRACTS (Federal, Direct)**	$ 308,610,932	$ 6,457,252	$ 315,068,184
SUPERFUND STATE CONTRACTS (State Match)**	$ 33,697,524	$ 717,472	$ 34,414,996
SUPERFUND SITE ASSESSMENTS (Federal, CA)	$ 10,459,342	$ 227,165	$ 10,686,507
SUPERFUND SITE AWARDS (Federal, CA)	$ 114,065,191	$ 1,312,764	$ 115,377,955
STATE FUNDS (State Match, CA)**	$ 9,941,390	$ 0	$ 9,941,390
PRP COMMITMENTS*	$ 729,891,454	$ 2,433,000	$ 732,324,454
SUBTOTAL SITE ACTIVITY	**$ 1,206,665,833**	**$ 11,147,653**	**$ 1,217,813,486**
SUPERFUND CORE CA (Federal)	$ 14,663,393	$ 0	$ 14,663,393
CORE CA (State Match)	$ 1,629,266	$ 0	$ 1,629,266
TOTAL FUNDING *	**$ 1,222,958,492**	**$ 11,147,653**	**$ 1,234,106,145**

*These totals do not include complete information on expenditures by the EPA or liable parties for response actions, which account for well over half of the Superfund-related expenditures. Please note that the beginning balance for PRP commitments has been decreased to correct errors in prior years.

**The funding shown in Superfund State Contracts is the amount committed to cleanups in these contracts. In some cases, these funds have not yet been expended. The match associated with site awards is awarded in full, even when the federal funds are only partially awarded, provided the EPA has approved the total funding amount.

Cleanup Progress

Details on progress toward addressing Superfund sites in Michigan can be found in Table 2, on the next page. To date, 20 sites have been deleted from the NPL (see page I-9). As evidenced by the data in the table, significant progress has been made in the cleanup of the 65 sites remaining on the NPL. The EPA considers construction of the remedy to be complete at 56 sites (at these sites, the remedy fully constructed and operational although the cleanup goals may not yet be achieved).

We are also working to facilitate the redevelopment or reuse of Superfund sites. Currently, the EPA considers 48 NPL sites in Michigan as ready for anticipated use. In 2019 the Grand Traverse Overall site, the Albion-Sheridan Township Landfill site, and the Springfield Township Dump site were designated as ready for anticipated use. The EPA recognizes 31 Michigan NPL sites as currently being in reuse, which is an increase of 3 sites over the 2018 total.

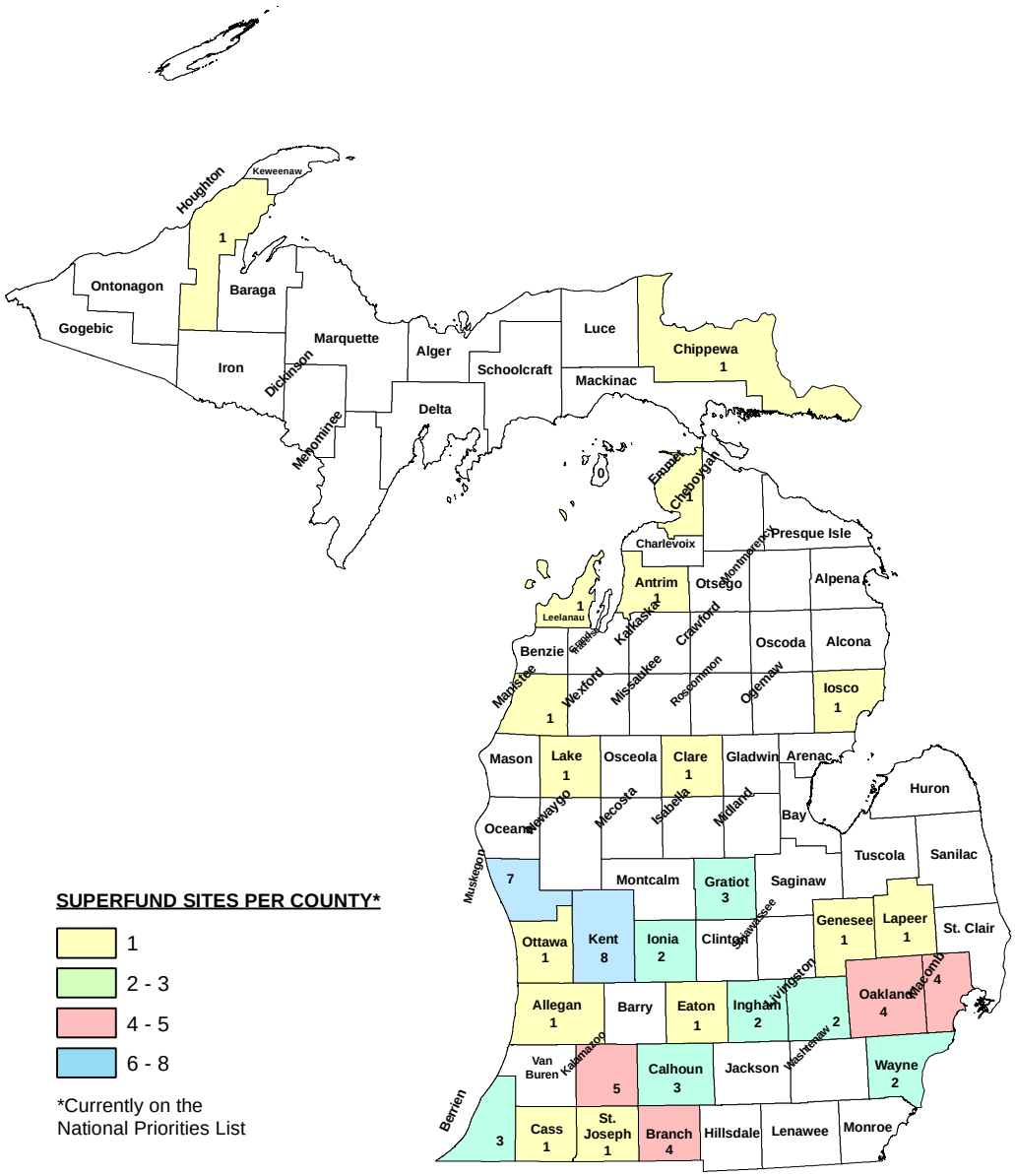
Many of the Michigan sites that have appeared on the NPL have been divided into operable units by the EPA in order to more effectively address different aspects of the site. Each of these operable units may have its own remedy and go through the various remedial stages independent of activities at other parts of the site. Therefore, each site may have several remedies. An example of this would be contaminated soil being removed at one operable unit while wells are being installed to delineate contamination in the same site's groundwater operable unit. The EPA, State, or the PRP groups may address different operable units at a site at different times, or concurrently.

TABLE 2
CLEANUP PROGRESS AT FEDERAL NPL AND REMOVAL SITES IN MICHIGAN

ACTIVITY*	PRIOR TO FY 2019	FY 2019	TOTAL
Removal Actions Completed	446	14	460
Water Supply Replacements	25	0	25
RI/FS Starts	147	2	149
RI/FS Completions	131	7	138
RODS and ROD Amendments	166	2	168
RD Starts	106	1	107
RD Completions	100	1	101
RA Starts	122	4	126
RA (Construction) Completions	108	2	110
Ongoing O & M, LTRA	60	62	62
Site Deletions	19	1	20
Site Additions	84	1	85
Five-Year Reviews Completed	222	13	235

*Note: More than one of these activities may occur at an individual site.

FIGURE 1
MICHIGAN CURRENT NATIONAL PRIORITY LIST SITES
FY 2019



Total Sites: 65

SUPERFUND FEDERAL GRANT DOLLARS AWARDED IN FY 2019				
CA#	**FEDERAL AMOUNT**	**STATE MATCH**	**DATE**	**SITE/PROJECT**
V00E02435	$ 314,779	$ 0	10/19/18	Partial funding to conduct Remedial Investigation Activities at the Sturgis Wade Electric site.
V04E00776	$ 166,610	$ 0	3/27/19	Partial funding to conduct Management Assistance activities.
V06E00778	$ 126,090	$ 0	3/27/19	Partial funding to conduct Site Assessment activities.
V01E00999	$ 300,000	$ 0	4/1/19	Provides funding to conduct Management Assistance activities at the Kalamazoo River site.
V00E02435	$ 314,779	$ 0	4/17/19	Provides balance of funding to conduct Remedial Investigation activities at the Sturgis Wade Electric site.
V04E007762	$ 166,596	$ 0	5/1/19	Provides balance of funding to conduct Management Assistance activities.
V06E00778	$ 101,075		5/1/19	Provides balance of funding to conduct Site Assessment activities.
V00E02053	$ 50,000	$ 0	8/28/19	Provides additional funding to continue Remedial Design activities at the Spartan Chemical Co. site.
TOTAL	**$ 1,539,929**	**$ 0**		

SUPERFUND STATE CONTRACTS* SIGNED IN FY 2019			
DATE	**FEDERAL AMOUNT**	**STATE MATCH**	**SITE/PROJECT**
9/20/19	$ 6,457,252	$ 717,472	Amendment 3 to the Ten Mile Drain contract to add funding for the excavation and disposal of near-surface soils at the site.
TOTAL	**$ 6,457,252**	**$ 717,472**	

*Superfund State Contracts are a financial mechanism whereby the State can provide the EPA with the required 10 percent match when the EPA is conducting the remediation.

MICHIGAN SITES DELETED FROM THE FINAL NPL
(Alphabetically by County)

COUNTY	SITE NAME	DATE DELETED
Alpena	Ossineke Residential Wells	January 31, 1996
Benzie	Metal Working Shop	December 23, 1992
Charlevoix	Charlevoix Municipal Well	December 2, 1993
Genesee	Berlin and Farro	June 24, 1998
Grand Traverse	Avenue E Groundwater	March 20, 2007
Ionia	H & K Sales	May 21, 1998
Kent	Folkertsma Refuse	April 10, 1996
Kent	Kent City Mobile Home Park	March 20, 1995
Lenawee	Anderson Development Co.	January 26, 1996
Livingston	Spiegelberg Landfill	June 13, 2011
Marquette	Cliffs/Dow Dump	November 17, 2000
Mason	Mason County Landfill	September 9, 1999
Monroe	Novaco Industries	July 14, 1998
Muskegon	Duell & Gardner Landfill	September 30, 2019
Muskegon	Whitehall Municipal Wells	February 11, 1991
Oakland	Cemetery Dump	April 19, 1995
Ottawa	Waste Management of Michigan - Holland Lagoons	January 14, 2013
Van Buren	Burrows Sanitation	July 14, 2015
Wayne	Carter Industrials	March 25, 1997
Wayne	Lower Ecorse Creek	July 1, 2005

MICHIGAN SITES PROPOSED FOR THE NPL
(Alphabetically by County)

COUNTY	SITE NAME	PROPOSED DATE
Bay	Bay City Middlegrounds	February 13, 1995
Iosco	Wurtsmith Air Force Base	January 18, 1994

2019 Superfund Legislative Report

Superfund Site Summaries have been prepared for all the Michigan sites currently on the NPL. Each summary discusses the contamination problem at the site, the cleanup actions taken, the projected schedule for future cleanup activities, the amount of Federal Superfund money awarded to the site, and State match utilized.

The Site Summaries appear in alphabetical order by county. Appendix A contains an index to the Site Summaries, organized alphabetically by site name. Appendix B is an alphabetical list of commonly used acronyms.

FY 2019 note: The site summaries portion of this report is generated from a database (known as RIDE). The Remediation and Redevelopment Division has been transitioning from an old database to RIDE over a period of years. In FY 2018, the first year the site summaries were produced from RIDE, they did not include listings of RODs (Record of Decision), and SSCs (Superfund State Contract) for each site. These have been added back in for FY 2019. However, there is an unresolved problem with the grant expenditure amounts from the State's accounting system shown in the listing at the end of each site summary not being complete. This results in the recent grant expenditure information being somewhat understated. The older grant expenditure information is correct. Another unresolved problem has resulted in some of the financial information for the SSCs being incorrect. The "State Total" and the "Expenditures in FY2019" are correct but the other SSC financial information is not correct in the report. EGLE regrets that it was unable to resolve these issues in time for this report.

FISCAL YEAR 2019 FEDERAL SUPERFUND
LEGISLATIVE REPORT

SUPERFUND

SITE

SUMMARIES

Left: Aerial view of the Trowbridge Dam showing progress of the removal and stabilization project at the Kalamazoo River Superfund Site. Metal sheetpile is being installed to stabilize the former powerhouse location to allow for removal of the foundation.

Right: Large excavators equipped with vibratory hammers were used at the Kalamazoo River site to install metal sheetpiles along areas of the Trowbridge Dam vulnerable to erosion. Photo courtesy of Kendra Stanley-Mills provided by Michigan Department of Natural Resources.

Superfund Legislative Report
Fiscal Year 2019

Site Name: Rockwell International Corp.

State Site ID:
03000030

Federal Site ID:
1B

Full Address:
One Glass Street, 400 North Street, Allegan, MI, 49010

County:
Allegan

Location

The Rockwell International Corp., Superfund Site is an inactive manufacturing facility that occupies approximately 30 acres bordering the Kalamazoo River at 1 Glass Street in Allegan, Michigan. The site is bordered on the east by River Street, on the south by North Street, on the west by the city of Allegan's Publicly Owned Treatment Works (POTW), and on the northwest and north by the Kalamazoo River (backwater area). The site and immediate surrounding area are used for residential and industrial purposes. North Ward Elementary School is located about 200 feet east of the site across River Street. A recreational park is located immediately across the former railroad bridge to the south that is frequently traveled by foot traffic.

Status

The historical site usage was industrial manufacturing beginning in approximately 1908 and lasting until 1996. Some of the items historically manufactured at the site included glass, various automobile parts, and lastly drive lines for vehicles. In September 2002, the EPA issued a Record of Decision (ROD) which was amended in August 2016 and an Unilateral Administrative Order (UAO), which was amended in March 2007. The Potentially Responsible Party (PRP) completed numerous clean up activates to comply with the ROD and the UAO. Additional information regarding these cleanup activities can be found under the history section below.

The RA Completion Report was received from the PRP on January 23, 2018. EGLE (formerly known as MDEQ) reviewed this report and provided comments to the EPA on June 1, 2018, and the EPA provided comments to the PRPs on July 26, 2018. The PRPs are still working on this document to address both agencies comments. The PRP submitted the revised Remedial Action Completion Report on March 8, 2019.

The Institutional Controls (ICs) Implementation and Assurance Plan was approved by the EPA early August 2019.

Long-term monitoring activities continued through 2019. Volatile Organic Compounds (VOCs) were detected in nine monitoring wells sampled but none above EGLE Part 201 Groundwater/Surface Water Interface (GSI) criteria, showing no threat to surface water quality at the site. Dioxin and furan were detected but below criterion in the only well designated for testing (MW-630D) and suggests the implemented remedy is effective. Target Analyte Listed (TAL) metals were non-detect at the 11 monitoring wells sampled. Cyanide has shown some exeedances occasionally but mostly come non-detect that the monitoring will continue but the remedy is protective of human health and the environment. Polychlorinated biphenyls (PCBs) were non detect in the 9 monitoring wells sampled. There is an exceedance of chemicals in pesticides however the consultants determined it to not be representative of groundwater venting to surface water and impacting surface water quality. Light Nonaqueous Phase Liquids (LNAPL) was not observed in any location. These results are consistent with the previous 2016-2018 monitoring events.

History

Operations at the Old Rockwell site began in 1901 with the manufacture of glass and mirrors. In 1916, the facilities at the site were sold and, thereafter, operated for the machining and assembly of automotive drive-line parts until 1992. Operations included steel heat treating, machining and parts assembly. After 1992, the buildings were leased for various purposes ranging from tire recycling and composting businesses to a paint shop. Waste streams generated at the site contained cutting oils, lubricants, emulsifiers, oxidation inhibitors, cleaning compounds, treatment compounds, metal filings, metal, and cyanide salts. Three holding ponds and a soluble oil pond were located near the river. Several oil spills to the Kalamazoo River were documented. The site is being addressed by the PRP, Meritor Inc. The

Rockwell Former Manufacturing Building was declared hazardous and the building was demolished in 2005. Much of the footers and floor slab remains. The former Drive Line Assembly Building remains and is being reused.

Several environmental investigations have been completed at the site. Historic contaminants of concern (COCs) included VOCs, semi-volatile organic compounds, polychlorinated biphenyls (PCBs), dioxins, and various other metals, LNAPL have also been identified at the site.

Under a 1988 Administrative Order by Consent, the PRP initiated a Remedial Investigation (RI) and Feasibility Study (FS). A series of drafts were submitted in 1990, 1993, 1994, and 1997 and the EPA eventually took over all site activities from the PRP in 1998. A ROD, completed in July 1995, separated the Landfill Contents Operable Unit (OU) from the rest of the site. The Landfill Contents OU was determined to present no threat to human health and the environment as long as it was restricted to industrial use. A no action remedy was selected for the contents. However, groundwater contamination was to be investigated and treated with the rest of the Rockwell site. This allowed the city of Allegan Waste Water Treatment Plant (WWTP) facility to expand onto a portion of the landfill property.

The EPA took over the site and Tetratech, a contractor for the EPA, completed a Draft RI/FS and risk assessment in 2001. Samples, collected in 2000 and 2001, show that the oil that was identified on the water table and in the site soils contains extremely high levels of PCBs (up to 1,900 parts per million [ppm]). An emergency removal action (RA) was undertaken by the PRP, Arvin-Meritor, at a residential property located south of the site, and overseen by the EPA. The area in which the RA took place was found to be contaminated with PCB-impacted oil that was originally discharged into a drain that emptied into the Kalamazoo River.

In September 2002, a ROD was issued to address remaining contaminated soil and groundwater at the facility. The 2002 ROD required an aggressive removal program through the excavation and off-site disposal of source areas, including removal of any remaining oil. The ROD allows for contaminated soil with levels below direct contact values to be left in place. A slurry wall groundwater containment system with a passive treatment system (funnel and gate) was to be installed around the perimeter of the site to address any contamination migrating off-site. The ROD also required ICs such as water well restrictions to be put in place. The ROD does not address impacts to the Kalamazoo River. The EPA issued a Unilateral Administrative Order to Arvin-Meritor, the PRP, requiring them to initiate and complete the cleanup identified in the September 2002 ROD. Meritor, Inc. (successor to Arvin-Meritor) is currently complying with the Unilateral Administrative Order (UAO).

Arvin-Meritor in 2005 began implementing the approved RA. In 2005 and 2006, all of the former manufacturing buildings that were located on the western (tax reverted) portion of the site were demolished. However, large portions of the foundations and concrete floor slab remain in place. Upon completion of the demolition, excavation of contaminated areas, and removal activities, the site was regraded and seeded in late 2006. In the fall of 2007, Arvin-Meritor submitted a work plan meant to determine whether or not the installation of a funnel and gate system was necessary. The EPA and EGLE provided comments on the work plan. Additional groundwater monitoring wells were installed in 2008 to better assess the current conditions and assist in the determination of whether the groundwater treatment system will be needed.

In 2008, non-aqueous phase liquid (NAPL) was again observed in multiple monitoring wells across the site. In addition, PCBs and mercury were detected in wells near the river.
The EPA requested that Arvin-Meritor re-evaluate the extent of NAPL present across the site. Removal of NAPL by excavation started in October 2010 and was completed in January 2011.

The EPA, EGLE, and the PRP group updated the Interim Monitoring Plan to characterize the quality of the groundwater at the site and provide necessary data to support the Remedial Design (RD) of the slurry wall, as outlined in the 2002 ROD. Additional wells were installed and existing wells repaired as part of that effort in 2012. The four rounds of required groundwater sampling were completed in 2013. The PRP submitted a summary report to the EPA and EGLE containing the groundwater data collected during the four total rounds of sampling completed over 2012 and 2013.

A FYR was executed on April 28, 2015. The main conclusions of this review were that the site remedies will be protective of human health and the environment upon completion of the following: ICs to restrict residential use of the site and to prohibit use of groundwater at the site need to be implemented; an IC implementation and assurance plan must be submitted to ensure that the ICs are maintained, monitored and enforced; and a long-term groundwater monitoring plan needs to be developed and implemented.

August 2016, a ROD Amendment was executed to remove the following three components of the groundwater containment system described in the 2002 ROD. 1) Construction of a soil-bentonite slurry wall to laterally surround the

site (fully or partially) and restrict groundwater flow; and 2) Installation of permeable reactive gates within the slurry wall footprint to allow in-situ treatment of groundwater prior to its discharge into the Kalamazoo River. 3) Contingency for closure of the slurry wall and extraction of groundwater if the slurry wall and permeable reactive gates fail to sufficiently prevent the movement of contaminated groundwater to the Kalamazoo River. Based on 2013-2016 groundwater monitoring results, it was concluded that this portion of the remedy is no longer necessary to protect the public health and welfare and the environment from actual or threatened releases of hazardous substance, pollutants, or contaminants from the site.

The EPA in consultation with EGLE, approved the Long-Term Monitoring Plan (LTMP) (dated August 11, 2016), which requires at least two years of biannual (every Spring and Fall) sampling to confirm that no LNAPL is continuing to impact the site soils or groundwater. If analytical data indicate consistent contaminant concentrations during the two years of sampling, PRPs may request in writing to change the parameters of the Long-Term Groundwater Monitoring Program. Two groundwater monitoring events were completed in 2017; each event included water level measurements, LNAPL presence check, and the collection of groundwater samples from 26 monitoring wells using low-flow sampling protocols and in accordance with the LTMP. LNAPL was not observed in any of the locations monitored. Groundwater from MW-503 and MW-156 had cyanide and pesticides in concentrations above the generic GSI criteria. For 2018 monitoring events, LNAPL was not observed in any of the locations monitored. The groundwater data from the 2018 sampling events show predominately low concentrations of compounds present in groundwater, generally consistent with the data collected during the monitoring conducted in 2016 and 2017. Detected chemical concentrations were below the applicable GSI criteria, except for available cyanide and pesticides.

In recent years, EGLE observed the unexpected changes at the storm water outfall located near Kalamazoo River. The project geologist recommended to sample the outfall during the fall season (2018) when the storm sewer system is intercepting and discharging groundwater (based on observing orange/iron stained flow) due to high groundwater levels after long periods of rain. A few attempts were made to collect samples but due to lack of water, EGLE wasn't able to collect any samples.

On April 24, 2018, the EPA provided a comfort letter to the JML Real Estate (JML). This comfort letter was in response to JML’s inquiry to show interest to purchase the former Rockwell International Corp. property to convert it to a commercial development. On July 30, 2018, JML prepared a Baseline Environmental Assessment report and submitted it to EGLE Kalamazoo District office. JML purchased two parcels, which include the former Rockwell International Corporation. A site inspection with the EPA was conducted on May 15, 2018. A new section of fencing had been installed by the city of Allegan along the planned new eastern property line. The city had previously announced the plans to sell a large portion of the former manufacturing building property to JML Real Estate. The fence had been installed on top of the hill along the east side of the historical access drive. During a site visit, it was observed that a portion of the historical eastern perimeter fence along with the associated signage had been removed by the prospective (at that time) property owner JML Real Estate. Numerous manufactured Ropes Courses components were stored on the concrete pad of the former manufacturing building. A restrictive covenant was to be prepared by the PRPs consultant to assure appropriate land use restrictions would be implemented and was predicted to be completed by early 2020.

Enforcement

Arvin-Meritor (formerly Rockwell International Corporation) is a PRP under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 95-510 (CERCLA), as amended, and signed an Order in 1988 to conduct the RI/FS. The EPA later took over and completed the RI/FS. The PRP's contractor has completed an emergency removal action for the LNAPL in the area south of North Street and is currently working under a UAO to complete the site remediation.

EGLE notified Arvin-Meritor of their liability for past state costs and in 2007 a settlement was agreed upon.

After reviewing the UAO, the EPA in consultation with EGLE approved the PRP's request to reduce the Performance Guarantee to $459,113. The Performance Guarantee commonly referred to as financial assurance, required at the site in accordance with paragraph 102 of UAO No. V-W-02-C-718. The basis for this request was construction completion and the ROD Amendment, eliminating the slurry wall requirement, which estimates that the net present value of the remedy is $459,113.

Operable Units for Rockwell International Corp.

OU1 Landfill Contents

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 7/11/1995

Location Name: OU1 Landfill Contents

Comments:
A ROD, completed in July 1995, separated the Landfill Contents OU from the rest of the site. The Landfill Contents OU was determined to present no threat to human health and the environment as long as it was restricted to industrial use. A no action remedy was selected and no site-use restrictions or IC such as fencing or construction restrictions was imposed for the contents.

The landfill contents OU was formerly a city dump area. The area is now serving as expansion space for the city of Allegan POTW.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/2002

Location Name: Rockwell International Corp. - OU Entire Site

Comments:
The 2002 ROD requires an aggressive removal program through the excavation and off-site disposal of source areas. Impacted soil with levels below direct contact values will be left. A slurry wall containment system with passive groundwater treatment system (funnel and gate) will be installed around the perimeter of the site to address any contamination migrating off-site as well as residual soil contamination that may continue to impact the groundwater. The ROD also requires ICs such as drinking water well restrictions to be put in place. The ROD does not address impacts to the Kalamazoo River.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 8/18/2016

Location Name: Rockwell International Corp. - OU Entire Site

Comments:
The ROD Amendment was executed to remove three components in the groundwater containment system described in the 2002 ROD. Based on 2013-2016 groundwater monitoring results, it was concluded that this portion of the remedy is no longer necessary to protect the public health and welfare and the environment from actual or threatened releases of hazardous substance, pollutants, or contaminants from the Site.

All other requirements of the 2002 ROD remain unchanged.

Response Activities - Ongoing

Activity: 5 Year Review **Start Date:** 3/26/2019 **End Date:** 4/24/2020

Operable Unit:
Rockwell International Corp. - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The purpose of the review is to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment. This FYR concluded that the remedy is functioning as intended by the decision document.

Activity: Monitoring **Start Date:** 10/24/2016 **End Date:** 10/24/2020

Operable Unit:

Status:

Rockwell International Corp. - OU Entire Site | Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The EPA in consultation with EGLE, approved the LTMP (dated August 11, 2016) which requires at least two years of annual (every Spring) sampling to confirm that no LNAPL is continuing to impact the site soils or groundwater. If analytical data indicate consistent contaminant concentrations during the two years of sampling, PRPs may request in writing to change in the parameters of the Long-Term Groundwater Monitoring Program. The PRPs requested to terminate the LTMP after the 2018 sampling but that request was denied. Two more years of monitoring were required.

Activity: Operation and Maintenance | **Start Date:** 1/1/2007 | **End Date:** 6/1/2033

Operable Unit: Rockwell International Corp. - OU Entire Site | **Status:** Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	Private	$10,000.00	Federal

Comments:
Costs for Operation and Maintenance are estimated for a per year cost. This also includes ongoing monitoring events.

Activity: Operation and Maintenance | **Start Date:** 7/11/1995 | **End Date:** 7/11/2025

Operable Unit: Rockwell International Corp. - OU1 Landfill Contents | **Status:** Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$40,000.00	Private	$0.00	

Comments:
The city of Allegan WWTP purchased, fenced, and paved or landscaped a portion of the former landfill property to prevent direct contact hazards. The city of Allegan was aware of the COCs on the property at the time of the ROD. The city has utilized the parcel for a WWTP expansion and has agreed to keep the area covered (vegetated or paved) and fenced to eliminate direct contact hazards.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 5/19/2014 | **End Date:** 4/28/2015

Operable Unit: Rockwell International Corp. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Second FYR was completed in 2015. The soil remedy was completed in February 2011. Four quarters of groundwater sampling were conducted during 2012-2013. The contaminants of concern detected during these sampling events were generally at low concentrations. Therefore, installation of a slurry wall containment system with treatment gates is not warranted. A LTMP needs to be developed and implemented. ICs need to be maintained, monitored and enforced.

Activity: Interim Response | **Start Date:** 10/4/2010 | **End Date:** 2/10/2011

Operable Unit: Rockwell International Corp. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:

The PRPs undertook a second NAPL removal action in the winter of 2010 and 2011. The removal was anticipated to take about three weeks, based on the preliminary geoprobe testing. The oil in soil test using Sudan IV dye detected oil in clear and odorless samples, but did not register some of the stained and smelly samples if the NAPL was not available. Several underground pipes and 32,571 tons of contaminated soil were removed. Standing water was pumped from the excavations to holding tanks where it was filtered, sampled, and treated; then discharged under permit to the adjacent city of Allegan WWTP.

Activity: 5 Year Review | **Start Date:** 8/11/2009 | **End Date:** 5/5/2010

Operable Unit:
Rockwell International Corp. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The First FYR was completed in 2010. The remedy from the ROD called for excavation of the NAPL and installation of a slurry wall with a funnel and gate system. The PRPs completed a decommissioning and demolition of the former manufacturing building and the former site wastewater treatment building. The action included the decommissioning of underground utilities, the closure of site WWTP ponds, remediation of areas of the site where soil concentrations exceeded the site-wide cleanup criteria, and the grading and restoration of the site. This removal also included removal of associated NAPL areas.

Activity: Remedial Action | **Start Date:** 6/1/2005 | **End Date:** 8/24/2016

Operable Unit:
Rockwell International Corp. - OU Entire Site

Status:
Construction Complete

Primary Cost:
$12,000,000.00

Primary Source:
Private

Secondary Cost:
$193,000.00

Secondary Source:
Federal

Comments:
On March 8, 2019, final copy of the construction completion report was submitted to the EPA and EGLE.

Activity: Interim Response | **Start Date:** 6/1/2005 | **End Date:** 11/30/2006

Operable Unit:
Rockwell International Corp. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs completed the decommissioning and demolition of the former manufacturing building and the former site wastewater treatment building. The action included the decommissioning of underground utilities, the closure of site WWTP ponds, remediation of areas of the site where soil concentrations exceeded the site-wide cleanup criteria, and the grading and restoration of the site. This removal also included removal of associated NAPL areas.

Activity: Remedial Design | **Start Date:** 12/2/2002 | **End Date:** 6/1/2005

Operable Unit:
Rockwell International Corp. - OU Entire Site

Status:
Completed

Primary Cost:
$1,500,000.00

Primary Source:
Private

Secondary Cost:
$50,000.00

Secondary Source:
Federal

Comments:
RD of the groundwater treatment system included a slurry wall groundwater containment system with a passive treatment system (funnel and gate) was to be installed around the perimeter of the site to address any contamination migrating off-site.

Activity: Interim Response | **Start Date:** 9/3/2001 | **End Date:** 5/1/2003

Operable Unit:

Status:

Rockwell International Corp. - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,350,000.00	Private	$50,000.00	Federal

Comments:
NAPL and soils containing oil and/or PCBs (up to 1,900 ppm) were removed from the residential yard and area south of North Street in the area of a former drain pipe to the Kalamazoo River.

Activity: Remedial Investigation | **Start Date:** 7/22/1987 | **End Date:** 7/1/2002

Operable Unit:		Status:	
Rockwell International Corp. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$900,000.00	State	$800,000.00	Federal

Comments:
After several years of the facility being investigated by the PRP, the EPA took the lead. The EPA contractor started work in 2000 and completed a Draft RI/FS. During 2001, EGLE also performed an exacerbation assessment in order to aid in the development of the facility and to further assess the facilty.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 3/26/2024 | **End Date:** 3/26/2025

Operable Unit:		Status:	
Rockwell International Corp. - OU Entire Site		Future Need	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
	Federal		

Comments:
FYR for the Site as required by Section 121 of the CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986. The purpose of the review is to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V04E00776	Management Assistance	3/31/2021	Open
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$13,983.22	$5,864.37
Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$5,644.66	$131.36
Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2018	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$279,328.61	$0.00	$1,388.35	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V02E00776	Management Assistance	3/31/2017	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$629,172.00	$0.00	$15,215.65	$0.00

Rockwell International Corp.

Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $10,632.32	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $48,149.55	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $38,765.07	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $2,332.98	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $40,338.14	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $6,183.78	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $20,072.92	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $44,990.72	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $76,687.05	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Tar Lake

State Site ID:
05000012

Federal Site ID:
71

Full Address:
U.S. 131, Mancelona, MI, 49659

County:
Antrim

Location

The Tar Lake site is located in Antrim County, on the east side of the intersection of Highway 131 and Elder Road in Mancelona Township, Michigan.

Status

The Tar Lake site (Site) is a former iron manufacturing facility. Manufacturing operations created a tar-like waste which was disposed of in low-lying areas of the site. Previously conducted cleanup of the site included excavation and disposal of tar and contaminated soils, groundwater extraction and treatment, and the implementation of use restrictions. In August 2019, the EPA completed the Third Five-Year Review (FYR) at the Tar Lake Site and concluded that the remedy at the Site is protective in the short-term. However, additional actions are necessary for the site to be protective in the long-term.

Pre-design investigation activities were conducted subsequent the 2013 Explanation of Significant Differences (ESD) to refine the extent of proposed additional excavations of unsaturated soil and verify the horizontal and vertical extent of the proposed biosparge system expansions. In December 2018, the Final Remedial Design (RD) report was completed for the northern portions of operable unit 2 (OU) to include specifications for the planned remedial action (RA). The estimated total cost of the RA is $26,990,000, comprised of $24,291,000 federal cost-share, and $2,699,000 state cost-share. The RA is anticipated to commence in 2021, or pending available federal funding. The former municipal dump (also a part of OU2), will be addressed at another time.

History

The Site is a former iron manufacturing facility (Antrim Iron Works) that operated from about 1882 to 1945. The Site is in a rural area about one mile south of Mancelona, Michigan and currently consists of 14 separate properties. The original Antrim Iron Works facility consisted of several parcels of property totaling 234 acres in area and the site was placed on the National Priorities List (NPL) in September 1983. After the EPA determined that 45 acres were acceptable for unrestricted use/unlimited exposure and completed a partial deletion for this area in 2005, the total Site acreage was reduced to 189 acres. Although another 75 acres was deleted from the NPL in 2011, this area is still considered to be part of the Site and still requires FYRs. About 12 acres of the Site are fenced. The groundwater treatment system and monitoring well network are located within this fenced area. Parts of the Site are used by two businesses and Mancelona Township. About 100 acres of the Site have been vacant since 1945.

For approximately 35 years, manufacturing operations at Antrim Iron Works created a tar-like waste residue (tar) that was discharged to a low-lying depression on the Site. The tar in this low-lying area eventually covered 8 acres and was 27 feet deep at its deepest point. From 1957 to 1967, a metal product company also disposed some waste in the Tar Lake area but that waste was removed before EPA became involved with the Site. Other major areas of operations at the Site include the iron production area, creosote area, and the retort and chemical production area. Two lakes within the Site, Peckham Lake and Nelson Lake, were used for cooling water withdrawal and discharge.

The Site contains two primary classes of contaminants: organics and inorganics. The organic compounds found on the Site include wood tar, polynuclear aromatic hydrocarbons, and phenolics. Earlier RAs did not address the full extent of the inorganic contamination but will be evaluated once the organic contamination is remediated.

The EPA conducted a fund-lead removal action in 1998-1999 and removed 47,043 tons of tar and tar-like residue from

the Tar Lake depression area, OU1. The EPA conducted a fund-lead remedial investigation/feasibility study (RI/FS) to address OU2, which consists of soil below the excavated tar, groundwater, other operation areas, and a former municipal dump that also contains iron production waste products.

In 1998, EGLE (formerly known as MDEQ) installed an on-site, in-situ biosparge treatment system downgradient of the tar removal area to enhance biological degradation of contaminants in groundwater. Organic contaminants are destroyed by the operation of the groundwater biosparge treatment system. However, inorganic contaminants, including soluble iron and manganese, cannot be destroyed but become immobilized by the oxidizing conditions. EGLE also provided residents with bottled water until 2002, when EGLE connected residents to the Mancelona water supply through a state-funded supply extension.

An approximate 0.5-mile by 6-mile area of the local aquifer is currently unusable due to the poor aesthetic quality of groundwater emanating from the site. Several domestic wells were abandoned that contained phenolic compounds and high levels of dissolved iron and manganese. EGLE authorized the extension of the Mancelona Municipal System to replace the use of private wells. As part of the comprehensive $6,000,000 water system expansion funded by the state, water was supplied to residents impacted by the Tar Lake plume and the neighboring Dura (Wickes Manufacturing) trichloroethylene plume. A local water and sewer authority was established to administer the operation and maintenance (O & M) of the system. During the water main installation, additional source material was encountered along Elder Road. As a response, EGLE conducted an emergency removal of contaminated soil to allow for the completion of the water main installation.

In 2011 and 2012, additional investigations were conducted in the Tar Lake depression, adjacent smoke tunnels, and creosote areas to evaluate potential sources of the increasing groundwater contamination. The EPA issued an ESD in 2013 to document a significant increase in the scope and cost of the soil excavation and groundwater remedy. The ESD provides for excavating approximately 138,000 additional tons of contaminated soil from the Tar Lake area, adjacent smoke tunnel area, and from the creosote area; expanding the biosparge groundwater treatment system approximately 225 feet to the northwest, across Elder Road; and expanding the biosparge system approximately 550 feet into the low-lying Tar Lake area.

Building on the data from the 2012 investigation, an additional pre-design investigation was conducted in Fall of 2015. The investigation activities evaluated the extent and magnitude of contamination originating from a former municipal dump on-site. In April 2016, a supplemental investigation was conducted to further evaluate the extent of source material; e.g., tar, in the former municipal dump and extent of impact from that area, including the delineation the tar in a low-lying area. Remedial alternatives are being developed to address this contamination. For the municipal dump area, the EPA completed the Landfill Investigation and pre-design activities in 2017.

The additional remedial measures, identified in the 2013 ESD and modified based on the results of the 2015 pre-design investigation, were selected to achieve the cleanup criteria documented in the 2013 ESD and includes: excavating approximately 223,814 additional tons of contaminated soil from the Tar Lake area, adjacent smoke tunnel area, and creosote area; expanding the north end of the existing biosparge groundwater treatment system to the northwest, across Elder Road (7-10 sparge wells); expanding the biosparge system approximately 550 feet upgradient (east) into the low-lying Tar Lake area of the site (21 sparge wells); updating the cleanup standards in the 2002 Record of Decision (ROD) to current criteria; and adding cleanup standards for additional volatile organic compounds (VOC), semi-volatile organic compounds (SVOC) and inorganic chemicals in soil; and for additional VOC and SVOC chemicals in groundwater.

The State accrued a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) credit of $1,336,746 for RA expenditures incurred at this Site to install and operate the biosparge system, as well as long-term response action costs. The 10-year long-term response action period ended in February 2012; however, the agencies acknowledge that additional source material remains. The State credit will be used to satisfy part of the State's cost-share requirements for future RA costs. The O & M of the biosparge system downgradient of the Tar Lake depression continues to be operated by the State and will continue after the next phase of the cleanup.

In May 2018, groundwater sampling results from onsite monitoring wells indicated contaminants downgradient of the biosparge treatment system that suggested that the biosparge system was not reducing organic compounds to concentrations below established goals. In August 2019, EGLE installed two additional biosparge wells in an effort to mitigate contaminant migration beyond the influence of the treatment system. These two additional biosparge wells are a modification of the original biosparge system selected in the 2002 ROD Amendment. EGLE used State funds of $13,000 from unallocated O&M project funding that was available for additional authorized activities.

In October 2018, the EPA issued an updated Community Involvement Plan to support current and future activities proposed at the site.

In December 2018, the Final RD report was completed for the northern portions of OU2 to include specifications for the planned RA identified in the 2013 ESD and modified based on the results of the 2015 pre-design investigation. The estimated total cost of the RA is $26,990,000. The RA is anticipated to commence in 2021, or pending available federal funding. The former municipal dump (also a part of OU2), will be addressed at another time.

In August 2019, the EPA completed the Third FYR at the Site and concluded that the remedy at the Site is protective in the short-term. There are no uses of the site or on-site groundwater that are inconsistent with the short-term protectiveness of the remedy or the remedial action objectives in the 2002 ROD Amendment, 2004 ESD, 2009 ESD or 2013 ESD. None of the tar or soil contaminants detected in the Tar Lake area, the smoke tunnel area, the creosote area, or the landfill exceed Michigan nonresidential direct contact criteria. Samples collected from the residential area downgradient of the Site in 2014 showed no site-related contamination. However, additional actions are necessary for the Site to be protective in the long-term.

Enforcement

Prior to 1999, property owners, Viacom, had been identified as Potentially Responsible Parties (PRPs) and were liable under CERCLA, 1980 PL 96-510, as amended, and perhaps Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The EPA unsuccessfully negotiated with the PRPs to implement the tar removal portion of the site. The EPA negotiated with the PRPs for cash settlement of approximately $3,500,000 for the tar removal portion of the site activities.

In the fall of 1999, a non-profit organization, called the Mancelona Community Resource Development, purchased the fenced portion of the site, and the neighboring property that includes Peckham Lake, from Viacom. The Mancelona Community Resource Development plans to eventually develop the uncontaminated portion of the properties.

In spring of 2003, the EPA re-entered into cost recovery negotiations but Viacom refused to voluntarily reimburse federal and state expenditures, and Viacom would not commit to undertake the RA.

Operable Units for Tar Lake

OU1 Tar Removal

OU2 Soil and Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1992

Location Name: OU1 Tar Removal

Comments:
In 1992, a ROD was signed for the site which called for the excavation of the tar material and contaminated soil which was to be stabilized and placed and capped within on-site Resource Conservation and Recovery Act, Subtitle C containment cells. In addition, as an interim measure, the contaminated groundwater was to be treated at an on-site pump and treatment system and reinjected upgradient.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 6/12/1998

Location Name: OU1 Tar Removal

Comments:
In 1998, an ESD was signed to change the remedy from excavation and containment in cells to excavation and off-site disposal. The tar was excavated in 1998-1999 by the EPA and hauled to energy recovery facilities in New York and Illinois.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 2/25/2002

Location Name: OU2 Soil and Groundwater

Comments:
The RA chosen for the site is air-biosparging of the groundwater in the source area with limited soil removal. Biosparging will continue downgradient of the source area.

Record of Decision	**Amendment:** 0	**ESD:** 1	**Effective:** 9/27/2004

Location Name: OU2 Soil and Groundwater

Comments:
This ESD deleted the bioventing and groundwater recirculation components of the 2002 ROD and instead required the tar and contaminated soil associated with the rind of the "Tar Lake" depression to be excavated and disposed of in an off-site landfill. The estimated cost of excavation and off-site disposal was $1,200,000 versus $1,600,000 for the bioventing and groundwater recirculation. Also, the ESD prescribed that the tar excavated from the Creosote Area be disposed in an off-site landfill rather than sent to an energy recovery facility as anticipated in the 2002 ROD.

Record of Decision	**Amendment:** 0	**ESD:** 2	**Effective:** 9/14/2009

Location Name: OU2 Soil and Groundwater

Comments:
The ESD documents a change in the institutional control (IC) component of the groundwater remedy the EPA selected for Tar Lake.

Record of Decision	**Amendment:** 0	**ESD:** 3	**Effective:** 9/19/2013

Location Name: OU2 Soil and Groundwater

Comments:
This ESD provides for the excavation of approximately 138,000 additional tons of contaminated soil from the Tar Lake depression, the adjacent smoke tunnel area, and the creosote area; expanding the north end of the biosparge groundwater treatment system approximately 225 feet to the northwest--across Elder Road; expanding the biosparge system approximately 550 feet upgradient into the low-lying Tar Lake depression; updating the cleanup standards in the 2002 ROD to current Michigan Part 201 Criteria; and adding cleanup standards for additional VOCs, SVOCs and inorganic chemicals in soil; and for additional VOC and SVOC chemicals in groundwater.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 2/26/2012 | **End Date:** 2/26/2023

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$70,000.00	State	$0.00	

Comments:
O & M of the biosparge groundwater treatment system downgradient of the Tar Lake depression continues along with semi-annual groundwater sampling to evaluate the effectiveness of the remedy. Annual costs are approximately $70,000.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/22/2018 | **End Date:** 8/26/2019

Operable Unit:
Tar Lake - OU Entire Site

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Federal	$0.00	

Comments:
The EPA executed the FYR on August 26, 2019 and determined the remedy to be protective in the short-term. In

order for the remedy to be protective in the long-term, the RAs called for in the 2013 ESD need to be completed, and ICs need to be implemented. Additional information is needed to assure long-term protectiveness and are identified in the review. EGLE provided comments on outstanding issues to EPA via a letter dated January 25, 2018.

Activity: Remedial Design | **Start Date:** 10/1/2016 | **End Date:** 9/30/2018

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EPA conducted an RD for the remedy on the northern portion of OU2.

Activity: 5 Year Review | **Start Date:** 8/27/2013 | **End Date:** 5/14/2014

Operable Unit:
Tar Lake - OU Entire Site

Status:
Completed

Primary Cost:
$5,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA executed the FYR on May 14, 2014. Findings included: remedy protective in the short-term; need for ICs; and conduct additional investigation to identify additional RAs. The state provided comments on outstanding issues to the EPA via a letter dated November 8, 2013.

Activity: Remedial Investigation | **Start Date:** 2/26/2012 | **End Date:** 9/30/2016

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Completed

Primary Cost:
$900,000.00

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
EPA conducted a RD between 2012 and 2016 for the northern portions of OU2, as well as to characterize contamination originating near the former municipal dump, which also has tar waste. Subsequent activities split between work on the northern and southern portions of OU2.

Activity: 5 Year Review | **Start Date:** 9/21/2008 | **End Date:** 6/12/2009

Operable Unit:
Tar Lake - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
First FYR completed by the EPA on June 12, 2009. The review found that RAs in the Tar Lake area of the site (tar and soil removal, biosparge groundwater treatment system) are protective in the short-term. Required ICs are necessary for the site to be protective in the long-term. Additional information and actions are also needed to assure long-term protectiveness and are identified in the review.

Activity: Long Term Remedial Action | **Start Date:** 3/1/2006 | **End Date:** 2/25/2012

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Completed

Primary Cost:
$395,902.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
State

Comments:
EGLE operated the treatment system under a grant from the EPA.

Activity: Remedial Action | **Start Date:** 6/1/2004 | **End Date:** 9/15/2004

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,200,000.00	Federal	$0.00	

Comments:
This remedy included: removal of highly contaminated soils, continued biosparging, removal of polyliner, and removal of some of the on-site foundations. The cost estimate was the amount spent by the EPA during the RA.

In mid-2004, the EPA removed the rind of contaminated soil that had existed under the former tar deposit and also the creosote deposit that was located north of Elder Road. The groundwater at the site will require additional treatment with the biosparging system to remediate the contaminants that were mobilized during the soil removal.

Activity: Remedial Design | **Start Date:** 8/1/2003 | **End Date:** 9/30/2004

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Cancelled

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$230,000.00	Federal	$0.00	

Comments:
No Comment entered

Activity: Alternate Water | **Start Date:** 11/1/2001 | **End Date:** 9/30/2005

Operable Unit:
Tar Lake - OU1 Tar Removal

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,750,000.00	State	$0.00	

Comments:
Clean Michigan Initiative funds and Drinking Water and Radiological Protection Division funds financed the municipal water expansion that encompassed the Tar Lake and Dura (Wickes Manufacturing) plumes. The system is operated and owned by the Mancelona Area Water and Sewer Authority. The overall cost of the expansion is approximately $6,700,000. The final portion of the water main (next to the site) was completed in the fall of 2004 with ambient air monitoring assistance provided by the EPA. The final state-funded connections to the system were completed in 2005.

Activity: Bottled Water | **Start Date:** 11/6/2000 | **End Date:** 11/1/2002

Operable Unit:
Tar Lake - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$60,000.00	State	$0.00	

Comments:
Bottled water was supplied to residents affected by the Tar Lake dissolved iron plume until municipal water was extended.

Activity: Interim Response | **Start Date:** 11/15/1998 | **End Date:** 3/1/2006

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$263,000.00	State	$0.00	No Financial Source

Comments:

The state installed a biosparging system as an interim response to prevent contaminant migration in the groundwater as a result of the tar excavation performed by the EPA. The primary costs were for system installation by Mateco with the secondary costs for Harding Lawson Associates (now Mactec) for design, oversight, and optimization.

Activity: Emergency | **Start Date:** 9/7/1998 | **End Date:** 11/6/2000

Operable Unit:
Tar Lake - OU1 Tar Removal

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,300,000.00	Federal	$3,500,000.00	Private

Comments:
The tar was removed as part of an EPA emergency RA. The state installed an interim biosparge groundwater treatment (remedy) and is sampling a series of monitoring wells to evaluate the effectiveness of the system. The state's portion of the action included the installation and operation of the biosparge system and the associated periodic groundwater monitoring.

Activity: Remedial Design | **Start Date:** 7/1/1993 | **End Date:** 1/1/1995

Operable Unit:
Tar Lake - OU Entire Site

Status:
Cancelled

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$300,000.00	Federal	$0.00	

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 1/29/1986 | **End Date:** 7/8/1999

Operable Unit:
Tar Lake - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,300,000.00	Federal	$0.00	

Comments:
The RI/FS was conducted by CH2MHill for the EPA on a performance-based contract. All the field work was conducted within a two-week window.

Activity: Interim Response | **Start Date:** 7/1/1985 | **End Date:** 7/31/1985

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$18,900.00	Private	$0.00	

Comments:
The PRPs fenced the entire 14-acre property directly surrounding the Tar Lake depression.

Response Activities - Future Need

Activity: Operation and Maintenance | **Start Date:** 9/30/2026 | **End Date:** 9/30/2028

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Federal	$5,000.00	State

Comments:
O & M of remedy implemented to address contamination originating from the former municipal dump. State cost share will be predicated based on whatever remedy is selected.

Activity: Remedial Action | **Start Date:** 10/1/2024 | **End Date:** 10/1/2026

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Future Need

Primary Cost:
$3,500,000.00

Primary Source:
Federal

Secondary Cost:
$350,000.00

Secondary Source:
State

Comments:
Implementation of remedy to address contamination originating from the municipal landfill portion of OU2.

Activity: Operation and Maintenance | **Start Date:** 10/1/2023 | **End Date:** 10/1/2043

Operable Unit:
Tar Lake - OU Entire Site

Status:
Future Need

Primary Cost:
$2,800,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
O & M of expanded and existing biosparge system at approximately $140,000 per year for another 20 years beyond 2023.

Activity: 5 Year Review | **Start Date:** 9/30/2023 | **End Date:** 8/26/2024

Operable Unit:
Tar Lake - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:
Federal

Comments:
The Fourth FYR will be needed in 2024.

Activity: Remedial Design | **Start Date:** 3/31/2023 | **End Date:** 6/30/2024

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Remedy design to address source material and contamination from the former municipal dump area of the Site.

Activity: Remedial Action | **Start Date:** 4/11/2021 | **End Date:** 9/30/2023

Operable Unit:
Tar Lake - OU2 Soil and Groundwater

Status:
Future Need

Primary Cost:
$24,291,000.00

Primary Source:
Federal

Secondary Cost:
$2,699,000.00

Secondary Source:
State

Comments:
Excavation of approximately 138,000 tons of contaminated soil from locations around the Tar Lake area, adjacent smoke tunnel area and from the creosote area; expanding the north end of the biosparge groundwater treatment system 225 feet to the northwest, across Elder Road; and expanding the biosparge system 550 feet into the low-lying Tar Lake area. Includes construction and shakedown. The state will enter into an Superfund State Contract with the EPA.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 7/18/2012 | **Most Recent Mod:** 5/27/2020

Location Name: Tar Lake - OU Entire Site | **Status:** Open - Active

Total Contract: $0.00	**State Total:** $0.00	**State Share Balance:** $0.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00

Summary:

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $14,136.45	**Exp for Year:** $1,517.05
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $15,830.24	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $18,146.33	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $27,071.28	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $17,682.21	**Exp for Year:** $0.00
Grant #: V965858-01-0-LT	**Activity:** Long Term Remedial Action	**End Date:** 8/31/2012	**Status:** Closed
Fed Total Award: $411,457.00	**State Total Award:** $0.00	**Exp to Date:** $395,901.72	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $0.00	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $26,534.59	**Exp for Year:** $0.00
Grant #: V995259-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$39,449.00	$0.00	$4,933.00	$0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $8,211.77	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $39,717.92	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $24,703.36	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $28,067.88	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $39,908.78	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $19,444.52	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $14,456.00	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $40,304.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Aircraft Components

State Site ID:
11000320

Federal Site ID:
0W

Full Address:
671 North Shore Drive, Benton Harbor, MI, 49022

County:
Berrien

Location

The Aircraft Components site (a.k.a. D & L Sales, Benton Harbor Warehouse) consists of approximately 17 acres of land located on the north side of the city of Benton Harbor. The site is bounded by the Paw Paw River and associated wetlands to the south and east, North Shore Drive and residential areas to the west and residential areas to the north.

Status

The United States Air Force (Air Force) sold leftover aircraft components, including gauges with radioactive luminescent painted dials, to Aircraft Components of Benton Harbor, Michigan at the end of World War II. Aircraft Components operated a mail-order catalog business selling army surplus supplies and equipment. In addition to the golf course recently constructed on the southern portion of the site, a brewery warehouse and extensive paved parking and driveway area were more recently constructed on the site as additional redevelopment efforts. The EPA has managed a settlement fund to perform remediation actions to address trichloroethylene (TCE) and tetrachloroethylene (PCE) contamination in groundwater using in-situ chemical oxidation and hydrogen releasing compound technologies. EGLE staff continue to work with the EPA, EPA contractors, and the landowners to monitor changes in groundwater contamination, methane issues, vapor intrusion (VI) issues, and migration of contamination into and beneath the Paw Paw River. The changes are thought to be associated with the recent remediation efforts. As a result of recent exceedances of total dissolved solid action levels in river samples, EGLE staff have requested that the EPA perform acute whole effluent toxicity tests to evaluate potential threats to surface water from groundwater venting to the river.

The EPA contractors continue to perform semi-annual groundwater monitoring of groundwater and soil gas contaminant concentrations. TCE and PCE concentrations across the site were reduced by the remediation efforts, but concentrations of cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, and methane have increased and are migrating. The 2018 Five-Year Review (FYR) indicated protectiveness would be achieved with the completion of the Remedial Actions, but these results raise potential concerns moving forward and continue to be evaluated. The 2018 FYR recommended updating the site operation and maintenance plan, continued groundwater monitoring, placing Institutional Controls (ICs) on parcels south of the Paw Paw River, and developing a plan to monitor all ICs for the site. The development of a Restrictive Covenant for the property on the south side of the river is in the initial stages at this time.

Elevated methane concentrations were detected in soil gas points near the building in 2019 so the agencies agreed to focus on addressing the methane concerns instead of installing additional wells to delineate the plume. Elevated methane and volatile organic compound concentrations have also been discovered in groundwater and soil gas samples in other areas of the site. The brewery warehouse and parking lot recently constructed on the property may be trapping some of the methane and magnifying potential VI concerns. The EPA and EGLE staff continue to monitor and evaluate the effectiveness of the VI passive ventilation system under the building to protect future workers in the warehouse building.

History

The site was listed primarily as a result of radioactive contamination from gauges historically purchased from the Air Force and stored in a warehouse on the site. Many of the gauges were cracked and broken, which allowed the paint to escape as particulate matter. A number of such gauges were also found partially buried outside the warehouse. Due to fugitive dust tracked out by employees, and the burial of the gauges outside, there was concern that the radioactive material had migrated outside the building and impacted surface soils, riverbank soils, surface water, and possibly

sediments, and groundwater. Based upon preliminary data, other types of contamination (e.g., volatiles and metals) appeared to have impacted the environment outside the warehouse, possibly extending to the banks of the Paw Paw River.

In 1999, the EPA completed a removal action which dealt with the bulk of the radioactive materials. The old aircraft gauges and dials were shredded on the site and placed in drums for transportation to appropriate disposal facilities outside the state. The EPA then conducted a Phase I and Phase II Remedial Investigation/Feasibility Study (RI/FS) with State technical assistance. It was determined that the only remaining radioactive contamination was associated with the warehouse buildings along with a small area of surface soils. A Record of Decision (ROD) for the radiation contamination operable unit (OU) 1 was signed in September 2000; the Remedial Design (RD) was completed in 2001; and, the Remedial Action (RA) was initiated in November 2002 by the EPA. Building demolition and the final inspection were both completed.

In addition to defining the remaining radiological contamination, the RI also determined that chemical contamination existed at the site due to a history of various industrial practices. Samples taken during the RI showed significant levels of vinyl chloride, cis-1,2-dichloroethene, trichloroethylene, tetrachloroethylene, benzo[a]pyrene, aluminum, iron, mercury, as well as numerous other metals in the soil, sediments, groundwater, and surface water, at the site. To determine the full extent of this problem, a Phase III RI/FS for chemical contamination OU2 was initiated in 2001. The ROD for chemical contamination OU2 was signed by the EPA in September 2002 and the state conditionally concurred. The EPA initiated Treatability Study activities in the summer of 2003 with the final preparatory round of sampling conducted in January 2004.

The EPA completed the soil excavation activities portion of the RA at the site in August 2004. The groundwater work began in June 2004 and the injection of hydrogen releasing compounds was completed by mid-August. Quarterly groundwater sampling was conducted through April 2007 to evaluate the effectiveness of the selected groundwater remedy.

The Harbor Shores redevelopment project was initiated in May 2007. The development encompasses 530 acres that span parts of Benton Harbor, St. Joseph, and Benton Township. The development plans included new homes, space for new businesses, a hotel/conference center, a Jack Nicholas Signature golf course, an indoor water park, marina, parks, and new green space. The Aircraft Components site was included in the new golf course, designated as Hole 14. Grading and relocation of the soil on the site were completed in late fall of 2007. Two follow-up hydrogen releasing compound injections into the contamination source area was completed in November 2007 and March 2008.

The EPA wrote the First FYR which was signed on August 11, 2008. The FYR concluded for the radiation contamination OU1 that the remedy was protective in both the short and long-term. For the chemical contamination OU2, the remedy was determined to be protective of human health and the environment in the short term, but restrictions were needed to prevent the use of the groundwater, excavation, and potential interference with the remedy by future property residents. Long-term protectiveness was anticipated to occur with the implementation of ICs, maintenance, and monitoring. ICs were placed on the site property in May 2012.

Both the EPA and EGLE reviewed and approved a Residential Use Demonstration Work Plan submitted by Harbor Shores in May 2009. Soil and methane gas sampling under this work plan were completed in August and November 2009. The Residential Use Demonstration Investigation was completed in 2010 and the results indicated two hot spots of elevated contamination remained in the site soil. In 2010, Harbor Shores excavated the hot spot areas and added a clean soil cover to both areas.

Harbor Shores moved forward with plans for the residential redevelopment of the western half of the site and EPA developed an Explanation of Significant Differences (ESD), which was signed on September 30, 2010. The ESD required Harbor Shores to perform specific requirements prior to the redevelopment. The remedy modifications included in the ESD are as follows: changes in the land use for portions of the property from commercial/industrial to limited residential; excavation and disposal of a limited quantity of contaminated soil; placement of a 12-inch cap of clean soil cover over the area where proposed residential development would be allowed; residential construction requirements; modifications to ICs to ensure adequate protection of future residential development; and, determination of the need for additional injections of hydrogen releasing compound to remediate the remaining groundwater contamination plume.

A Consent Decree (Decree) between the EPA, Harbor Shores Development, D & L Sales, and the Department of Defense was approved in 2012. As part of the Decree, settlement money from the Department of Defense was paid to the EPA. A restrictive covenant (RC) has been filed for the site property. The EPA developed, and EGLE reviewed

and approved, a pilot study to conduct one additional bioremediation in-situ injection for the remaining on-site source contamination. The pilot study was implemented and a full-scale injection was completed in 2014.

The full-scale groundwater RA was implemented in March 2014, which the EPA considered to be the start of a new RA for the site. Completion of the remedy was determined with monitoring and the decision not to do any additional treatments was made in 2019. As part of the full-scale injection, the EPA installed additional monitoring wells on-site to monitor the effectiveness of the remedy. To assess the extent of the groundwater contamination, the EPA installed three additional monitoring wells in the wetland area south of the Paw Paw River; however, site contaminants continue to migrate and the plume boundary is still not defined.

A RC was placed on the site property in 2012. An additional RC is now being sought to cover the contamination on the south side of the river. EGLE staff split groundwater samples with the EPA contractors in September 2016 in efforts to determine accuracy in data to assess the effectiveness of the full-scale sodium persulfate injection treatment for the groundwater. Venting groundwater was found to have acutely toxic levels of total dissolved solids. This contamination continues to be a problem.

The property was sold on September 16, 2016, by Harbor Shores Land Development, LLC., to Darrow Properties. The new property owner submitted plans for a brewery warehouse and parking lot to the EPA. Construction of the warehouse building was completed in 2017, the building was lined with a passive vapor barrier with the option of conversion to an active system, if needed, to prevent methane from entering the warehouse. Elevated methane concentrations were detected in soil gas points near the building in 2019 so the agencies agreed to focus on addressing the methane concerns instead of installing additional wells to delineate the plume. There are no known drinking water intakes in the area and the contamination appears to be sinking.

Enforcement

The former property owner, D & L Sales, is considered non-viable in regards to undertaking necessary actions at the site. The Air Force has been identified by the EPA as a potentially responsible party due to their former ownership of the aircraft gauges. They declined to take on the response actions at the site, claiming budgetary and staffing constraints.

With the incorporation of the site as part of the Harbor Shores Development, the EPA negotiated a Decree, Scope of Work, and ICs to allow for the redevelopment of the site. The Decree was signed in 2012. Under the Decree and Scope of Work, Harbor Shores Development agreed to replace all the monitoring wells damaged during the redevelopment, conduct a hydrogen releasing compound injection treatment in the source area soils, and allow the EPA and EGLE future access to the site to continue the scheduled groundwater monitoring sampling, plus conduct any future hydrogen releasing compound injections which may be required to remediate the source contamination. The Decree also designates Harbor Shores Development as a non-liable party and releases the developer from future liability costs. The property was sold to Darrow Properties in September 2016.

Operable Units for Aircraft Components

OU1 Radiation Contamination

OU2 Chemical Contamination

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/15/2000

Location Name: OU1 Radiation Contamination

Comments:
The EPA ROD called for demolition of brick buildings and off-site transportation of debris. State funded 10 percent of RA cost under a Superfund State Contract.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/25/2002

Location Name: OU2 Chemical Contamination

Comments:
State provided conditional concurrence.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/30/2010

Location Name: OU2 Chemical Contamination

Comments:
With Harbor Shores moving forward with plans for residential redevelopment of the western half of the site, the EPA developed an ESD, which was signed on September 30, 2010. The ESD requires Harbor Shores to perform specific requirements prior to the redevelopment. The remedy modifications included in the ESD are the following: changes in the land use for portions of the property from commercial/industrial to limited residential; excavation and disposal of a limited quantity of contaminated soil (i.e., excavation of the second hot spot found during the Residential Use Demonstration investigation); placement of a 12-inch cap of clean soil cover over the area where proposed residential development would be allowed; residential construction requirements; modifications to ICs to ensure adequate protection of future residential development; and determination of the need for additional injections of hydrogen releasing compound to remediate the remaining groundwater contamination plume.

Response Activities - In Progress

Activity: Remedial Action **Start Date:** 4/10/2013 **End Date:** 12/31/2019

Operable Unit:
Aircraft Components - OU2 Chemical Contamination

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$260,000.00	Federal	$4,000.00	State

Comments:
The EPA has implemented a full scale in-situ chemical oxidation process to address the remaining groundwater contamination on the site. The new remedy should also reduce and potentially eliminate methane generation as a byproduct of the new bio-remedy. A pilot test was conducted in spring of 2013 with a full remedy injection which occurred in March 2014. Additional quarterly groundwater monitoring is being performed to determine the success of the injection to address groundwater contamination. An evaluation of the effectiveness of the injections to remediate groundwater will be conducted by the EPA and EGLE staff. Property information for RCs is also being obtained by the EPA and EGLE staff on the south side of the Paw Paw River for areas known to be affected by groundwater contamination.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 7/5/2017 **End Date:** 4/10/2018

Operable Unit:
Aircraft Components - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
A FYR was written by EPA, beginning approximately in July 2017 and completed in April 2018. EGLE reviewed and provided comments to determine if the response action for groundwater in the chemical contamination OU2 was successful and is protective for human health and the environment for the short and long-term.

Activity: 5 Year Review **Start Date:** 7/1/2012 **End Date:** 4/10/2013

Operable Unit:
Aircraft Components - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
A FYR, written by the EPA, was completed on April 10, 2013. EGLE provided review and comments on the review

and agreed that future response activities for the radiation contamination OU1 are protective for human health and the environment for short and long-term, and that the long-term effectiveness for human health and the environment for the chemical contamination OU2 had not yet been determined. Additional evaluation after the groundwater RA is conducted, which began in 2014, will be needed to determine protectiveness.

Activity: 5 Year Review | **Start Date:** 12/1/2007 | **End Date:** 8/11/2008

Operable Unit:
Aircraft Components - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA wrote the FYR which was signed on August 11, 2008. The FYR concluded for the radiation contamination OU1 that the remedy was protective in both the short and long-term. For the chemical contamination OU2, in the short-term, the remedy continued to be protective of human health and the environment but restrictions were needed to prevent the use of the groundwater and prohibitions against residential use, excavation, and interference with the remedy needed to be implemented. Long-term protectiveness will occur after ICs are implemented, maintained, and monitored.

Activity: Remedial Action | **Start Date:** 8/30/2003 | **End Date:** 12/31/2019

Operable Unit:
Aircraft Components - OU2 Chemical Contamination

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Potentially Responsible Parties performed two hydrogen releasing compound injections in November 2007 and March 2008. The regular monitoring of groundwater at the site began in 2004 to evaluate the effectiveness of the selected groundwater remedy. Groundwater monitoring was suspended after April 2007 to allow the site to be redeveloped into a new golf course. Upon replacement of the monitoring wells removed due to redevelopment activities, quarterly groundwater sampling resumed in June 2008 and was reduced to semi-annual sampling in 2011. Two hot spots of contaminated soils were excavated and the area was backfilled with 12 inches of clean cover in May 2012. A deed restriction prohibiting excavation and use of the groundwater for the property was filed with the Berrien County Register of Deeds office in May 2012. EGLE staff have commented on plans for a VI barrier needed due to construction of a building on the property and stormwater retention pond construction specifications.

Activity: Remedial Action | **Start Date:** 11/4/2002 | **End Date:** 7/31/2003

Operable Unit:
Aircraft Components - OU1 Radiation Contamination

Status:
Completed

Primary Cost:
$2,089,800.00

Primary Source:
Federal

Secondary Cost:
$232,200.00

Secondary Source:
State

Comments:
Demolition of brick buildings and off-site transportation of debris. State funded 10 percent of RA cost under a Superfund State Contract. Final Report was completed and reviewed by EGLE.

Activity: Remedial Design | **Start Date:** 9/26/2002 | **End Date:** 3/17/2004

Operable Unit:
Aircraft Components - OU2 Chemical Contamination

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
The EPA submitted the initial RD document addressing both soil and groundwater RAs in July 2003. EGLE reviewed and commented on the report. Based on that review, the EPA split the soil and groundwater remedies into two separate documents. The soil RD was completed in November 2003, the groundwater RD was completed in June

2004 following the completion of the groundwater Treatability Study Report in the spring of 2004.

Activity: Remedial Investigation | **Start Date:** 2/1/2001 | **End Date:** 6/28/2002

Operable Unit: Aircraft Components - OU2 Chemical Contamination
Status: Completed

Primary Cost: $0.00
Primary Source: Federal
Secondary Cost: $0.00
Secondary Source:

Comments:
RI dollars for the radiation contamination OU and the chemical contamination OU are combined and were not tracked separately.

Activity: Remedial Design | **Start Date:** 11/21/2000 | **End Date:** 7/29/2002

Operable Unit: Aircraft Components - OU1 Radiation Contamination
Status: Completed

Primary Cost: $10,000.00
Primary Source: Federal
Secondary Cost: $0.00
Secondary Source:

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 6/28/1998 | **End Date:** 9/25/2002

Operable Unit: Aircraft Components - OU1 Radiation Contamination
Status: Completed

Primary Cost: $339,000.00
Primary Source: Federal
Secondary Cost: $0.00
Secondary Source:

Comments:
No Comment entered

Activity: Interim Response | **Start Date:** 9/16/1996 | **End Date:** 9/28/2000

Operable Unit: Aircraft Components - OU1 Radiation Contamination
Status: Completed

Primary Cost: $6,169,000.00
Primary Source: Federal
Secondary Cost: $0.00
Secondary Source:

Comments:
The removal addressed the bulk of the radiation contamination. The aircraft dials and gauges were shredded and put into drums and taken off the site for appropriate disposal out of State.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 7/7/2022 | **End Date:** 6/30/2023

Operable Unit: Aircraft Components - OU2 Chemical Contamination
Status: Future Need

Primary Cost:
Primary Source: No Financial Source
Secondary Cost:
Secondary Source:

Comments:
FYR for 2023 will be needed to evaluate short and long-term protectiveness of response actions.

Activity: 5 Year Review | **Start Date:** 4/11/2022 | **End Date:** 4/10/2023

Operable Unit: Aircraft Components - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	No Financial Source		

Comments:
Five Year Review is required

State Superfund Contracts

Activity:	Effective Date:	Most Recent Mod:
Remedial Action	7/2/2002	5/27/2020

Location Name:	Status:
Aircraft Components - OU Entire Site	Open - Active

Total Contract:	State Total:	State Share Balance:
$0.00	$232,200.00	$0.00
Expenditures to Date:	**Expenditures in FY2019:**	**Contracted in FY2019:**
$0.00	$0.00	$0.00

Summary:
453109

Activity:	Effective Date:	Most Recent Mod:
Remedial Action	8/12/2003	5/27/2020

Location Name:	Status:
Aircraft Components - OU Entire Site	Open - Active

Total Contract:	State Total:	State Share Balance:
$0.00	$350,000.00	$0.00
Expenditures to Date:	**Expenditures in FY2019:**	**Contracted in FY2019:**
$0.00	$0.00	$0.00

Summary:
453110

Federal Grants

Grant #:	Activity:	End Date:	Status:
V04E00776	Management Assistance	3/31/2021	Open
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$14,364.22	$5,374.73
Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$7,139.04	$309.32
Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2018	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$279,328.61	$0.00	$9,588.68	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V02E00776	Management Assistance	3/31/2017	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$629,172.00	$0.00	$17,136.77	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V01E007761	Management Assistance	3/31/2015	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$651,876.00	$0.00	$21,122.36	$0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $17,333.78	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $10,481.37	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $21,400.10	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $27,546.85	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $57,883.30	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $12,433.58	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $54,980.06	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Bendix Corp./Allied Automotive

State Site ID:
11000005

Federal Site ID:
AS

Full Address:
3737 Red Arrow Highway, St. Joseph, MI, 49085

County:
Berrien

Location

The Bendix Corp./Allied Automotive Superfund site (Bendix site) is located at 3737 Red Arrow Highway, Lincoln Township, Berrien County, Michigan, approximately 4 miles south of the city of St. Joseph. The Bendix site is approximately 1/2 mile from the eastern shore of Lake Michigan, approximately 1/3 mile west of Hickory Creek, and bordered to the west by Red Arrow Highway.

The western groundwater contamination plume originates near the north parking lot at the Bosch plant (source location unknown) and travels to the northwest under Red Arrow Highway, under the Churchill Farms subdivision, and discharges into Lake Michigan approximately 25 feet from shore. The eastern groundwater contamination plume originates near the eastern loading dock area at the Bosch plant (former seepage lagoon) and migrates east and northeast of the plant, discharging into Hickory Creek north and south of Maiden Lane.

Status

This site was developed in 1939 as an iron casting foundry and machine shop. The property has been utilized as a braking system manufacturer since 1952 and remains active today.

EGLE (formerly known as MDEQ) and the EPA are collaborating on developing a revised conceptual site model in order to evaluate the protectiveness of the current remedy. Screening for vapor intrusion (VI) has been completed in the area of the Churchill Farms subdivision and residential areas along Red Arrow Highway in 2018 and no concerns were identified, however VI issues near the factory and surrounding properties have yet to be evaluated. A plan to investigate one of the nearby commercial properties was submitted in 2020, which is expected to be approved. The magnitude of the dense non-aqueous phase liquid at the northern source area still needs to be determined. Plume configurations and groundwater flow directions contradict each other under the existing conceptual site model. There is also the need for an in depth analysis of the Monitored Natural Attenuation (MNA) remedy at the site to evaluate its effectiveness. These issues, among others, were identified in the April 2018 letter that EGLE sent to the EPA and were included in the 2019 Five Year Review (FYR) Report for this site. A detailed schedule for completing specific tasks was also included in the FYR with some of the items to begin in 2020.

History

The Bendix site was originally farm land but was developed in 1939 by the Nylen Products Corporation. The 36-acre facility consisted of an iron casting foundry and a machine shop. The Bendix Corporation (Bendix) purchased the property in 1952 and manufactured automotive braking systems. Allied Automotive purchased Bendix in 1983. Its successor, AlliedSignal, Inc., sold the facility to Bosch Braking Systems Corporation (Bosch), the current owner, in 1996. No baseline environmental assessment was conducted on the property.

Oil-based cutting fluids were used at the facility during the 1950s and 1960s. Water soluble cutting fluids were used beginning in 1967. Chlorinated solvents were reportedly used in the 1960s and 1970s. From 1965 to 1975, foundry dust collector and machine shop oily wastewaters were disposed into three unlined lagoons: (1) foundry "A" lagoon, (2) south lagoon, and (3) the loading dock lagoon. The wastewater contained chlorinated organic solvents, electroplating wastes, and heavy metals. Between 1975 and 1978, the foundry "A" lagoon and the loading dock lagoon were closed and their contents were disposed into the south lagoon. The south lagoon was closed in 1978 with the installation of an MDEQ approved clay cap.

Bendix Corp./Allied Automotive

Environmental investigations began at the Bendix site in 1975 when three groundwater wells were installed around the south lagoon. Over the years, Bendix/AlliedSignal/Bosch have conducted numerous investigations to evaluate the nature and distribution of industrial chemicals in soil, groundwater, surface water, and sediments associated with the Bendix site and neighboring properties. Industrial chemicals identified in the environment include trichloroethylene (TCE), arsenic, nickel, chromium, asbestos and lead, which are associated with the manufacture of braking systems.

As a result of industrial activities at the Bendix site and the influence of the natural groundwater divide in the area, two volatile organic compound (VOC) plumes have been identified (eastern and western plumes) that extend beyond the property boundaries, discharging into Hickory Creek and Lake Michigan, respectively. The major site-related contaminants are primarily TCE and its biological degradation products. Contaminant levels exceed drinking water, groundwater/surface water interface (GSI), and surface water criteria. The eastern plume source is in the vicinity of the loading dock, creating a plume that extends northeast to its primary discharge zone along Hickory Creek. The western plume originates in the area of the north parking lot and extends to the northwest where it discharges to Lake Michigan. The closed south lagoon is located over the groundwater divide and continues to release low levels of industrial cutting oil residuals and chlorinated solvents to the groundwater.

A Record of Decision (ROD) was signed by the EPA on September 30, 1997. Based on the information available at the time, EGLE concurred with the remedy selected by the EPA. The preferred remedy for the western groundwater plume venting into Lake Michigan was MNA. The remedy chosen for the eastern plume venting into Hickory Creek was MNA for the groundwater contamination, with soil vapor extraction (SVE) technology to be implemented to remediate the source area identified near the loading dock area of the Bosch plant.

In the summer of 1998, Bosch conducted additional characterization of the eastern and western groundwater plumes. In 1999, the EPA and Bosch negotiated and agreed to a Statement of Work and Consent Decree for the construction and operation of an SVE system for the eastern plume source area and compliance monitoring wells in the eastern and western plumes.

During mid-1999 and early 2000, EGLE initiated an investigation to determine the zone of discharge of the two groundwater plumes to the open water sources. This study, as well as subsequent investigations, showed much higher levels of contamination in venting groundwater than were previously known, and that it was discharging much closer to shore than was previously believed. In the summer of 2002, Bosch completed a benthic invertebrate study to help determine the ecological effects of the plume discharge into Lake Michigan. No benthic organisms were found in the study or control areas, probably due to the disruption of the benthos in the high-energy surf area along the beaches. As part of their study, Bosch also collected pore water samples and lake water samples in the plume discharge area identified by EGLE. Their findings confirmed the work conducted by EGLE and also confirmed that there are areas where VOCs are present in the lake water column above the discharge in excess of surface water criteria. EGLE performed additional sampling in Lake Michigan during the winter of 2002/2003 to further define the area(s) of contaminant discharge.

The last of 12 baseline rounds of quarterly sampling in the point of compliance wells was conducted during December 2003. The data from the point of compliance wells indicate that in most wells not associated with the western plume core, concentrations are decreasing slightly over time. Some of the wells in the core of the plume have been dramatically increasing in concentration, and at least one of the point of compliance wells has had consistent levels of VOCs above the site-specific mixing zone based chronic GSI criteria, occasionally above the acute GSI criteria established for the discharge. Unfortunately, none of Bosch's GSI point of compliance wells are monitoring the plume core. One GSI monitoring well cluster at the south edge of the plume has had increasing concentrations indicating a slight southerly movement of the plume. It is likely that this decreasing trend in concentrations found in the western plume point of compliance wells is an artifact of the lateral movement of the plume over time as evidenced in the movement of the discharge since 1999. This movement has caused the plume core to reside between the existing monitoring wells, thus necessitating the installation of additional point of compliance wells. Recent data indicate an increase in VOC concentrations near the source area, which will probably translate to increasing concentrations within the plume as this source water moves downgradient.

In June 2003, EGLE performed a comprehensive sampling of the pore water in the western plume discharge area to define the areal extent and magnitude of the plume discharge. The results indicate that the core of the plume discharge was located approximately 50 feet south of the location identified in 1999, and that the plume is discharging concentrations of VOCs approximately twice the levels found in 1999.

The EPA completed its FYR evaluation of the site in 2004. The findings of this review identified a number of action items to be performed to ensure that the site remedy was addressing all contaminants. This FYR was generally

supported by EGLE.

In conjunction with the 2004 FYR conclusions, the potentially responsible party (PRP) replaced several monitoring wells, installed four monitoring well clusters near Lake Michigan (representing the far northern portion of the plume discharge), and compiled historical data from the site. The PRP was not able to install the monitoring wells across the plume core as recommended in the 2004 FYR.

The Michigan Department of Community Health (MDCH) has been involved in reviewing the potential human health effects of the plume discharge at the beach. A preliminary health assessment was conducted by the MDCH in 2001 and 2002, and was revised in 2005, for release in 2007. The MDCH study concluded that there is an "indeterminate public health hazard" associated with the plume discharge, and recommends that annual notifications be sent to individual residents, additional monitoring be performed, and that activity-based sampling be performed in the area of discharge to better quantify the risks posed by the discharge.

Due to ongoing exceedances of criteria in the point of compliance wells, the PRP submitted a work plan to install three extraction wells and two additional monitoring well clusters to be used to effect a "mass reduction" in the source area. This extraction was proposed without the monitoring necessary to determine its effectiveness, and without the GSI monitoring mandated by state regulations.

In September 2008, the PRP installed three small capacity extraction wells and two monitoring well clusters. The MDEQ requested that the PRP install additional source area monitoring wells to provide an infrastructure capable of monitoring the effects of the PRP's source control efforts. This request was not supported by the EPA and was rejected by the PRP. Thus, the MDEQ has installed a monitoring network representative of the groundwater directly downgradient of the source area and also near the point where the contaminated groundwater discharges to Lake Michigan.

In February 2009, the EPA issued an Explanation of Significant Differences (ESD) for the site, modifying the ROD remedy to include Bosch's near-source groundwater extraction system as part of the remedy.

The EPA prepared a Second FYR report for the site in 2009. The only recommendation from this review was for Bosch to implement its contingent remedial action (RA). EGLE provided extensive comments to this Review, most of which were not incorporated. EGLE's concerns were further expressed to the EPA, Region 5 Administrator, in correspondence from the EGLE Director. The EPA had not adequately addressed these concerns in subsequent years.

In August 2009, Bosch started operation of its new source area groundwater extraction system. The entire system pumps about 20 gallons per minute of groundwater and was anticipated to extract 30 pounds of contamination per month. The source area near the Bosch plant has not been adequately characterized; therefore, it is impossible to predict whether the system will be effective or how long it may need to operate. From August 2009 to December 2014, about 1,032 pounds of contaminants were removed from the source area. Despite a series of problems associated with the operation of this pump and treat system, most of these operational problems have been overcome and the system is in operation a majority of the time.

EGLE requested and received voluntary access from Shoreham Village and installed three nested monitoring wells within the roadway of Churchill Farms (owned by the Village) in 2012 to be sampled for groundwater and soil vapor. The new monitoring wells were installed in the core of the plume and have documented the most elevated levels of contaminated groundwater at the site to date.

In December 2013, the Churchill Farms Condo Association sent a letter and report to the EPA and EGLE requesting additional assessment work to further evaluate risks at the site. EGLE has gone on record supporting the condo association's request.

The EPA prepared the Third FYR report for the site in April 2014. This FYR included recommendations from the EPA to the PRP to conduct soil vapor monitoring along the core of the western plume, installation of additional monitoring wells along Red Arrow Highway to evaluate the effectiveness of the groundwater extraction and treatment system, conduct annual monitoring of beach conditions along the Churchill Farms beach to evaluate the potential for human exposure to site contaminants, conduct a mass flux analysis to determine the effectiveness of the groundwater extraction and treatment system, and to develop an Institutional Control Implementation and Assurance Plan.

Six new monitoring wells were installed by the PRP to satisfy the EPA recommendation in the 2014 FYR to install

additional monitoring wells to evaluate the effectiveness of the groundwater extraction and treatment system. These wells, in addition to the existing wells, represent a transect across the plume to conduct a mass flux calculation on an annual basis. The newly installed six monitoring wells were monitored for the first time in April 2015 and the PRP is continuing the monitoring of the site groundwater on a quarterly basis.

Four rounds of soil vapor sampling were completed on EGLE wells that were installed in 2012 and identified the potential for soil gas vapors to be present in the soil at the Churchill Farms subdivision. However, this was a limited investigation and was not intended to adequately assess the VI pathway at this site to determine if a human health risk is present. The PRP, in conjunction with the EPA and EGLE, determined that it was appropriate to do further investigation of potential VI concerns in the Churchill Farms subdivision and at other residential properties along Red Arrow Highway. A draft plan for conducting the VI investigation was submitted in 2016 and a final copy was submitted and approved in the fall of 2017. Soil gas wells were installed according to the locations identified in the plan and four rounds of sampling were completed. The analytical results were non-detect for site related contaminants in all of the sampling events, therefore, the EPA and EGLE provided approval for the PRP to remove the soil gas wells. The removals were completed late in 2018.

Enforcement

In June 1988, the Bendix site was proposed by the EPA for inclusion on the National Priorities List (NPL). AlliedSignal, Inc., owner of the Bendix site at that time, was informed that it was potentially responsible for contamination at the Bendix site. On February 14, 1989, AlliedSignal, Inc., entered into a Consent Agreement with the EPA to conduct a remedial investigation/feasibility study (RI/FS). The Bendix site was officially listed on the NPL on February 21, 1990. Bosch and the EPA entered into a Consent Decree in 1999 for the implementation of the RA.

The MDEQ may elect to cost recover funds spent by the state to adequately monitor the plume and for measures to mitigate the discharge.

Operable Units for Bendix Corp./Allied Automotive

OU1 Eastern Plume SVE MNA

OU2 Western Plume MNA

OU3 Western Plume Contingent RA

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1997

Location Name: Bendix Corp./Allied Automotive - OU Entire Site

Comments:
The groundwater remedy for the eastern and western groundwater plumes is monitored natural attenuation. For the eastern plume only, the treatment for the soil is SVE.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 2/19/2009

Location Name: Bendix Corp./Allied Automotive - OU Entire Site

Comments:
An ESD that presents the EPA's rationale for requiring the installation of a groundwater extraction and treatment system to reduce contaminant loading from the source of the western plume and enhance the effectiveness of natural attenuation was signed on February 19, 2009.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 12/13/2000 **End Date:** 9/30/2050

Operable Unit:
Bendix Corp./Allied Automotive - OU1 Eastern Plume SVE MNA

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,612,000.00	Private	$0.00	

Comments:
The eastern plume SVE system seems to be effective in removing VOCs from the source area soils. The groundwater VOC concentrations downgradient from the source have been increasing lately and have recently been found in previously unimpacted areas of this part of the site which will need additional evaluation, possible additional characterization, and perhaps remediation.

Activity: Operation and Maintenance | **Start Date:** 12/13/2000 | **End Date:** 12/31/2050

Operable Unit:
Bendix Corp./Allied Automotive - OU3 Western Plume Contingent RA

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$800,000.00	Private	$0.00	

Comments:
Groundwater sampling for MNA of the eastern and western plumes will continue indefinitely. Monitoring conducted to date demonstrates that alternate concentration levels have yet to be attained.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 4/30/2018 | **End Date:** 8/20/2019

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
This FYR was signed on 8/20/2019. It was determined that the remedy is short-term protective. However, in order for the remedy to be protective in the long-term, a number of actions need to be taken. These actions include conducting a series of evaluations to assess the effectiveness of remedy components, updating decision documents, evaluating ICs, and implementing long-term plans.

Activity: Remedial Investigation | **Start Date:** 10/9/2017 | **End Date:** 11/26/2018

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
This RI included the VI investigation at the Churchill Farms Subdivision, located to the west of the site and began in October 2017. Four rounds of VI sampling took place, none of which identified detections of contaminants. EGLE and the EPA approved the removal of the soil gas wells given that no potential for exposure was identified. The cost associated with this is being incurred by the PRP and the cost is unknown to EGLE.

Activity: 5 Year Review | **Start Date:** 1/22/2014 | **End Date:** 4/14/2014

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR found that the remedy was protective of human health and the environment in the short-term. The state disagreed with this assessment and detailed our concerns but they were not addressed within the FYR. At the EPA's request, the PRP prepared work plans to implement recommendations for another activity based risk assessment for the Churchill Farms beach area and for an investigation to screen for VI in the Churchill Farms area.

Activity: 5 Year Review | **Start Date:** 9/9/2008 | **End Date:** 8/18/2009

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR found that the remedy is currently protective of human health and the environment in the short term. The state disagreed with this assessment and detailed our concerns to EPA upper management. They were not addressed within the FYR.

Activity: Remedial Action | **Start Date:** 12/6/2007 | **End Date:** 9/30/2008

Operable Unit:
Bendix Corp./Allied Automotive - OU3 Western Plume Contingent RA

Status:
Completed

Primary Cost:
$700,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Installation of extraction well sytstem.

Activity: Remedial Action | **Start Date:** 9/14/2007 | **End Date:** 9/15/2009

Operable Unit:
Bendix Corp./Allied Automotive - OU3 Western Plume Contingent RA

Status:
Construction Complete

Primary Cost:
$1,250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Contingent RA for the western plume source area. The system consists of a small groundwater extraction and treatment system near the inferred source area.

Activity: 5 Year Review | **Start Date:** 6/1/2004 | **End Date:** 9/1/2004

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:
$123,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA, in consultation with EGLE, concluded in the 2004 FYR that MNA was not working as expected, additional monitoring wells needed to be installed, certain monitoring wells needed replacing, and that there was not an unacceptable human health risk associated with the western plume discharge.

Activity: Remedial Action | **Start Date:** 6/17/1999 | **End Date:** 12/13/2000

Operable Unit:
Bendix Corp./Allied Automotive - OU3 Western Plume Contingent RA

Status:
Construction Complete

Primary Cost:
$150,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The western plume has been allowed to naturally attenuate per the 1997 ROD. Post-construction information regarding the plume discharge has caused this decision to be modified, and a more active in-situ RA has been initiated, but has not yet been shown to be effective. Small amounts of contaminant mass have been recovered from

the groundwater but the contamination levels emanating from the site are unchanged and have been shown to increase in the southern portion of the plume.

Activity: Remedial Action | **Start Date:** 6/17/1999 | **End Date:** 12/13/2000

Operable Unit:
Bendix Corp./Allied Automotive - OU1 Eastern Plume SVE MNA

Status:
Construction Complete

Primary Cost:
$606,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
SVE and MNA were chosen for remediation of the eastern plume. The SVE was installed near the eastern Bosch loading dock and seems to be effective. MNA of the groundwater is ongoing.

Activity: Remedial Design | **Start Date:** 4/14/1999 | **End Date:** 6/17/1999

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:
$75,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 2/1/1989 | **End Date:** 7/31/1997

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Completed

Primary Cost:
$250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
RI conducted to determine the nature and extent of contamination.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 1/1/2023 | **End Date:** 4/30/2024

Operable Unit:
Bendix Corp./Allied Automotive - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
The next FYR is due in April 2024.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $6,632.20	**Exp for Year:** $1,244.25

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $8,804.75	**Exp for Year:** $2,880.68

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $17,890.53	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $15,182.37	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $20,210.13	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $35,721.85	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $5,203.58	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $11,867.58	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $42,138.76	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $14,514.44	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $537.95	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $133,085.82	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

Bendix Corp./Allied Automotive

$1,737,502.00	$0.00	$45,367.00	$0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Electrovoice, Inc.

State Site ID:
11000010

Federal Site ID:
E8

Full Address:
600 Cecil Street, Buchanan, MI, 49107

County:
Berrien

Location

The Electrovoice, Inc., site is an 11.5-acre parcel in Buchanan Township, Berrien County. It is located at 600 Cecil Street, Buchanan, Michigan. The area surrounding the site is primarily residential. McCoy Creek, a tributary to the St. Joseph River, is approximately 2,000 feet from the source of contamination.

Status

The Electrovoice, Inc. site is located at 600 Cecil Street, Buchanan, Michigan. The site encompasses an 11.5-acre parcel with an existing building and paved parking area. The main activities at the site included assembly, die casting, machining, painting, and electroplating. Two on-site seepage lagoons were used for discharge of plating waste from 1952 to 1962 when wastes were removed from the lagoons. Paint wastes and solvents from the plant glue shop were discharged to a drywell from 1964 to 1973. In 1979, an industrial sewer line broke, resulting in the discharge of an unknown quantity of plating wastes into the abandoned lagoons. Sampling in 1980 revealed groundwater contaminated with lead, xylene, toluene, and trichloroethylene. The Electrovoice, Inc., site was placed on the National Priorities List (NPL) in September 1983.

The Electro-Voice Work Plan - Soil Gas Investigation and Installation of Sentry Well, dated October 8, 2018, was reviewed by EGLE staff and comments were provided. Implementation of this work has not yet started. Groundwater monitoring is currently performed on an annual basis. EGLE continues to review and comment on the annual report documents. EGLE received notice on June 30, 2019 from the EPA of upcoming Fifth Five-Year Review (FYR) due June 30, 2021

History

Mark IV Dayco Products, Inc., (formerly Electrovoice, Inc.), is the current owner of the property. However, Electrovoice, Inc. (the potentially responsible party [PRP]) has responsibility for any site-related remediation. Operations at the site included assembly, die casting, machining, painting, electroplating, and research and development. Electrovoice, Inc. used two on-site seepage lagoons for discharge of plating waste from 1952 to 1962. In 1962, the use of these lagoons was discontinued and the wastes were removed. From 1964 to 1973, paint wastes and solvents from the plant glue shop were discharged to a drywell.

In 1979, an industrial sewer line broke, resulting in the discharge of an unknown quantity of plating wastes into the abandoned lagoons. Electrovoice, Inc. responded immediately by having the effluent treated and removed, repairing the line, and installing a holding tank to prevent future incidents from occurring. In addition, Electrovoice, Inc. installed four monitoring wells around the lagoons. In 1980, sampling revealed groundwater contaminated with lead, xylene, toluene, and trichloroethylene. In September 1983, the site was placed on the NPL.

In 1987, Electrovoice, Inc. entered into an Administrative Order by Consent (AOC) with the EPA to conduct a remedial investigation/feasibility study (RI/FS). They completed the RI in 1990. However, in 1991, they failed to revise the Draft FS report consistent with the requirements of the National Contingency Plan. The EPA completed the FS in 1991.

The EPA divided the site work into two operable unites (OUs): OU1 consisting of on-site soils and the lagoons; and OU2 consisting of the off-site groundwater plume. The on-site soils remedy consisted of a hazardous waste landfill cap placed over the lagoon area after excavation and consolidation of contaminated soils, a soil vapor extraction (SVE) system for the contaminated soil in the drywell area, and a groundwater pump and treat system for on-site groundwater

contamination. In addition, the off-site groundwater would be monitored for five years. The EPA issued the Record of Decision (ROD) for the on-site soils on June 23, 1992. In April 1993, the EPA updated that ROD in an Explanation of Significant Difference (ESD).

In March 1993, an innovative technology demonstration project began on the site using a subsurface volatilization and ventilation system (SVVS) to remediate both the soils and groundwater on the site. This system was being evaluated as a potential remedy instead of the SVE remedy required in the ROD.

In 1994, a pre-design investigation was conducted to determine the vertical and horizontal extent of contaminated soils in the former lagoon area. Upon review of the SVVS technology performance on-site, the EPA, with state concurrence, issued another ESD to the 1992 ROD, in May 1995. This ESD selected the SVVS as the remedy for the drywell area soils and the on-site groundwater instead of the technologies stated in the ROD. In April 1996, the EPA, with state concurrence, issued another ESD to the ROD which revised cleanup standards to incorporate changes in the Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201).

Excavation and removal of waste fluids and contaminated soils from the former lagoon area were completed in August 1996. In 2003, review of the cumulative groundwater data from the drywell and on-site lagoon areas indicated the contaminant concentrations were below the current cleanup criteria and that remediation of the on-site OU was complete. The final remedial action (RA) report for the on-site OU was written in 2003 stating remediation was complete. Operation of the SVVS was discontinued and a reduction of the number of monitoring wells to be sampled was implemented.

The groundwater monitoring required in the ROD for the on-site soils and lagoons provided data to evaluate the effects of on-site RA on off-site groundwater before selecting a final remedy for the off-site groundwater plume. The off-site groundwater had been monitored since 1993. Electrovoice, Inc. conducted an investigation to evaluate the off-site groundwater in 1998. The results of quarterly and annual groundwater monitoring and the additional off-site groundwater investigation were presented in a June 1999 Technical Memorandum for the Evaluation of Off-Site Groundwater. The EPA selected a remedy for the off-site groundwater plume and published the Proposed Plan in June 1999. The ROD was signed in September 1999. The state did not concur with this remedy as it ignored the heavy metals exceedances of the groundwater/surface water interface (GSI)/mixing zone determination (MZD) criteria into McCoy Creek. The components of the selected remedy were natural attenuation via stream capture and dilution with some bio-degradation, institutional controls (ICs), monitoring, and contingency actions. The additional studies called for in the off-site groundwater plume ROD included: further definition of the plume in the vicinity of McCoy Creek, documentation that natural attenuation was occurring in the plume, and characterization of the inorganic component of the plume. These studies were completed in 2003. A draft Consent Decree (Decree) between the EPA and Electrovoice, Inc. and a draft Statement of Work for the Remedial Design (RD) for the off-site groundwater plume were written and reviewed in 2001. Both documents were finalized in 2002. The initial groundwater study, which included sampling of all of the monitoring wells, was conducted in September 2002. The EPA completed the First FYR report in 2001. The report recommended closure for the on-site soils OU, but continued monitoring and development of the groundwater monitoring well network for the off-site groundwater plume.

The successors to the Electrovoice, Inc. liability informed the EPA of their intent to close the plant site and sell the property. Sale of the property was completed by June 2002. At that time, the facility was unoccupied. The PRP completed negotiations with the EPA to ensure funds will be made available to continue with the RD and long-term Operation and Maintenance (O & M) monitoring requirements as specified in the ROD and in the Long-Term Remedial Action (LTRA).

The Long-Term Natural Attenuation Monitoring Plan was finalized in 2005 and implementation began in March 2005. The Long Term Natural Attenuation Monitoring Plan required groundwater sampling of selected monitoring wells every six months for three years, through 2007, after which a re-evaluation of the data would determine if the selected monitored natural attenuation (MNA) remedy should continue, or if the remedy should be altered.

The Second FYR for the Electrovoice, Inc. site was completed in 2006. A revised Declaration of Restrictive Covenant was developed to restrict access to the area groundwater via private drinking water wells. Decreases in concentrations of the volatile organic compounds (VOCs) and heavy metals, specifically mercury and zinc, had been documented.

The EPA completed the Third FYR for the Electrovoice, Inc. site in 2011. As noted in the Second FYR, there was a continued documented decrease in the concentrations of the VOCs and heavy metal contamination in the off-site groundwater. Therefore, the groundwater sampling schedule was reduced from semi-annual to annual beginning in

2012. The remedy continues to be protective of human health and the environment.

The EPA, with assistance from EGLE, developed the Fourth FYR which was completed in May 2016. As noted in the previous 2011 FYR report, review of the groundwater data documented the continuous decrease in the concentrations of VOCs although some exceedances of criteria remain. Heavy metals concentrations were below criteria or non-detect. The remedy continues to be protective of human health and the environment.

Enforcement

Electrovoice, Inc., remains the PRP for the site and is responsible for cleanup. On October 8, 1987, an AOC was agreed to by Electrovoice, Inc., and was signed by the EPA. The AOC required Electrovoice, Inc. to conduct an RI/FS to determine the nature and extent of contamination. In September 1993, a Decree between the EPA and Electrovoice, Inc. and a Statement of Work for the RD/RA for the on-site soils and lagoons, was filed with the United States District Court. A Decree, Statement of Work, and RD/RA between the EPA and Electrovoice, Inc., for the off-site groundwater plume were filed with the United States District Court on February 25, 2001.

Operable Units for Electrovoice, Inc.

OU1 Onsite Soils Lagoons

OU2 Offsite Groundwater Plume

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 1/23/1992

Location Name: OU1 Onsite Soils Lagoons

Comments:
On-site soils were to be treated by an SVE system. The 2001 FYR recommended that operation of the SVE be terminated because on-site treatment was complete.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 4/24/1993

Location Name: OU1 Onsite Soils Lagoons

Comments:
An ESD was signed in April 1993 proposing to modify the ROD selected remedy from a SVE to an SVVS, an innovative technology remedy.

Record of Decision **Amendment:** 0 **ESD:** 2 **Effective:** 5/1/1995

Location Name: OU1 Onsite Soils Lagoons

Comments:
A Second ESD was signed in May 1995 selecting the SVVS remedy for the on-site soils and lagoons OU.

Record of Decision **Amendment:** 0 **ESD:** 3 **Effective:** 4/24/1996

Location Name: OU1 Onsite Soils Lagoons

Comments:
A Third ESD was signed in April 1996 to incorporate the new Part 201 cleanup criteria into the ROD.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/21/1999

Location Name: OU2 Offsite Groundwater Plume

Comments:
The off-site groundwater plume, is being treated by MNA. The state did not concur with this remedy as it ignores the heavy metals exceedances of the GSI/MZD criteria into McCoy Creek.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 1/1/2012 | **End Date:** 12/31/2043

Operable Unit:
Electrovoice, Inc. - OU2 Offsite Groundwater Plume

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M operations began in 2012 based on the information gathered from the LTRA phase reviewed in the 2011 FYR. The MNA remedy has proven to be effective. In 2012, O & M began with annual groundwater monitoring in a reduced number of wells.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/1/2015 | **End Date:** 5/1/2016

Operable Unit:
Electrovoice, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EPA began development of the Fourth FYR in September 2015. The Fourth FYR was completed in May 2016. As in the previous FYR report (2011), review of the groundwater data documented a continuous decrease in the concentrations of VOCs although some exceedance of criteria remain. Heavy metals concentrations were below criteria or non-detect. The remedy continues to be protective of human health and the environment.

Activity: 5 Year Review | **Start Date:** 1/1/2011 | **End Date:** 9/20/2011

Operable Unit:
Electrovoice, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was written by the EPA. EGLE was responsible for reviewing and providing comments on the report. The report recommended that the current LTRA continue under a modified sampling schedule. Beginning in 2012, and for the next five years, groundwater sampling will be conducted annually with development of one annual report per year. The remedy continues to be protective of human health and the environment.

Activity: 5 Year Review | **Start Date:** 1/9/2006 | **End Date:** 9/30/2006

Operable Unit:
Electrovoice, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was written by the EPA. EGLE was responsible for reviewing and providing comments on the report. The report recommended that the current LTRA continue and included a revised Declaration of Restrictive Covenant to restrict access to the groundwater by private wells within the contamination plume boundary.

Activity: Long Term Remedial Action | **Start Date:** 10/1/2004 | **End Date:** 12/31/2011

Operable Unit:
Electrovoice, Inc. - OU2 Offsite Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The LTRA consisted of semi-annual sampling of the monitoring wells. It began in 2004 and was completed in 2011.

Activity: Remedial Action | **Start Date:** 9/19/2003 | **End Date:** 12/30/2003

Operable Unit:
Electrovoice, Inc. - OU2 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$5,000.00	Federal

Comments:
Install additional monitoring wells.

Activity: Remedial Design | **Start Date:** 4/12/2001 | **End Date:** 9/19/2003

Operable Unit:
Electrovoice, Inc. - OU2 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$6,000.00	Federal

Comments:
No Comment entered

Activity: 5 Year Review | **Start Date:** 1/1/2001 | **End Date:** 9/28/2001

Operable Unit:
Electrovoice, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The FYR report was written by the EPA. EGLE was responsible for reviewing and providing comments on the report. The report recommended closure of the on-site soils OU, but continued monitoring and development of the groundwater monitoring well network for the off-site groundwater plume.

Activity: Operation and Maintenance | **Start Date:** 8/1/1996 | **End Date:** 12/30/2003

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Monitoring well sampling specifically for the lagoons was discontinued in 2003 as treatment for the on-site soils and lagoons was considered complete in the 2001 FYR.

Activity: Operation and Maintenance | **Start Date:** 8/1/1996 | **End Date:** 9/1/2001

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The SVVS system was discontinued as treatment for the on-site soils and lagoons, and was considered complete in the 2001 FYR of the site.

Activity: Remedial Action | **Start Date:** 5/1/1996 | **End Date:** 3/17/1997

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$162,000.00

Secondary Source:
Federal

Comments:
The PRP conducted a RA with federal oversight.

Activity: Remedial Design

Start Date: 9/29/1993

End Date: 5/24/1996

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$263,000.00

Secondary Source:
Federal

Comments:
The PRP conducted the RD with federal oversight.

Activity: Remedial Investigation

Start Date: 9/15/1992

End Date: 9/21/1999

Operable Unit:
Electrovoice, Inc. - OU2 Offsite Groundwater Plume

Status:
Completed

Primary Cost:
$79,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted the RI/FS.

Activity: Remedial Investigation

Start Date: 10/8/1987

End Date: 6/24/1992

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$228,000.00

Secondary Source:
Federal

Comments:
The PRP conducted an RI/FS with federal oversight.

Activity: Remedial Investigation

Start Date: 9/4/1987

End Date: 10/8/1987

Operable Unit:
Electrovoice, Inc. - OU1 Onsite Soils Lagoons

Status:
Completed

Primary Cost:
$159,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted an RI/FS.

Response Activities - Future Need

Activity: 5 Year Review

Start Date: 5/1/2020

End Date: 5/1/2021

Operable Unit:
Electrovoice, Inc. - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fifth FYR, to be developed by the EPA, will be due by May 1, 2021.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $3,754.67	**Exp for Year:** $1,648.83
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $419.24	**Exp for Year:** $195.17
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $814.20	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $931.93	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $1,251.00	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $6,293.63	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $7,426.09	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $4,831.40	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $35,371.19	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $9,892.78	**Exp for Year:** $0.00

Electrovoice, Inc.

Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $104,950.03	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $3,263.30	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $20,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Bronson Reel Company

State Site ID:
12000018

Federal Site ID:
B5

Full Address:
505 N. Douglas Street, Bronson, MI, 49028

County:
Branch

Location

The Bronson Reel Company site is located at 505 N. Douglas Street in Bronson, Michigan. The former facility is currently owned by Borg Warner.

Status

The Bronson Reel Company site is one of three former manufacturing facilities located in the city of Bronson that make up the North Bronson Former Facilities (NBFF) Site. These three former manufacturing facilities were considered to be part of the North Bronson Industrial Area (NBIA) Superfund site (Site) at one time. The two other sites are the Scott and Fetzer Corporation site and the L.A. Darling site.

Since the building was demolished in 2015, the condition of the piece-meal building foundation has continued to deteriorate, allowing surface water to infiltrate between foundation cracks into the subsurface. EGLE and the EPA identified the deteriorating foundation as a issue in the 2019 Five Year Review (FYR). The EPA and EGLE are working with the potentially responsible party (PRP) to address the foundation concerns and a solution is expected in 2020.

History

In September 1993, the EPA redefined the boundaries of the NBIA site and excluded a significant portion of the area, including the former facilities and contamination emanating from them. By this time, sufficient data had been gathered in the vicinity of these facilities during the NBIA site Remedial Investigation (RI) to determine that a strong likelihood existed that each of the former manufacturing facilities was a source of contamination. Following extensive negotiations with the PRP for each facility, it was decided that each PRP would conduct an RI/Feasibility Study (FS) at their site. To differentiate between sites, each facility is considered an Operable Unit (OU); Numbers 1, 2, or 3. Bronson Reel is OU1. For details on the other NBFF or the NBIA site, see individual Legislative Reports.

Bronson Reel Company actually began operations in 1922 when two local residents sold stock locally to begin a small fishing reel manufacturing operation in Bronson. The firm was initially located at 123 North Matteson Street until 1929 when the firm outgrew this location. In 1929, a new facility at Douglas and State Streets in Bronson was built. Early operations included plating and machining of small parts used to make fishing reels and other precision components. The Bronson Reel Company survived the depression years and, except for the years during World War II (WWII) when the company made parts for bomb sights, the company continued to be locally owned and made fishing reels. In 1946, the Higbie Manufacturing Company purchased the Bronson Reel Company. During the late 1940s, several additions were made to the original plant. The company maintained their own tool room where they produced all their own dies, tools, and fixtures. The plating department was enlarged during this time as well. In 1963, Higbie Manufacturing Company sold its Bronson Reel division including the Bronson site to Bronson Specialties, Inc. Following the sale, the production of fishing reels declined and eventually terminated in 1968. Although plating operations were discontinued in 1968, metal tooling and other manufacturing operations were continued by Bronson Specialties, Inc., and Bronson Precision Products, Inc., until at least the early 1990s. The current property owner is Borg Warner.

Bronson Reel Company discharged liquid wastes to the city-owned western lagoons via the city's industrial sewer line from 1939 until 1968. According to file records, they never discharged to the lagoons known as the eastern lagoons. The seepage lagoons are part of the NBIA Superfund site.

On June 14, 1988, the EGLE (formerly known as the MDEQ) inspected the site and subsequently issued a list of

required corrective actions. In their follow-up letter, EGLE instructed the company to contain waste storage drums and metal shavings properly and to remove soils affected by spilled or leaking cutting oils. Through a series of response activities, the company removed a reported 10,440 tons of soil as well as an underground oil storage tank, an oil-water separator, and a portion of the abandoned Bronson industrial sewer that was located along the northern edge of the property.

A hydrogeologic investigation was performed by the property owners in 1988 as directed by EGLE. This investigation included the installation of six shallow groundwater monitoring wells. It was determined that groundwater was moving in a northwesterly direction and that low levels of some volatile organic compounds and metals were present.

In 1998, during a phase of the RI being conducted at the NBIA Superfund site, significant concentrations of the solvent trichloroethylene (TCE) were detected in groundwater samples north and northwest of the former Bronson Reel Company.

The PRP for the former Bronson Reel Company site entered into an Administrative Order by Consent with the EPA to conduct a streamlined RI/Focused Feasibility Study (FFS) at the site on September 30, 2002.

The PRP retained Fletcher Driscoll and Associates to conduct a streamlined RI at the site to determine whether it was a source of TCE contamination in the groundwater. A draft streamlined RI report was submitted in November 2004. RI data indicate the former Bronson Reel Company is not currently contributing to the TCE contamination in groundwater at this site. However, it was further determined that there was no way to demonstrate that the former facility had not contributed to groundwater contamination in the past. Because of the extensive excavation work that was done in the late 1980s no significant soil contamination was detected on-site where soils were accessible. It was further determined that the Record of Decision (ROD) would address soils only to facilitate the decision process. The revised streamlined RI report was approved in 2005.

The FFS was approved in 2006. A ROD for soil only was signed in September 2006. The ROD calls for deed restrictions to ensure that, if in the future the buildings and foundations remaining on the site are removed, the soil beneath the buildings will be investigated to see if any contamination remains on-site in areas currently inaccessible. The EPA is pursuing the preparation and filing of the deed restrictions. Use of groundwater from beneath this property will be restricted due to contamination throughout the industrial area.

A draft Restrictive Covenant (RC) as stipulated in the ROD was submitted to the Agencies in 2010 and the MDEQ provided comments to the EPA. The city of Bronson has expressed interest in having the buildings on the Bronson Reel property demolished due to their state of disrepair.

In 2012, EGLE became aware that the concrete foundation at the Bronson Reel location may be of questionable competency. In response to this information, the EPA later indicated a potential need for modification to the ROD to address this change in site conditions. To clarify, the original ROD indicated that additional sampling and possible soil removal would only need to occur if the concrete foundation was disturbed during a future demolition. Now, because the concrete foundation may be of questionable competency, any demolition of the building may also necessitate the removal of the concrete foundation, triggering additional soil investigation and possible soil removal from underneath the foundation footprint. This means that the draft RC should wait to be finalized until the EPA determines and implements a revision to the ROD so that the final RC is consistent with the ROD and ensures adequate protection.

On March 19, 2014, the EPA agreed to do the following to resolve the RC at Bronson Reel:

1) The EPA will write a letter to the file clarifying the need to maintain the foundation;
2) The EPA will secure enforcement mechanism with the PRP to ensure the draft RC gets implemented and monitored and the foundation maintained; and
3) The EPA will follow up with the PRP to see if they will voluntarily sample under the building and evaluate vapor intrusion (VI) concerns.

Without EGLE agreement, the EPA assisted in the execution of a RC on the former Bronson Reel property which identifies EGLE as the grantee and does not require foundation maintenance or protection against VI. The RC was recorded with the Branch County Register of Deeds on September 9, 2014, and prohibits: activities contrary to due care, interference with response activities, disturbance of the building foundations (with exceptions), exposure of sub-slab/foundation soils (with exceptions), consumption of on-site groundwater.

At the end of 2015, the city of Bronson expressed interest in attaining the property. EGLE had informed them of the

benefit of conducting a Baseline Environmental Assessment (state level) and securing a prospective purchaser agreement (federal level) prior to acquiring the property to limit their liability. EGLE also requested the EPA offer services to facilitate the prospective purchaser agreement. By December 2016, the city was longer interested in the property because the business across the street went bankrupt.

In 2015, the property owner, Borg Warner, demolished the dilapidated buildings at the Bronson Reel property and removed the debris. Newly stained soils were observed on the property during the demolition. Borg Warner sampled the stained soils. Sample results indicated 88,000 parts per million (ppm) Diesel Range Organics. This was likely due to demolition equipment hydraulic line failure. In December 2015, Borg Warner removed the stained soils and collected two soil samples to verify contaminant removal. In December 2016, Borg Warner provided sample results for one (no other sample results provided) of the December 2015 samples that indicated 33,800 ppm, Diesel Range Organics and indicated additional soils were removed in September 2016. Borg Warner did not respond to EGLE's request for information concerning post September 2016 excavation verification samples or results.

With the 2015 building demolition complete, the piece-meal foundation has been exposed to the elements with no requirement for foundation maintenance. The EPA evaluated enforcement options that would provide for 1) enforcement of ROD (investigate/remediate contaminated soils if foundation is removed), 2) maintain foundation, 3) evaluate/address VI (both on and off property), 4) develop and implement an Institutional Control plan and Operation & Maintenance plan (to maintain the foundation). In 2017, the EPA changed project managers again, resulting in no additional action at the Bronson Reel former facility.

On September 13, 2017, EGLE requested the EPA evaluate the entire site for the potential for VI. Updated criteria warrant additional investigation for this potential exposure pathway.

Enforcement

None.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/26/2006

Location Name: Bronson Reel Company - OU Entire Site

Comments:
The ROD is for soil only. It calls for deed restrictions to ensure that, if in the future the buildings and foundations remaining on the site are removed, the soil beneath the buildings will be investigated to see if any contamination remains on-site in areas currently inaccessible.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 10/18/2018 **End Date:** 9/30/2019

Operable Unit:
Bronson Reel Company - OU Entire Site

Status:
Completed

Primary Cost: **Primary Source:** Federal **Secondary Cost:** **Secondary Source:**

Comments:
The first FYR was completed in 2019 and covered Bronson Reel OU1 and LA Darling OU2. Scott and Fetzer OU3, was not included as it is still in the remedial design phase. EGLE concurred with the FYR.

Response Activities - Future Need

Activity: 5 Year Review **Start Date:** 9/30/2023 **End Date:** 9/30/2024

Operable Unit:
Bronson Reel Company - OU Entire Site

Status:
Future Need

Primary Cost: **Primary Source:** **Secondary Cost:** **Secondary Source:**

Federal

Comments:
Second FYR for NBFF

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $889.43	**Exp for Year:** $837.86
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $93.88	**Exp for Year:** $0.33
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $152.45	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $34,999.10	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $2,722.34	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: L.A. Darling Subarea

State Site ID:
12000084

Federal Site ID:
B6

Full Address:
Matteson and E. Railroad St., Bronson, MI, 49028

County:
Branch

Location

The L.A. Darling site is located in the city of Bronson, Branch County, Michigan. The eastern boundary of the site is a line extending north on Buchanan Street to the Conrail Railroad Tracks. The railroad tracks form the north boundary, Matteson Street is the west boundary, and the south boundary is delineated by a line running parallel to Fillmore Street on the north side of D & L Tooling. The site is approximately 2.2 acres in size and comprised primarily of 4 city lots; Lot numbers 45, 46, 47, and 48 at the southern end of the North Bronson Industrial Area (NBIA).

Status

The former L.A. Darling Company site is one of three former manufacturing facilities located in the city of Bronson that were considered to be part of the NBIA Superfund site at one time. The other two sites are the Scott & Fetzer Corporation and Bronson Reel Company. Commercial and manufacturing activities date back to 1897 on some of the property known as the L.A.Darling site.

In 2019, EGLE (formerly known as the MDEQ) and the EPA worked with L.A. Darling to finalize documents related to the onsite treatment system. Construction of components of the onsite groundwater pump and treat (P & T) system began in fall 2019. L.A. Darling continued to work with EGLE on obtaining a National Pollutant Discharge Elimination System (NPDES) permit to discharge water during operation of the P & T system.

In 2019, EGLE performed a limited groundwater investigation at the NBIA and North Bronson Former Facilities (NBFF) sites to screen the groundwater for per- and polyfluoroalkyl substances (PFAS). Analytical results did not show any exceedances above appropriate groundwater criteria. Following this sampling, EGLE determined PFAS sampling at the L.A. Darling site would not be required as part of the application for the NPDES permit as originally requested in 2018.

History

Commercial and manufacturing activities date back to 1897 on some of the property known as the L.A. Darling site. In 1897, the R.N. Sanderson Company operated a grain mill on the northern half of Lot 45. In 1909, August Visel went into business with Charles Conover and moved the Ideal Fixture Company, manufacturers of retail display hat stands, to Lot 46 located on the northeast corner of Matteson and East Railroad Streets. The name of the company was changed to Visel-Conover Company. By 1916, the grain mill had expanded, Visel-Conover Company continued to operate and the W.A. Kipp Foundry now existed on the east end of Lot 46. By 1936, the grain mill and the foundry were apparently gone and the retail fixture company had expanded onto the property these facilities previously occupied. It was then known as L.A. Darling and their product lines consisted of a variety of commercial display fixtures and retail shelving made from a variety of materials. Operations included chromium and cadmium plating, and degreasing using trichloroethylene (TCE). Sometime in the 1930's, the plating operations were moved to the eastern half of Lot 46. Various materials, fuels, and spent chemicals were staged on the eastern half of Lot 45. The files contain historical references to on-site lagoons for liquid waste disposal before the city of Bronson constructed an industrial sewer line to municipal lagoons located north of the L.A. Darling property. By 1950, one block of East Railroad Street had been vacated and L.A. Darling had expanded south onto Lots 47 and 48. L.A. Darling operated at this location until 1968 when the company closed and the equipment was moved to a new facility in Paragould, Arkansas.

L.A. Darling Subarea

Sometime between 1938 and 1950, the block of East Railroad Street which bisected the lots was abandoned to permit expansion of L.A. Darling. Railroad Street continues to exist both east and west of the L.A. Darling site.

L.A. Darling sold the lots where the company existed to Meyer and Ester Goldman. Patriark Inc., leased the property and manufactured plastic building products in 1968 and 1969. The Goldmans sold the property to Patriark, Inc., in 1969 and Patriark, Inc., subsequently sold the property to Jack R. Coleman and Alanzo Craft, Jr. In 1980, Mr. Coleman sold his interest in the property to Mr. Craft, who had the buildings demolished. Alanzo Craft, Jr. sold the property to the city of Bronson in 1982. Following demolition, the building foundations and some of the demolition rubble remained on-site. The property was not fenced so there was ready access to the site and remaining demolition materials.

In September 1993, the EPA redefined the boundaries of the NBIA site and excluded a significant portion of the area, including three former manufacturing facility properties and contamination emanating from them, from the site description. The EPA refers to these three former manufacturing facilities collectively as the North Bronson Former Facilities (NBFF). To differentiate between sites, each facility is considered an Operable Unit (OU); OU1 (Bronson Reel), OU2 (L.A. Darling), and OU3 (Scott & Fetzer Corporation). For details on the other NBFF OU's or the NBIA site, see their individual Legislative Reports. By 1993, sufficient data had been gathered in the vicinity of the former facilities during the NBIA site Remedial Investigation (RI) to determine that a strong likelihood existed that each of the former manufacturing facilities was a source of contamination. Following extensive negotiations with the potentially responsible party (PRP) for each facility, it was decided that each PRP would conduct an RI/Feasibility Study (FS) at each individual OU.

The city of Bronson hoped to redevelop the site. EGLE conducted a Brownfield Redevelopment Assessment at the site on March 25, 1997, via a cooperative agreement with the EPA. At the same time, the Michigan Department of Community Health was in the process of completing a Health Consultation Assessment of the property. Based upon the results of the Brownfield Redevelopment Assessment, EGLE determined that the property met the definition of a facility as defined in Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Among the contaminants found at levels of concern were arsenic, cadmium, antimony, chromium, nickel, TCE, tetrachloroethene, and 1,2-dichloroethene.

In 1999, EGLE awarded a contract to Harding Lawson Associates ES of Michigan, Inc., to identify potential on-site contaminants in the soil and groundwater, and in concrete and remaining demolition debris.

The study revealed that TCE and a number of metals are present in the site soil above Industrial and Commercial Drinking Water Protection Criteria and TCE and several metals are present in groundwater above the Part 201 Drinking Water Criteria. The study further concluded that debris may be buried on the former plant property. Finally, the study concluded that additional site investigation work was necessary to adequately characterize the site.

The Kalamazoo District Office of the Remediation and Redevelopment Division, which managed the first phase of investigation, began preparations for Phase II investigation. A representative of the Marmon Group, the PRP, contacted District personnel and advised them that their client was interested in conducting response activities, as appropriate, at the L.A. Darling site.

On June 5, 2002, the Marmon Group entered into an Administrative Order by Consent (AOC) with the EPA to conduct a streamlined RI/Focused Feasibility Study (FFS) on the L.A. Darling property. The PRP's contractors started soil and groundwater sampling in October 2001, prior to the finalization of the Order. Additional soil and groundwater sampling was performed in 2003 and 2004.

In the 2004 RI Report, the PRP proposed performing a source and contaminated soil removal. Their report contended that saturated soils and groundwater had been sufficiently characterized by the work conducted. While EGLE agreed that unsaturated site soils had been adequately characterized, EGLE could not concur that saturated soils and groundwater had been sufficiently characterized as the report contended. The PRP had not fully characterized the extent of groundwater contamination nor groundwater flow paths leaving the site. The PRP submitted a revised RI report in 2006. This report did not adequately incorporate Agency comments. Nevertheless, in order to move the project along, the EPA gave them conditional approval on the report provided they agreed to multiple conditions designed to assure appropriate response actions at the site to address environmental contamination. A FFS was submitted by the PRP later in 2006. The FFS proposes to remove unsaturated contaminated soils and treat groundwater to Part 201 generic industrial criteria. The groundwater remedy proposed in the FFS was not supported by actual aquifer hydraulic data and, therefore, could not be assessed for adequacy. In addition, the format for the FFS was not acceptable to the EPA.

L.A. Darling Subarea

Next, the PRP submitted a proposal for an aquifer pump test to obtain the data necessary to evaluate the proposed groundwater remedy. Following revision directions from the EPA, the PRP submitted another version of the FFS in June 2007.

Instead of proceeding to conduct the pump test to support the proposed groundwater remedy at this time, the PRP elected to conduct a pre-Record of Decision (ROD) interim soil response at the L.A. Darling site. Following negotiation of a work plan, the interim response began in November 2007 and was completed in early 2008. An estimated 5,100 cubic yards of soil and concrete were removed from the site during this voluntary work. In addition to excavating and disposing of contaminated soil, at the request of the city of Bronson, the PRP reinstated the former section of Railroad Street that was removed sometime between 1938 and 1950.

In July 2008, the EPA, in consultation with EGLE, issued a Proposed Plan for soil and groundwater work. The Proposed Plan called for removal of contaminated soil to Part 201 industrial cleanup criteria to the depth of the groundwater; installation of an air sparging and soil vapor extraction system (AS/SVE); and construction of a groundwater P & T system once the AS/SVE has achieved the limits of its effectiveness. The groundwater treatment system will operate until it can be demonstrated that groundwater leaving the property meets Part 201 residential drinking water criteria.

Following public comment, the EPA issued a ROD for this response on September 22, 2008. EGLE concurred with the ROD.

In 2008, it was determined that a few buildings in the vicinity of L.A. Darling had levels of contaminants in indoor air that were above, or had the potential to rise above, screening levels. The PRP installed and maintains mitigation systems in residences where necessary and monitored soil gas.

On June 3, 2011, the EPA issued a Unilateral Administrative Order (UAO) which allowed the PRP to begin design of the remediation systems during 2011.

In early 2012, the PRP submitted the 95 percent Remedial Design (RD) Work Plan. After comments and revisions, the EPA approved the final design. The remedy design includes focused soil removal of hot spot soils above direct contact criteria to treat the soils and AS in combination with SVE followed by groundwater extraction and treatment to treat the on-site contaminated groundwater. Construction of the excavation portion of the remedy began in the summer of 2012. Soil samples collected during the excavation demonstrated the need for additional soil excavation which was conducted into fall 2012.

Soil excavation and installation of AS/SVE systems were completed by summer 2013. AS/SVE began in May 2013. In 2015 groundwater sample results and SVE vapor concentrations indicated the need to continue operation of the systems. Due to lack of subsequent contaminant reduction, the AS/SVE systems were shut down in May 2016. To date, the treatment systems have removed over 240 pounds of volatile organic compounds (primarily TCE).

Updates to the 2012 draft pump test and corresponding P & T design were submitted to the agencies in October 2016. The pump tests occurred in the spring of 2017. The results of these tests will be used to update the proposed design of the P & T.

On September 13, 2017, EGLE requested that the EPA evaluate the entire site for the potential for VI. Updated criteria warrant additional investigation for this potential exposure pathway.

In 2018, L.A. Darling submitted the Pumping Test Report for their Spring 2017 pump test. L.A. Darling also submitted an update to the 2012 95 percent RD Work Plan based on the results of the pumping test. In response to the L.A. Darling request for a NPDES discharge permit as part of the P & T, EGLE requested that L.A. Darling collect PFAS analytical data from onsite groundwater to understand the potential concern with regards to PFAS contamination in groundwater before an NPDES permit would be issued.

Enforcement

The PRPs for the L.A. Darling site entered into an AOC with the EPA on June 5, 2002, to conduct a streamlined RI and focused FS at the site. A ROD was signed in September 2008.

On June 3, 2011, the EPA issued a UAO which allowed the PRP to begin design of the remediation systems during

2011 and subsequent construction and operation.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/22/2008

Location Name: L.A. Darling Subarea - OU Entire Site

Comments:
Remaining contaminated soil will be excavated to the water table. If source material is detected at the water table, the PRP will attempt to remove the source. Groundwater treatment will be AS/SVE. When effectiveness of AS/SVE is shown to be dropping, P & T will be employed. P & T construction began in August 2019 and implementation in scheduled for spring/summer 2020.

Response Activities - In Progress

Activity: Remedial Action **Start Date:** 8/1/2019 **End Date:** 12/31/2020

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
In Progress

Primary Cost:

Primary Source:
Private

Secondary Cost:

Secondary Source:

Comments:
Construction of the groundwater P & T system. The cost information has been requested from the PRP and has not been made available.

Response Activities - Completed

Activity: Remedial Design **Start Date:** 10/10/2016 **End Date:** 7/16/2020

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Redesigning the pump test (original draft reviewed in 2012) that will be used to design the P & T system. Pump test occured in spring 2017 followed by submittal of P & T design. EPA approved the P & T design in July 2020.

Activity: Remedial Action **Start Date:** 6/5/2012 **End Date:** 5/10/2016

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Hot spot excavation (2012) and construction (summer 2013) and operation (summer 2013-May 10, 2016) of the AS/SVE system until no longer effective. In 2018, there will be construction of a P & T containment system to contain remaining contaminated groundwater on-site. Operation of the P & T system will be considered operation and maintenance (O & M).

Activity: Remedial Design **Start Date:** 8/17/2011 **End Date:** 6/5/2012

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

L.A. Darling Subarea

Comments:
Design included focused hot spot excavation, AS/SVE followed by groundwater P & T once the AS/SVE effectiveness declines.

Activity: Interim Response | **Start Date:** 11/1/2007 | **End Date:** 2/28/2008

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Prior to the issuance of a ROD, the PRP implemented an interim response at the L.A. Darling site beginning in November 2007. It was completed in early 2008. The interim response consisted of soil excavation, concrete removal, and off-site disposal.

Activity: Remedial Investigation | **Start Date:** 6/30/2002 | **End Date:** 9/30/2008

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Pursuant to the Order between the PRP for L.A. Darling and the EPA, the PRP conducted a streamlined RI/focused feasibility study which was approved by the EPA on May 7, 2008. ROD was signed in September 2008.

Activity: Interim Response | **Start Date:** 10/29/1998 | **End Date:** 10/22/2000

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Completed

Primary Cost:
$97,821.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Determine the horizontal and vertical extent of the soil contamination.

Response Activities - Future Need

Activity: Operation and Maintenance | **Start Date:** 1/1/2021 | **End Date:** 6/30/2051

Operable Unit:
L.A. Darling Subarea - OU Entire Site

Status:
Future Need

Primary Cost:
$7,500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Upon completion of the pump tests (spring 2017), the design of the P & T system are being updated. It is anticipated that the groundwater P & T system will be operational in early 2021. The estimated run time of the P & T system is 30 years. $250,000 of O & M per year for 30 years.

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $3,039.99	**Exp for Year:** $0.00

L.A. Darling Subarea

Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $2,066.06	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $145.88	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $11,583.92	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $307.07	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $14,343.06	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $51,199.02	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $5,507.92	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: North Bronson Industrial Area

State Site ID:
12000012

Federal Site ID:
1C

Full Address:
135 Industrial Avenue, Bronson, MI, 49028

County:
Branch

Location

The North Bronson Industrial Area (NBIA) Superfund site is located in the city of Bronson, Branch County, Michigan. The eastern boundary of the site is a line extending north from Lincoln Street to County Drain 30. County Drain 30 forms the north boundary, Burr Oak Road is the west boundary, and the south boundary is delineated by Fillmore and Union Streets.

Status

Since the early 1900s, multiple past and current manufacturing facilities have existed in a 220 acre industrial park located on the north side of the City of Bronson. Past industries directly discharged waste water into County Drain 30. As a result of cattle and fish kills in the 1930s, the City of Bronson constructed seepage lagoons to retain the wastes generated by industry. An industrial sewer system was also constructed and used to convey wastes from the industries to the lagoons. The Superfund site consists of Country Drain 30, the waste seepage lagoons, the industrial sewer and associated impacted soil and groundwater, and the site wide groundwater plume. Some of the former manufacturing facilities that discharged industrial wastes into the sewer system were L.A. Darling, Scott & Fetzer Corporation, and Bronson Reel Company collectively known as the North Bronson Former Facilities (NBFF). Each of these former manufacturing companies is a site of environmental contamination in their own right, as well as having contributed to the NBIA site contamination.

In 2018, the potentially responsible party (PRP) group submitted a draft operable unit 2 (OU) Remedial Investigation and Feasibility Study (RI/FS) Work Plan to the EPA and EGLE to investigate possible soil and groundwater contamination associated with the Industrial Sewer. The EPA and EGLE provided comments on this work plan in 2019 and continue to work with the PRP to refine the work plan. The RI is scheduled to begin at OU 2 in 2020.

In 2019 EGLE performed a limited groundwater investigation at the NBIA and NBFF sites to screen the groundwater for per- and polyfluoroalkyl substances (PFAS). Analytical results did not show any exceedances above appropriate groundwater criteria.

History

Since the early 1900s, multiple past and current manufacturing facilities have existed in a 220-acre industrial park located on the north side of the city of Bronson. The NBIA Superfund site as defined by the EPA encompasses two series of industrial waste lagoons located at the northern edge of the industrial area, the industrial sewer and associated impacted soil and groundwater, the sediment and water in County Drain 30, and groundwater under and downgradient of the lagoons. Contamination detected at the site is the result of industrial activity and waste handling practices in the industrial park since its inception. In the 1930s, cattle and fish kills were reported due to ingestion of cyanide-contaminated water from County Drain 30. The water contamination was reportedly due to direct discharge of industrial wastes to County Drain 30. To reduce the amount of contaminants entering the drain, the city of Bronson constructed seepage lagoons to retain the wastes generated by industry. An industrial sewer system was also constructed and used to convey wastes from the industries to the lagoons.

The site is zoned by the city of Bronson for industrial use only. Land use in the area consists of a mixture of industrial, residential, and agricultural uses. The area has a high potential for industrial redevelopment.

The Western and Eastern Lagoons were built in 1938 and 1949, respectively, to contain metal-laden plating and other

industrial wastes generated by several industries in the area. Between 1930 and 1970, the city of Bronson owned and operated both sets of lagoons. The Bronson Plating Company purchased the Eastern Lagoons from the city in 1970. The Western Lagoons, which are still owned by the City of Bronson, were used until 1981. The Bronson Plating Company continued to discharge to the Eastern Lagoons until 1981.

Initial investigations in the NBIA were conducted as early as 1978, by EGLE. Monitoring well samples contained trichloroethylene (TCE) and elevated concentrations of cadmium, chromium, copper, nickel, zinc, and cyanide. Polychlorinated biphenyls were detected in sediment samples from County Drain 30 downstream of the Western Lagoons. Additional wells installed in 1981, near the Eastern Lagoons, revealed the presence of volatile organic compounds (VOCs) and metals.

EGLE sampled County Drain 30 in 1984 and found metal contamination downstream from the Bronson Plating Company. As a result, in 1986 the Bronson Plating Company dredged County Drain 30 from its eastern outfall to the Matteson Street overpass, dewatered the sediment on-site, and had the dredged material removed for disposal.

Sludge material in the lagoons contains metals and cyanide which continue to be sources of contamination. The most obvious sources of the chlorinated organic compounds appear to be from the NBFF sites referred to above. There may be other sources as well. Chlorinated organic compounds also appear to have been released from the industrial sewer. Contaminants from these sources are leaching into the groundwater and being transported with the groundwater. Some of the groundwater vents to County Drain 30, a protected waterway of the state, which discharges to Swan Creek, a tributary of the St. Joseph River.

The NBIA was placed on the National Priorities List and became eligible for funding under the Superfund Program. Using a federal grant, EGLE conducted a two-phase RI to characterize contamination in the NBIA. Initially the NBIA site encompassed a 220 acre area that included the NBFF. Therefore, the RI included preliminary investigation of the NBFF sites. However, in the early 1990's the EPA redefined the boundaries of the NBIA Superfund site and defined it as the lagoons, County Drain 30, and groundwater contaminated by the lagoons. A technical memorandum was issued in 1989, followed by an RI report in 1993. The FS was released in 1995. Supplementary field studies to further define contamination in the industrial area as well as a groundwater-use survey were conducted in 1996. Additional remedial alternatives were evaluated in an addendum to the FS released in the spring of 1997. These activities are known collectively as OU1, East and West Lagoons - sludge, soil, associated groundwater, sediments, and surface water (East and West Lagoons). A Proposed Plan, released in 1997, recommended that the following remedy be implemented: (1) Consolidated wastes from the Eastern Lagoons and contaminated sediments from the County Drain into the Western Lagoons and cover, and (2) Install a groundwater recovery system between the Western Lagoons and the County Drain and construct an engineered wetland to treat the contaminated groundwater. The Record of Decision (ROD) determined that the remedy recommended in the Proposed Plan was appropriate. The ROD was signed in June 1998. The EPA and EGLE negotiated an agreement with the PRPs to design and implement the selected, or an equivalent, remedy. EGLE participated in these negotiations but is not a party to the agreement. The PRPs signed a Decree in 1999 agreeing to implement the remedy set forth in the ROD.

As described above, the ROD does not address the groundwater contamination or source areas upgradient of the lagoons and County Drain 30 because the EPA redefined the NBIA Superfund site boundaries. EGLE petitioned the EPA to include the former industrial facilities in the NBIA so that these sources of contamination could be remedied and not continue to contaminate groundwater in the industrial park. In an October 12, 1995, letter, the EPA agreed to include the industrial sewer, and any contamination associated with releases from it, in the NBIA site description, but not the former manufacturing facilities. EGLE conducted industrial sewer investigations in 1996 and again in 1998. These two investigations are known as Phases 1 and 2 of OU2, Industrial Sewer and Media Contaminated via Sewer (Industrial Sewer). Two technical memorandums were written summarizing the results of the Industrial Sewer OU investigations. The second report was completed in December 1999. The reports conclude that the industrial sewer is a source of soil and groundwater contamination within the industrial park. In accordance with the Superfund process, potential remedial alternatives for addressing soil and groundwater contamination from the industrial sewer will be evaluated in the FS and the Baseline Risk Assessment for this portion of the site. Following the FS, a proposed plan for the Industrial Sewer OU will be released for public comment, which will be followed by the issuance of a second ROD.

The Decree for East and West Lagoons OU was entered into the court record on February 24, 2000. The PRPs submitted a pre-design work plan in June 2000, for further study of the hydrogeology at the site to facilitate design of the remedy. The initial pre-design study, which began in February 2001, was followed by multiple additional studies to further define the extent of groundwater contamination. The studies indicated that groundwater was not completely venting into County Drain 30 and subsequent studies were designed to determine the fate of the contamination. Also

during this time, the PRPs submitted the first version of a municipal groundwater use restriction ordinance to prevent exposure to contaminated groundwater. At the request of the PRPs, EGLE reviewed their draft ordinance to determine whether it was consistent with the requirements of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and program policy application. EGLE identified several revisions that would be necessary to be consistent with Part 201.

Discussions between the Agencies and the PRPs relative to the NBFF sites had continued throughout this time period and the PRP for each of the three sites advised the Agencies that they would voluntarily address the sites. At their request, the FS for the Industrial Sewer OU of the NBIA was placed in abeyance until they completed the RI/FS studies at each of the NBFF sites. Each NBFF RI/FS study is being performed pursuant to individual Administrative Orders by Consent.

As pre-design study data became more comprehensive, the technical and administrative complexity of addressing multiple sites within one area became more obvious, the PRP group formed a technical committee to facilitate completion of the pre-design work. The groundwater in the vicinity of the lagoons is known to be contaminated with both metals and chlorinated organic compounds, including TCE, cis 1,2-dichloroethene (DCE), and vinyl chloride (VC), and the area hydraulically upgradient from the lagoons is primarily contaminated with the chlorinated solvents. The technical work group proposed to the Agencies that they conduct a groundwater investigation throughout the NBIA to help determine whether compounds detected in groundwater in the Western Lagoon area are sourced entirely from the lagoons or in part from other sources in the NBIA, whether there is a plume west of the Western Lagoon area, and if so, whether the plume originates from the lagoons or another source(s). This additional investigation was approved because, in spite of delaying completion of the pre-design study, the information to be gained was considered instrumental in understanding the groundwater dynamics throughout the study area and would assist in selecting the appropriate final remedy selection. This groundwater investigation was completed in 2005.

In December 2004, over the objection of the EPA, and in spite of direction to leave the contaminated sediments in County Drain 30 undisturbed until alternate disposal arrangements could be made, the Branch County Drain Commissioner had the sediments, known to be contaminated with high concentrations of metals, dredged from County Drain 30 and dumped along the entire length of the north side of the drain on the property of local farmers. Upon discovery that these contaminated sediments had been excavated, EGLE notified the EPA of the situation and the Agencies took the following actions: The Agencies met with the Drain Commissioner, as well as the PRP group. The PRP group agreed to assist in characterizing the dredged material and explore possible response alternatives, although they are not responsible for the Drain Commissioner's actions.

In January 2005, EGLE staff collected between 50 and 60 samples of dredged material from along the north bank of County Drain 30 to screen for metals content using X-Ray Fluorescence technology. This work was done to preliminarily assess the chemical make-up of the dredged materials and to aid in development of a sampling strategy. The information was made available to the PRPs and the EPA. The EPA pursued the matter by advising the Drain Commissioner of steps needed to be taken in response to these actions. The banks were hydroseeded by the Drain Commissioner to limit erosion of the unvegetated soil back into the drain. Silt traps were installed in the County Drain to limit migration of reentrained sediments that washed from the banks. The NBIA PRPs will remove some of the excavated material during implementation of the remedial action (RA).

In 2006, the PRPs advised the Agencies that they wanted to evaluate the efficacy of stabilizing/solidifying some or all of the lagoon sludges in place as an enhancement to the remedy selected in the ROD. To that end, utilizing the services of a new consultant, the PRP group conducted sampling of soil and plating sludge from the lagoons; berms surrounding the lagoons; and from beneath the lagoons to confirm the current chemical make-up of the material. The Agencies received preliminary analytical results in late November 2006, which indicated concentrations of inorganic materials are consistent with or greater than concentrations detected during the RI. The PRPs then performed bench-scale stabilization/solidification tests on lagoon material in April 2007, followed by a field-scale pilot study from May through July 2007.

The PRPs assumed responsibility for residential well sampling for the first time in 2007, at the direction of the EPA. Prior to this, EGLE had financed the annual well sampling for over 10 years.

Pursuant to volatilization to indoor air regulations, the PRPs performed initial soil gas studies to assess the vapor intrusion (VI) exposure pathway in 2007. The PRPs also submitted, to the Agencies, a proposal for alternate sediment cleanup criteria. No action was taken on this proposal before other issues relative to County Drain 30 developed.

In 2008, the Water Bureau re-evaluated the 2006 mixing zone determination for the NBIA. As a result of changes

made in 2007 when the National Pollutant Discharge Elimination System permit for the Bronson Wastewater Treatment Plant was reissued, the Water Bureau issued revised acute and chronic values for all of the parameters identified for the site. In general, this resulted in more stringent allowable discharges from groundwater to surface water than were determined in 2006. There have been four previous mixing zone determinations for the NBIA. The acute and chronic values identified in 2008 are very similar to the values contained in the ROD for this site. However, they are more restrictive than those calculated in 2004 and 2006. The impact of this situation is that the PRP group is not certain that they can comply with these values for all constituents of concern in conjunction with the solidification/stabilization process.

Results from the initial soil gas sampling for evidence of VI indicated no unacceptable levels of VOCs were detected in structures in the vicinity of the Eastern Lagoons. However, some elevated levels were detected near two of the NBFF.

Also in 2008, the additional extent-of-contamination groundwater sampling was conducted on the western side of the site and on the north side of County Drain 30. Methylene chloride, VC, DCE, and TCE were detected in some of these groundwater samples.

In response to the question of whether or not to pursue the stabilization/solidification remedy for the lagoons, the PRPs requested a meeting to be held in Bronson in March 2009. The PRP group spokesman presented updated proposals covering many of the issues discussed previously in this report. Included were proposals for the following:

-Confirming background concentrations of contaminants in sediments and then obtaining updated sediment data to quantify the volume of sediments that must be addressed.
-Getting the groundwater use ordinance for the city of Bronson enacted.
-Clarification of Groundwater Surface Water Interface Criteria and what is acceptable for a compliance demonstration.
-Determination of applicable cleanup criteria for the dredged sediment spoils deposited on farmland north of the county drain.
-Completion of extent of contamination characterization in groundwater.

The Agencies provided detailed comments on the proposals from the PRPs and final work plans were generated for further extent of groundwater contamination studies, and for studies to preliminarily define how much soil and sediment would have to be removed.

Beginning in August 2010, the PRPs began submitting documents summarizing the results of the studies as well as proposing alternate cleanup goals for some media. The Agencies reviewed and commented on these documents. The PRPs submitted revised documents in 2011 and the Agencies are seeking additional supporting information confirming the need to use sediment criteria for erodible soils. The EPA clarified the remediation goals in letters to the PRPS dated November 8, 2012, and December 4, 2013.

Lagoon water and sludge, surrounding sub-surface soils, and County Drain 30 surface water and sediments remain contaminated with heavy metals (cadmium, total chromium, copper, nickel, zinc, and cyanide). Groundwater is contaminated with metals and chlorinated organic compounds, such as TCE, DCE, and VC, in exceedance of allowable levels.

The PRPs submitted a draft Remedial Design (RD) Work Plan in the spring of 2013. The agencies have reviewed several iterations of this work plan and are working with the responsible parties to secure an acceptable work plan. EGLE is working to get the EPA support for PRP development of data quality objectives to be used to develop a pre-design investigation. The pre-design investigation results will be used in the development of the RD. The submittals to date by the PRPs have not yet resulted in an approved RD Work Plan. The agencies and the PRPs met in April 2016 to discuss the status of the RD Work Plan. EGLE provided the EPA with comments on the meeting minutes and are waiting for EPA response.

In 2017, EGLE continued to work with the EPA as they negotiate a Statement of Work and Administrative Order of Consent for the PRPs to conduct an RI of contaminated sewers and contaminated groundwater associated with those sewers.

Enforcement

The PRP group, which includes existing and former area manufacturers as well as the city of Bronson, entered into a Decree in 1999 agreeing to implement the remedy selected in the ROD. The Decree was lodged in federal court in

February 2000.

When a Special Notice of Liability was issued to the PRPs in September 2000 for the FS and Baseline Risk Assessment for the Industrial Sewer OU, the PRPs requested a meeting with the Agencies and raised the issue of upgradient contamination. Separate agreements have been negotiated by the EPA for each of the NBFF and the individual PRPs for site characterization and source remediation. The Industrial Sewer OU Special Notice of Liability and anticipated negotiations have been put in abeyance pending the outcome of the site work.

As of 2016-2017, the EPA is in negotiations with the PRPs regarding conducting a RI for OU2: addressing contaminated sewers and groundwater contamination associated with those sewers.

Operable Units for North Bronson Industrial Area

OU1 Lagoons

OU2 Industrial Sewer

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/19/1998

Location Name: OU1 Lagoons

Comments:
Consolidation of contaminated County Drain 30 sediment and eastern lagoon soil into the western lagoons. Capping the western lagoons and capturing and treating contaminated groundwater in an engineered wetland.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/26/2008

Location Name: OU1 Lagoons

Comments:
The PRPs have determined that the lagoon materials do not have sufficient strength to support the cover that is necessary for closure. This Explanation of Significant Difference (ESD) clarifies that the stabilization and solidification of materials (either in-situ or ex-situ) falls within the scope of the 1998 NBIA East and West Lagoons OU ROD. This enhancement of the remedy would serve to limit leaching of contaminants to groundwater and would provide additional stability to the sludge mass, resulting in an improved condition for the closure of the lagoons. The MDEQ concurred with this ESD.

Response Activities - Completed

Activity: Negotiations **Start Date:** 8/1/1998 **End Date:** 2/24/2000

Operable Unit:
North Bronson Industrial Area - OU1 Lagoons

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Decree for OU1 Pre-Design, Design, and RA lodged in Federal Court on February 24, 2000.

Activity: Remedial Investigation **Start Date:** 5/1/1998 **End Date:** 12/31/2000

Operable Unit:
North Bronson Industrial Area - OU2 Industrial Sewer

Status:
Completed

Primary Cost:
$48,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The RI was completed and the Technical Memorandum written by EGLE and approved by the EPA. The EPA issued a Special Notice of Liability on September 28, 2000, for FS and Baseline Risk Assessment. The Industrial Sewer

OU2 FS and Baseline Risk Assessment negotiations were placed in abeyance in approximately February 2001 while negotiations for the NBFF site characterizations continue. Negotiations for the FS have not resumed.

Activity: Remedial Investigation		**Start Date:** 6/1/1987	**End Date:** 7/31/1997
Operable Unit: North Bronson Industrial Area - OU1 Lagoons		**Status:** Completed	
Primary Cost: $1,423,784.00	**Primary Source:** Federal	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
The RI was performed under direction of EGLE by Warzyn Inc.

Response Activities - Future Need

Activity: Remedial Design		**Start Date:** 1/1/2022	**End Date:** 7/31/2023
Operable Unit: North Bronson Industrial Area - OU1 Lagoons		**Status:** Pending	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Based on results of pilot studies, the EPA issued an ESD in 2008 to provide for lagoon stabilization. Dredging of contaminated sediments from County Drain 30 remains a component of the remedy. The EPA and EGLE are working with the PRPs in the finalization of a RD Work Plan which will be the basis of the design work. A Pre-Design Investigation Work Plan and Quality Assurance Project Plan need to be developed, approved by the agencies, and corresponding work completed prior to development of the design.

Activity: Remedial Design		**Start Date:** 1/1/2022	**End Date:** 12/31/2023
Operable Unit: North Bronson Industrial Area - OU2 Industrial Sewer		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
The EPA is in the process of negotiating an agreement to conduct a RI/FS for the Industrial Sewer OU2 of the NBIA site. Once the RI/FS has been completed, the RD will begin.

Activity: Remedial Investigation		**Start Date:** 10/1/2019	**End Date:** 3/31/2021
Operable Unit: North Bronson Industrial Area - OU2 Industrial Sewer		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
The EPA is in negotiations with the PRPs regarding approving a RI/FS Work Plan for OU2: addressing contaminated sewers and groundwater contamination associated with those sewers. Once the negotiations have been successfully completed and the work plan is approved, the RI will begin.

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $16,130.86	**Exp for Year:** $10,463.93

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $6,339.30	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $15,506.37	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $23,371.03	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $11,623.56	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $13,561.92	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $16,240.85	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $73,082.07	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $73,082.07	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $52,295.25	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $6,803.17	**Exp for Year:** $0.00
Grant #: V005934-01-RI	**Activity:** Remedial Investigation	**End Date:** 3/31/2001	**Status:** Closed
Fed Total Award: $1,471,784.00	**State Total Award:** $0.00	**Exp to Date:** $1,471,784.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Scott & Fetzer Corporation

State Site ID:
12000085

Federal Site ID:
B7

Full Address:
141 W. Railroad Street, Bronson, MI, 49028

County:
Branch

Location

The former Scott & Fetzer Corporation (Scott & Fetzer) site facility is located at 141 West Railroad Street, Bronson, Michigan. Directions to the site from Coldwater, Michigan: U.S.12 west to Bronson; north on Matteson Street to Railroad Street; west on Railroad Street. The site is immediately on the south.

Status

The Scott & Fetzer facility started as a small manufacturing facility in 1920 and grew to a larger operation until it was shut down in 1986. Metal plating operations led to the release of degreasing agents that have contaminated the soil and groundwater. Various interim cleanup actions have been conducted at the site.

In 2018, Scott & Fetzer and their contractor investigated elevated concentrations of chlorinated volatile organic compounds (VOCs) in indoor air at a residence adjacent to the Scott & Fetzer former facility. The source of vapors has been traced to the plumbing connected to the sanitary sewer. A sanitary sewer investigation was conducted in 2019. Additionally, Scott & Fetzer and their contractor developed a work plan and began investigating the potential for vapor intrusion (VI) at additional homes near the site. Continued monitoring is planned to continue through 2020.

In 2019, Scott & Fetzer and their contractor began to revise a previous draft of a predesign investigation work plan in preparation for designing the interim Record of Decision (ROD) required remedy. EGLE (formerly known as the MDEQ) and the EPA requested that the potentially responsible parties (PRP) explore the option of skipping the air sparge/soil vapor extraction system (AS/SVE) remedial phase and move to soil excavation and a groundwater pump and treat system. Previous work at the L.A. Darling site showed that AS/SVE may not be the best remedial option for the site. This discussion between EPA, EGLE and the PRP will continue into 2020.

History

This facility, commonly known as Scott & Fetzer Plant #1, started as a small specialty manufacturing operation circa 1910, and grew to employ at least 500 people at one time. Harry A. Douglas began a company called Warner Douglas along with several other men on April 12, 1912, designing and manufacturing automobile electrical parts. The company grew until it encompassed the entire block bounded by Matteson, West Railroad, State, and North Walker Streets on the north side of Bronson. Metal plating operations that included cadmium, chromium, silver, tin, and zinc were part of the manufacturing process. In addition to electroplating, the manufacturing process included associated cleaning and degreasing processes using trichloroethylene (TCE). Although ownership and company names changed several times during the facility's history, and additional products were added to the product lines, the processes stayed essentially the same from the company's inception until it was shutdown in 1986.

The Scott & Fetzer site is one of three former manufacturing facilities located in the city of Bronson that were considered to be part of the North Bronson Industrial Area (NBIA) Superfund site at one time. The other two sites are L.A. Darling and Bronson Reel Companies. In September 1993, the EPA redefined the boundaries of the NBIA site and excluded a significant portion of the area, including these three former manufacturing facilities and contamination emanating from them, from the site description. By this time, sufficient data had been gathered in the vicinity of these facilities during the NBIA site Remedial Investigation (RI) to determine that a strong likelihood existed that each of the former manufacturing facilities was a source of contamination. Following extensive negotiations with the PRP for each facility, it was decided that each PRP would conduct a RI/Feasibility Study (FS) at their site. The EPA refers to these three former manufacturing facilities collectively as the North Bronson Former Facilities (NBFF). For details on the

other two NBFF or the NBIA site, refer to individual site reports.

The company name changed in 1915 to Douglas & Rudd, and in 1922, the company changed names again, this time, to H.A. Douglas Manufacturing Company. The Kingston Products Division of Kokomo, Indiana, purchased H.A. Douglas Manufacturing Company in 1942, and the name changed again, to Douglas Manufacturing Division, Kingston Products. The product lines now included vacuum cleaners. The Scott & Fetzer Corporation purchased Kingston and Douglas in 1968 by means of an agreement of merger, and the Bronson plants became Douglas Division of Scott & Fetzer. Sometime during 1984, a lot located across State Street from the plant was purchased and a small waste treatment plant, known as the cyanide destruction facility, was constructed. Also in 1984, the Orion Planning Group of Westport, Connecticut, purchased the Douglas Division and Kingston from Scott & Fetzer and the company name changed yet again to Douglas Components Corporation. Sometime after 1984 Universal Components Corporation purchased the company. This was the company's name when all manufacturing ceased at the facility sometime in 1986. The buildings were used as a warehouse following the shutdown of the manufacturing processes. When manufacturing ceased at this location, wastes and residuals from the manufacturing operations were apparently left in place.

From 1986 to the early 1990s, concerns escalated regarding the deteriorating Scott & Fetzer building, the hazardous materials and conditions remaining in the building and on plant property and inadequate security at both the plant and the cyanide destruction facility. EGLE District Office conducted a site inspection in 1992 and subsequently requested Universal Components to clean up the site and remove hazardous materials and physical hazards. The EPA became involved when EGLE notified them that the company had taken little or no action to clean up the immediate threats within the main building and in the cyanide destruction area. On April 28, 1993, the EPA Emergency and Enforcement Response Branch made the following observations of the Scott & Fetzer facility while at the site for NBIA site activities. Numerous drums, tanks, and a roll-off container could be seen inside the building through an open doorway. Two children were observed peering through the open door. Many large windows had been broken or were missing glass and access was not adequately restricted.

The EPA obtained consent to enter the Scott & Fetzer buildings on May 10, 1993. Approximately fifty 55-gallon open and deteriorating drums and small containers were observed inside one of the buildings. Labels on some of the drums indicated the contents consisted of acids, caustics, solvent degreaser, and roofing-type materials. An open vat containing approximately 100 gallons of a green-colored liquid with a pH of 1.0 was found in an area where plating operations took place. Several pits were also observed containing unknown liquids with pH values ranging between 6 and 7. Near the vat, a bermed concrete area was observed containing sand and absorbent material. An additional 100 open drums were staged west of the plating area and two polyethylene storage tanks containing approximately 1,500 and 1,000 gallons of unknown liquids, respectively, were staged east of the drums.

A tarp-covered roll-off container was located near the loading dock door and contained approximately 15 cubic yards of unknown solid materials. A vast network of insulated piping was observed throughout the building. Much of the insulation was hanging from the pipes or lying on the ground, and appeared to be of the friable asbestos type. Samples taken from the various containers revealed elevated levels of heavy metals such as arsenic, cadmium, chromium, lead, selenium, and silver above regulatory levels. Samples also exhibited pH values ranging between 0.8 and 13. The analytical results of the liquid and solid material indicated the presence of characteristic corrosive, reactive, and toxicity characteristic wastes under the Resource Conservation and Recovery Act, 1976 PL 94-580, as amended. The roof was observed to be partially collapsed, allowing precipitation to enter.

The EPA entered into an Administrative Order by Consent with the Universal Components Corporation, the last private owner of record to conduct specified cleanup activities on March 8, 1994. However, the EPA assumed control of the removal activities at the site in September 1994 when Universal Components Corporation did not complete the removal activities they had initiated due to financial problems. In 1994 and 1995, the EPA containerized and removed waste materials and took steps to mitigate some of the safety and physical hazards. Left for the State to address were all remaining contaminated materials in the building, contaminated material and soil beneath the building, the indoor plating trench and pit system, and the asbestos insulation scattered throughout the buildings. In addition, a badly deteriorated structure on the cyanide destruction facility lot remained.

The State became the owners of the property in 1995 through the tax reversion process. EGLE supervised a two-day cleanup of the cyanide destruction facility site on May 1 and 2, 1996.

As the building continued to deteriorate and become a greater physical and chemical hazard it was determined that the building would have to be demolished. In addition, historical records in EGLE files and more current groundwater data from the NBIA site RI/FS indicated that the property on which the building stood was contaminated and continued to be

a source of environmental contamination. In order to address the contaminated soil, it was necessary to demolish the building.

EGLE awarded a contract to Pitsch Companies for the demolition and DLZ Michigan, Inc., for Project Management in 2000. The State's purpose for the project was to abate the asbestos-containing materials; to characterize all of the waste and building materials to determine the appropriate disposal methods; and to complete demolition of all existing buildings, slabs, foundations, in-ground concrete pits and footings to at least 3 feet below grade as well as to remove and dispose of all demolition debris, liquids, and underground storage tanks according to character of the material.

Pitsch Companies' asbestos crew mobilized to the site on April 20, 2000, to begin asbestos abatement activities and to characterize the liquid wastes in the pits. Following completion of these activities, Pitsch Companies mobilized demolition equipment to the site to commence building demolition and site cleanup activities on May 24, 2000. Activities included the demolition and removal of all building debris, disposal of all non-hazardous liquids, removal and disposal of the concrete slab and pits and the disposal of polychlorinated biphenyl-impacted concrete, disposal of non-hazardous and hazardous concrete, the removal of three underground storage tanks and the removal of non-hazardous and hazardous soil. Following demolition and disposal activities, Pitsch Companies performed site restoration activities including backfilling and grading and hydroseeding. A 6-foot chain-link fence was constructed around the grounds of the Scott & Fetzer site.

The PRP for Scott & Fetzer and the EPA entered into an Order, signed on June 5, 2002, committing the PRPs to conduct a streamlined RI/Focused Feasibility Study (FFS) at the Scott & Fetzer site.

Three phases of RI began in July 2003 and September 2004 and January 2006. The second event consisted of installing and sampling permanent monitoring wells. The third event focused on vertical aquifer sampling. All field investigations occurred after the Agencies worked with the PRP on the scope of work.

The soil gas investigation, begun in 2007, to assess the VI pathway into residences and other inhabited buildings has been completed. Three residences were equipped with vapor abatement systems as a result of the investigations.

The PRP submitted FFS was approved by the EPA in June 2009, with several conditions identified to assure compliance with State and Federal statutes. A Proposed Plan was issued in July 2009, outlining the recommended remedy for the Scott & Fetzer site. A public meeting was held on July 21, 2009, in Bronson during which the remedy was explained to attendees and oral public comment on the proposal was taken. Following public input, the EPA, with support from EGLE, issued a ROD for the site in September 2009, which outlined the response actions to be implemented by the PRP.

The site remedy consists of several methods of cleanup. Soils will be excavated from both former plant properties and from publicly owned sewers beneath city streets that have been contaminated by discharges from the plant. AS/SVE will be employed to remove volatile contaminants from soil and groundwater. Groundwater extraction wells will control the migration of contaminated groundwater. The PRP will continue to maintain the air vapor control systems installed on the impacted residences. Additional activities will be implemented to assure cleanup of site contamination and prevention of unacceptable exposure to site contaminants.

In June 2013, the EPA issued a Unilateral Administrative Order (Order) directing the PRPs to perform the following: implement a deed restriction on the contaminated property; excavate and dispose of contaminated soils; construct, install, and operate AS/SVE systems; design and implement a remedial action (RA) operation and maintenance plan (O & M).

The PRPs submitted a remedial design (RD) work plan and EGLE reviewed and provided comments to the EPA in December 2013. The EPA submitted comments in September 2014. In October 2014, the PRPs submitted a response to comments followed by a November 2014 RD work plan-revision 1. EGLE submitted to the EPA in the beginning of January 2015. There are several key concepts that need to be addressed in this work plan. EGLE has facilitated several conference calls to work toward resolution.

In 2017, the EPA and MDEQ reviewed and provided comments on several different versions of the draft work plan that outlines the proposed work laid out in the 2013 Order. There are several key concepts that need to be resolved in this work plan. EGLE provided the EPA comments on the latest version in January 2017. The EPA subsequently allowed responsible parties to place the work plan on hold and develop a pre-design investigation work plan. EGLE commented on this work plan. In a September 2017 email, the EPA told the responsible party "The PDI work plan is on a temporary hold while we decide on the path forward from here."

On June 12 and September 13, 2017, EGLE requested the EPA evaluate the entire site for the potential for VI. Updated criteria warrant additional investigation for this potential exposure pathway.

In 2018, Scott & Fetzer and their contractor investigated elevated concentrations of chlorinated VOCs in indoor air at a residence adjacent to the Scott & Fetzer former facility. A vapor mitigation system has been running at the residence, the walls and floor in the basement have been sealed, and two air purifying units have been running in the home. The source of vapors has been traced to the plumbing connected to the sanitary sewer.

Enforcement

The PRP for the Scott & Fetzer site, one of three former facilities known collectively as the NBFF, entered into an Order with the EPA on June 5, 2002 to conduct a streamlined RI/FFS at the Scott & Fetzer site in Bronson, Michigan. The RI was approved in May 2008. The FFS was approved in June 2009. The EPA selected a remedy for the site in September 2009.

In June 2013, the EPA issued an Order directing the PRPs to perform the following: implement a deed restriction on the contaminated property; excavate and dispose of contaminated soils; construct, install, and operate AS/SVE systems; design and implement a RA O & M plan.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/2009

Location Name: Scott & Fetzer Corporation - OU Entire Site

Comments:
The remedy consists of soil excavation and disposal, AS/SVE, groundwater extraction, and maintenance of vapor control systems in residential homes.

Response Activities - In Progress

Activity: Remedial Design **Start Date:** 8/19/2013 **End Date:** 7/31/2022

Operable Unit:
Scott & Fetzer Corporation - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Agencies are working with the PRPs in the development of a RD Work Plan. This will be the basis of the design work. EPA and EGLE are negotiating bypassing the AS/SVE remedy and implementing a groundwater pump and treat system and soil excavation. Negotiations are ongoing through 2020 and a resolutions in anticipated in early 2021.

Response Activities - Completed

Activity: Remedial Investigation **Start Date:** 6/5/2002 **End Date:** 5/7/2008

Operable Unit:
Scott & Fetzer Corporation - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Pursuant to the Order between Scott & Fetzer and the EPA, the PRP completed an RI on May 7, 2008. The PRP submitted a revised FFS in January 2009 which was approved June 2009. A Proposed Plan was shared July 2009.

Activity: Interim Response **Start Date:** 5/8/2001 **End Date:** 6/19/2002

Operable Unit:

Status:

Scott & Fetzer Corporation - OU Entire Site | Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$76,956.00	State	$0.00	

Comments:
Disposal of reclassified demolition materials. Materials were initially assumed to be non-contaminated but were actually contaminated. Handling and disposal costs changed.

Activity: Interim Response | **Start Date:** 10/27/1997 | **End Date:** 8/31/2002

Operable Unit: Scott & Fetzer Corporation - OU Entire Site | **Status:** Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$612,574.00	State	$0.00	

Comments:
Services performed under this contract included sampling the potential asbestos containing material in the Annex building. Sampled second floor plaster walls which were previously determined to contain asbestos containing material. These costs were to be used if it was verified that this material was non-asbestos containing material. Elimination of the second floor plaster wall asbestos abatement if analytical result showed that it was not asbestos containing material. Removal of liquids, cleaning, and backfilling of four additional pits. Abandonment of the existing well on the west side of the courtyard.

Activity: Interim Response | **Start Date:** 6/17/1997 | **End Date:** 8/31/2002

Operable Unit: Scott & Fetzer Corporation - OU Entire Site | **Status:** Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$130,613.00	State	$0.00	

Comments:
This project includes building demolition; removal and disposal of underground water storage tanks; disposal of contaminated soil; and determination of further response actions needed.

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 7/31/2021 | **End Date:** 8/1/2051

Operable Unit: Scott & Fetzer Corporation - OU Entire Site | **Status:** Future Need

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	

Comments:
Anticipated construction and operation of one of the ROD allowable remedies based on the outcome of the EPA and EGLE negotiations with the PRP. The RD is anticipated to begin in early 2021 and the RA will follow completion of the RD.

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $7,936.59	**Exp for Year:** $0.00

Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$629,172.00	$0.00	$10,342.04	$0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $3,453.03	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $8,896.92	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $6,173.52	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $47,417.12	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $10,397.43	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Albion-Sheridan Twp. Landfill

State Site ID:
13000003

Federal Site ID:
AN

Full Address:
29951 East Erie Road, Albion, MI, 49224

County:
Calhoun

Location

The Albion-Sheridan Township Landfill site is an inactive landfill located approximately one mile east of the city of Albion in Sheridan Township, Michigan. The landfill covers approximately 18 acres of a 33 acre property, a 20 acre lot adjacent to it was purchased as a borrow area for the cover and is used as a sedimentation basin for the landfill. The fenced area includes the entire 53 acre area. It is situated between Michigan Avenue and East Erie Road and is bordered on the east by the Calhoun/Jackson County line. The north branch of the Kalamazoo River is approximately 400 feet south of the site. Several residences are located within 1,000 feet, including the Amberton Village subdivision adjacent to the site on the east, and four residences adjacent to the site near the southwest (downgradient) corner.

Status

The Albion-Sheridan Township Landfill closed in 1981. An engineered landfill cap was installed on the landfill in 1999. Groundwater continues to be monitored to ensure protection of nearby drinking water wells. The 2019 annual monitoring event was performed and the 2019 annual report of groundwater quality was submitted to EGLE (formerly known as MDEQ) in February 2019.

In the last Five Year Review (FYR), EPA recommended the potentially responsible party (PRP) group continue the trend analysis to monitor reduced arsenic levels in groundwater over the next 5 years at the Site and to implement restrictive covenants (RCs) for property parcels owned by Calhoun County. The RCs were registered with Calhoun County in April 2019. The County health department, on behalf of EGLE, will continue to collect drinking water samples from residential wells located near the site and analyze for the presence/absence of arsenic.

History

From 1966 to 1981, the Albion-Sheridan Township Landfill site accepted municipal refuse and industrial wastes from the city of Albion and nearby Sheridan Township. The landfill discontinued operation in 1981. The site reportedly accepted metal hydroxide plating sludge from a local factory prior to 1981. Tests conducted by EGLE, indicated that the sludges contained various heavy metal contaminants. In 1986, the EPA discovered approximately 40 drums of waste on the surface. Some drums were filled with what appeared to be oil and grease wastes. Before the remedy was implemented, the landfill was covered with sand and gravel and there were signs that burning had occurred. There was also evidence that suggested that several thousand drums of waste were disposed of at the site. The groundwater is contaminated with inorganic contaminants such as ammonia, calcium, iron, magnesium, potassium, sodium, and heavy metals including arsenic and lead. Soils are contaminated with cyanide and heavy metals such as nickel, lead, cadmium, and chromium. The sludge is contaminated with heavy metals, chlorides, and cyanide.

A search for PRPs was conducted after the site was listed on the National Priorities List and six PRPs were identified. In 1990, under the supervision of the EPA, one of the PRPs conducted a removal action on the surface drums described above. Following the EPA's notification to the PRPs of their responsibility under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, the PRPs failed to reach agreement with the EPA to conduct the Remedial Investigation/Feasibility Study (RI/FS). The EPA assumed the lead for the site investigation and early remediation efforts. Fieldwork for the RI was done in late 1992 and early 1993. Potential hot spots of buried drums were identified during geophysical surveys conducted as part of the RI. Based on this information, EGLE used state funding to conduct additional investigations of the potential hot spots to better determine their nature and extent. During 1994, the EPA completed the RI/FS reports for the site. EGLE, using state funds, conducted test pitting to determine the extent and contents of the buried drums on-site. Drums containing

solvents were uncovered in one area of the landfill.

In 1995, the EPA issued a Record of Decision (ROD) for the final Remedial Action (RA) at the site. The selected remedy included removal and off-site treatment and disposal of drums containing hazardous and liquid wastes from Test Pit Area #9 and other drums encountered during grading of the landfill surface. The remedy also required construction of a solid waste landfill cover with a flexible membrane liner over the entire landfill mass, installation of an active landfill gas collection system with flaring to treat the off-gas from the landfill, and monitoring of groundwater to ensure effectiveness of the RA in lowering site arsenic concentrations through natural oxidation. The ROD also included an option for passive gas venting. Institutional controls (ICs) were to be placed on the landfill property to limit both land and groundwater use and remain in place until the cleanup standards were attained (estimated at 14 years or 2009). The EPA subsequently approved passive gas venting for landfill gases and that appropriate criteria must be met at the fence boundary. The ROD also included a contingent remedy for groundwater treatment by in-situ oxidation if, 5 years after the landfill cap installation, the arsenic concentrations in the groundwater did not decline at a sufficient rate or if contamination threatened residential wells.

A Unilateral Administrative Order (Order) for the Remedial Design (RD) and RA was signed in October 1995. The PRP group completed the predesign field studies throughout 1996. The PRP group completed the design in September 1997. In December 1997, drums of hazardous waste were removed from the site. In 1998, underground storage tanks were excavated and removed from the site and new monitoring wells were installed. The PRPs split into RA and RD groups at that time. Construction of the final cap and vegetative cover was completed on September 28, 1999. In 2000, a series of erosion concerns and control measures as well as a few elevated gas levels in the gas probes were identified. The methane level at one probe point along the eastern boundary of the site was elevated during three separate sample events in 2000. Two additional gas probes were installed, and monitoring of methane continued for a total of 12 quarters, to ensure that migration was detected before possible impact to nearby residential areas. Monitoring subsequent to July 2000 revealed no unacceptable methane levels, and gas probe monitoring was terminated after the March 2002 sampling event. Significant erosion control work was undertaken at the site late in the fall of 2000. The EPA and EGLE approved the landfill vegetative cap in June 2002, after it withstood a winter without erosion problems.

The final RA close-out inspection was performed on May 31, 2001. Quarterly gas probe readings, taken subsequent to the elevated levels detected in July 2000, did not reveal any additional unacceptable gas levels; however, the PRPs had not taken any readings since March 2002. EGLE took readings from the gas probes in 2006 during a site inspection. The operation and maintenance (O & M) activities for this site include sampling of monitoring and residential wells. There is also a contingency plan in the event the groundwater concentrations reach unacceptable levels. The EPA completed a Five-Year Review (FYR) of the remedy in August 2002. The 2002 FYR noted that the maximum contaminant level for arsenic would be lowered from 50 to 10 parts per billion (ppb) by 2006 which requires a more careful analysis of site data. Manganese, aluminum, and ammonia concentrations in groundwater have exceeded Michigan residential drinking water criteria in some on-site monitoring wells since 2002 and continue to be monitored.

The Second FYR for this site was completed on August 15, 2007 and noted manganese and arsenic in groundwater being concerns to watch. A reduction in the maximum concentration limit for arsenic has resulted in a larger portion of the plume being above criteria than originally determined. Two additional properties are now encompassed in the area over the plume and need RCs regarding contaminated groundwater. At the time, the status of the contaminant concentrations was not clear due to the outdated sampling techniques previously used at this site (including bailers and filtered samples). Arsenic groundwater trend analysis and ICs analysis were evaluated. A multi-year trend analysis was performed to take into account the updated sampling techniques. EGLE recommended additional updates to site technologies and expressed other concerns at this site to the EPA in 2009. The 2008 groundwater data included only filtered (dissolved) metals samples and elevated reporting limits, so it could not be compared to the unfiltered (total) metals samples collected since that time.

The south branch of the Kalamazoo River is directly south of the site and near some off-site wells. That part of the river was determined to be potentially at risk. EGLE staff suggested that the PRPs perform additional evaluation and analytical work to assess the release of arsenic and manganese to the wetland and surface water immediately south of the site. The EPA has not required follow-up to date.

The groundwater is sampled each fall and an annual report is submitted each March. The current ROD requires that 5 years from the date on which construction of the landfill cap is complete, a statistical test be performed on wells in which the arsenic concentration exceeds 50 ppb. This statistical test is designed to determine whether arsenic in the well or wells is declining sufficiently fast to fall below 50 ppb within 15 years of completion of landfill cap construction. If any well failed this test, the contingent remedy was to be implemented. The EPA has declined to enforce the

appropriate evaluation of this requirement and noted an extended evaluation period in the 2007 FYR to allow for contamination to attain compliance.

EGLE staff discontinued project management activities on this site in 2011 due to budgetary and staffing constraints. EGLE Superfund staff have arranged for their drinking water staff to sample a limited number of residential wells located immediately downgradient of the landfill. The South Branch of the Kalamazoo River is not being monitored.

The Third FYR was completed on August 3, 2012. It noted the previous arsenic criteria maximum contaminant level (MCL) modification to 10 ppb in drinking water (prior to the 2007 FYR). The EPA determined in 2007, that the PRPs should be given additional time (in addition to the 15 years stated in the ROD) to comply with the more stringent criteria requirement.

The EGLE Project Manager arranged for the department to collect drinking water samples from a limited number of the downgradient residences in 2013. Sample results indicated elevated arsenic, manganese, and iron in some wells. This information led the Project Manager to perform a focused data review. The following information was noted: the data from November 2012 reflect reduced concentrations in some wells, however, exceedances of Michigan groundwater criteria for arsenic, ammonia, aluminum, and manganese were observed in other wells. Two wells exceed the arsenic MCL and remain the primary wells of concern for both arsenic and manganese.

The Fourth FYR for this site was completed on May 16, 2017. This FYR concluded the remedy at the site is currently protective of human health and the environment in the short-term. The FYR included the following recommendations: 1) the multi-year tread analysis for arsenic in the O & M program should continue to monitor arsenic levels during the next 5 years to see if the trend of reduced arsenic levels and migration in groundwater remains at the site; and 2) EPA will be working with the PRPs, Calhoun County, and EGLE to ensure that ICs in the form of RCs are implemented on site property parcel(s) owned by Calhoun County. The ICs will assure that groundwater use on site parcel(s) are adequately restricted and the site remedy is protected.

From 2014-2019, drinking water samples were collected annually from residential wells located near the site and analyzed for the presence/absence of arsenic. These samples were collected by the County health department as part of a long-term groundwater contamination investigation being conducted by EGLE. The laboratory did not detected the presence of arsenic above the MCL of 10 ppb.

Enforcement

The EPA issued an Order to the PRPs: Cooper Industries, Corning, Inc., the city of Albion, and Decker Manufacturing. Two of the PRPs, Cooper Industries and Corning, Inc., have completed the design and implemented the remedy. The EPA initiated litigation for past and future costs with the PRPs. The EPA also negotiated a Consent Decree with the PRPs for all work as well as past and future costs. Decker Manufacturing and the city of Albion are performing all O & M activities as part of this settlement.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/28/1995

Location Name: Albion-Sheridan Twp. Landfill - OU Entire Site

Comments:
The remedy includes: removal and off-site treatment and disposal of drums, construction of a solid waste landfill cap, ICs, active landfill gas collection, groundwater monitoring, and treatment of groundwater by in-situ oxidation if arsenic contamination does not decline within 5 years of completion of the landfill cap. During the design, the EPA approved modification of the active landfill gas collection to a passive venting system.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 1/1/1998 **End Date:** 10/27/2028

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$980,000.00	Private	$0.00	

Comments:
The landfill cap will require maintenance to remain protective. The PRP group is responsible for these activities as well as long-term sampling of monitoring and residential wells. Estimated costs were $145,000/first 5 years then $14,000/year for the following 15 years plus mowing and maintenance costs.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 11/16/2016 | **End Date:** 5/16/2017

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
On November 11, 2016, the EGLE Project Manager participated in the FYR site visit with EPA. In May 2017, EGLE provided a detail comment letter on the Draft Fourth FYR to the EPA. On May 16, 2017, the EPA completed and signed the Fourth FYR for the Albion-Sheridan Township Landfill Site.

Activity: 5 Year Review | **Start Date:** 8/3/2011 | **End Date:** 8/15/2012

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
This FYR was completed on August 15, 2012. EGLE staff did not review or comment on the document due to lack of funds and associated lack of involvement. The EPA has chosen not to enforce the ROD regarding arsenic and manganese criteria exceedances in groundwater.

Activity: 5 Year Review | **Start Date:** 10/11/2006 | **End Date:** 8/15/2007

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The 2007 FYR contained follow-up requirements to evaluate trends including the site driver of arsenic, at the new MCL of 10 ppb, and the updated technology with use of unfiltered samples.

Activity: 5 Year Review | **Start Date:** 5/2/2002 | **End Date:** 9/6/2002

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The 2002 FYR acknowledged that the groundwater concentrations of arsenic and manganese may be problematic due to more stringent criteria having been adopted in the updated risk based derivations.

Activity: Remedial Action | **Start Date:** 9/1/1997 | **End Date:** 5/31/2001

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,654,734.00	Private	$78,000.00	Federal

Comments:
In December 1997, drums of hazardous waste were removed from the site. In 1998, underground storage tanks were excavated and removed from the site and new monitoring wells were installed. Construction of the landfill cap, including a flexible membrane liner, began in the spring of 1999 and was completed by the end of 1999. The final Construction Completion Inspection was performed on May 31, 2001.

Activity: Remedial Design | **Start Date:** 12/11/1995 | **End Date:** 9/1/1997

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$270,000.00	Private	$50,000.00	Federal

Comments:
The RD was approved by the EPA in September 1997. All RD work was completed by the PRPs. Costs indicated are a rough estimate.

Activity: Remedial Investigation | **Start Date:** 1/1/1992 | **End Date:** 3/28/1995

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,201,000.00	Private	$200,000.00	State

Comments:
The EPA assumed the lead for the site investigation. Fieldwork for the RI was done in late 1992 and early 1993. Potential hot spots of buried drums were identified during geophysical surveys conducted as part of the RI. Based on this information, EGLE used state funding to conduct additional investigations of the potential hot spots to better determine their nature and extent. EGLE conducted test pitting to determine the extent and contents of the buried drums on-site. The EPA completed the RI/FS reports for the site in 1994. The EPA later recovered their costs from the PRPs. These costs were developed from the ROD estimates and the EPA.

Activity: Interim Response | **Start Date:** 1/1/1990 | **End Date:** 1/1/1991

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	Private	$1,000.00	State

Comments:
In 1986, the EPA discovered approximately 40 drums of waste on the surface of the landfill. In 1990, under the supervision of the EPA, one of the PRPs conducted the removal action of the surface drums.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/1/2021 | **End Date:** 9/1/2022

Operable Unit:
Albion-Sheridan Twp. Landfill - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The purpose of this FYR will be to determine whether the implemented remedy at this site is actually protective of human health and the environment.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,320.33	**Exp for Year:** $284.91
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $661.78	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $610.15	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $365.68	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $3,171.23	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $2,505.68	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $2,873.24	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $15,015.33	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $62,329.95	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $4,489.00	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation	**End Date:** 9/30/2003	**Status:** Closed

Albion-Sheridan Twp. Landfill

Feasibility Study

Fed Total Award:	State Total Award:	Exp to Date:	Exp for Year:
$472,000.00	$0.00	$61,252.00	$0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: McGraw Edison Corp.

State Site ID:
13000090

Federal Site ID:
T9

Full Address:
704 North Clark Street, Albion, MI, 49224

County:
Calhoun

Location

The McGraw Edison Corporation site is located at 704 North Clark Street on the east side of Albion, Michigan. The site occupies 24 acres surrounded by mixed industrial and residential properties. Approximately 1,500 feet northwest of the site are municipal wells for the city of Albion known as the Clark Street well field.

Status

Cooper Industries manufactured air conditioners, humidifiers, and similar equipment until it closed in 1980. From 1970 to 1980, "still-bottoms" (an oily waste) contaminated with trichloroethylene (TCE) were spread on the site's dirt roads to control dust. TCE was found in 2 on-site water supply wells and 45 nearby residential wells in 1980. Nearby Albion municipal wells also showed TCE contamination in the past.

Cooper Industries continues to operate the shallow aquifer groundwater pump and treat (P & T) system and samples groundwater at the site on a semi-annual basis with the objective of monitoring the progress of groundwater remediation by recovery/treatment systems in the shallow aquifer. Volatile Organic Compound (VOC) concentrations in the shallow aquifer wells are decreasing or have remained stable shown as indicated by the Fiscal Year (FY) 2019 Monitoring Report. Based on these findings contaminant mass in the shallow aquifer plume is being removed and hydraulically contained.

The deep aquifer groundwater quality continues to be monitored biennially along with the shallow aquifer system and groundwater plume.

EGLE (formerly known as MDEQ) received a "Response Activity Plan and Groundwater Discharge Permit Exemption Request " document developed by the potentially responsible parties (PRPs) consultant in October 2018. EGLE staff reviewed the document and provided written comments in November 2018. Subsequently, the In-Situ Technical and Program Support team approved the Response Activity Plan. The in-situ chemical oxidation system plans to be installed and ready to begin operation in late 2019.

EGLE expressed a concern regarding the potential for off-site vapor intrusion (VI) downgradient of monitoring well B-45S. The PRP Consultant, in a letter dated January 18, 2017, indicated that concentrations of perchloroethene (PCE) and trichloroethylene (TCE) for the four most recent groundwater sampling events are consistently below the 2013 VI Guidance residential groundwater to indoor air screening levels and, therefore, off-site VI downgradient of monitoring well B-45S is unwarranted. EGLE staff after meeting with the PRP consultant in 2018 reconvened in early 2019 and EGLE staff gave their approval.

History

The company manufactured air conditioners, humidifiers, and similar equipment until it closed in 1980. From 1970 to 1980, "still-bottoms" (an oily waste) contaminated with trichloroethylene (TCE) were spread on the site's dirt roads to control dust.

The State of Michigan and McGraw Edison Corporation entered into a Consent Decree (Decree) in 1984 which required McGraw Edison to address contamination at the site.

A former "fire-well" had been used to purge the bedrock aquifer of contaminants until a temporary shutdown was authorized in 2008. Restarting the deep aquifer pump has not been determined to be necessary to date. A number of shallow purge wells were installed in several phases to purge the upper contaminated aquifer. Only the shallow pumping system is in use at this time. The purged groundwater was originally treated via activated carbon and air stripping. The treatment system has been modified and currently consists of a shallow air stripper tray system. The National Pollutant Discharge Elimination System (NPDES) permit for discharge to the Kalamazoo River remains in effect.

In the spring of 1995, verification sampling of soils was conducted to monitor the effectiveness of the soil flushing system in removing TCE from site soils as required in the Decree and the stipulation and order to implement final remediation. The verification sampling indicated the soil flushing system was effective in remediating two areas to concentrations below 10 parts per billion (ppb), another area to concentrations below 100 ppb, and significantly reduced TCE concentrations in the fourth area. It was determined that soil flushing should continue in the fourth area and verification sampling should be undertaken in 1998. The groundwater purge and treatment systems continued to be operated and monitored in accordance with the Decree and the stipulation and order to implement final remediation.

In the spring of 1997, verification sampling of soils was once again conducted to monitor the effectiveness of the soil flushing system in removing TCE from soils in the remaining soil flushing area. The verification sampling and a statistical evaluation of the data indicated that the soil flushing system was effective in reducing the concentrations to acceptable levels, and closure of the soil flushing unit was approved. In addition, EGLE's Surface Water Quality Division and Air Quality Division approved a modification to remove the activated carbon system from the treatment system as requested by Cooper Industries. Currently, purged groundwater is treated by air stripping and then discharged to the Kalamazoo River in accordance with EGLE's Air Quality Discharge and NPDES permits.

In 1997, a Baseline Environmental Assessment of the property was conducted and submitted to EGLE for review prior to the purchase of the property by a local development group. The property transfer was approved by the Michigan Department of Attorney General's (MDAG) office in accordance with the Decree and the stipulation and order to implement final remediation. The building at the property is vacant at this time.

In September 1999, EGLE completed a Five-Year Review (FYR) using federal funds assessing the groundwater contaminant levels surrounding the site and evaluating the effectiveness of the remedy. The FYR, approved by the EPA, concluded that the groundwater recovery system continues to effectively extract TCE from the contaminated groundwater and recommended installation of additional monitoring wells where data gaps exist. In 1999, Cooper Industries submitted a formal request to amend the Decree to reflect current Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, cleanup criteria. This request was evaluated and approved by the MDAG's office.

In December 2003, Cooper Industries submitted a work plan to conduct soils investigation by advancing borings under the existing building to determine the presence of potential sources of contamination to justify the installation of a treatment system that can intercept contaminants from migrating into the shallow aquifer. EGLE approved the work plan and the investigation was subsequently completed. The results of the investigation indicated several locations in the area that showed levels of contaminants exceeding criteria, notably the northeast corner of the building and the loading dock areas.

In October 2004, the EPA in coordination with EGLE, completed a Second FYR of the protectiveness of the remedy. The review concluded that the groundwater recovery system continues to effectively extract TCE from the contaminated groundwater and made the following recommendations and follow-up actions: install additional monitoring wells where data gaps exist, address elevated concentrations of TCE detected in the soils and groundwater in the northeast footprint of the building and the loading dock area, eliminate the removal of monitoring wells from the network, perform a residential well inventory in the area where residences were offered municipal water supply hook-up, and provide a regular maintenance schedule of the extraction/monitoring wells using established well cleaning procedures.

In 2005, EGLE staff reviewed, evaluated, and approved Cooper Industries' proposed work plan for in-situ chemical oxidation test at the facility. The work plan called for conducting a pilot test to understand what effect a full scale in-situ chemical oxidation treatment program using potassium permanganate will have in reducing the mass of TCE in the shallow aquifer, and volume of groundwater being treated by the existing groundwater P & T system. The pilot test was conducted and results were inconclusive as to the viability of the technology for this site.

Cooper Industries prepared a deep aquifer shutdown work plan which included updating and replacing the old treatment system with a shallow tray stripper. The shutdown was originally for a one-year period (April 2008 until April

2009), but was extended three months due to equipment failure in December 2008. The replacement system was operational in February 2009. The shutdown plan required that EGLE be convinced that the deep aquifer was no longer contaminated and that the shallow aquifer was not negatively impacted by the shutdown or the associated shift in the vicinity groundwater levels. Additional monitoring wells were to be placed downgradient to assist in the appropriate monitoring of this system; locations were to be determined as data was collected. EGLE has concurred with the assessment that additional wells are not yet necessary. There are still a few isolated locations with contamination, but the majority of the contamination in the deep aquifer appears to have been removed.

In February 2009, PRPs installed a new shallow tray air stripper to replace the broken stripper system. The new system consists of two units for ease in cleaning and potential pumping volume increases.

EGLE, in cooperation with the PRPs, completed and placed an updated Restrictive Covenant (RC) on the property in 2013. The RC imposes institutional controls (ICs) on the property to prohibit installation of water wells in the affected area and restrict digging. The RC also calls for evaluation of inhalation concerns in the building, placement of the approved permanent markers, and follow-up on the remaining contamination in the pilot study area near the loading dock area adjacent to the building. The property has recently been sold.

A draft VI workplan was approved and sampling efforts were completed in July 2014.

It was decided on June 24, 2016, that installation of a Sub-Slab Depressurization (SSD) system was necessary to address unacceptable exposures related to VI inside the McGraw Edison building. Consequently, the SSD system was installed on October 4, 2016. The installation consisted of two vent pits connected to a single fan on the roof of the building in the western part of the plant to cover the area occupied by Challenger Communications' workers. Initial air effluent sampling results were low. The PRPs will submit a report on the operation and monitoring data of the SSD system on a regular basis.

A summary of the SSD system operation and monitoring, P & T system operation and monitoring, the groundwater monitoring plan, and air permitting was discussed between EGLE and the PRP consultant in January 2017. EGLE asked about the operation monitoring of the SSD system and a commitment was made to submit a plan for monitoring the system and reporting the data to the State.

A summary of the planned ozone injection beneath the building and expansion of the SSD system was presented at the January 2017 meeting.

Enforcement

A Decree between the State of Michigan and McGraw Edison Corporation was entered with the Calhoun County Circuit Court on June 11, 1984. Subsequently, this site and the rest of the McGraw Edison Corporation was purchased by Cooper Industries. Residents, whose wells were contaminated by this site, have been placed on a municipal water supply system paid for by the McGraw Edison Corporation. In accordance with the Decree, McGraw Edison Corporation paid $250,000 to the State for its costs, set up a $150,000 trust account for economic development, completed a hydrogeological study of the site, installed deep and shallow aquifer groundwater purging and treatment systems and a soil flushing system. Several additional Orders were placed after the original. The final Order was completed on March 23, 2001.

Response Activities - In Progress

Activity: Remedial Action | **Start Date:** 10/4/2016 | **End Date:** 11/27/2019

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
It was decided on June 24, 2016 that installation of a SSD system was necessary to address unacceptable exposures related to VI inside the McGraw Edison building.

The SSD system was installed on October 4, 2016. The installation consisted of two vent pits connected to a single fan on the roof of the building in the western part of the plant to cover the area occupied by Challenger Communications' workers. Initial air effluent sampling results were low. The PRPs will submit a report on the operation and monitoring data of the SSD system on a regular basis.

Cost information for this action was requested by the PRP, but was not made available.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 9/30/1990 | **End Date:** 12/30/2030

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$28,000,000.00	Private	$0.00	

Comments:
Operation and Maintenance (O & M) of the groundwater extraction and treatment system has been on going continuously since 1990 and is projected to end in 2030. The cost of this operation was originally estimated at $700,000 per year. The current O & M estimate has been reduced to $113,500 per year due to the shutdown of the deep aquifer groundwater treatment system and other system upgrades. The PRPs continue to assess VI concerns at the site.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 8/9/2004 | **End Date:** 10/27/2004

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The 2004 FYR was completed by the EPA in coordination with EGLE staff. The review concluded that the groundwater recovery system continues to effectively extract TCE from the contaminated groundwater and made the following recommendations and follow-up actions: install additional monitoring wells where data gaps exist, address elevated concentrations of TCE detected in the soils and groundwater in the northeast footprint of the building and the loading dock area, eliminate the removal of monitoring wells from the network, perform a residential well inventory in the area where residences were offered municipal water supply hook-up, and provide a regular maintenance schedule of the extraction/monitoring wells using established well cleaning procedures.

Activity: 5 Year Review | **Start Date:** 5/30/1999 | **End Date:** 10/29/1999

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$8,528.00	Federal	$0.00	

Comments:
The FYR was completed by EGLE staff and submitted to the EPA in September 1999. The review concluded that the groundwater recovery system continues to effectively extract TCE from the contaminated groundwater and recommended installation of additional monitoring wells where data gaps existed.

Activity: Remedial Action | **Start Date:** 2/22/1986 | **End Date:** 10/30/1997

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$5,000,000.00	Private	$0.00	

Comments:
The Remedial Action consisted of two parts: soils removal (about 18,980 cubic yards of contaminated soils were removed from site and disposed of at an approved facility), and soils flushing that spanned from May 1989 through October 1997.

Activity: Remedial Investigation | **Start Date:** 9/30/1985 | **End Date:** 9/30/1986

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Cooper Industries conducted the Remedial Investigation/Feasibility Study (RI/FS) from 1985 through 1986 at a cost of $2,000,000. The RI consisted of soils and hydrogeological investigation.

Activity: Alternate Water | **Start Date:** 9/30/1980 | **End Date:** 9/30/1987

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Completed

Primary Cost:
$250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Residents in the vicinity of the site, whose wells were affected by contaminants from the site, were placed on a municipal water supply system paid for by the state at a cost of $250,000, which was subsequently reimbursed by McGraw Edison Corporation.

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 10/1/2020 | **End Date:** 12/31/2021

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
There is a conceptual plan in place to inject ozone underneath the building in the near future.

Cost information for this action was requested by the PRP, but was not made available.

Activity: Remedial Investigation | **Start Date:** 8/15/2020 | **End Date:** 10/15/2021

Operable Unit:
McGraw Edison Corp. - OU Entire Site

Status:
Future Need

Primary Cost:
$200,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
To install four deep monitor wells to help identify outside source of contamination.

This was planned for 2019, however due to lack of funding it is being pushed back until EGLE can determine if proper funding will become available.

Federal Grants

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Verona Well Field

State Site ID:
13000006

Federal Site ID:
51

Full Address:
250 Brigden Drive, Battle Creek, MI, 49017

County:
Calhoun

Location

The Verona Well Field site is located in the northeast part of the city of Battle Creek, Calhoun County, Michigan. The site consists of the well field located at 250 Brigden Drive and three source areas: Thomas Solvent Raymond Road (TSRR), Thomas Solvent Annex (Annex), and the Grand Trunk Western Railroad Paint Shop (Paint Shop). The TSRR source area is located at 1194 N. Raymond Road, the southeast corner of Raymond Road and Emmett Street. The Annex is located on the south side of Emmett Street, approximately one-half mile west of the Raymond Road source area. The Paint Shop is located at the north end of Raymond Road by the Grand Trunk Western/Canadian National Railroad marshaling yard. The area surrounding the well field includes three residential areas and pockets of light and heavy industry. The largest of the residential areas borders the well field to the south, between the well field and the Raymond Road and the Annex source areas. The Grand Trunk Western/Canadian National Railroad marshaling yard borders the well field to the east. A large undeveloped wetland area is located north of the well field.

Status

In 1981, as a result of routine monitoring, several volatile organic solvent contaminants were found in the city of Battle Creek's municipal water system. Between 1981 and early 1984, 27 of the 30 municipal wells in the Verona Well Field became contaminated as the groundwater contaminant plume progressed northward. The same contaminants were also found in a number of private residential wells in an adjacent residential area. In 1983, the municipal water system was extended to this neighborhood.

Work continues to address the risks to the well field through the southern blocking well system and remediation efforts at the Annex source area.

EGLE (formerly known as MDEQ) terminated operation of the air sparging/soil vapor extraction (AS/SVE) system at the TSRR source area on June 15, 2016, due to groundwater concentrations being below criteria. After a nine month post-sparge aquifer stabilization period, EGLE began quarterly groundwater monitoring in March 2017 to evaluate achievement of groundwater cleanup criteria. After five rounds of quarterly groundwater sampling with all samples well below cleanup criteria, the first round of soil verification sampling occurred in April 2018. Soil results indicated approximately half of the soils have achieved cleanup criteria. Additional soil sampling occurred in March 2019 to refine the lateral extent of contamination. Additional work is needed to remediate remaining contaminated soils. The EPA plans to write a focused feasibility study (FFS) and modify the Record of Decision (ROD) to support excavating the remaining contaminated soils. The groundwater meets cleanup criteria (eight consecutive quarters below criteria).

History

In 1981, as a result of routine monitoring, several volatile organic solvent contaminants were found in the city of Battle Creek's municipal water system.

EGLE initiated investigations into the source of contamination to the well field in 1981 and the EPA began remedial investigation (RI)/feasibility study (FS) work in 1983. In accordance with the May 1, 1984, ROD, the EPA implemented an interim measure wherein 12 municipal wells were converted into blocking wells of which approximately six would operate at any given time. This system helped to minimize the migration of the contaminated plume into northern municipal wells. Additionally, to help supplement well field capacity lost due to the contamination and the implementation of the blocking wells, three additional municipal water supply wells were installed at the far downgradient end of the Verona Well Field. Since this blocking system became operational, contaminant

concentrations in the north part of the well field have fallen dramatically.

The EPA's investigation identified three source areas: TSRR, the Annex, and the Paint Shop. TSRR has tax-reverted to the state while the latter two source areas are owned by the Canadian National (formerly Grand Trunk Western) Railroad. TSRR was owned and operated by the Thomas Solvent Company, a solvent recycling, blending, and packaging company that had poor housekeeping practices as well as 21 underground storage tanks. The Annex was a transfer station operated by the Thomas Solvent Company that also had poor housekeeping practices during its operation. The Paint Shop contamination resulted from disposal of degreasers into a dirt pit. Site contaminants are primarily solvents and volatile organic compounds (VOCs). Some of the site indicator compounds include: trichloroethylene, tetrachloroethene, cis-1,2-dichloroethene, carbon tetrachloride, 1,1-dichloroethane, trichloroethane, benzene, toluene, ethylbenzene, and xylenes.

In 1987, a groundwater extraction well system was installed at TSRR to begin groundwater remediation at this source area. The state operated this system until 2012 when it was shut down to optimize other treatment systems. SVE was also installed and operated from 1988 to 1992. With the possible exception of one hotspot location, 1991/1992 soil sampling indicated that VOC levels in the soils at this source area had reached Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201) generic residential cleanup criteria. A 2005 hotspot soil sampling indicated exceedences of cleanup criteria for tetrachloroethene and trichloroethene. The detection of higher contaminant concentrations was likely due to improved sample preservation methods.

The final site-wide ROD was signed in June 1991 and consists of operation and maintenance (O & M) of the existing northern blocking wells and treatment systems; the installation and O & M of a southern line of blocking wells between the existing blocking wells and the source areas; installation and O & M of groundwater extraction and treatment systems at the remaining source areas; and installation and O & M of SVE systems at the remaining source areas.

The participating potentially responsible parties (PRPs) completed the construction of the final remedy in December 1996. The constructed groundwater remedy varies from the 1991 ROD in the following ways: the Annex groundwater system was only constructed to provide containment and not active remediation, a groundwater extraction system was not installed at the Paint Shop, and a second air stripper was not constructed at the well field to treat the additional extracted groundwater. Since construction completion, samples have been, and are being, collected to help evaluate the effectiveness of the blocking well, extraction well, and treatment systems.

In the early 1990s, the PRPs installed SVE systems at the two remaining source areas. These systems were operated for less than a year. In response to EGLE incentives, in November 2004 and May 2005, the PRP group initiated groundwater sparging at the Annex and Paint Shop source areas, respectively, to augment source area contaminant removal; and have seen a significant reduction in contamination at these locations. The 365 days of operation required in the Scope of Work was completed in November 2005. The PRPs continued sparging after said date.

There were several outstanding issues regarding the implementation of the final remedy, whether or not the final remedy was effective and provided adequate capture, as well as the methods used to demonstrate that the remedy was effective and operating properly. In order to address these important issues, representatives of the PRP group, the city of Battle Creek, the EPA, and EGLE participated in a process to develop a Verona Well Field Management Plan. Toward this end, the participating parties developed an Interim Commitment, signed September 26, 2000, that spelled out the future of the remedial actions (RAs) at the site. Design documents for the proposed upgrades to the well field blocking well and treatment systems and for the Annex extraction system were submitted by the PRP group, reviewed by EGLE, and implemented in 2003. The PRP group worked with EGLE on evaluating source area enhancements at the Paint Shop and/or the Annex to augment contaminant mass removal at these source areas as a part of a Draft State Judicial Consent Decree (Decree).

The EPA issued an Explanation of Significant Differences (ESD) on September 29, 2003, identifying the following modifications to the 1991 ROD remedy: reduction in the scope of the Annex groundwater extraction well system, elimination of on-site groundwater extraction at the Paint Shop in favor of downgradient treatment at the second line of blocking wells, elimination of the second air stripper in the well field, elimination of installation of additional extraction well(s) downgradient of the TSRR source area, and modification of the cleanup criteria specified in the 1991 ROD. EGLE did not concur with the ESD because the ESD failed to identify three compounds (aluminum, iron, and sodium) exceeding Part 201 generic residential cleanup criteria as contaminants of concern (COC) with corresponding cleanup criteria.

While the Draft Decree was being negotiated, the PRPs completed several tasks in 2004 that were listed within the

Decree, including completion of the construction of the Bypass and Blocking Well System, and installation and operation of an AS treatment system in the Annex Source Area. The enhancements to the Bypass and Blocking Well System were completed in mid-2004 and began operation shortly thereafter. The Annex Sparge System was installed in the fall of 2004 and began operation in October 2004. The Decree was signed and filed in February 2006.

With input from all of the Verona Well Field Management Plan parties, the Verona Well Field Management Plan was approved with modification on December 20, 2007. The purpose of this plan is to coordinate and manage the operation, maintenance, inspection, monitoring, performance evaluation, communication, reporting, and contingency corrective measures for the entire site and the corresponding source areas.

In 2005, EGLE conducted a soil investigation at the TSRR site. Results indicated exceedences of cleanup criteria for tetrachloroethene and trichloroethene. The investigation was required to determine how much contamination remained in the on-site soils and to complete a requirement listed in the 2002 Five-Year Review (FYR). The results of this investigation led the EPA and EGLE to implement AS/SVE at TSRR, Davis Oil, and the "northwest area" (located at the northwest corner of Raymond Road and Emmett Street) with the intent of remediating residual vadose zone soils (TSRR) and reducing contaminant mass in the smear zone soils (TSRR and downgradient).

A 2008 ESD supported these recommendations and documented the following significant differences from the EPA's originally selected remedy:
-Performance of a second phase of SVE treatment to reduce VOCs in vadose zone soils at TSRR to below the cleanup objectives, and to control AS emissions as needed;
-Performance of AS to improve SVE performance in achieving soil cleanup objectives in smear zone and shallow saturated zone soils at TSRR.

In July 2008, the PRPs conducted limited soil sampling at the Annex and Paint Shop source areas to evaluate current contaminant concentrations in the soils. The soil sample results from two borings at the Paint Shop indicated soils above the site-specific cleanup criteria and only one sample result from three borings at the Annex indicated concentrations above the site-specific cleanup criteria.

EGLE began construction of the AS/SVE systems in November 2009 and operation began June 8, 2010. Adjustments were being made to the extraction wells to accommodate the influence of the AS system.

In 2009, the PRPs expanded the sparge systems at the Annex and the Paint Shop and turned off the two deep groundwater extraction wells at the Annex leaving only the two shallow extraction wells on. Because this scenario did not provide complete capture, it was understood that the AS system would continue to operate to optimize contaminant removal. In the spring of 2010, the PRPs petitioned the agencies to shut down the two remaining Annex extraction wells and convert them to AS points. In the fall of 2010, EGLE responded to the PRPs stating that site conditions do not yet meet the requirements specified in the Decree that would allow complete extraction well shut down.

In late 2008, the PRPs petitioned the EPA and EGLE to shut down all or a portion of the northern blocking well line. In 2009, the agencies tentatively agreed to allow the shut down of three additional northern line blocking wells, leaving two northern line blocking wells operating, with the understanding that modifications to the system be made should the need arise. In the fall of 2010, the PRPs requested shutting down the remaining northern blocking wells. EGLE responded that site conditions did not yet meet the Decree requirements for shutting down the remaining northern blocking wells. In 2012, EGLE and the PRPs modified the Decree to allow these wells to be shut down while the southern blocking wells continue to operate. In May 2012, the PRPs shut down the two remaining northern blocking wells and continue to operate the southern blocking wells.

As of December 1, 2010, the PRPs shut down the Annex AS system and began evaluating when to begin soil verification sampling. To date, Annex soil verification sampling has not occurred. Since the Annex December 2010 AS shut down, the PRPs noticed a rebound in groundwater contaminant concentrations. In May 2013, the PRPs shut down the Annex extraction wells and restarted the AS system.

In late fall of 2011, the EPA drafted an ESD. After several iterations, the EPA finalized the ESD in December 2013. This ESD changed the source area cleanup criteria from one in one million cancer risk to the Michigan generic residential criteria for soils and groundwater and also allowed for AS operation at TSRR without extraction well operation.

In 2012, EGLE and the PRPs modified the Decree to allow temporary AS without extraction well operation at both the TSRR and Annex source areas and EGLE turned off the TSRR extraction wells at the end of May 2012. Prior to this,

EGLE had been able to operate both the AS/SVE systems and the extraction wells while still demonstrating a backward gradient. The TSRR groundwater concentrations have reduced substantially since the AS/SVE systems implementation.

The PRPs also operate the southern blocking well line. In 2013, the PRPs requested that two of the southern blocking wells be shut down. Due to the potential impact to the municipal water supply and the presence of contaminants above cleanup criteria downgradient of the southern blocking wells, EGLE and the city indicated this request was premature. In 2015, the PRPs later made a second request to shut down select southern blocking wells and also change the source area remedy to monitored natural attenuation (the PRPs subsequently rescinded the latter request). The EPA's technical consultant determined that, with appropriate field demonstration, the PRPs could potentially shut down the two proposed blocking wells. The PRPs determined they would not pursue shutdown of the two blocking wells due to the level of effort for the demonstration needed.

The PRPs stopped the operation of the AS system at the Paint Shop Source Area, June 2015, and the Annex Source Area, April 2015. After extensive evaluation by the EPA and EGLE, EGLE determined that the Annex AS system needed to resume operation in order to protect the municipal well field and meet the requirements in the Consent Decree. The PRPs resumed operation of the Annex AS system in January 2017. The Paint Shop groundwater treatment occurs at the southern blocking wells and the EPA historically approved PRP shutdown of the Paint Shop source area SVE soil treatment system.

In 2015, the PRPs requested decommissioning of the Verona Well Field blocking well treatment systems and the Annex SVE system which has not operated since the mid-1990s. Based on the EPA's technical consultant's recommendations, EGLE responded to these requests by 1) approving the blocking well treatment system shutdown conditioned upon a better contingency treatment should wellhead treatment be necessary (the PRPs have not agreed to provide this), 2) requesting the PRPs retain the Annex SVE system, indicating the fairly high unsaturated soil concentrations that existed at the time the system was shut down. The PRPs declined to provide a better contingency plan for wellhead treatment of the blocking wells and removed the SVE system when they decommissioned the blocking well treatment systems in 2016.

In May 2016, the PRPs resumed operation of northern blocking well V27 due to confirmed detections of contaminants in dormant northern blocking wells (all northern blocking wells had been off) and the influent to the city's water plant tap. The operation of this well provides better protection of the municipal water supply and helps capture residual contamination present north of the influence of the Southern Blocking Wells. The PRPs have agreed to notify the agencies prior to terminating operation of this well.

In the fall of 2016, EGLE conducted vertical aquifer sampling at several locations at the TSRR source area. This data was used to place additional monitoring wells to ensure representative samples for groundwater remediation verification sampling. In the fall of 2016, EGLE abandoned the groundwater extraction wells; any future groundwater treatment needs would be addressed through the AS/SVE system.

The Fourth FYR was completed in September 2017. The FYR concluded that the remedies are protective in the short-term. To be protective in the long-term, the following recommendations need to be implemented: develop and implement long-term stewardship procedures for monitoring and tracking compliance with existing institutional controls (ICs), conduct a site-wide vapor intrusion (VI) investigation (starting with existing information), evaluate need to conduct additional 1,4-dioxane sampling, continue monitoring and operation of northern blocking well V27 for one year, evaluate capture at southern blocking well BW-9, optimize blocking wells hydraulic capture zone, install an additional monitoring well location, determine if per- and polyfluoroalkyl substances (PFAS) are potential COCs. The agencies are currently in discussions with the responsible parties regarding implementation of these recommendations.

Enforcement

Enforcement actions were taken against the Thomas Solvent Company and the Grand Trunk Western Railroad. The Thomas Solvent Company subsequently filed for bankruptcy. A partial Consent Decree and judgment was entered by the Federal District Court in November 1991. Under that settlement, the state obtained judgments against Dick Thomas and all of the Thomas Solvent Companies. Pursuant to that judgment, those parties have paid the state more than $611,000. This partial settlement covered state costs incurred through November 30, 1989. Approximately $200,000 of this amount was set aside for a natural resource damage assessment. In 1989, the state and the EPA received a partial settlement of $607,490 for state costs incurred through June 1988 associated with the Grand Trunk Western Railroad's contribution to the contamination problem. The state entered into an Administrative Order by

Consent with the Grand Trunk Western Railroad and other non-de minimis PRPs covering state claims for past state costs incurred after June 1988 to August 31,1994, in the amount of $425,000.

In the fall of 1992, there was a $3 million de minimis settlement with the state and the EPA for past and future costs at the Well Field, the Annex, and the Paint Shop. Approximately $150,000 of this amount went to the state. In October 1993, the Michigan Department of Natural Resources and the EPA initiated enforcement actions against four companies who are liable for costs incurred at the TSRR facility. The EPA, the state, and the defendants entered a Consent Decree on April 17, 1998, under which the settling parties agreed to reimburse the state $300,000.

The PRPs for the Annex, the Paint Shop, and Well Field operated the final remedy under a Unilateral Administrative Order issued by the EPA until the PRPs entered into a Consent Decree with the EPA, an agreement with the city of Battle Creek, both entered in January 2006, and a Judicial Consent Decree with the state, entered in February 2006. The state Judicial Consent Decree addresses future RAs at the site and settlement of the natural resources damage claim. The settlement includes source area enhancements at the Paint Shop and/or the Annex and enhanced remedial actions at the Annex and the Well Field. The Judicial Consent Decree provides for reimbursement of state oversight costs. EGLE submitted the first reimbursement request in 2007. This request was disputed by the PRPs and subsequently settled. The second reimbursement request was submitted in 2008, was disputed by the PRPs and settled. The PRPs agreed to pay an established amount for oversight each year.

Operable Units for Verona Well Field

OU1 Thomas Solvents Raymond Road Source Area

OU2 Interim Action Well Field

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 8/12/1985

Location Name: OU1 Thomas Solvents Raymond Road Source Area

Comments:
The remedy consists of installation of 9 groundwater extraction wells at TSRR with air stripper treatment at the Verona Well Field and 22 SVE wells with carbon/catalytic oxidation off-gas treatment.

Record of Decision **Amendment:** 0 **ESD:** 2 **Effective:** 9/29/2008

Location Name: OU1 Thomas Solvents Raymond Road Source Area

Comments:
The ESD provides for the following modifications to the TSRR remedy: 1) perform a second phase of SVE in combination with AS to try to achieve soil cleanup objectives, 2) allow a temporary shutdown during AS operation if it is demonstrated that AS by itself achieves groundwater Cleanup Objectives at select monitoring wells and groundwater contamination is not spreading, and 3) updated the air emissions Applicable or Relevant and Appropriate Requirements reference.

Please note that the EPA identified this ESD as ESD#2 because this is the second ESD for the site but the first ESD for Operable Unit 1, TSRR Source Area Groundwater/Soil Remediation.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 5/1/1984

Location Name: OU2 Interim Action Well Field

Comments:
The remedy consists of 12 municipal wells being converted to blocking wells to protect the municipal well field. Water is to be treated through an on-site air stripper with vapor phase carbon. The remedy also included installation of three additional municipal wells to provide 6 million gallons per day toward replacement of lost municipal water capacity due to the municipal wells being converted to blocking wells.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/28/1991

Location Name: Verona Well Field - OU Entire Site

Comments:
The ROD remedy consists of: continued O & M of the existing (northern) blocking well line, installation and O & M of a second line of blocking wells to the south, continued O & M of the existing air stripper/vapor phase carbon treatment system, installation and O & M of a second air stripper/vapor phase carbon treatment system, installation and O & M of groundwater extraction and remediation systems at the Annex and Paint Shop source areas, installation and O & M of SVE systems at the Annex and Paint Shop source areas, implementation of comprehensive monitoring systems site-wide, continued O & M of the TSRR source area groundwater extraction system, installation of an on-site air stripper/vapor phase carbon treatment system at the TSRR source area, and installation of additional extraction well(s) near Raymond Road.

Record of Decision | **Amendment:** 0 | **ESD:** 1 | **Effective:** 9/29/2003

Location Name: Verona Well Field - OU Entire Site

Comments:
The EPA issued an ESD on September 29, 2003, identifying the following modifications to the 1991 ROD remedy: reduction in the scope of the Annex groundwater extraction well system, the elimination of on-site groundwater extraction at the Paint Shop in favor of downgradient treatment at the second (southern) line of blocking wells, the elimination of the second air stripper in the well field, elimination of installation of additional extraction well(s) at the TSRR source area, and modification of the cleanup criteria specified in the 1991 ROD. EGLE did not concur with the ESD because the ESD failed to identify three compounds (aluminum, iron, and sodium) exceeding Part 201 generic residential cleanup criteria as COCs with corresponding cleanup criteria.

Record of Decision | **Amendment:** 0 | **ESD:** 3 | **Effective:** 12/11/2013

Location Name: Verona Well Field - OU Entire Site

Comments:
This ESD changed the source area (Annex, Paint Shop, TSRR) cleanup criteria from one in one million cancer risk to the Michigan generic residential criteria for soils and groundwater (generally one in one hundred thousand cancer risk) and also allowed for AS operation at TSRR and at the Annex without extraction well operation. The rest of the contaminated aquifer retains the 2003 ESD one in one million cancer risk criteria.

Response Activities - In Progress

Activity: Remedial Action | **Start Date:** 11/1/2009 | **End Date:** 12/31/2022

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
In Progress

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$2,555,420.00	Federal	$283,935.00	State

Comments:
TSRR/Davis Oil/Northwest Area AS/SVE construction, operation, verification sampling (TSRR only), and decommissioning. The AS/SVE system was turned off in June 2016. After a nine month post-sparge aquifer stabilization period, EGLE began quarterly groundwater monitoring in March 2017 to evaluate achievement of groundwater cleanup criteria. In April 2018, the first round of soil verification sampling occurred. Soil results indicated approximately half of the soils have achieved cleanup criteria. Additional work is needed to remediate remaining contaminated soils. The EPA plans to write a focused feasibility study and modify the ROD to support excavating the remaining contaminated soils. The groundwater meets cleanup criteria (eight consecutive quarters below criteria).

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 6/1/1996 | **End Date:** 12/31/2040

Operable Unit:
Verona Well Field - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,400,000.00	Private	$0.00	

Comments:
Responsible Parties estimate annual expenditures of approximately $350,000.

PRP operation of the final remedy for the site. This consists of: O & M of one northern well and the southern blocking well lines, O & M of the Annex AS system, and monitoring and evaluation of those systems.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/26/2016 | **End Date:** 9/13/2017

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Final Fourth FYR included the following recommendations: develop and implement long-term stewardship procedures for monitoring and tracking compliance with existing ICs, conduct a site-wide VI investigation, evaluate need to conduct additional 1,4-dioxane sampling, continue monitoring and operation of northern blocking well V27 for one year, evaluate capture at southern blocking well BW-9, optimize blocking wells hydraulic capture zone, install an additional monitoring well location, determine if PFAS are potential COCs.

Activity: 5 Year Review | **Start Date:** 7/3/2012 | **End Date:** 9/18/2012

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The FYR site visit occurred July 3, 2012. EGLE received the first draft of the FYR on July 31, 2012, with the EPA issuing the final version on September 18, 2012. Per the Executive Summary, the remedies for the entire site are "protective of human health and the environment in the short-term. The remedies are expected to be protective of human health and the environment in the long-term upon attainment of all cleanup standards. Long-term stewardship requires monitoring and evaluating ICs. An IC study was performed for the site by the PRPs and ICs were put in place. However, some ICs at the site may not be protective in the long-term. Therefore, the ICs for the site will be re-evaluated to determine whether additional ICs are needed or whether modifications are necessary."

Activity: Remedial Design | **Start Date:** 10/1/2007 | **End Date:** 7/9/2008

Operable Unit: Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$128,000.00	State	$0.00	

Comments:
Under a federal grant, EGLE contractors designed an AS and SVE system to address residual contamination at the TSRR source area, and address the nearby Davis Oil and livestock yard that had historically become impacted by TSRR-related contamination due to migration.

Activity: 5 Year Review | **Start Date:** 12/18/2006 | **End Date:** 9/20/2007

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Per the Executive Summary, "The selected remedy is considered protective in the short-term; however, in order to assure that it is protective in the long-term, follow up actions need to be implemented." The recommended follow-up actions include: 1) Installation and operation of a replacement extraction well and new free product recovery system and investigation of other technologies to clean up the free product near TSRR, 2) evaluation of further treatment options for TSRR soil, 3) for the Annex, add dieldrin and benzo(a)pyrene to the final soil sampling and change the remedy to either adjust the cleanup objectives or require permanent usage restrictions, 4) for the Annex and Paint Shop, evaluate effectiveness of the deed notice and, if necessary, propose a restrictive covenant, 5) notify nearby businesses and property owners of the potential for VI.

Activity: Remedial Action | **Start Date:** 12/1/2005 | **End Date:** 11/13/2007

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	State	$0.00	

Comments:
EGLE replaced TSRR extraction well EW3. Petroleum product from the adjacent Davis Oil Underground Storage Tank site was found in EW3 in May 2005.

Activity: Remedial Investigation | **Start Date:** 4/1/2005 | **End Date:** 12/30/2005

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	State	$0.00	

Comments:
EGLE undertook a soil hot spot investigation in 2005. The investigation was conducted to determine how much contamination remained in the TSRR on-site soils and to complete a recommendation in the 2002 FYR.

Activity: Operation and Maintenance | **Start Date:** 5/6/2002 | **End Date:** 9/30/2016

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$425,000.00	State	$0.00	

Comments:
The state assumed 100 percent of the costs associated with long-term O & M at the TSRR Source Area on May 6, 2002. As of May 2012, the extraction wells were turned off to allow optimized operation of the AS/SVE systems. The extraction wells were subsequently abandoned in the fall of 2016 with the understanding that any needed groundwater treatment would come from the more effective AS system.

Activity: 5 Year Review | **Start Date:** 11/7/2001 | **End Date:** 9/30/2002

Operable Unit:
Verona Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Per the Executive Summary, "The remedies for the entire Site are protective in the short-term because there is no evidence that there is current significant exposure. In order for the remedy to remain protective in the long-term, the following actions are needed, which are not already provided for in enforceable documents or agreements: implementation of measures to provide protection to the city water supply in case demand increases; incorporation of

certain semi-volatile organic compounds (SVOCs) and metals into the source area monitoring and cleanup requirements; implementation of screening-level sampling of source area soils for SVOC, pesticide/polychlorinated biphenyls (PCBs), and metals contamination, and any significant risks from these parameters need to be addressed prior to release of control over these properties; implementation of actions to comply with 40 CFR 264.193 (sic: actual citation is 40 CFR 265.193) for the portion of the Annex force main going through the storm sewer."

Activity: Remedial Action | **Start Date:** 1/1/1994 | **End Date:** 12/1/1996

Operable Unit:
Verona Well Field - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
PRP construction of the southern line of blocking wells, the Annex groundwater extraction system, and the construction and limited operation (<1 year) of the Annex and Paint Shop SVE systems.

Activity: Remedial Design | **Start Date:** 1/1/1992 | **End Date:** 1/1/1994

Operable Unit:
Verona Well Field - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
PRP design of the final remedy for the site: Annex source area groundwater extraction wells, southern blocking well line, modifications to the existing northern blocking well line, and capture of the Paint Shop source area groundwater at the southern blocking well line.

Activity: Long Term Remedial Action | **Start Date:** 2/28/1987 | **End Date:** 5/6/2002

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:
$1,373,400.00

Primary Source:
Federal

Secondary Cost:
$152,600.00

Secondary Source:
State

Comments:
EGLE began operation of the TSRR groundwater extraction system (for the EPA) in March 1987 and continued operation under a Cooperative Agreement with the EPA until May 6, 2002, at which time the funding became 100 percent state responsibility.

Activity: Remedial Action | **Start Date:** 9/1/1986 | **End Date:** 6/1/1996

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:
$6,973,200.00

Primary Source:
Federal

Secondary Cost:
$774,800.00

Secondary Source:
State

Comments:
The TSRR groundwater extraction system was constructed in late 1986 and began operation in late February 1987. The TSRR SVE system was installed in 1987/1988 and operated from 1988 to 1992. Approximately $5,930,000 was spent in design and construction of the groundwater extraction system and the SVE system and the operation of the SVE system. Approximately, $1,818,000 was spent for construction of the on-site TSRR air stripper.

Activity: Long Term Remedial Action | **Start Date:** 9/1/1984 | **End Date:** 6/1/1996

Operable Unit:
Verona Well Field - OU2 Interim Action Well Field

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$492,000.00	Federal	$54,600.00	State

Comments:
Long-term operation of the Interim Action blocking well line (northern blocking well line) from initiation of operation in approximately September 1984 until the PRP group assumed operation of the extraction and remediation system in June 1996. By December 1996, the PRP group completed construction of the 1991 ROD remedy (includes upgrades to the northern blocking wells and construction of a southern blocking well line) when the interim action became part of the final remedy outlined in the 1991 ROD.

Activity: Remedial Design | **Start Date:** 1/1/1984 | **End Date:** 7/30/1984

Operable Unit: Verona Well Field - OU2 Interim Action Well Field
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$210,900.00	Federal	$0.00	

Comments:
Designing the northern blocking well and groundwater treatment system (air stripper/vapor phase carbon).

Activity: Interim Response | **Start Date:** 1/1/1984 | **End Date:** 9/1/1984

Operable Unit: Verona Well Field - OU2 Interim Action Well Field
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,039,000.00	Federal	$226,000.00	State

Comments:
Conversion of municipal wells to the northern blocking well line and construction of the air stripper treatment system.

Activity: Bottled Water | **Start Date:** 1/1/1984 | **End Date:** 1/1/1989

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	State	$0.00	

Comments:
Bottled water was provided to residents whose wells had been impacted by the groundwater plume.

Activity: Remedial Investigation | **Start Date:** 6/15/1983 | **End Date:** 6/28/1991

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,085,000.00	Federal	$0.00	

Comments:
EPA conducted RI of the Annex and Paint Shop source areas, other potential source areas, the area between the source areas and the Verona Well Field, culminated in the June 28, 1991, site-wide ROD.

Activity: Alternate Water | **Start Date:** 1/1/1983 | **End Date:** 12/31/1984

Operable Unit: Verona Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,475,000.00	Federal	$35,000.00	Private

Comments:
Extended municipal water supply to residents whose wells had been affected by the groundwater contaminant plume.

Housing & Urban Development spent $1,000,000; the EPA spent $475,000, and the city of Battle Creek spent $35,000.

Activity: Remedial Investigation | **Start Date:** 1/1/1983 | **End Date:** 5/1/1984

Operable Unit:
Verona Well Field - OU2 Interim Action Well Field

Status:
Completed

Primary Cost:
$1,000,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EPA conducted RI to determine how to address contamination in the Verona Well Field municipal water supply.

Activity: Remedial Investigation | **Start Date:** 1/1/1983 | **End Date:** 1/1/1985

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Completed

Primary Cost:
$1,130,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EPA conducted RI/FS for TSRR source area groundwater and soils.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/13/2021 | **End Date:** 9/13/2022

Operable Unit:
Verona Well Field - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
A FYR will need to be completed in 2022.

Activity: Remedial Action | **Start Date:** 3/1/2021 | **End Date:** 12/31/2022

Operable Unit:
Verona Well Field - OU1 Thomas Solvents Raymond Road Source Area

Status:
Future Need

Primary Cost:
$1,500,000.00

Primary Source:
Federal

Secondary Cost:
$200,000.00

Secondary Source:
State

Comments:
Provide 10 percent match ($150k match; $50k analytical) for supplemental treatment needed to achieve soil cleanup objectives. While this treatment technology has not been decided, excavation was assumed for the purposes of cost estimation and scheduling. EPA plans to write a focused feasibility study and modify the ROD to support excavating the remaining contaminated soils. This funding request plus contracts encumbrance should be sufficient to bring the site to closure. The AS/SVE system and subsequent treatment methods treats the contaminated soils and groundwater, thereby improving the groundwater quality, reducing risk, and eventually returning the aquifer back to drinkable quality.

State Superfund Contracts

Activity: Interim Response | **Effective Date:** 5/8/1984 | **Most Recent Mod:** 5/27/2020

Location Name: Verona Well Field - OU Entire Site | **Status:** Final Close

Total Contract: $0.00	**State Total:** $230,000.00	**State Share Balance:** $4,000.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00
Summary:		

Activity: Remedial Action | **Effective Date:** 9/12/1985 | **Most Recent Mod:** 5/27/2020

Location Name: Verona Well Field - OU Entire Site | **Status:** Open - Active

Total Contract: $0.00	**State Total:** $736,378.00	**State Share Balance:** $0.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00
Summary:		

Activity: Long Term Remedial Action | **Effective Date:** 7/7/1995 | **Most Recent Mod:** 5/27/2020

Location Name: Verona Well Field - OU Entire Site | **Status:** Open - Active

Total Contract: $0.00	**State Total:** $388,610.00	**State Share Balance:** $206,810.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00
Summary:		

Federal Grants

Grant #: V00E82601	**Activity:** Remedial Action	**End Date:** 6/30/2021	**Status:** Open
Fed Total Award: $805,139.98	**State Total Award:** $91,266.86	**Exp to Date:** $44.10	**Exp for Year:** $44.10
Grant #: V00E82601-RA	**Activity:** Remedial Action	**End Date:** 6/30/2021	**Status:** Open
Fed Total Award: $2,555,420.00	**State Total Award:** $272,777.00	**Exp to Date:** $1,831,698.79	**Exp for Year:** $0.00
Grant #: V00E82601-RA	**Activity:** Remedial Action	**End Date:**	**Status:** Open
Fed Total Award: $0.00	**State Total Award:** $0.00	**Exp to Date:** $100,420.00	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $108,582.18	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:**	**End Date:**	**Status:**

	Management Assistance	9/30/2004	Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $25,902.43	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $3,838.65	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $304,926.25	**Exp for Year:** $0.00
Grant #: V005793-01-RD	**Activity:** Remedial Design	**End Date:** 5/31/2003	**Status:** Closed
Fed Total Award: $653,365.00	**State Total Award:** $0.00	**Exp to Date:** $210,900.00	**Exp for Year:** $0.00
Grant #: V005793-01-LT	**Activity:** Long Term Remedial Action	**End Date:** 5/31/2003	**Status:** Closed
Fed Total Award: $2,897,175.00	**State Total Award:** $371,072.00	**Exp to Date:** $2,485,380.95	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $229,301.30	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: U.S. Aviex

State Site ID:
14000017

Federal Site ID:
T8

Full Address:
1056 Huntly Road, Niles, MI, 49120

County:
Cass

Location

The U.S. Aviex Superfund Site covers about six-acres in Cass County, Howard Township, Michigan, located at 1056 Huntley Road, just east of the city of Niles. The St. Joseph River (tributary to Lake Michigan) is about 3.5 miles west of the Site and the nearest surface water body, Barron Lake, is about 0.5 miles north-northeast of the Site. The primary land use in the area is rural residential with a small subdivision immediately adjacent to the Site toward the south and west. Minor agricultural and horticultural activities are present in the general vicinity of the Site. The residential area is comprised of numerous single-family homes with some homes located within 100 feet of the property perimeter. There are no storm or sanitary sewers in the vicinity of the Site. A Niles municipal well is located approximately 2 miles west of the Site.

Status

The U.S. Aviex Superfund Site is a former non-lubricating automotive fluids manufacturing facility that operated from the early 1960s through 1978. In 1978, the facility was destroyed due to fire and finally, the U.S. Aviex company declared Chapter 11 Bankruptcy in 1988. Since then, the EPA and EGLE completed various investigations and remediation activities to clean up the soil and groundwater contamination that occurred due to historical operations and the fire incident.

In December 2018, EGLE and the EPA initiated the Fifth Five-Year Review (FYR) process which was scheduled to be completed by November 24, 2019. However, EPA completed and signed the Fifth FYR on February 03, 2020, and submitted it to EGLE on February 20, 2020. Included as a recommendation in the Fifth FYR were to develop an Institutional Control Implementation Assurance Plan (ICIAP) which would include the results of the Site Institutional Controls (ICs) evaluation activity that have already been conducted. It was noted the that the ICIAP should include a plan for: 1) future IC evaluation activities; 2) taking corrective measures to existing ICs, if needed; 3) placing additional ICs, if needed; and 4) ensuring the long-term stewardship of the Site, which includes ongoing monitoring, maintenance, and enforcement of ICs. Other recommendations were that EGLE should continue its investigations to determine the nature and extent of 1,4-Dioxane both on- and off-Site, its relationship to the Site, and inclusion into the Site Groundwater Monitoring Plan (GMP). New monitoring wells should be developed, surveyed, and incorporated into the current GMP. A final recommendation was that although no current VI risk is present, additional subsurface investigation of vadose zone source soil to assess the persistent soil gas and underlying groundwater plume mass is recommended. EGLE is working with its contractor to prepare a scope of work to address these issues in a timely manner. The 2019 groundwater monitoring report will be completed by end of August 2020. The first half of 2020 groundwater and soil-gas sampling events were completed in June 2020. The Van Buren/Cass District Health Department sampled fifteen residential wells and tested for both volatile organic compounds and 1,4-Dioxane in June 2020. Letters including lab results (non detect) were sent to the residents on July 13, 2020.

History

The U.S. Aviex company (Site) was a former non-lubricating automotive fluids manufacturing facility that operated from the early 1960s through 1978. Bulk chemicals were stored in aboveground storage tanks, underground storage tanks, steel drums, or fiberpak drums. All tanks were connected to batch and filling rooms by underground and/or overhead pipes. Three types of chemical releases are suspected to have occurred: 1) miscellaneous spills due to poor material handling practices in the 1960s and 1970s, 2) the rupture of a diethyl ether (DEE) underground pipeline in July 1972, and 3) infiltration of water and chemicals during the fire that destroyed the facility in 1978. In 1972, approximately six weeks after the DEE pipeline release, a nearby resident complained of bad-tasting well water. In 1982, the state

initiated legal action against U.S. Aviex resulting in U.S. Aviex performing a groundwater investigation at the Site. The results of the investigation led to the installation and operation of an on-site groundwater extraction and treatment system, treating 200 gallons per minute of contaminated groundwater in an air stripper. The effluent was pumped to the Bame-Huntley surface drain. This effort was only partially successful in containing the groundwater contamination, and the EPA became involved at the Site.

The Site was placed on the National Priorities List (NPL) in September 1983 and U.S. Aviex began purging and treating groundwater from two extraction wells later that year. U.S. Aviex also began a remedial investigation/feasibility study (RI/FS) to determine the extent and nature of the contamination. However, U.S. Aviex declared Chapter 11 Bankruptcy in 1988. Therefore, the EPA assumed the cleanup responsibilities and completed the RI/FS in later 1988. During the RI, it was identified that impacted groundwater was migrating west-southwest toward the intersection of Almaugas Road and Blanchard Drive. The residents of Howard Township in the area of the impacted groundwater were connected to the city of Niles water supply in September 1987.

On September 7, 1988, the Record of Decision (ROD) was signed with the selection of an on-site soil flushing treatment with groundwater purging and treatment remedy and EGLE concurred with the ROD. In September 1991, ELLE entered into a Superfund State Contract (SSC) with the EPA for the state's share of capital costs of the remedial action (RA). In October 1991, the design of the groundwater extraction and treatment system was completed, and construction was completed in September 1993.

Based on the EPA initial assessment, it was determined that additional soil treatment was not warranted and an Explanation of Significant Differences (ESD) was issued eliminating soil flushing from the remedy. In October 1993, the final RA construction report was completed. In October 1994, EGLE assumed the operation and maintenance (O & M) of the treatment system from the EPA. In October 1995, the Site changed status to a fund-financed state lead (Also known as Long-Term Response actions [LTRA]) for O & M costs over ten years.

In October 1997, Tetra Tech Environmental Management, Inc. mobilized under the authorization of the EPA to define the horizontal and vertical extent of contaminated groundwater bypassing capture by the current extraction system. The investigation discovered 1,2-dichloroethane and diethyl ether above cleanup levels beyond the capture zone of the extraction system. In 1999, EGLE received a grant ($367,000) from the EPA for state-lead work to determine how to best capture and clean up the escaping plume. On December 3, 1999, the First Five Year Review (FYR) was completed and signed by the EPA. In 2000, an additional extraction well was installed to prevent further downgradient migration of contaminated groundwater until the extent of contaminated groundwater could be fully defined.

Between 2002 and 2003, EGLE conducted several additional groundwater investigations to achieve the following objectives: 1) to better define the extent of the downgradient plume, 2) to evaluate the effectiveness of the installed pump and treat (P & T) system, and 3) to evaluate the concentrations of impacted groundwater still migrating from the site. These investigations identified higher concentrations of contaminants, including the presence of light non-aqueous phase liquid (LNAPL), remaining in the source areas on the plant property than had previously been identified. Based upon the results from these investigations, EGLE and the EPA installed a series of additional downgradient monitoring wells to further monitor the groundwater concentrations and the migration of impacted groundwater into two separate well-head protection areas. In addition, in 2003 and 2004, EGLE (with the EPA's concurrence), performed two separate expanded pilot tests to address the contamination remaining at the plant property. The pilot studies consisted of ozone sparging of the groundwater and enhanced bioattenuation of the groundwater using a product known as BIOX. In late 2003, the P & T system was temporarily shut down during the pilot testing.

On September 29, 2004, the EPA issued a ROD Amendment that modified the remedy which included the following: 1) the shutdown of the groundwater P & T system; 2) continued operation of the ozone sparging system, and 3) monitored natural attenuation (MNA) for the remaining low-level groundwater contamination off the U.S. Aviex property. On December 3, 2004, the Second FYR was completed and signed by the EPA.

Based on the results of the ozone sparge pilot test at the Site, EGLE operated the sparging system thru 2007 to continue to reduce contaminant levels at the property. In the fall of 2007, contaminant levels had been significantly reduced at the Site. In many of the on-site wells, contaminant levels were below the residential criteria. The sparge system was subsequently shut down and underwent an evaluation and monitoring period to detect any potential rebound of contaminant levels. The remaining contamination located downgradient of the Site continues to be monitored on a regular basis to ensure that natural attenuation is occurring. The other pilot test that was conducted over a small area at the Site, was documented to contain free phase toluene. BIOX, a chemical that enhances bioremediation, was applied in two applications, the last application occurred in March 2004. The BIOX pilot test was successful in removing the LNAPL in the wells; however, later monitoring showed a return of the LNAPL, indicating that

the source of the LNAPL was not being fully addressed. In the fall of 2007, excavation of the LNAPL and off-site disposal began. Excavation activities were completed in 2008. On November 11, 2009, the Third FYR was completed and signed by the EPA. The FYR concluded that the remedy is currently protective of human health and the environment.

The Site continues to have groundwater monitored annually to evaluate the following: 1) any potential rebound from the response actions in 2008; 2) the progress of natural attenuation of downgradient impacted groundwater, and 3) potential migration of contaminated groundwater toward the local municipal well field. In 2011, deed restrictions were placed on the Site and a private party purchased the property. The former U.S. Aviex property is currently being used as a storage facility.

In 2014, EGLE completed a downgradient groundwater assessment. This assessment has shown that the extent of impacted groundwater has not left the Jerry Tyler Memorial Airport property even though it does appear to be migrating. Additional downgradient wells were installed by EGLE in 2015 to evaluate the extent of the DEE groundwater contamination near the city's airport property. The 2015-2016 bi-annual groundwater sampling data confirmed that the extent of groundwater contamination (related to aesthetic screening levels) has not migrated beyond the Jerry Tyler Memorial Airport. These sampling data also confirmed that groundwater concentration of volatile organic compounds (VOCs) related to human health is stable and/or steadily reducing.

Three technical memorandums, including the Annual Trend Analysis (2014-2016), the Annual Groundwater Report (2012, 2014-2016), and the MNA Evaluations (2013-2015) were finalized and submitted to the EPA and city of Niles. The distribution of contaminants observed during the 2013, 2014, 2015, and 2016 sampling events is consistent with analytical results historically observed at the Site. Based on trend analysis, concentrations of contaminant of concern have decreased following source area remedial activities. Despite the effectiveness of the remedial activities, two areas of groundwater contamination located in the northwest (1,2-dichloroethane) and southeast (tetrachloroethylene [PCE] and trichloroethylene [TCE]) corners of the Site generally continue to exceed health-based criteria for one or more contaminant of concern. However, prior sampling trends indicate concentrations are variable but generally declining on the Site and are expected to continue to decline as a result of natural attenuation.

1,2-dichloroethane and DEE remain the primary contaminants of concerns downgradient of the Site. The 1,2-dichloroethane plume appears to be stable due to natural attenuation processes. The 1,2-dichloroethane plume is not expected to impact the city of Niles wellhead protection areas downgradient of the Site. DEE concentrations in the Jerry Tyler Memorial Airport vicinity continue to be detected in monitoring wells below health-based criteria to the west/northwest of the Airport Area, following the prominent regional groundwater flow direction. Historical DEE monitoring data indicate that the plume footprint has decreased, and it is expected that DEE concentrations will continue to decrease as the plume continues to migrate.

EGLE's data from 2012 shows that the Berrien County Health Department has been collecting drinking water samples from the residential drinking water wells from properties located within the vicinity of the groundwater contamination. The lab results confirmed that VOCs were not detected.

In 2017-2018, bi-annual groundwater sampling events were completed. EGLE prepared the 2017-18 Annual Monitoring Report and submitted it to the EPA in August 2019. Analytical results from the summer 2017 sampling indicate that the 1,2-dichloroethane plume downgradient of the Site continues to decrease in size and concentration with a few monitoring wells indicating detections slightly above health-based criteria within the highly stable plume. Concentrations of DEE detected in the Airport Area were significantly below health-based criteria but still above the aesthetic criteria. In addition to this sampling event, EGLE decided to conduct groundwater sampling on a quarterly basis for the monitoring wells in proximity to the city airport well field for analysis of VOCs. Three out of four events were conducted, and analytical results indicate DEE was not detected in any samples. However, carbon disulfide was detected in one monitoring well at a concentration significantly below the EPA ROD criteria (800 micrograms per liter). Furthermore, in June 2017, EGLE removed former groundwater treatment facility buildings to fulfill the current property owner's request. The Demolition Completion Report for the former groundwater treatment facility buildings was finalized in July 2017. These buildings were constructed in 1993 and the groundwater treatment system was operated until 2003 and have not been used since 2003 and EGLE did not anticipate using these buildings in the future.

EGLE began evaluating contaminants of concern related to vapors to determine if offsite migration may be occurring in 2014. From 2014-2017, multiple soil-gas, sub-slab, and indoor sampling events were conducted near the vicinity of the site including the residential area. EGLE finalized the 2014-2017 Vapor Intrusion (VI) Summary Report. Based on EGLE Site-Specific Volatilization to Indoor Air Criteria, concentrations of VOCs detected in indoor air samples and sub-slab samples at the residential properties, indicate that the VI pathway is fully evaluated and does not pose an

immediate risk to human health. However, concentrations of PCE and TCE detected in soil-gas samples suggest that vapors are migrating off-site in the residential area adjacent to the Site. Therefore, EGLE planned to install a VI mitigation system as a precautionary measure for the residence adjacent to the Site. However, due to the poor condition of the basement floor and walls in the house, the VI mitigation system was not installed, and it was decided to continue to monitor to assess the risk until an appropriate alternative option is selected. As a result of this new finding, new soil gas probes (5ft, 10ft, and 15ft) were installed on the north side of the house and soil-gas samples were collected to assess the risk. EGLE prepared the 2018 soil-gas technical memorandum to provide a detail of field activities and findings.

In October 2017, EGLE promulgated the 1,4-Dioxane rule package that established a new Part 201 Residential Drinking Water Criterion (DWC) of 7.2 micrograms per liter (ug/L), which is more than 10 times less than the previously established DWC (85 ug/L). Furthermore, according to the EPA's Technical Fact Sheet - 1,4-Dioxane dated November 2017, 1,4-Dioxane can occur as a contaminant at sites impacted with chlorinated solvents (particularly 1,1,1-trichloroethane [1,1,1-TCA]) because of its widespread use as a stabilizer for chlorinated solvents (EPA, 2017). Historical 1,1,1-TCA contamination at the Site had been documented. Therefore, EGLE collected groundwater samples for 1,4-Dioxane analyses as part of the ongoing screening process. Monitoring well sample results in late 2017 and early 2018 indicated the presence of 1,4-Dioxane, predominantly in downgradient well locations near the Tyler Memorial Airport. Although the source of the 1,4-Dioxane cannot be definitively attributed to the former U.S. Aviex facility, EGLE completed an investigation of the downgradient extent of 1,4-Dioxane in groundwater in late July 2018. Based on the investigation findings, new monitoring wells were installed (in January 2019) downgradient of the 1,4-Dioxane groundwater plume footprint with dissolved phase contaminant concentrations of 7.2 ug/L and greater. Additional details regarding the 1,4-Dioxane groundwater investigations and the 1,4-Dioxane monitoring well sampling activities are provided in the 1,4-Dioxane Phase I Investigation the Emerging Contaminant Sampling Summary Report. These reports were submitted to the EPA in August 2019.

Enforcement

The state received funds from the bankruptcy settlement of 1988.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/7/1988

Location Name: U.S. Aviex - OU Entire Site

Comments:
The selected remedy for the U.S.Aviex site, soil flushing and collection for on-site and off-site groundwater with treatment by air stripping, address both the two sources of contamination and the resulting off-site plume.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/30/1993

Location Name: U.S. Aviex - OU Entire Site

Comments:
This Explanation of Significant Difference (ESD) eliminates the need for installation of the soil flushing element of the remedy selected in the ROD. This change is justified by the results of additional investigation which indicated threat contaminated soil is not a significant treat to the the groundwater.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/29/2004

Location Name: U.S. Aviex - OU Entire Site

Comments:
The ROD Amendment changed the treatment method from a groundwater extraction and treatment system (P & T System) to monitored natural attenuation (MNA). MNA was also be augmented with on-site in-situ treatment (ozone sparging system) to address the newly identified contamination at or just below the groundwater/vadose zone interface.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 4/1/2004 **End Date:** 10/1/2024

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Ongoing

Primary Cost:
$125,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Monitoring of groundwater for natural attenuation of contaminants in impacted areas. Sampling costs estimated at $125,000 per year.

Response Activities - Completed

Activity: 5 Year Review

Start Date: 11/1/2018

End Date: 2/3/2020

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:
No Financial Source

Secondary Cost:

Secondary Source:

Comments:
Following recommendations were indicated in the Fifth FYR: Develop an Institutional Control Implementation Assurance Plan (ICIAP) and include the results of Site Institutional Controls (ICs) evaluation activity that have already been conducted and include a plan for: 1) future IC evaluation activity; 2) taking corrective measures to existing ICs, if needed; 3) placing additional ICs, if needed; and, 4) ensuring the LTS of the Site, which includes ongoing monitoring, maintenance, and enforcement of ICs. Also, EGLE should continue its investigations to determine the nature and extent of 1,4-D both on- and off-Site, its relationship to the Site, and inclusion into the Site GMP. New monitoring wells should be developed, surveyed, and incorporated into the current Groundwater Monitoring Plan (GMP); and lastly, although no current VI risk is present, additional subsurface investigation of vadose zone source soil to assess the persistent soil gas and underlying groundwater plume mass is recommended. EGLE is working with the EPA to address these issues in timely manner.

Activity: Remedial Investigation

Start Date: 10/1/2017

End Date: 5/13/2019

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$400,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Following tasks were completed:

1. The downgradient extent (near the municipal wells) of the 1,4-Dioxane plume was defined, both laterally and vertically.
2. A total of eight monitoring wells were installed to confirm the current extent of contamination and enable the long-term monitoring of plume migration west and northwest of the Tyler Memorial Airport.
3. Fourteen residential drinking water wells, 55 existing groundwater monitoring wells, school irrigation well and the National Standards company's private well were sampled for the 1,4-Dioxane analysis.
4. Thirteen groundwater monitoring wells were sampled for the per- and polyfluoroalkyl substances (PFAS) analysis.
5. Cost also includes FY 2018 and FY 2019 O & M cost and lab cost (Note- O & M activities were completed during remedial investigation activities in order to make entire effort more economical)

Following three reports were prepared to document summary of all findings, field activities, and recommendations.

1. 1,4-Dioxane Phase I Investigation (Technical Memorandum)
2. 1,4-Dioxane Phase II Monitor Well Installation Summary
3. Emerging Contaminant Assessment Summary Report

Activity: Operation and Maintenance

Start Date: 10/1/2016

End Date: 9/30/2017

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$147,500.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Soil gas and indoor air sampling, semi-annual groundwater sampling and report prep and finalization/cost estimates for groundwater modeling and VI mitigation system. The task objective was to remove the two former buildings and the concrete pads associated with the former groundwater treatment facility, and the capping of associated utilities below ground level. The project included restoration of the disturbed areas consistent with the surrounding area. Yearly lab cost is also included.

Activity: Operation and Maintenance **Start Date:** 10/1/2015 **End Date:** 9/30/2016

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$242,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Semi-annual sampling events and report finalization, installed permanent well nests on airport property (Dec 2015), installation of fence gate to access one well location, abandonment of mw RL-4/survey & sampling of new installed wells, soil gas and indoor air sampling, historical data map preparation, meeting with city of Niles and lab cost.

Activity: 5 Year Review **Start Date:** 1/1/2014 **End Date:** 11/27/2014

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$10,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR was completed by the EPA in November 2014. The FYR concluded that the remedy is currently protective of human health and the environment.

Activity: 5 Year Review **Start Date:** 1/8/2009 **End Date:** 11/24/2009

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$10,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA completed the FYR. The FYR concluded that the remedy is currently protective of human health and the environment.

Activity: Operation and Maintenance **Start Date:** 1/1/2007 **End Date:** 6/29/2009

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$600,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
This action included the excavation and off-site disposal of soils that contain non-aqueous phase liquids and was completed in the spring of 2009.

Activity: Alternate Water **Start Date:** 1/1/2007 **End Date:** 6/29/2009

Operable Unit:

Status:

U.S. Aviex - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	State	$0.00	

Comments:
This action extended the municipal water line and provides hook-up to the municipal system for the remaining homes that still had their own drinking water wells.

Activity: 5 Year Review | **Start Date:** 9/1/2004 | **End Date:** 10/29/2004

Operable Unit: U.S. Aviex - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Federal	$0.00	

Comments:
Concluded that the remedy is currently protective of human health and the environment; however, for the remedy to remain protective in the long-term, O & M of the remedy must be continued.

Activity: Operation and Maintenance | **Start Date:** 4/1/2004 | **End Date:** 10/1/2007

Operable Unit: U.S. Aviex - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	State	$0.00	

Comments:
O & M for the air sparge system. Interim response action completed. Levels were significantly reduced though still remain above applicable criteria.

Activity: Remedial Action | **Start Date:** 5/1/2003 | **End Date:** 4/1/2004

Operable Unit: U.S. Aviex - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$600,000.00	Federal	$60,000.00	State

Comments:
Pilot and expanded pilot test of Air Sparge/Ozone and BIOX injections.

Activity: 5 Year Review | **Start Date:** 9/30/1999 | **End Date:** 12/30/1999

Operable Unit: U.S. Aviex - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,000.00	Federal	$0.00	

Comments:
Concluded that the remedy is currently protective of human health and the environment.

Activity: Remedial Design | **Start Date:** 2/20/1999 | **End Date:** 3/20/2001

Operable Unit: U.S. Aviex - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$319,500.00	Federal	$0.00	

Comments:
Remedial Design (RD) of all additional extraction wells.

Activity: Remedial Investigation | **Start Date:** 10/30/1997 | **End Date:** 6/1/2003

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$112,500.00

Primary Source:
Federal

Secondary Cost:
$12,500.00

Secondary Source:
State

Comments:
RI downgradient plume investigation.

Activity: Long Term Remedial Action | **Start Date:** 10/13/1995 | **End Date:** 3/31/2004

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$2,459,827.00

Primary Source:
Federal

Secondary Cost:
$314,520.00

Secondary Source:
State

Comments:
The groundwater extraction system operated from 1993 to 2004.

Activity: Remedial Action | **Start Date:** 4/30/1992 | **End Date:** 9/21/1995

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$2,745,990.00

Primary Source:
Federal

Secondary Cost:
$305,110.00

Secondary Source:
State

Comments:
In September 1991, EGLE entered into an SSC with the EPA for $305,110 for the state's share of capital costs of the RA.

Activity: Remedial Design | **Start Date:** 1/30/1991 | **End Date:** 10/30/1991

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$726,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
RD of the groundwater treatment system.

Activity: Alternate Water | **Start Date:** 12/30/1986 | **End Date:** 9/30/1987

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:
$992,331.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
In September 1987, EGLE, using state funding, completed construction of an alternate water supply for Howard Township from the city of Niles. The system distributes water from the city of Niles public water supply to an estimated 220 homes in the area.

Activity: Remedial Investigation | **Start Date:** 12/30/1983 | **End Date:** 12/30/1988

Operable Unit:
U.S. Aviex - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$412,176.00	Federal	$400,000.00	Private

Comments:
This was a federal-lead, fund-financed activity. The potentially responsible party began an RI/FS to determine the extent and nature of contamination. However, the EPA took over and completed the RI.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 2/4/2024	**End Date:** 2/3/2025
Operable Unit: U.S. Aviex - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**

Comments:
Sixth 5 Year Review needed.

State Superfund Contracts

Activity: Remedial Action	**Effective Date:** 9/10/1991	**Most Recent Mod:** 5/27/2020
Location Name: U.S. Aviex - OU Entire Site		**Status:** Final Close
Total Contract: $0.00	**State Total:** $259,803.00	**State Share Balance:** $0.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00

Summary:

Federal Grants

Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $66,422.00	**Exp for Year:** $0.00
Grant #: V995746-01-LT	**Activity:** Long Term Remedial Action	**End Date:** 3/31/2004	**Status:** Closed
Fed Total Award: $3,150,177.00	**State Total Award:** $314,520.00	**Exp to Date:** $3,119,912.30	**Exp for Year:** $0.00
Grant #: V985560-01	**Activity:** 5 Year Review	**End Date:** 12/31/2003	**Status:** Closed
Budget Amount: $9,555.00	**State Total Award:** $0.00	**Exp to Date:** $9,554.63	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $31,429.00	**Exp for Year:** $0.00
Grant #: V995746-01-RD	**Activity:** Remedial Design	**End Date:**	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

U.S. Aviex

$0.00	$0.00	$314,350.41	$0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Charlevoix Municipal Well Field

State Site ID:
15000008

Federal Site ID:
53

Full Address:
Lake Shore Drive, Charlevoix, MI, 49720

County:
Charlevoix

Location

The Charlevoix Municipal Well Field site consists of several individual source areas and contaminated groundwater located under much of the city of Charlevoix. The city of Charlevoix is located on an isthmus between Lake Michigan and Round Lake, expanding along the shore of Lake Charlevoix. The population of about 3,000 residents increases to an estimated 30,000 people during the summer months. The site as it was first discovered was located on the shore of Lake Michigan and consisted of a municipal well system made of a shallow well connected to a horizontal flume buried beneath the beach. This well is no longer in use.

Status

This site was discovered in 1981 when high concentrations of TCE were identified in the municipal drinking water well during routine sampling by the Michigan Department of Public Health. In response to the high concentrations in the municipal well both the EPA and EGLE began groundwater investigations to determine the extent of the contaminant. During these investigations, a PCE plume was also discovered adjacent to the TCE plume. Throughout the history of this site, the contaminated groundwater plumes were found to underlie a large portion of the city, and several source areas were discovered. Along with the contaminated soils in the source areas and the contaminated groundwater, vapor intrusion (VI) issues have also been documented.

EGLE has continued correspondence with the EPA in matters of operation and maintenance of the 18 vapor intrusion mitigation systems and the development of the remedial design timeline and planning for future implementations of site activities for cleanup purposes.

History

In 1981, the city of Charlevoix was notified by the Michigan Department of Public Health that its groundwater was contaminated with high concentrations of trichloroethylene (TCE) which was impacting the municipal water supply. In response, the city installed four new monitoring wells near its municipal well with the assistance of EGLE. During this investigation, a portion of an adjacent tetrachloroethylene (PCE) plume was discovered to be overlapping the location of the TCE plume.

The EPA investigated the contamination and selected an initial cleanup remedy to address the TCE plume in a Record of Decision (ROD) dated June 12, 1984 (1984 ROD). In 1985, the EPA constructed a new water intake system and filtration plant using water from Lake Michigan as its source. A buried intake pipe was constructed that connects to the existing city pump house. A chlorine diffuser, anchored inside and running the entire length of the intake pipe, disinfects the water. Due to capacity issues, the EPA constructed a new water intake structure in 1992. The new intake system and water treatment plant successfully provided safe drinking water.

On September 30, 1985, after completing an investigation of site contamination, the EPA issued a second ROD (1985 ROD) that selected a remedy that included groundwater monitoring and restrictions on groundwater use. The selected alternative allows the contaminated groundwater plumes to naturally migrate and disperse into Lake Michigan. The 1985 ROD estimated that the contaminated groundwater will be purged in approximately 50 years.

Because of the EPA's decision not to pursue the PCE plume, on January 30, 1986, the state scored and listed the PCE plume as a State cleanup site known as the Charlevoix Municipal Well Field (PCE) Site (which was listed separately from the Charlevoix Municipal Well Field Superfund Site). The State conducted a Remedial Investigation (RI) on the

Charlevoix Municipal Well Field (PCE) Site and issued a Remedial Investigation (RI) report dated August 1989. The Charlevoix Municipal Well Field (PCE) Site includes three adjacent source areas: PCE sources at 204 West Lincoln Street and 207 West Garfield Avenue, and a petroleum source at 206 West Lincoln Street.

The State also listed Hooker Dry Cleaners and Art's Dry Cleaners on the State list of contaminated sites. These sites are also sources of PCE groundwater contamination. The groundwater contamination from these two sites is east and west of the main PCE plume. Groundwater flow direction from these source areas is toward the north, and west toward Round Lake and Lake Michigan.

An EPA Close-out Report was signed by the State of Michigan on August 6, 1993, and the site was deleted from the National Priorities List on December 2, 1993.

Beginning in 1994, State funds were used to install and operate soil vapor extraction (SVE) and groundwater sparge systems in all aforementioned source areas. The goal of the treatment systems was to reduce the contaminants in the source area soil and groundwater so that concentrations in the groundwater were no longer a threat to surface water resources. The systems, source area, and duration are as follows: SVE and Air Sparging (AS) (Art's, October 1994-November 1995); SVE and AS PCE Site (1997-July 2003); and SVE and AS (Hookers Dry Cleaners, August 2001-September 2002). All systems have been decommissioned and annual groundwater monitoring has taken place since 1996.

In 2006, while evaluating whether the site met the criteria for site-wide readiness for anticipated use, the EPA became aware that contaminants remained in the groundwater at concentrations higher than the levels considered protective for unrestricted use. The Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510 and the National Oil and Hazardous Substances Pollution Contingency Plan require that periodic reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use or unrestricted exposure following the completion for all remedial actions (RA) for the site. Thus, it was determined another Five-Year Review (FYR) should be conducted.

The Third FYR report was signed by the EPA in September 2011. In this FYR, the EPA concluded that "...the interim remedy at OU1 [Operable Unit 1] is protective of human health and the environment because the alternate water supply provided by the construction of a lake water intake line to the water treatment plant prevents human health exposure to contaminated groundwater...." "However, PCE contamination that remains in the soil and groundwater could potentially pose vapor intrusion (VI) risks via the indoor airway pathway and may result in a longer period of time for groundwater to return to a useable state. Additional evaluation of the source area will be necessary to confirm the determination of the protectiveness of this pathway and whether groundwater will return to a useable state within a reasonable period of time." The EPA has deferred a site-wide protectiveness determination until VI risks via the indoor pathway are addressed.

In August 2012, the EPA contractor conducted soil borings in parts of the city checking for potentially hazardous vapors released from chemicals left behind from closed dry cleaners and industries. On November 19, 2012, the EPA hosted two open house sessions to discuss the VI investigation currently underway in the community. The EPA continued this investigation through the summer of 2013.

Another round of groundwater sampling was conducted in early fall 2012 by EGLE. Monitoring wells sampled during this event included wells from the Charlevoix PCE sites and the remaining Superfund site wells. Results from this sampling event indicated that the TCE groundwater plume has discharged to Lake Michigan and no longer exceeds drinking water standards. The PCE groundwater levels in the majority of the wells sampled still exceed drinking water standards. Ongoing groundwater sampling is needed to monitor the PCE levels.

In June 2013, a public availability session was held to discuss the VI work that was completed in the latter part of June and the beginning of July. Results for indoor air samples during June-July 2013 did not exceed numbers for a removal action. Concentrations from samples from the sub-slab and soil gas points did indicate exceedances above indoor air risks. The EPA converted 70 of the soil gas points to permanent monitoring locations in November 2013. Additional sampling was planned for indoor air and sub-slab points at the three identified source area locations on the site. This sampling was completed in March 2014.

A geophysical survey was also completed by the EPA in November 2013. The results of this survey were the discovery of two orphan underground storage tanks: one located west of the former Art's Dry Cleaners and one located to the north of Whitley's Floor Covering. These underground storage tanks were confirmed with exploratory borings on December 5, 2013, and sampled March 27, 2014. The analytical results for the underground storage tank located to the

west of the former Art's Dry Cleaners indicated high levels of dry cleaning constituents.

Results from a March 2014 VI sampling event showed an immediate risk to human health and the environment, prompting the involvement of the EPA Emergency Response Branch (ERB). Further VI investigations resulted in the installation of sub-slab depressurization systems at two residences where sub-slab results exceeded indoor air numbers. The investigation continued through early 2015 and results were evaluated to determine the next course of the investigation and/or mitigation remedies.

Another round of groundwater sampling was conducted in early fall 2014 by EGLE. The PCE groundwater levels in the majority of the wells sampled still exceed drinking water standards and are comparable to results from 2013. Ongoing groundwater sampling was deemed necessary to monitor the PCE levels.

On October 29, 2014, a public availability session was held to discuss the current and upcoming VI work and removal actions being completed by the EPA and its contractors.

In November 2014, EPA contractors uncovered three underground storage tanks at the former Art's Dry Cleaners and sampled each to determine the contents. The analytical results indicated high levels of dry cleaning constituents were present in each underground storage tank. The underground storage tanks were emptied and cleaned of all contaminants and filled in place. Additional work included exploratory borings that confirmed soil conditions below the underground storage tanks were not contaminated. The removal of the underground storage tanks had been considered but was not ideal due to the proximity of the underground storage tanks to the older nearby residence. With analytical data that showed no contaminants, the need for removal was deemed unnecessary.

During 2015, the EPA ERB continued their VI investigation through September. Additional sampling was completed at a number of residences and a total of 16 sub-slab depressurization systems have been installed over this time period. The EPA ERB has since demobilized from the site and the Remedial Branch has again taken over actions on the site. The EPA continued investigations into the VI issue in the late spring of 2016 with EGLE's support. Another round of groundwater sampling was conducted in early fall 2015 by EGLE.

During 2016, the EPA completed and signed the fourth FYR in April. The EPA also started a new RI/FS in August with the U.S Army Corps of Engineers (USACE) as the primary contractor for all investigations on the site. Another round of groundwater sampling was conducted in early fall 2016 by EGLE. Monitoring wells sampled during this event included wells from the Charlevoix PCE sites and the remaining Superfund site wells. Results from this sampling event indicated, as in previous events, that the TCE groundwater plume has discharged to Lake Michigan and no longer exceeds drinking water standards. The PCE groundwater levels in the majority of the wells sampled still exceed drinking water standards and are comparable to results from 2015. Ongoing groundwater sampling was again deemed necessary to monitor the PCE levels.

The EPA's primary contractor, the USACE completed the RI/FS field activities in October 2017. EGLE's site contractor assisted the USACE in VI samplings and groundwater sampling during the spring thru the fall of 2017. The annual groundwater sampling event was completed in October 2017 by the USACE and EGLE with results showing no increase in concentrations for TCE or PCE. Monitoring wells sampled during this event included wells from the Charlevoix PCE sites and the remaining Superfund site wells. As with the previous sampling events, ongoing groundwater sampling was deemed necessary to monitor the PCE levels. The EPA and EGLE received a draft final report from the USACE on RI/FS activities in the fall of 2018.

The EPA, USACE, EGLE, and EGLE's contractor completed a VI investigation during the first week of April 2018. The investigation area included a majority of downtown Charlevoix, which is located in the northeast portion of the site. The results from the samples taken show detections that are not elevated but warrant further investigation. EGLE and EPA are collaborating on future work to address those concerns. The annual groundwater sampling event was completed in October 2018 by EGLE's consultant with results showing no increase in concentrations for TCE or PCE. Monitoring wells sampled during this event included wells from the Charlevoix PCE sites and the remaining Superfund site wells. Ongoing groundwater sampling was again deemed necessary to monitor the PCE levels.

The EPA and EGLE completed the review of the draft final report from the USACE on Remedial Investigation/Feasibility Study (RI/FS) activities conducted in the summer of 2018. The Focused Feasibility Study was finalized and discussions continued between the EPA and EGLE on implementation of the selected remedy.

Enforcement

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/12/1984

Location Name: Charlevoix Municipal Well Field - OU Entire Site

Comments:
EPA issued a ROD on June 12, 1984, for an interim action for an alternate water supply to replace the contaminated municipal well (1984 ROD). The 1984 ROD stated that the objective of the interim action was to provide a safe drinking water supply to meet the City's needs, until such time that final remedial measures could be implemented.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1985

Location Name: Charlevoix Municipal Well Field - OU Entire Site

Comments:
After completing the RI, EPA issued a second ROD on September 30,1985 (1985 ROD). The 1985 ROD selected a remedy for the groundwater contamination. The 1985 ROD states that the "objective of remedial action at the site was identified as minimizing the potential risk to the public from direct consumption of the contaminated ground water through inadvertent use of private wells by individuals unaware of the hazard." The 1985 ROD further states that groundwater will be returned to a "useable state after 50 years."

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 4/8/2020

Location Name: Charlevoix Municipal Well Field - OU Entire Site

Comments:
The total present worth cost to implement the selected remedy is $15.4 million, which includes $13,874,224 in remedial action present worth cost and $1,573,149 in present worth O&M costs over a 35-year period. Annual O&M costs are estimated at an average of $298,886 for 35 years. Costs per year vary due to periodic costs including five-year reviews and remedy component replacements. However, costs related to ISCO treatment may also increase if, during pre-design, the natural oxidant demand of the aquifer is determined to be higher than anticipated. If costs for ISCO increase significantly, EPA will reevaluate the other viable in-situ treatment options. If EPA determines that one of the other treatment options is better suited given the aquifer NOD, then EPA will document this decision in a Memo to the File, Explanation of Significant Differences (ESD) or ROD Amendment, as appropriate.

Response Activities - In Progress

Activity: Remedial Investigation **Start Date:** 10/1/2012 **End Date:** 9/30/2019

Operable Unit:
Charlevoix Municipal Well Field - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Based on the last FYR, the EPA has determined that the PCE contamination remaining in the soil and groundwater could potentially pose VI risks via the indoor airway pathway and that additional evaluation of the source area will be necessary. In August 2012, the EPA contractor conducted soil borings in part of the city checking for potentially hazardous vapors released from chemicals left behind from closed dry cleaners and industries. On November 19, 2012, the EPA hosted two open house sessions to discuss a VI investigation currently underway in the community. The EPA has held additional community engagement sessions and continues its VI investigation field work.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 7/15/2015 **End Date:** 6/1/2016

Operable Unit:
Charlevoix Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Fourth FYR was completed by the EPA in April 2016. This site has contaminants remaining in the groundwater at concentrations higher than the levels considered protective for unrestricted use. The next FYR is due in 2021.

Activity: 5 Year Review | **Start Date:** 2/17/2008 | **End Date:** 9/23/2011

Operable Unit: Charlevoix Municipal Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Federal	$0.00	

Comments:
The Third FYR report was signed by the EPA in September 2011. In this FYR the EPA concluded that "...the interim remedy at OU1 [Operable Unit 1] is protective of human health and the environment because the alternate water supply provided by construction of a lake water intake line to the water treatment plant prevents human health exposure to contaminated groundwater...." "However, PCE contamination that remains in the soil and groundwater could potentially pose vapor intrusion risks via the indoor airway pathway and may result in a longer period of time for groundwater to return to a useable state. Additional evaluation of the source area will be necessary to confirm the determination of the protectiveness of this pathway and whether groundwater will return to a usable state within a reasonable period of time." The EPA has deferred a site-wide protectiveness determination until VI risks via the indoor pathway are addressed.

Activity: 5 Year Review | **Start Date:** 1/15/2001 | **End Date:** 5/15/2001

Operable Unit: Charlevoix Municipal Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The 2001 FYR concluded that "...groundwater samples have been collected annually from monitoring wells starting in 1988 and based on the Reconciliation and Termination Agreement dated January 27, 1997, all remedial activities were completed. No further activities have been conducted at this site. Analysis of data from past sampling activities has shown a gradual decrease in contamination. Sampling has verified that the two plumes were discharged to Lake Michigan and diluted." It further stated that "...the remedies selected for this site remain protective of human health and the environment. Specifically, confirmatory sampling has verified that the ROD cleanup objectives have been achieved and all cleanup actions specified in the ROD have been implemented."

Activity: 5 Year Review | **Start Date:** 5/22/1994 | **End Date:** 9/20/1994

Operable Unit: Charlevoix Municipal Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The EPA conducted the First FYR in 1994 to evaluate whether the RA remains protective of public health and the environment. This review concluded that all recommendations given in the September 1985 ROD have been met.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 6/27/2020 | **End Date:** 6/27/2021

Operable Unit: Charlevoix Municipal Well Field - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Fifth FYR needed.

State Superfund Contracts

Activity: Remedial Action	**Effective Date:** 5/10/1991	**Most Recent Mod:** 5/27/2020
Location Name: Charlevoix Municipal Well Field - OU Entire Site		**Status:** Final Close
Total Contract: $0.00	**State Total:** $60,000.00	**State Share Balance:** $60,000.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00
Summary:		

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $761.71	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $1,969.00	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $14,177.79	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $7,178.04	**Exp for Year:** $0.00
Grant #: V00E192-01	**Activity:** 5 Year Review	**End Date:** 9/30/2011	**Status:** Closed
Budget Amount: $10,000.00	**State Total Award:** $0.00	**Exp to Date:** $10,000.00	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $34,340.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Cannelton Industries, Inc.

State Site ID:
17000001

Federal Site ID:
8R

Full Address:
South St. between 12th & 18th Sts., Sault Ste. Marie, MI, 49752

County:
Chippewa

Location

The Cannelton Industries, Inc., site (the Site) is located in Sault Ste. Marie, Michigan, on the shore of the Saint Mary's River, Chippewa County. The site is bounded on the south by 4th Avenue West, 16th Street, and South Street, to the west by 18th Street West, to the east by 12th Street West and a coal dock, and to the north by the Saint Mary's River.

Status

The site is a former leather tannery which operated from 1900 to 1958. Site cleanup actions were completed in 2007.

In 2018, EPA Region 5 worked with the EPA Headquarters to redevelop and redraft the Final Close Out Report. The initial Final Close Out Report was not approved by the EPA Headquarters because the potentially responsible party (PRP) had not completed all of the required sampling from the 2008 Operations and Maintenance (O&M) plan. The Final Close Out Report documents the completion of all necessary cleanup actions at the site. Throughout 2019, EGLE and EPA Region 5 staff worked with EPA Headquarters to determine what criteria still needed to be met for the site to qualify for delisting.

The fourth Five Year Review (FYR) was initiated in late 2018 and was completed in August 2019.

In 2019, EGLE (formerly known as the MDEQ) requested that the PRP sample groundwater at the site for per- and polyfluoroalkyl substances (PFAS) because the site was historically used as a tannery. Tanneries have been known to use PFAS as a waterproofing agent. The PRP prepared a groundwater sampling work plan and quality assurance project plan that was approved by EGLE and EPA in August 2019. The PRP collected PFAS samples from the groundwater at the site in November 2019. The results from the PFAS investigation are expected in early 2020.

History

The site is a former leather tannery, the Northwest Leather Company, which operated from 1900 to 1958. The company dumped solid waste materials and piped liquid wastes from the tanning operations into a riverine wetland on the Saint Mary's River. High concentrations of chromium and mercury and significant concentrations of other heavy metals and polynuclear aromatic hydrocarbons contaminated site soils and river sediments.

The site includes the former tannery plant site (now demolished), waste disposal areas along the river, and portions of the river where eroded shoreline wastes settled into the sediment. An approximately two-acre portion of the disposal area, referred to as the barren zone because of the stressed vegetation and blue-green soils/wastes, had the highest levels of soil contamination on-site and had experienced spontaneous periodic fires during dry summer months. Some disposal of drums was also evident along a portion of the shoreline several hundred yards west of the barren zone.

The EPA conducted a fund-lead remedial investigation/feasibility study (RI/FS) from 1989 through 1992. Actions were taken by the PRPs to isolate the highly contaminated barren zone including construction of a fence and seawall. In 1990, the PRPs also installed a temporary sprinkler system in the barren zone, and dug trenches for aeration. Since then, no fires have occurred. In the fall of 1991 and the spring of 1992, the PRPs fenced most of the site and extended the seawall. The EPA conducted ecotoxicological studies and an ecological inventory. EGLE conducted several contaminant leachability studies on site soils and sediments to assist in the establishment of cleanup criteria.

The Record of Decision (ROD) was issued by the EPA on September 30, 1992, calling for removal and disposal of

debris, waste, soils, and sediments in an on-site landfill, treatment of groundwater collected during the dewatering activities as part of construction, groundwater monitoring, and land-use restrictions for the landfilled area. The state withheld concurrence on the ROD pending completion of pre-design studies.

In April 1993, the EPA and the PRPs signed an Administrative Order by Consent (Order) for the remedial design (RD). In the beginning phases of RD, the PRPs completed the pre-design studies and used the findings to propose significant amendments to the ROD. The EPA accepted the PRP's proposal, and amended the ROD in September 1996 to reduce the volume of soil to be excavated, about 35,000 cubic yards, based on documentation of the chemical stability of the waste. The State of Michigan concurred with the amended ROD since it included adequate ROD-reopener language with contingencies based on planned sediment bio-uptake and storm-induced sediment erosion studies. The preliminary design was also completed at that time. Though the preliminary design had been written for the original ROD, most of it was usable for the amended ROD. In conjunction with the National Oceanic and Atmospheric Administration, also completed studies on the erodibility of contaminated sediments and bioavailability of sediment contaminants. The remedial action (RA) construction was completed in the summer of 1999, including the removal of barren zone and shoreline wastes, some fence removal, well abandonment, new well installation, and additional shoreline stabilization. The groundwater monitoring wells were removed upon completion of post dredging verification sampling requirements. The 2010 Explanation of Significant Differences (ESD) formalized the removal of biomonitoring from the long-term O & M requirements.

High concentrations of mercury and chromium remained in site sediments and soils, and questions remained as to the bioavailability of these metals. Post-remedial baseline and year-one sediment contaminant bio-uptake studies were done during 2000 and 2001. Further bio-uptake studies would be necessary in future years if sediments were left in place.

Instead of having the PRPs continue to conduct bio-uptake studies, EGLE advocated for a cost-shared sediment removal, to improve upon the EPA's preferred remedy. Another biomonitoring study was planned for 2004, but this was put on hold pending the outcome of an application for Great Lakes Legacy Act funding, which would be used to dredge the contaminated sediments, thus obviating the need to do ongoing biomonitoring studies. Soon thereafter the EPA Great Lakes National Program Office began using Great Lakes Legacy Act funds to cost-share sediment removals in Areas of Concern, and this site qualified. A three-party cost-share project agreement between EGLE, the EPA-Great Lakes National Program Office, and the property owner Phelps Dodge, was signed in 2006; and the work of removing sediments began in 2006 and was completed in September 2007. The EPA Superfund Program was not involved in the agreement, but supported the work.

The First Five-Year Review (FYR) was conducted by the EPA and signed on July 30, 2004. The EPA concluded that the RA is functioning as intended and is protective in the short-term. Long-term monitoring is being conducted to insure proof of remediation in the long term.

The Second FYR was completed by the EPA on September 11, 2009. The EPA concluded that the remedy is functioning as designed and is protective, although some long-term monitoring will be necessary.

An ESD document was signed on March 23, 2010. The purpose of this document was to modify the remedy that had been selected in the September 27,1996, ROD Amendment by eliminating the requirement for biological monitoring. The parties agreed that the biological monitoring was no longer necessary because of the sediment removal project that was completed in 2007.

MDEQ staff completed work with the PRP group and implemented appropriate Restrictive Covenants on the property in 2013.

Discussions of deleting the site from the National Priorities List (NPL) between the site owner and the Agencies were initiated in early 2013. In 2013, the EPA Remedial Project Manager (RPM) also started work on a Final Close Out Report for the site.

The Agencies met on-site with the PRPs in August 2013 for a pre-FYR Site Inspection. EGLE Project Manager (PM) addressed some outstanding loose ends regarding two small unrestored wetland excavation areas shortly thereafter. Although no restoration actions were called for in the RA, EGLE PM provided the PRPs with suggestions of optional follow-up actions for faster recovery.

Additional O & M sampling was completed in 2013. The EPA Headquarters staff also determined that modifications to the O & M Plan were needed in order to monitor the areas with contamination remaining in place, particularly the

wetland area.

In the process of gathering details for the Final Close Out Report, the EPA RPM, in consultation with EGLE PM, determined that the required post-dredging confirmation sampling and long-term monitoring work had not been executed after the dredging was completed. Numerous communications between the Agencies and the PRPs took place early in 2014 and resulted in completion of the post-dredging sample collection and reporting.

In late 2015, EPA Headquarters staff determined that the existing O & M Plan needs modification and expansion in order to adequately monitor areas where contaminated media remain in place. The NPL deletion has been delayed in order to modify the O & M Plan and collect additional data.

Throughout 2016, the Agencies continued to work in cooperation with the PRPs to modify the O & M Plan to monitor the areas where contaminated media remains in place and to address outstanding ROD amendment items in order to develop a reasonable path toward deletion of the site from the NPL.

In early 2017, the Agencies reviewed and provided comments on the September 2016 Surface Water and Sediment Sampling Event for the Tannery Bay. Review of the data indicated the majority of the site contamination concentrations were either non-detect or below site cleanup criteria. However, mercury was detected in five of the bay surface water samples above the cleanup criteria.

Throughout 2017, the Agencies continued to work with the PRPs to determine what sampling will be required to be included in the revised O & M Plan. It is anticipated once the revised O & M Plan is approved, sampling will begin in 2018. EGLE and the EPA also worked with Sault Ste. Marie city officials to return completed portions of the site to productive use. Key portions of the site are ready for reuse at this time.

Throughout 2018, the Agencies continued to work with the PRPs to determine what sampling will be required to be included in the revised Operation and Maintenance (O & M) Plan.

Enforcement

Cyprus-Amax Minerals Company was the lead PRP at this site during the RD and construction. Under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA), they funded the interim response, RD, RA, additional studies, shoreline stabilization, and all other actions beginning with their purchase of the site in 1992 and ending with their sale of the site in December 1999 to the Phelps Dodge Company. The Phelps Dodge Company did not provide a Baseline Environmental Assessment upon purchase of the site, and may have thereby assumed state liability for the site, in addition to their pre-existing liability under CERCLA. EGLE continues to serve as a liaison to the EPA regarding consistency of the federally required activities with state statutes.

In efforts to complete site closure activities and assess outstanding site issues, Agency staff sorted through existing legal and routine site correspondence. Additional efforts were made to bring the PRPs up-to-date regarding overlooked post-dredging requirements and monitoring. Data results are being evaluated in order to develop an updated path forward; including possible modifications to the O & M Plan regarding surface water mercury sampling.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1992

Location Name: Cannelton Industries, Inc. - OU Entire Site

Comments:
The state did not concur with the ROD.

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 9/27/1996

Location Name: Cannelton Industries, Inc. - OU Entire Site

Comments:
The state concurred with the ROD Amendment, but with the contingency that the sediment remedy would be based on agreeable interpretations of sufficient bio-uptake studies.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 3/23/2010

Location Name: Cannelton Industries, Inc. - OU Entire Site

Comments:
The purpose of this document was to modify the remedy that had been selected in the September 27, 1996, ROD Amendment by eliminating the requirement for biological monitoring. The parties agreed that the biological monitoring was no longer necessary because of the sediment removal project that was completed in 2007.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 9/13/2008 **End Date:** 12/31/2030

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:
$45,000.00

Primary Source:
Private

Secondary Cost:

Secondary Source:

Comments:
Remedial actions at the site included the excavation of contaminated soil from the shoreline and various parcels on site, installation of a shoreline berm for erosion control, protective vegetated cover, perimeter fencing, and restrictive covenant notification plaques. O & M at the site includes a site inspection in ensure the integrity of the remedy and repairs if necessary. O & M is ongoing.

Activity: Monitoring **Start Date:** 9/30/2007 **End Date:** 11/30/2021

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Post-Excavation confirmation sampling was required as part of the dredging agreement. surface water and sediment sampling has taken place intermittently between 2007 and 2018. The agencies are in the process of evaluating that data to determine when sampling can be discontinued.

Cost information for this action was requested by the PRP, but was not made available.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 8/8/2018 **End Date:** 9/13/2019

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$33,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The 2019 FYR determined that the remedy was functioning as intended and remained protective in the short-term. A Restrictive Covenant and Environmental Easement has been placed on the property. A long-term stewardship plan has been developed for use along with the required site O & M activities to ensure that the procedures to properly maintain, monitor, and enforce Institutional Controls are adhered to that ensure long-term success of the remedy and long-term protection of human health and the environment.

EGLE identified the need to test for per- and polyfluoroalkyl substances (PFAS) at the site because PFAS has been known to be used at former tannery sites. The PRP developed a PFAS sampling plan that was approved in 2019 and

will be implemented in 2020.

EGLE concurred with the 2019 FYR.

Activity: 5 Year Review | **Start Date:** 8/11/2013 | **End Date:** 8/8/2014

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$25,000.00	Federal	$0.00	

Comments:
The 2014 FYR determined that the remedy was functioning as intended and remained protective in the short-term. A Restrictive Covenant and Environmental Easement has been placed on the property. A long-term stewardship plan is being developed for use along with the required site O & M activities to ensure that the procedures to properly maintain, monitor, and enforce Institutional Controls are adhered to that ensure long-term success of the remedy and long-term protection of human health and the environment.

Activity: 5 Year Review | **Start Date:** 8/27/2008 | **End Date:** 8/11/2009

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$35,000.00	Federal	$0.00	

Comments:
The EPA concluded that the RA was functioning as designed and remained protective. Some long-term monitoring was required since some low-level waste was left in place.

Activity: 5 Year Review | **Start Date:** 2/1/2004 | **End Date:** 7/30/2004

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$35,000.00	Federal	$0.00	

Comments:
The EPA concluded that the RA was functioning as intended and was protective of human health and the environment in the short-term. Long-term monitoring was undertaken to ensure that long-term protectiveness was maintained at the site.

Activity: Remedial Action | **Start Date:** 12/31/1999 | **End Date:** 9/30/2007

Operable Unit:
Cannelton Industries, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,500,000.00	Federal	$3,500,000.00	Private

Comments:
The soil remediation was completed in the summer of 1999, including the removal of barren zone and shoreline wastes (32,000 tons or 35,000 cubic yards), fence removal, well abandonment, new well installation, and additional shoreline stabilization. Private party costs of this activity are unknown. The dredging was successfully completed in 2007. Sediment dredging was performed under a three-party agreement including the EPA-Great Lakes National Program Office using Great Lakes Legacy Act funds, the site owner Phelps Dodge Company, and the State of Michigan, which contributed $600,000. The result was an improved more permanent remedy for the sediments than the in-situ stabilization remedy previously selected by the EPA-Superfund.

Activity: Operation and Maintenance | **Start Date:** 9/28/1999 | **End Date:** 3/23/2010

Operable Unit:

Status:

Cannelton Industries, Inc. - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The 1992 ROD called for long-term monitoring including biological monitoring. The 1996 ROD Amendment and sediment removal action included excavation and off-site disposal of contaminated soils and tannery waste materials from the former Barren Zone, Southern Shoreline, and Western Shoreline. Challenges associated with organism survival and obtaining of mercury free native species proved to be unreasonable; this fact, in combination with the completion of removal efforts, led MDEQ staff to support discontinuation of the long-term biological monitoring. An ESD that was signed on March 23, 2010, and officially released in July 2010, stated that the biological monitoring was to be eliminated from the remedy selected in the September 27, 1996, ROD.

Activity: Remedial Design | **Start Date:** 5/10/1993 | **End Date:** 7/1/2007

Operable Unit: Cannelton Industries, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$324,000.00	Federal

Comments:
The PRP conducted the RA with EPA oversight.

Activity: Negotiations | **Start Date:** 2/5/1993 | **End Date:** 4/12/1993

Operable Unit: Cannelton Industries, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$35,000.00	Federal	$0.00	

Comments:
RD/RA negotiations.

Activity: Remedial Investigation | **Start Date:** 9/27/1988 | **End Date:** 9/30/1992

Operable Unit: Cannelton Industries, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,080,000.00	Federal	$0.00	

Comments:
No Comment entered

Activity: Negotiations | **Start Date:** 6/28/1988 | **End Date:** 9/27/1988

Operable Unit: Cannelton Industries, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
RI/FS negotiations.

Activity: Interim Response | **Start Date:** 6/11/1988 | **End Date:** 7/1/1988

Operable Unit: Cannelton Industries, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Federal	$0.00	

Comments:
No Comment entered

Response Activities - Future Need

Activity: Remedial Investigation		**Start Date:** 11/11/2019	**End Date:** 6/1/2020
Operable Unit: Cannelton Industries, Inc. - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Private	**Secondary Cost:**	**Secondary Source:**

Comments:
The PRP will install 6 monitoring wells and sample the groundwater for per- and polyfluoroalkyl substances (PFAS) as requested by EGLE during the 2019 FYR process to address a data gap about whether or not PFAS is present in groundwater onsite.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $10,121.22	**Exp for Year:** $4,827.12
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $4,286.75	**Exp for Year:** $1,668.32
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $3,194.79	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $8,229.76	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $67.35	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $49,791.09	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $106,549.67	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:**	**End Date:**	**Status:**

Cannelton Industries, Inc.

	Negotiations	9/30/2003	Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $17,145.53	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $84,500.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Clare Water Supply

State Site ID:
18000006

Federal Site ID:
55

Full Address:
Clare Industrial Park, Clare, MI, 48617

County:
Clare

Location

The site is centered in the Clare Industrial Park area on the southwestern side of the city of Clare. The site is bounded on the north by US 10/Business Route (Main Street), on the east by Maple Street, on the south by Dunlop Road, and near the western limits of the city by the Mitchell property. The land-use around the site is a mix of industrial, residential, and commercial.

Status

The Michigan Department of Health and Human Services discovered contamination in some of Clare's public water supply wells. This occurred in 1981 as the result of a statewide effort to sample public water supplies for volatile organic contaminants (VOCs). There are four municipal production wells.

City production wells continue to operate and serve as groundwater contamination extraction wells. The extracted water continues to be treated by air stripping prior to being pumped to the city's distribution system. The potentially responsible parties (PRPs) continue to sparge at the Stage Right 1999 Time Critical Removal Action and operate the Ex-Cell-O treatment cell.

In June 2017, EGLE requested the EPA require prompt site-wide vapor intrusion (VI) investigation due to new VI screening values being developed. In particular, the Stage Right source area should be immediately investigated due to likely source material underneath the Stage Right building and high trichloroethylene (TCE) groundwater concentrations at that location. In May 2018, EGLE requested the EPA Removal Branch conduct VI investigation. At the EPA's request, the Illinois Tool Works responsible party submitted a proposal for indoor air monitoring which EGLE determined inadequate as a VI investigation. As this reporting period ended, negotiations for an acceptable work plan were ongoing.

The EPA and EGLE continue discussions with the responsible parties regarding the 2017 Optimization Report recommendations. At the agencies request, the responsible parties agreed to sample the groundwater for per- and polyflouroaklyl substances (PFAS).

History

In 1981, VOCs were discovered in some of Clare's public water supply. Sampling revealed VOCs in two of the four wells: Municipal Well #2 (MW-2) and Municipal Well #5 (MW-5), subsequently replaced with adjacent Municipal Well #8 (MW-8) and Municipal Well #9 (MW-9) , respectively. This was due to releases of waste solvents and other hazardous materials to soils and groundwater in the city's industrial park. Concentrations of VOC contamination up to 48 parts per billion (ppb) were also found in two monitoring wells located in the northeastern portion of the site. However, these high concentrations were not found in the city water supply due to volatilization that occurred within the system prior to distribution.

The city of Clare (City) reduced the levels of contaminants in its water distribution system by increasing the production of uncontaminated wells and reducing the use of the contaminated wells. The City also aerated the supply water to remove VOCs. These steps usually kept the concentrations of contaminants from exceeding federal drinking water standards. However, during peak demand periods the increased use of the contaminated municipal wells caused the levels of TCE to reach the maximum concentration limit of 5 ppb allowed under the Michigan Safe Drinking Water Act, 1976 PA 399, as amended.

Initial actions to address the contamination were completed from 1983 to 1988. EGLE conducted a preliminary assessment in 1983. In 1984, the EPA conducted a site inspection, listed the Clare Water Supply site (Site) on its National Priorities List, and identified PRPs. At the request of EGLE, the PRPs agreed to remove some of the contaminated soils that were serving as a source of contamination in groundwater and ultimately the municipal wells. The PRPs completed these actions during May 1987 and January 1988.

The EPA instituted remedies for two separate operable units (OUs). OU1, the interim remedial action (RA) to protect the public water supply, began in 1990. The EPA established a final remedy for contaminated soil and groundwater in source areas that contributed to contamination in the municipal supply. This remedy is called OU2. Both of these OUs are described in their own sections below.

A remedial investigation/feasibility study (RI/FS) was completed in February 1992.

In September 2001, the EPA completed its First Five-Year Review (FYR) of the Site. It concluded that the remedial actions were still effective and that the remedies protected the municipal water supply.

In 2003, EGLE began evaluating the presence of 1,4-dioxane in public water supplies around the state. It found concentrations of 3 and 5 ppb in both of Clare's impacted MW-2 and MW-5. With EGLE's encouragement, the EPA asked Clare to begin monitoring for this chemical of concern. For further details, see the section below on the first OU.

A FYR was conducted in 2006. The EPA concluded that the remedy is protective in both the short and long-term. Long-term protectiveness of the overall groundwater RA relies upon the continued operation and maintenance (O&M) of the air strippers for flow from MW-2 and MW-5 until water quality at those wells is generally below Maximum Contaminant Levels (MCLs) and effective Institutional Controls (ICs).

OU1 remedy: interim action to protect the public water supply.

The EPA decided to address the problem in a more comprehensive manner after the PRPs completed initial actions. In August 1990, the EPA issued an interim action Record of Decision (ROD) for the interim action OU to protect the public water supply. This action was funded by the PRPs, which required treatment of the groundwater before distribution to the public water supply system. The ROD also required monthly sampling and analysis of the water before and after treatment. The treatment utilized two air stripping treatment towers. This system began operating in March 1991 and continues to operate today.

The EPA later modified the groundwater remedy for this interim action. This was described in an Explanation of Significant Difference (ESD) in August 1995. The modified groundwater extraction and treatment system was constructed and went on-line in August 1996. This modified system utilized the two existing air strippers, along with an additional extraction well, PRP-1, which had its own separate air stripper. PRP-1 was installed to increase groundwater capture and treatment capacity. The treated water was then piped into the municipal water distribution system.

EGLE evaluated the need for adding a new chemical of concern (COC), 1,4-dioxane, to the regular analysis of Clare's municipal water supply. EGLE suggested to the EPA that this be done, and the EPA then communicated this to the City in 2005. The City added this parameter to their water supply sampling and is now sampling quarterly for this toxic chemical. Concentrations to date have ranged from less than 1.0 to 5.0 ppb.

In Fiscal Year (FY) 2005, the City notified the EPA that MW-2, which is a part of the interim action OU remedy, was failing. This issue was evaluated and the PRPs agreed to pay for its replacement. The city installed the replacement well (MW-8) and began operating it in September 2006. Both the old well and the new one have been part of the required remedy for this OU. This installation was described in a 2004 ESD.

Concentrations of chemicals of concern in the treated public water supply have shown concentrations mostly below detection, at less than 1 ppb. Occasionally, a monthly sample has shown levels between 1 and 2 ppb, but all below drinking water standards.

OU2 remedy: final remedy to clean up remaining soil and groundwater contamination acting as source areas.

A second ROD was signed on September 16, 1992, for OU2, the final response to address remaining soil and groundwater contamination (soil and groundwater remedy OU). It called for in-situ soil vapor extraction (SVE) to treat the remaining contaminated soils and sediments. Contaminated groundwater was to be treated using ultraviolet

photochemical oxidation.

The original SVE soils remedy was revised in several actions beginning in 1997. In May 1997, a ROD amendment was completed. The amended ROD called for actions to excavate and consolidate contaminated soils into an on-site containment cell at the Ex-Cell-O facility along Main Street in the northwest part of the Site. The change was made because the contaminated soils in the industrial park were not conducive to SVE treatment. The construction of the containment cell, including the cap, was completed in June 1999. The removal of the contaminated soils from exposed areas of the Site and disposal into the containment cell significantly reduced the soils as a source of the groundwater contamination. Potential residual contamination likely remained, especially in deeper soils near the water table. The city's water supply continues to be monitored to ensure that its drinking water continues to be safe for human consumption.

In FY 2003, the PRPs and the EPA completed an Engineering Evaluation/Cost Analysis for a proposed revision to the soil and groundwater remedy OU. Its purpose was to evaluate alternatives for managing high levels of vinyl chloride found in unconfined, shallow groundwater near the former Mitchell facility (now the Filcon facility). This contamination posed a potential risk to at least one of Clare's municipal wells.

In FY 2004, the EPA drafted another ESD document to describe the reason for changing the remedy.

In FY 2005, an addition to the final remedy was constructed at the Filcon facility, known as a permeable reactive barrier (barrier). This barrier is designed to passively treat shallow groundwater contaminated with VOCs. The PRPs installed the barrier in December 2004. It consisted of two approximately parallel trenches in the ground that were 175 feet long and 16-20 feet below ground. The trenches were backfilled with an iron-impregnated, carbon-coated silica sand material that provides the treatment media. A public meeting was held in Clare in April 2005 to discuss issues related to the barrier. In order to evaluate the effectiveness of the barrier, a network of monitoring wells were installed in May 2005.

In April 2009, the PRP Group installed four pneumatic pumps in existing dual vapor extraction wells at the Ex-Cell-O source area. This has resulted in reduced groundwater elevations and increased contaminant removal from this location.

The EPA had the Third FYR signed September 20, 2011. EGLE did not agree with many of the statements and conclusions reached in this FYR and had the EPA attach the EGLE comments to the final FYR. Key unaddressed issues EGLE identified included: 1) more effort needs to be placed on source remediation instead of relying on the municipal wells to "contain" the contaminant plume, 2) 1,4-dioxane needs to be included as a COC, cleanup criteria established, and effort placed on identifying the source, 3) the need to make Stage Right a part of the remedy and require source area remediation, not trying to modify an ineffective 12 year old "time critical" removal action, 4) the contamination at Standard Oil needs to be addressed.

The Stage Right source area began a time critical removal action in 1999 with the goal being for the TCE groundwater contaminant concentrations to be reduced to 300 ppb within one year of operation and, ultimately achieve the site-wide cleanup criteria of 5 ppb in order to protect the adjacent municipal wells. Because neither goal had been achieved after twelve years of operation, the EPA requested and, in January 2010, EGLE provided the EPA with a technical evaluation of the 1999 "time critical" removal action at the Stage Right source area that indicated the remedy is not functioning as designed and has not met the cleanup objective. The EGLE evaluation also recommended "Proper data collection to verify the remedial action is protective of human health, and that no unacceptable exposures are occurring." The EPA subsequently provided this evaluation to the PRPs who subsequently submitted its own evaluation with a different conclusion. In 2012, the PRPs installed limited modifications (additional sparge well clusters, a new ozone delivery system) to the existing system and refused to implement the EPA and EGLE recommended actions. EGLE continues to be concerned that the ongoing actions at Stage Right will not achieve removal action cleanup goals due to system design issues.

In 2013, EGLE staff began working with the City to secure an ordinance to protect against exposures associated with the site. The ordinance was finalized in June 2014. The ordinance, in the interest of the public health, safety, and welfare, essentially establishes restricted zones in which certain uses of groundwater are prohibited. EGLE provided a copy to the EPA.

In the fall of 2015, staff and management from EGLE and the EPA met twice to discuss the direction of the site and the ability of the remedy (as it is currently operating) to meet the remedial objectives of aquifer restoration within a reasonable time. The 1992 ROD called for an expedited remedy and anticipated no more than 30 years to achieve

aquifer restoration. It is apparent that the aquifer will not achieve restoration by 2022. Late in 2015, the EPA agreed to have a technical evaluation of the site and the remedies conducted by the EPA's technical group from its Washington D.C. headquarters. This technical evaluation was conducted in 2016 and the draft report submitted to all parties in December 2016.

In 2017, the Optimization Report was finalized and the agencies discussed the following report recommendations with the responsible parties: evaluate potential VI at Stage Right, additional characterization for 1,4-dioxane, analyze groundwater for emerging contaminants, specific recommendations to provide enhanced site characterization, consider other treatment options for the Soil Remedy Area, develop a remedial strategy for the Stage Right treatment area, evaluate options for continued use of municipal wells for the groundwater remedy, improved data management and analysis. The report also recommended the EPA determine the need to sample for PFAS. EGLE recommended that the EPA require PFAS sampling at the site due to historic site uses.

Enforcement

The group of four PRPs continues to undertake required response actions at the Clare Water Supply site under a Unilateral Administrative Order issued by the EPA in 1990. The group owned and operated facilities, either directly or through successor acquisition, that were source areas of the contamination. The group is comprised of Coltec Industries, Inc., Textron, Inc. (formerly Ex-Cell-O), United Technologies Automotive Corporation, and Illinois Tool Works.

Several on-site source areas, Stanley Oil, Standard Oil, and American Dry Cleaners, were identified in the RI report that have no current remediation work being performed. The site PRP group claims no responsibility for these source areas. EGLE Saginaw Bay District Office staff has indicated that additional efforts at these locations is unlikely due to these locations being a part of a Superfund site, work load, and funding availability. EGLE has notified the EPA that they should address these areas as part of the Superfund site. In 2013, the Saginaw Bay District Office issued a No Further Action letter for benzene, toluene, ethylbenzene, and zylene-related contamination at Standard Oil. Other chlorinated contaminants may need to be addressed at this location.

Operable Units for Clare Water Supply

OU1 Interim Action Wellhead Treatment

OU2 Soil and Groundwater Pump and Treat

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 8/18/1990

Location Name: OU1 Interim Action Wellhead Treatment

Comments:
Interim action ROD to treat municipal water.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/16/1992

Location Name: OU2 Soil and Groundwater Pump and Treat

Comments:
The ROD selected a combined remedy calling for use of deed and/or access restrictions as necessary; SVE; and a groundwater extraction and treatment system using ultraviolet photochemical oxidation.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 8/4/1995

Location Name: OU2 Soil and Groundwater Pump and Treat

Comments:
Groundwater remedy was changed to continue to utilize the air stripping towers that were installed as part of an emergency action. One additional extraction well and one additional air stripper were added to increase the capture and treatment capacity.

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 5/15/1997

Location Name: OU2 Soil and Groundwater Pump and Treat

Comments:
The ROD was amended to change soil remedy to excavation and encapsulation in an on-site containment cell.

Record of Decision	**Amendment:** 0	**ESD:** 2	**Effective:** 9/29/2004

Location Name: OU2 Soil and Groundwater Pump and Treat

Comments:
An ESD was issued to:

1. Construct a permeable reactive barrier at the Mitchell facility;
2. Replace a city municipal/extraction well;
3. Adoption of new Groundwater Surface Water Interface Criteria for xylene and ethylbenzene.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 7/1/1999 | **End Date:** 12/21/2022

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$2,634,000.00	Private	$0.00	

Comments:
O & M and monitoring of the permeable reactive barrier and soil containment cell remedy. Estimated end date will likely change based on site conditions and which (if any) of the 2017 technical recommendations are implemented.

Activity: Operation and Maintenance | **Start Date:** 3/7/1992 | **End Date:** 3/7/2022

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$540,000.00	Private	$0.00	

Comments:
This is for operating and maintaining the pump and treat air strippers, and for monitoring the water quality at the extraction wells, which include a municipal supply well. Aquifer restoration is not achievable by the estimated end date. EPA technical group evaluated the site and remedy in 2016 and submitted a draft report in December 2016. Estimated end date is based on 30 years from the ROD and will likely have to be extended.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 4/29/2015 | **End Date:** 9/16/2016

Operable Unit:
Clare Water Supply - OU Entire Site

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	TBD	$0.00	

Comments:
The EPA signed the Fourth FYR on September 16, 2016. The EPA's review concluded that the remedy is protective in the short-term. In order for the remedy to be protective in the long-term, "the following actions need to be taken to ensure protectiveness: evaluate VI at the site (including, at a minimum under the Stage Right building and Fostoria Screw) based on the new regulation/guidelines; complete the site-wide Remedy Optimization Review to evaluate TCE under the Stage Right building and provide recommendations to address continued high concentrations of TCE in

groundwater; and provide annual written notification to MDOT to ensure the road workers are aware of site-related contamination in the US 10 ROW."

Activity: 5 Year Review | **Start Date:** 6/29/2011 | **End Date:** 9/20/2011

Operable Unit:
Clare Water Supply - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The EPA signed the Third FYR on September 20, 2011. EGLE did not agree with many of the statements and conclusions reached in the FYR and had the EPA attach EGLE's comments to the final FYR report. Key issues EGLE identified as not being adequately addressed at the site or in the FYR: 1) more effort needs to be placed on source remediation instead of relying on the municipal wells to "contain" the contaminant plume, 2) 1,4-dioxane needs to be included as a COC, cleanup criteria established, and effort placed on identifying the source, 3) the need to make Stage Right a part of the remedy and require source area remediation, 4) the contamination at Standard Oil needs to be evaluated and addressed.

Activity: 5 Year Review | **Start Date:** 6/23/2005 | **End Date:** 9/28/2006

Operable Unit:
Clare Water Supply - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
This Second FYR was completed by the EPA with EGLE's assistance. EPA's report concludes the following: "The imminent threats at the site have been addressed and the remedy provides both short and long-term protection of human health and the environment because impacted drinking water is being treated via air stripping prior to mixing with unimpacted drinking water for further treatment in the City's public water supply system prior to distribution. Exposure pathways that could result in unacceptable risk are being controlled and are preventing exposure to and ingestion of contaminated groundwater. Long-term protectiveness of the overall groundwater remedial action relies upon the continued operation and maintenance of the air strippers for flow from MW-2 and MW-5 until water quality at those wells is generally below MCLs, after which the City may opt to maintain the air strippers for long-term use until all groundwater within the City's Wellhead Protection Area exhibits concentrations generally below MCLs. Long-term protectiveness is also dependent upon effective Institutional Controls that are maintained and monitored."

Activity: Remedial Action | **Start Date:** 12/13/2004 | **End Date:** 5/31/2005

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$300,000.00	Private	$0.00	

Comments:
A permeable reactive barrier was installed along with a monitoring well network in FY 2005. The estimated cost to the PRP Group was $300,000. The completion date was in May 2005.

Activity: 5 Year Review | **Start Date:** 9/3/2001 | **End Date:** 9/30/2001

Operable Unit:
Clare Water Supply - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,000.00	Federal	$0.00	

Comments:
The EPA prepared the FYR with State assistance. The EPA concluded that the Site remains protective although specific areas within the Site are still under active remedial actions.

Activity: Remedial Design | **Start Date:** 6/15/2001 | **End Date:** 11/30/2004

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:
$20,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Remedial Design for the installation of a permeable reactive barrier to treat contaminated groundwater at the Filcon facility, formerly known as the Mitchell facility, was completed in FY2005.

Activity: Remedial Action | **Start Date:** 4/28/1998 | **End Date:** 6/15/1999

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:
$1,361,200.00

Primary Source:
Private

Secondary Cost:
$55,000.00

Secondary Source:
Federal

Comments:
Excavation of contaminated soils into an on-site containment cell constructed by the PRP group.

Activity: Remedial Design | **Start Date:** 5/15/1997 | **End Date:** 4/28/1998

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Design of soil containment cell by PRP group. Cost unknown.

Activity: Remedial Action | **Start Date:** 10/3/1995 | **End Date:** 8/26/1996

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:
$220,000.00

Primary Source:
Private

Secondary Cost:
$180,000.00

Secondary Source:
Federal

Comments:
Construction of enhanced groundwater capture and treatment via air stripping.

Activity: Remedial Design | **Start Date:** 9/17/1993 | **End Date:** 10/3/1995

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$200,000.00

Secondary Source:
Federal

Comments:
Design of groundwater remedy by PRP group. Costs unknown.

Activity: Remedial Action | **Start Date:** 3/7/1991 | **End Date:** 3/7/1992

Operable Unit:
Clare Water Supply - OU1 Interim Action Wellhead

Status:
Completed

Treatment

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$530,000.00	Private	$105,000.00	Federal

Comments:
Construction of air stripping towers to treat municipal water supply.

Activity: Remedial Design | **Start Date:** 9/14/1990 | **End Date:** 3/7/1991

Operable Unit:
Clare Water Supply - OU1 Interim Action Wellhead Treatment

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	

Comments:
No Comment entered

Activity: Interim Response | **Start Date:** 5/1/1987 | **End Date:** 1/29/1988

Operable Unit:
Clare Water Supply - OU2 Soil and Groundwater Pump and Treat

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	

Comments:
Contaminated soil excavation and off-site disposal of Site hot spots conducted under State request and oversight. Costs unknown.

Activity: Remedial Investigation | **Start Date:** 4/12/1985 | **End Date:** 9/27/1985

Operable Unit:
Clare Water Supply - OU1 Interim Action Wellhead Treatment

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$25,000.00	Federal

Comments:
RI/FS conducted by PRP group. Costs unknown.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/16/2020 | **End Date:** 9/16/2021

Operable Unit:
Clare Water Supply - OU Entire Site

Status:
Future Need

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	TBD	$0.00	

Comments:
Estimated end date based on five years from the September 16, 2016 FYR.

Federal Grants

Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2019	Closed

Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$21,044.69	$8,588.28

Clare Water Supply

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $8,342.23	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $22,896.80	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $8,521.44	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $26,458.93	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $19,490.15	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $40,875.54	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $93,114.18	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $141,617.64	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $24,231.00	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $113,660.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Parsons Chemical Works, Inc.

State Site ID:
23000010

Federal Site ID:
DX

Full Address:
3562 W. Jefferson Street, Grand Ledge, MI, 48837

County:
Eaton

Location

The Parsons Chemical Works, Inc., (Parsons) Superfund site, also known as ETM Enterprises, Inc., occupies approximately six acres on West Jefferson Street west of the city of Grand Ledge, approximately 1/4 of a mile east of the intersection of M-43 and Jefferson Street, Oneida Township. The former Parsons plant is bounded to the south by Millbrook Printing and to the west by the Church of the Nazarene and its associated parsonage. Commercial operations are located on the north side of Jefferson Street and two residential subdivisions, Russell Subdivision and Fairview Subdivision are located immediately east of the site across Oneida Street. The Grand River is located beyond wetlands, approximately 3/4 of a mile north of the plant.

Status

The EPA Regional Project Manager is in the process of developing an Explanation of Significant Difference and long-term stewardship plan regarding the restrictive covenant placed on the site. The EGLE Five Year Review (FYR) Issues Letter was sent to the EPA on April 3, 2018, which outlined issues for consideration in the 2019 FYR process and noted that the Parsons Chemical site was a candidate for deletion from the National Priorities List. The Fourth FYR, signed September 30, 2019, indicated that the site engineering controls marker was extremely difficult to see when the grass or snow exceeds the height of the marker and that there is a possibility that the marker could become damaged.

History

Parsons Chemical Works, Inc., which operated from 1945 through mid-1979, mixed, manufactured, and packaged agricultural chemicals including pesticides, herbicides, solvents, and mercury-based compounds. During operations, Parsons apparently discharged manufacturing liquid waste through the floor drains in the Parsons plant, leading to a septic tank and leach field, which were connected to a catch basin connected to a county drain system. The drainage system discharged into an unnamed stream northwest of the plant and the stream ultimately discharged into the Grand River. Eventually, the drainage tiles on the steep bank above the unnamed stream washed out, and the liquid discharged onto the bank, contaminating the ground. In addition to the discharge of liquid wastes, activities at the plant resulted in the deposition of chemicals in soil, impacting approximately one acre, primarily on the south side and around the perimeter of the building. In 1979, ETM Enterprises, Inc. purchased the facility and began operating a fiberglass parts manufacturing facility at this location. The connection between the septic system and the county drain was discovered during one of several investigations performed by ETM Enterprises, Inc., in response to environmental concerns about the property. The company had the septic system and tile field removed, and connected to the Grand Ledge municipal water and sanitary waste systems.

The EPA conducted the first of two Non Time-Critical Removal Actions (TCRA) at the site from October 1990 until June 1994. During this removal, 3,000 cubic yards of contaminated soil was remediated utilizing In-Situ Vitrification, an innovative soil remediation technology. At the conclusion of removal number one, an estimated 2,000 cubic yards of contaminated soil remained on-site awaiting a second removal. The contaminated area was fenced and posted to prevent accidental exposure until the EPA conducted a second Non-TCRA.

A remedial investigation/feasibility study (RI/FS), conducted between 1993 and 1995, consisted of a hydrogeological investigation, surface water, and sediment sampling, assessment of the drainage system, and further assessment of the remaining site soil conditions. The RI revealed that, with the exception of the previously identified contaminated soil (described above), the chemicals detected in soil on the plant site pose no acute public health concern. However, a shallow soil sample collected from a boring on the north side of Jefferson Street, off-plant property, contained a

concentration of 408 parts per million for arsenic, which could pose an acute public health problem via ingestion or direct contact. The RI revealed that shallow groundwater contained the pesticide dieldrin as well as elevated concentrations of several metals related to the former plant operations. These metals include manganese, lead, and arsenic. The shallow groundwater was not considered an aquifer, and the likelihood of it or the groundwater in the weathered portions of the bedrock being ingested or used for watering was deemed low. However, in the unlikely event that someone consumed groundwater from the shallow saturated zone or the weathered bedrock, the concentrations of manganese in the water could result in an acute health problem. Samples collected 20 feet into the bedrock aquifer, the area drinking water source, complied with all applicable health-based drinking water criteria. Water supply wells in the vicinity are installed more than 100 feet deep which should assure water quality. However, the potential for chemicals of concern in the shallow groundwater and the weathered bedrock to migrate to private wells was not quantified during the RI. Because approximately 67 residences and businesses adjacent to the site rely on private wells for their water supply, a long-term monitoring response was selected in the Record of Decision (ROD) to address this potential threat. The residential wells sampled during the RI revealed no contamination. EGLE and the EPA signed the ROD in 1997 for long-term monitoring of groundwater.

The EPA mobilized to the site in November 1998 to begin the second Non-TCRA of contaminated soil on plant property and along the north side of Jefferson Street where elevated concentrations of arsenic were found. Prior to mobilization, the EPA conducted three sampling events to characterize and quantify the soil to determine the most appropriate response. The project technical planning document, known as the Engineering Evaluation/Cost Analysis, stipulated that the soil be excavated and disposed of in a licensed landfill. Soil excavation was completed in February 1999. During the second removal, 5,102 cubic yards of soil were excavated and disposed of in a licensed landfill. Site restoration was completed in the summer of 1999 and the final site inspection took place in November 1999.

In December 1997, EGLE sampled all of the private water supply wells in the vicinity of the site, where property owners granted access, to establish a baseline of residential water quality data. These samples were analyzed for pesticides and seven metals. Pesticides were not detected in the water samples, nor were metals that exceeded the generic health-based residential drinking water standards. However, manganese was detected in approximately half of the wells above the aesthetic criterion of 50 parts per billion. The aesthetic criterion was typically associated with non-health-related objectionable characteristics such as taste or staining. EGLE provided each well owner with a copy of the results of their well analyses and a letter explaining the results.

Using funding provided by the EPA, EGLE began the remedial design in 1998. Because the concentration of manganese in some wells exceeded the aesthetic criterion for manganese, EGLE decided to determine whether its presence could be attributed to the former Parsons' operations or if it was naturally occurring. This was accomplished through several tasks. First, all of the manganese data related to this site was combined and assessed comprehensively to determine if a historic pattern could be established. Second, all of the existing site monitoring wells and six residential wells were sampled for manganese, and a complete round of static water level measurements was taken in October 1999. These data were used to develop new groundwater elevation contour maps to aid in the third task, which consisted of drilling three borings hydraulically upgradient of the site and the adjacent subdivisions and sampling them at frequent intervals to a depth of 180 feet. In addition to manganese, the samples were analyzed for aluminum, arsenic, lead, and zinc. Arsenic and lead had been identified as chemicals of concern during the RI. Aluminum and zinc were included because, while use of these metals at Parsons was not documented, they were detected in site monitoring wells at elevated concentrations.

Upon evaluation of the data, EGLE determined that, while arsenic and lead do not appear to be present at elevated levels upgradient of the Parsons site, manganese, aluminum, and zinc were all present at elevated concentrations at multiple vertical intervals in the background wells. It was concluded that the presence of elevated concentrations of these metals in site monitoring wells and some residential wells was not attributable to the former Parsons plant.

In 2001, a Baseline Environmental Assessment (BEA) was submitted to EGLE for the former Parsons site. The BEA was determined to be adequate for the purpose of obtaining an exemption from liability for the new owner pursuant to Section 21126(1)(c) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201). The state of Michigan notified the current property owner, the Shappell Corporation, in writing, that the state would not consider the new property owner liable for any contamination that was attributable to the former Parsons' operations. The EPA also determined that there were no viable responsible parties.

A Scope of Work was developed in 2002 which included annual groundwater sampling of both site monitoring wells and the adjacent residential wells for 15 years or until the data confirmed that any residual groundwater contamination was below Part 201 Drinking Water criteria. EGLE obtained funding from the EPA in October 2002, through a Cooperative

Agreement in conjunction with the Scope of Work, to pay for 90 percent of the downgradient investigation and implementation of the long-term monitoring required by the ROD.

EGLE in consultation with the EPA completed the First FYR for the site in March 2004. The FYR concluded that the remedy remains protective of human health and the environment.

The Second FYR, written by EGLE in consultation with the EPA, was completed on April 15, 2009. The FYR concluded that the remedy remains protective of human health and the environment in the short term. Long-term protectiveness would require compliance with effective Institutional Controls (ICs).

Annual groundwater sampling under the Scope of Work began in late October 2002 and was conducted through 2010. Staff of EGLE performed the on-site monitoring well groundwater sampling investigation while the Barry - Eaton County Health Department conducted the annual residential well sampling. Based on the data collected, dieldrin, which was never detected in any of the monitoring or residential wells samples, was dropped from the sampling regime in 2005.

After review of the residential well data collected from 2002 through 2010, it was decided that the sampling numbers could be reduced from 34 to the 7 residential wells located along the Parsons site boundary. This reduction in residential well sampling began in 2010 and sampling was discontinued after the 2011 sampling event.

Review of the monitoring well data from 2002 through 2010 determined there was no longer a need to continue the annual monitoring. Metals contamination concentrations in all the monitoring wells had been reduced to non-detect or below criteria. EGLE hired a contractor to plug and abandon the site monitoring wells. This activity was completed by early September 2011. EGLE began the development of the site-specific RC, which would include a property survey and installation of a permanent marker. The legal survey of the property was performed by a Level of Effort contractor and completed in September 2012.

The site-specific Cooperative Agreement was closed out on June 30, 2013, and the remaining funds returned to the EPA. The development of the RC was completed and filed with the Eaton County Register of Deeds on August 31, 2013. EGLE wrote, and the EPA approved in September 2013, a Remedial Action Report on the Parsons Chemical site. Installation of the permanent marker at the site was completed on October 30, 2013.

EGLE wrote the Third FYR for the Parsons Chemical site, which was approved and signed by the EPA on April 11, 2014. The Third FYR concluded that the remedy at the site is protective of human health and the environment in the long term. All RA objectives have been achieved. The filed RC prevents residential use of the property and disturbance of the In-Situ Vitrification treatment area.

Enforcement

The State of Michigan notified the current property owner in writing that the State would not consider him liable for any contamination that was attributable to the former Parsons' operations. The EPA determined there were no viable potentially responsible parties.

The MDEQ (now known as EGLE) developed the site-specific RC, which was filed with the Eaton County Register of Deeds on August 31, 2013. A permanent marker was installed at the site on October 30, 2013, as required by the RC.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1997

Location Name: Parsons Chemical Works, Inc. - OU Entire Site

Comments:
Long-term monitoring with trend analysis and contingency for alternate water supply, if needed.

Response Activities - Completed

Activity: 5 Year Review	**Start Date:** 4/3/2018	**End Date:** 9/30/2019

Operable Unit:	**Status:**
Parsons Chemical Works, Inc. - OU Entire Site	Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
The FYR stated a need for an ESD to include the RC and a stewardship plan prior to moving forward with delisting the site. Note that EGLE staff provided review and comment on the draft FYR but were not included in the site visit.

Activity: 5 Year Review | **Start Date:** 7/1/2013 | **End Date:** 4/11/2014

Operable Unit:		Status:	
Parsons Chemical Works, Inc. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$20,000.00	Federal	$0.00	

Comments:
The Third FYR was completed on April 11, 2014. The Third FYR concluded the remedy at the site is protective of human health and the environment in the long term. All RA objectives have been achieved. The filed RC prevents residential use of the property and the disturbance of the In-Situ Vitrification treatment area.

Activity: Remedial Action | **Start Date:** 6/1/2012 | **End Date:** 12/30/2012

Operable Unit:		Status:	
Parsons Chemical Works, Inc. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$4,500.00	Federal	$0.00	

Comments:
A property survey, required for the RC, was completed by a Level of Effort Contractor in the second half of 2012.

Activity: Remedial Action | **Start Date:** 10/10/2010 | **End Date:** 9/30/2011

Operable Unit:		Status:	
Parsons Chemical Works, Inc. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$100,000.00	Federal	$0.00	

Comments:
Funding was provided by the EPA to allow the MDEQ to hire a Level of Effort contractor to plug and abandon the site monitoring well network. This field activity was conducted and completed by early September 2011.

Activity: 5 Year Review | **Start Date:** 3/1/2008 | **End Date:** 4/15/2009

Operable Unit:		Status:	
Parsons Chemical Works, Inc. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$20,000.00	Federal	$0.00	

Comments:
The EPA provided funding to the MDEQ to conduct the Second FYR investigation. The Second FYR was completed on April 15, 2009. The FYR concluded that the remedy remains protective of human health and the environment in the short term. Long-term protectiveness would require compliance with effective ICs.

Activity: 5 Year Review | **Start Date:** 11/30/2003 | **End Date:** 3/31/2004

Operable Unit:		Status:	
Parsons Chemical Works, Inc. - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$20,000.00	Federal	$0.00	

Comments:

The First FYR concluded that the remedy remains protective of human health and the environment.

Activity: Remedial Action | **Start Date:** 10/1/2002 | **End Date:** 10/1/2010

Operable Unit:
Parsons Chemical Works, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$390,921.00	Federal	$43,436.00	State

Comments:
Long-term monitoring for 15 years with trend analysis and contingency was the intended long-term RA. Review of both the residential and monitoring well data from 2002 through 2010 determined that the metals contamination concentration had fallen to either non-detect or below criteria and that long-term monitoring of the groundwater was no longer needed.

Activity: Remedial Design | **Start Date:** 8/31/1998 | **End Date:** 12/31/2002

Operable Unit:
Parsons Chemical Works, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$178,660.00	Federal	$0.00	

Comments:
Conducted investigations to determine the regional background concentration of manganese in groundwater and whether the elevated concentration of manganese in some residential drinking water wells was attributable to the former Parsons Chemical Works, Inc., operations. It was determined that manganese was present in the background, along with zinc and aluminum. Arsenic and lead were not uniformly present in the background at elevated concentrations, but arsenic was detected at an increased concentration in one off-plant-property monitoring well downgradient of the former plant.

Activity: Interim Response | **Start Date:** 12/1/1997 | **End Date:** 5/21/1999

Operable Unit:
Parsons Chemical Works, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Federal	$6,000.00	State

Comments:
5,102 cubic yards of soil, contaminated with elevated concentrations of arsenic and/or dieldrin, were excavated and disposed of at an approved landfill. Conducted by the EPA Emergency Response Branch as a second mobilization for the non TCRA.

Activity: Interim Response | **Start Date:** 12/1/1997 | **End Date:** 4/30/1998

Operable Unit:
Parsons Chemical Works, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$15,000.00	State

Comments:
The MDEQ sampled 30 of the estimated 45 private water supply wells in the vicinity of Parsons Chemical Works, Inc., and analyzed for pesticides and metals. Results were sent to all residences and businesses.

Activity: Remedial Investigation | **Start Date:** 2/28/1993 | **End Date:** 6/30/1997

Operable Unit:
Parsons Chemical Works, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$870,957.00	Federal	$0.00	

Comments:
State lead RI/FS.

Activity: Interim Response		**Start Date:** 10/31/1990	**End Date:** 6/30/1994
Operable Unit: Parsons Chemical Works, Inc. - OU Entire Site		**Status:** Completed	
Primary Cost: $3,146,000.00	**Primary Source:** Federal	**Secondary Cost:** $200,000.00	**Secondary Source:** State

Comments:
Remediated 3,000 cubic yards of soil using In-Situ Vitrification. Conducted by the EPA Emergency Response Branch as a Non TCRA.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 4/3/2023	**End Date:** 9/30/2024
Operable Unit: Parsons Chemical Works, Inc. - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** No Financial Source	**Secondary Cost:**	**Secondary Source:**

Comments:
A Five Year Review is required.

Federal Grants

Grant #: V005813-01-RA	**Activity:** Remedial Action	**End Date:** 6/30/2013	**Status:** Closed
Fed Total Award: $340,921.00	**State Total Award:** $37,880.00	**Exp to Date:** $284,504.60	**Exp for Year:** $0.00
Grant #: V00E192-01	**Activity:** 5 Year Review	**End Date:** 9/30/2011	**Status:** Closed
Budget Amount: $20,000.00	**State Total Award:** $0.00	**Exp to Date:** $19,941.35	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $7,788.47	**Exp for Year:** $0.00
Grant #: V005953-01-RI	**Activity:** Remedial Investigation	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $1,020,738.00	**State Total Award:** $0.00	**Exp to Date:** $870,957.30	**Exp for Year:** $0.00
Grant #: V005953-01-RD	**Activity:** Remedial Design	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $213,432.00	**State Total Award:** $0.00	**Exp to Date:** $178,659.50	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Petoskey Municipal Well Field

State Site ID:
24000011

Federal Site ID:
54

Full Address:
200 West Lake Street, Petoskey, MI, 49770

County:
Emmet

Location

The PMC Groundwater site, formerly known as Petoskey Manufacturing Company (PMC) is located at 200 West Lake Street in the city of Petoskey, Emmet County, Michigan. The facility is located less than 600 feet from the former Ingalls municipal water supply well (now abandoned), located adjacent to Lake Michigan. While the area is serviced with municipal water, there are several residential wells located within 1/4 mile (outside the plume area).

Status

A city of Petoskey water supply well was contaminated with trichloroethylene (TCE) and dichloroethene at concentrations somewhat less than 50 parts per billion (ppb) and 10 ppb, respectively. PMC, located 600 feet from this municipal well, was identified as the potentially responsible party (PRP). Solvents and paint sludges dumped outside the building contaminated the soils and groundwater. The contamination plume migrated to the municipal well where it could enter the water supply system when the well was operated.

Groundwater contaminant concentrations currently exceed health based criteria; however, municipal drinking water is in place and nearby private residential wells do not appear to be threatened by the contamination. Project geologists evaluated the groundwater/surface water (GSI) pathway because there was concern that zinc may be an issue. They determined that the GSI pathway was likely incomplete and likely not an issue (subject to field verification).

From summer 2017 to spring 2018, the EPA evaluated nearby buildings for vapor intrusion (VI) and installed mitigation systems in a nearby building. The EPA conducted further delineation of the source of vapors and has submitted a draft Remedial Investigation (RI) report. EGLE has requested the EPA address both sources of VI and aquifer restoration (1998 Record of Decision [ROD] Requirement) in the Feasibility Study (FS). The agencies are working together to identify appropriate laws that apply to the proposed remedy. The EPA is in the process of finalizing the FS and expects the ROD to be modified by September 30, 2020.

The EPA has recently agreed with EGLE's (formerly known as MDEQ) request to mitigate additional locations as long as EGLE conducts the post removal site control including quarterly monitoring for the first year.

The EPA stated that the long-term remedial action period (LTRA) began in 2008. EGLE has responded that it has yet to begin because there is no Superfund State Contract (SSC) and all of the ROD remedy components have yet to be implemented. The scope of the upcoming FS and ROD will determine whether LTRA is appropriate and whether an SSC will be needed.

History

A city of Petoskey water supply well was contaminated with TCE and dichloroethene at concentrations somewhat less than 50 ppb and 10 ppb. This municipal well, was identified as having solvents and paint sludges dumped outside the building. The contamination plume migrated to the municipal well where it could enter the water supply system when the well was operated.

The December 2014 Third Five-Year Review (FYR) included many but not all of EGLE's issues. Through management meetings between the agencies, the EPA has agreed to evaluate the VI pathway, a concern due to the fact that condominiums were built over the original source area, evaluate a contingency remedy (the aquifer is not cleaning up as anticipated), sample for 1,4-dioxane (an emerging contaminant often found with solvents), and collect additional data

to verify GSI understandings. Toward this end, EGLE worked with the EPA to develop an acceptable Quality Assurance Project Plan and the EPA conducted groundwater monitoring in October 2016. The EPA installed sub-slab points at condominiums that were built on top of the former PMC property. Spring 2017 sample results necessitated the EPA Removal Branch installation of mitigation systems and additional indoor air sampling. The EPA also installed portable air purifiers at a few units with mitigation systems to provide supplemental treatment.

As a result of negotiations with EGLE, the PRP removed the most highly contaminated soils and capped the site in 1982. EGLE conducted preliminary hydrogeological investigations in 1982 and 1983. In 1984, the PRP performed additional hydrogeological studies under an EPA-issued Administrative Order by Consent (AOC). In the spring of 1987, the PRP signed an AOC to perform a complete remedial investigation/FS (RI). RI activities were initiated during the summer of 1988, but additional fieldwork was never undertaken by the PRP.

In early 1990, because of poor management practices on the part of the PRP, hydraulic oils seeped through the walls of part of the PMC building and into the surrounding soils. The PRP proceeded to excavate some of the contaminated soils and EGLE and the EPA collected soil samples to assess the extent of contamination.

Due to lengthy delays in the company's RI activities, the EPA removed the PRP from further RI responsibility. EGLE took this site as a state lead to conduct the RI. Soil borings and monitoring wells were drilled; and soil, surface water, and groundwater samples were collected. Additional investigative work was subsequently performed in 1995. This information was compiled and evaluated in a Phase II RI report released in early 1998. The EPA issued a Focused Feasibility Study (FFS) and the ROD for the final remedy which was signed September 30, 1998. The remedy included limited soil vapor extraction (SVE) at the northwest corner of the PMC building, excavation of soils around the PMC building to a depth of 5 feet (to reduce the amount of contaminant leaching to the groundwater), deed restrictions to prevent consumption of contaminated groundwater and to require due care at the PMC property, and groundwater monitoring with a contingency plan to ensure compliance with GSI criteria.

Because one of the city's two municipal wells became contaminated, EGLE provided $500,000 in environmental protection bond monies to the city of Petoskey toward acquisition of the Bay Harbor groundwater supply system as an alternative source of municipal water. In addition, in June 1995, the EPA provided $1,114,200 toward an alternate municipal water supply, plus $123,800 cost share from the state. Because the city of Petoskey was able to purchase an alternate water supply source several miles away from the site, the use of the contaminated well near the source facility was restricted to use during only high demand periods. According to a January 2007 communication with EGLE Water Bureau staff, the Ingall's well was filled with layers of rock and sand from bottom to top. The piping between the Ingalls' Avenue booster station and well was cut off and plugged.

Around 1999, the EPA excavated soils. Several areas were only excavated to 2 feet (as opposed to the 5 feet identified in the ROD) and one area of concern was excavated to approximately 7 feet to ensure that residential direct contact criteria were met. EGLE collected confirmation samples at this location, all of which were below residential direct contact criteria. The EPA also modified the pilot study SVE wells and began operation of the SVE system. The SVE system was operated on a limited, intermittent basis between November 1999 and December 2000. In accordance with the requirements of the 1998 ROD, EGLE requested that the EPA resume SVE operation at the site; but the EPA declined to do so.

On June 17-19, 2002, baseline monitoring well sampling activities were conducted by EGLE to assist in designing the long-term groundwater monitoring plan for the site. The Baseline Monitoring Program was needed because groundwater data had not been collected since the 1998 RI and because the city of Petoskey Ingalls water supply well, a major hydraulic and chemical transport influence, had been taken out of service.

Analysis of the monitoring well samples identified the presence of TCE and bis(2-ethylhexyl)phthalate at concentrations above the Residential and Nonresidential Drinking Water Criteria, of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Additionally, aluminum, chromium, copper, lead, selenium, sodium, thallium, and zinc were detected in the monitoring well samples above both the Residential and Nonresidential Drinking Water and the GSI Criteria of the NREPA throughout the site. This data is in the 2002 Baseline Monitoring Technical Memorandum Report.

In 2004, at the EPA's request, EGLE collected water level data and conducted a monitoring well casing elevation survey. The purpose of this event was to collect the data to determine the actual flow direction or directions and the amount of change with time caused by fluctuations in regional groundwater, the effects of Lake Michigan, and changes in barometric pressure. The May 2005 report had the following observations/recommendations: fluctuation in the elevation of Lake Michigan has a dominant influence on the water levels and flow direction of the site groundwater;

additional new monitoring wells were needed; and replacement monitoring wells were needed to replace those abandoned due to redevelopment activities.

In 2004, all existing PMC buildings had been demolished. In 2005, a portion of the site was developed into condominiums. The rest of the property was developed into condominiums by 2014.

EGLE's review of the Draft 2005 FYR report made use of new information concerning soil contamination beneath the former building from the 2004 Due Care and Demolition Report for the former PMC by Environmental Consultants & Services, Inc., and the results of the Draft EGLE Groundwater Level Survey. Based on this review, EGLE concluded that the natural attenuation remedy for the site was appropriate, but identified concerns with the remaining soil contamination, the existing monitoring system, the need for a monitoring plan for the monitored natural attenuation (MNA) remedy, the lack of institutional controls (ICs), the lack of a ROD-required contingency plan, and the impact of these issues on the ability to make an accurate evaluation of the remedy's short- and long-term protectiveness.

The long-term remediation goal is for the groundwater to achieve generic residential (drinking water and GSI) criteria. The remediation goal for site soils is to achieve residential direct contact criteria because the property has been identified in the city's master zoning plan as multi-family residential and the property has been partially developed into condominiums.

In 2006, the EPA initiated groundwater sampling at the site to better determine current contaminant concentrations, establish a baseline, and develop the long-term groundwater monitoring plan. Ten rounds of samples were collected between 2006-2009.

In 2006, the EPA finalized a long-term Groundwater Monitoring Plan for the site without incorporating EGLE's comments. EGLE notified the EPA that the monitoring plan does not meet all of the groundwater remedial action (RA) objectives outlined in the ROD (MNA, aquifer cleanup to comply with drinking water standards, and meet the GSI protection criteria). At a December 2007 meeting with EPA, EGLE reiterated the need for the EPA to implement the following previously-made recommendations: 1) implement adequate deed restrictions and/or modify the existing groundwater ordinance to meet Part 201 requirements, 2) the EPA conduct a survey of all of the monitoring wells to obtain current and accurate x,y,z coordinates, 3) develop a monitoring well chronology/history/summary and determination of adequacy to document what has happened to each of the monitoring wells, 4) provide corrected and accurate monitoring well and well abandonment logs, 5) create a database for the groundwater monitoring results, 6) revise the Groundwater Monitoring Plan to more accurately meet the ROD objectives, and 7) develop a contingency plan in accordance with the ROD, particularly in light of continued elevated concentrations of TCE at the site. The EPA agreed that #7 needed to be done. At this point, it is unclear what the contingency might be due to the presence of new condos and buried utilities at the former PMC property. The EPA also indicated it would like to abandon two additional monitoring wells (PS-6, and MW-10A).

In December 2009, the EPA issued the Second FYR for the site. During the development stage, EGLE had identified and recommended several key concerns be included in the FYR as follow-up action items. These included: installation of ROD-required monitoring wells, implementation of adequate ROD-required deed restrictions, the existing ordinance the EPA is relying on is not protective, development and implementation of an adequate ROD-required groundwater monitoring plan (current plan does not monitor for natural attenuation, a key component of the remedy), development and implementation of the ROD-required contingency plan (groundwater contaminant concentrations have not dropped and a contingent remedy needs to be implemented), development of the ROD-required well abandonment plan, and further sampling and evaluation of wide-spread zinc groundwater contamination. The EPA has interpreted that all of these ROD components have been adequately implemented. None of the EGLE recommendations were included in the issues and recommendations sections of the final FYR.

The EPA has asserted that the LTRA period began in 2008 even though all of the components of the ROD have not been implemented. In January 2010, EGLE provided written confirmation of disagreement with this assertion. In April 2010, the EPA submitted a draft SSC (for state payment of its match contribution) to which EGLE responded indicating that there were too many unresolved issues to enter into an SSC at this time. The start of the LTRA period is critical because it obligates EGLE to 10 percent match for 10 years followed by 100 percent state funding. Further discussions with the EPA will occur. While the Agencies have yet to agree on the start date of the LTRA, the EPA did proceed with using federal funds for monitoring well maintenance in the summer of 2011.

EGLE reviewed the EPA's revised Draft Groundwater Monitoring Plan and informed the EPA: "The offered monitoring plan is not acceptable to fulfill the 1998 ROD groundwater remedial action objectives (MNA), aquifer cleanup to comply with the drinking water standards and meet the GSI protection criteria. The offered monitoring plan also does not (and

should) incorporate the 2010 FYR recommendation and monitor for zinc to verify whether the contamination is attributable to PMC." The EPA responded without making any substantial changes.

In May 2012, EGLE and the EPA management participated in a conference call to discuss key issues at the site (inadequate ICs, need for additional source remediation, need for better monitoring, GSI exceedances, clarifying source and potential RA for zinc contamination). Conference calls with the EPA in the spring of 2014 resulted in the EPA indicating they are open to possible contingency remedies which are currently being investigated. EGLE has notified the EPA that EGLE does not believe that technical impracticability is suitable for this site at this time.

Enforcement

In 1984, the PRP performed additional hydrogeological studies under an EPA-issued Order. In the spring of 1987, the PRP signed an AOC to perform a complete RI/FS; and RI activities were initiated during the summer of 1988. Additional fieldwork was scheduled for the spring of 1989 yet was never undertaken by the PRP. The investigation was subsequently taken over by the EPA and then EGLE. It has been determined that the PMC is liable under the NREPA. On June 1, 2000, the PMC filed for protection under Chapter 11 of the Bankruptcy Code for a second time. On February 16, 2001, the Chapter 11 filing was converted to Chapter 7. The PMC property then became a part of the bankruptcy estate.

In April 2003, the former PMC facility was sold through Chapter 7 Bankruptcy Trustee to the Perazza Products, LLC, a Michigan corporation (the developer). In July 2004, the developer completely demolished and removed the existing building and foundation. According to the developer, contaminated soils that exceed EGLE Residential Cleanup Criteria for Direct Contact, Volatilization to Indoor Air, and GSI protection were also removed. The existing building and contaminated soils were hauled off-site for disposal.

On May 12, 2005, the property owner and developer, Petoskey Pointe Associates, LLC, entered a Declaration of Restrictive Covenant with Emmet County restricting certain activities at the former Petoskey Manufacturing Company property. This declaration was reviewed and determined acceptable by EGLE Compliance & Enforcement staff.

In December 2009, EGLE was notified that Perazza Products, LLC, the developer, was filing for bankruptcy.

Operable Units for Petoskey Municipal Well Field

OU1 Interim Action Ingalls Well

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 6/14/1995

Location Name: OU1 Interim Action Ingalls Well

Comments:
The interim action ROD provided for either treatment of the contaminated Ingalls municipal well with air stripping or provide the capital cost equivalency of the air stripper to be used toward acquiring an alternate water supply. EGLE elected to have the money applied to an alternate water supply consisting of a groundwater source located in Bay Harbor, a development located approximately 5 miles west of Petoskey. If the air stripper were to have operated, the ROD estimated the annual operation and maintenance (O & M) cost at $169,000.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1998

Location Name: Petoskey Municipal Well Field - OU Entire Site

Comments:
Soils Remedy: Operation of the pilot test SVE system; excavation of contaminated soils to five feet, with one area to seven feet; excavation to eliminate residential direct contact concern and to minimize the potential for leaching to groundwater; implementation of deed restriction.

Groundwater Remedy: Installation of deed restrictions; installation of additional monitoring wells; groundwater monitoring until generic residential drinking water criteria are achieved.

Contingency Plan: This contingency plan "will be implemented to protect human health and the environment if environmental monitoring predicts or detects statistically-significant exceedances of POC [point of operational compliance] criteria that demonstrate that natural attenuation is not occurring sufficiently or at an acceptable rate." If the soils remedy fails to result in sufficient reductions in groundwater contaminant concentrations, the contingency plan will require an evaluation of the impact of the exce

Response Activities - In Progress

Activity: 5 Year Review | **Start Date:** 12/21/2018 | **End Date:** 3/5/2020

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EPA determined that the remedy is protective in the short term and, to be protective in the long term the institutional controls need to be addressed and monitored and a new decision document issued addressing groundwater and soils as sources of VI and requiring additional ICs. The recommendations all related to institutional controls/monitoring of ICs. Additional recommendations included sampling PFOS and PFOA, evaluation of the monitoring well network, prepare an updated O & M plan, prepare a monitoring well abandonment plan, prepare a map showing all areas where ICs are needed, revise the city ordinance.

Response Activities - Completed

Activity: Remedial Investigation | **Start Date:** 12/19/2017 | **End Date:** 7/31/2019

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:
$310,000.00

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
RI to determine nature and extent of contamination in soil and groundwater that may be contributing to VI issues, and to develop a remedy that will achieve groundwater aquifer restoration and elimination of VI sources.

Activity: 5 Year Review | **Start Date:** 12/19/2013 | **End Date:** 12/19/2014

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
On December 19, 2013, EGLE sent the EPA a letter identifying key issues to be evaluated as part of the FYR.

On December 26, 2013, EGLE received an EPA letter dated December 19, 2013, indicating that the FYR process has started and is expected to end no later than December 23, 2014.

The EPA finalized the Third FYR on December 19, 2014 and provided a copy to EGLE on January 15, 2015.

Activity: 5 Year Review | **Start Date:** 10/28/2009 | **End Date:** 12/23/2009

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The EPA concluded that the remedy is protective in the short-term and is expected to be protective in the long-term. EGLE did not support the EPA's conclusions due to the fact that certain remedy components have not yet been implemented.

Activity: 5 Year Review | **Start Date:** 10/18/2004 | **End Date:** 3/16/2005

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	Federal

Comments:
The EPA issued the First FYR report on March 16, 2005. The report stated, "The remedy is functioning as designed. The immediate threats have been addressed and the remedy is protective in the short term. In order for the remedy to be protective in the long-term, deed restrictions controlling the use of groundwater and long-term groundwater monitoring plan, need to be put in place to prevent exposure to contaminated groundwater."

Activity: Remedial Action | **Start Date:** 10/1/2000 | **End Date:** 9/30/2009

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$145,080.00	Federal	$6,120.00	State

Comments:
Work performed by EGLE under a Cooperative Agreement (CA) from the EPA.

Under this CA, EGLE conducted annual groundwater monitoring from 2001 to 2009. Results of these sampling events were to be used to determine long-term monitoring requirements for the groundwater.

Activity: Remedial Action | **Start Date:** 9/1/1999 | **End Date:** 12/31/2000

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$333,826.00	Federal	$37,092.00	State

Comments:
Excavation: In November 1999, the EPA conducted a limited excavation of contaminated soils around the building, focusing primarily on the west side of the building. The EPA elected to limit the excavation to 2 feet at select locations (the ROD required 5 feet).

SVE: The EPA operated the SVE system on a limited, intermittent basis between November 1999 and December 2000. In response to a July 2001 EGLE letter requesting that the SVE system resume operation in accordance with the ROD requirement that the SVE system operate until non-detect, the EPA has indicated that it would not resume operation of the SVE system.

This work was done under an SSC with the EPA, ensuring the state's 10 percent cost share of the RA.

Activity: Remedial Design | **Start Date:** 4/1/1999 | **End Date:** 11/30/2000

Operable Unit:

Status:

Petoskey Municipal Well Field - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$65,000.00	Federal	$0.00	

Comments:
The EPA designed the proposed soil excavation and modification to the RI/FS SVE pilot extraction wells in 1999-2000.

Activity: Interim Response | **Start Date:** 10/28/1996 | **End Date:** 9/20/1999

Operable Unit: Petoskey Municipal Well Field - OU1 Interim Action Ingalls Well
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,114,200.00	Federal	$623,800.00	State

Comments:
On October 28, 1996, the state provided the city of Petoskey with $500,000 toward an alternate water supply. The EPA awarded a $0 CA amendment on July 26, 1996, approving the transfer of $1,238,000 in federal dollars to the city. This funding was to be used toward the provision of an alternate water supply (groundwater from Bay Harbor) in accordance with the June 14, 1995, interim action ROD.

Activity: Remedial Investigation | **Start Date:** 1/1/1991 | **End Date:** 2/28/1998

Operable Unit: Petoskey Municipal Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$672,279.00	Federal	$0.00	

Comments:
EGLE conducted two phases of RI focusing on soil and groundwater contamination and the extent of on-site contamination.

Activity: Remedial Investigation | **Start Date:** 1/1/1984 | **End Date:** 12/31/1990

Operable Unit: Petoskey Municipal Well Field - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$275,000.00	Federal

Comments:
Under a 1984 EPA-issued AOC, PMC performed additional hydrogeological investigation activities and installed 4 monitoring well clusters (PS-A, PS-B, PS-C, and PS-D) in 1984.

Under a second EPA AOC in 1987, PMC was directed to conduct a full RI/FS. They installed 4 additional monitoring wells in 1988 (PS-104, PS-105S, PS-105D, PS-106). The EPA assumed responsibility for the RI in 1990 due to PMC delays in work plan development and their filing for Chapter 11 bankruptcy in 1990.

Activity: Interim Response | **Start Date:** 6/1/1982 | **End Date:** 6/30/1982

Operable Unit: Petoskey Municipal Well Field - OU1 Interim Action Ingalls Well
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Private	$0.00	

Comments:
After EGLE collected soil samples, PMC removed contaminated soils from the west side of the building sometime in 1982.

Activity: Remedial Investigation | **Start Date:** 1/1/1982 | **End Date:** 12/31/1983

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The 5 groundwater monitoring wells (PS-1, PS-4, PS-6, PS-10, and PS-11) were installed in 1982 and 1983 to evaluate the source of the Ingalls municipal well contamination.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 3/5/2024 | **End Date:** 3/5/2025

Operable Unit:
Petoskey Municipal Well Field - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Estimated start and end dates based on March 5, 2020 signature of most recent FYR.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 8/6/1999 | **Most Recent Mod:** 5/27/2020

Location Name: Petoskey Municipal Well Field - OU Entire Site | **Status:** Final Close

Total Contract:
$0.00

State Total:
$30,679.00

State Share Balance:
$0.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:
453104

Federal Grants

Grant #: V04E00776

Activity:
Management Assistance

End Date:
3/31/2021

Status:
Open

Budget Amount:
$0.00

State Total Award:
$0.00

Exp to Date:
$32,497.86

Exp for Year:
$16,053.93

Grant #: V03E00776

Activity:
Management Assistance

End Date:
3/31/2019

Status:
Closed

Budget Amount:
$0.00

State Total Award:
$0.00

Exp to Date:
$37,101.49

Exp for Year:
$8,055.71

Grant #: V03E00776

Activity:
Management Assistance

End Date:
3/31/2018

Status:
Closed

Fed Total Award:
$279,328.61

State Total Award:
$0.00

Exp to Date:
$24,590.23

Exp for Year:
$0.00

Grant #: V02E00776

Activity:
Management Assistance

End Date:
3/31/2017

Status:
Closed

Fed Total Award:
$629,172.00

State Total Award:
$0.00

Exp to Date:
$8,277.78

Exp for Year:
$0.00

Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $17,254.23	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $9,095.71	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $7,752.17	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $638.39	**Exp for Year:** $0.00
Grant #: V975314-01-RA	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $55,080.00	**State Total Award:** $6,120.00	**Exp to Date:** $50,036.53	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $16,605.69	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $27,349.00	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $11,012.06	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $7,880.85	**Exp for Year:** $0.00
Grant #: V995105-01-RI	**Activity:** Remedial Investigation	**End Date:** 9/30/1999	**Status:** Closed
Fed Total Award: $840,924.00	**State Total Award:** $0.00	**Exp to Date:** $672,278.88	**Exp for Year:** $0.00
Grant #: V995105-01-RA	**Activity:** Remedial Action	**End Date:** 9/30/1999	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

Petoskey Municipal Well Field

$1,238,000.00	$137,555.00	$1,375,555.00	$0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $45,155.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Forest Waste Products

State Site ID:
25000009

Federal Site ID:
D5

Full Address:
8359 East Farrand Road, Otisville, MI, 48463

County:
Genesee

Location

The Forest Waste Products site is located in a rural area about two miles northwest of Otisville, Michigan. Butternut Creek is located about 1,000 feet from the eastern site boundary. A municipal water supply is not available in the area; however, private wells are nearby.

Status

The Forest Waste site operated as a landfill from 1972 to 1978. The site was also permitted to receive certain limited types of pre-treated liquid industrial wastes which were dewatered in a system of nine lagoons. During its operation, a number of industrial wastes were disposed of in either the lagoons or landfill. No additional wastes were received at the site since its closure in 1978.

The PRPs conducted the annual groundwater sampling event, including residential well sampling, which was completed in June 2019. The EPA and EGLE received the annual report, which included the data from that event. The Forest Waste Coordinating Committee (FWCC) contractor also completed aquifer testing, bedrock well installation, and several other pre-design activities on and off the site. The EPA and EGLE have continued to discuss and review reports throughout 2019 for future actions for the site.

History

The Forest Waste site was licensed pursuant to the Garbage and Refuse Disposal Act, 1965 PA 87, as amended, to operate as a landfill from 1972 to 1978. The site was also permitted to receive certain limited types of pre-treated liquid industrial wastes for dewatering in a system of nine lagoons. During its operation, a number of industrial wastes were disposed of in either the lagoons or landfill area including polychlorinated biphenyl contaminated roofing materials, polybrominated biphenyl (PBB) contaminated cattle feed, chemical fire debris, paint wastes, plating wastes, acid wastes, and caustic wastes. These wastes were buried in bulk form or in drums or deposited in the lagoons for dewatering. No additional wastes were received at the site since its closure in 1978.

Soil, lagoon, and surface water samples were collected in 1984. Plating waste, soil contamination, and PBB disposal, particularly near the landfill area, prompted a small mammal study to be conducted in November 1985. No PBBs were detected in the small mammals sampled. Surface soils were found to be contaminated with lead, polynuclear aromatic hydrocarbons, and PBBs. The groundwater was contaminated with a variety of volatile organic compounds and cyanide. An elevated potential of hydrogen (pH) of 10 (normal background is 6 to 7) showed the groundwater to be more caustic at the site. None of the 16 residential wells sampled in 1984, nor the 17 residential wells tested in 1985, showed groundwater contamination. Fish from a nearby pond were sampled to determine if hazardous substances had bioaccumulated. Only low levels of mercury were detected. The site is surrounded by a perimeter fence, which was installed in 1984.

In the spring of 1986, additional deep and shallow monitoring wells were installed to further define groundwater conditions. Additional surface water samples were collected adjacent to the site. Borings were taken in several of the waste lagoons in order to document any downward migration of the waste materials through the soil profile. A phased Feasibility Study (FS) for the lagoons was completed on April 8, 1986, which recommended the removal of all waste materials and underlying contaminated soils from six of the nine lagoons. In July 1988, the EPA issued an Administrative Order requiring the Potentially Responsible Parties (PRPs) to complete excavation and removal of the contaminated wastes and underlying soils in the lagoon areas pursuant to the Record of Decision (ROD) signed on

June 30, 1986. Between the fall of 1988, and the fall of 1989, the PRPs removed 9,123 tons of waste sludges and contaminated soils and 53,922 gallons of lagoon liquids and decontamination wastes from the waste lagoons and disposed of them in an off-site hazardous waste disposal facility. The lagoon area was then backfilled, graded, and seeded.

A small-scale waste characterization of the contents of the landfill was undertaken in April 1987. This study documented that there were several areas where large numbers of industrial waste drums, containing primarily paints and paint solvents, had been buried.

On August 28, 1987, the EPA released the final Remedial Investigation (RI) report for the entire site, and the final FS was released on January 20, 1988. In March 1988, the EPA issued a ROD calling for deed restrictions, a landfill cap, a sub-surface vertical barrier around the landfill, limited drum removal from the landfill, and groundwater monitoring.

The EPA (through the U.S. Army Corps of Engineers) selected a consulting firm to design the landfill remedy. Fieldwork was conducted in April and May 1990 to identify large concentrations of drums, by test pitting, and to install borings to locate the landfill perimeter.

In the spring of 1993, the PRPs characterized and disposed of approximately 500 staged drums excavated from the landfill in 1990, pursuant to a March 1992 order issued by the EPA. Additional trenching and drum removal activities were completed during the fall of 1993 with subsequent off-site disposal/treatment of the staged drums completed in the spring of 1994.

The PRPs took over the remedial design/remedial action (RD/RA) for final site remedy, which included additional drum removal, capping of the landfill, and groundwater monitoring. In the spring of 1993, the EPA issued an Explanation of Significant Differences (ESD), which eliminated the requirement for a vertical barrier around the landfill, as specified in the 1988 ROD. The ESD retained groundwater monitoring.

Design of the landfill cap was completed in 1995. Construction of the landfill cap was completed in September 1997 with the approval of the final inspection. The approximate landfill area of 15 acres was fenced separately from the rest of the site.

A Five-Year Review (FYR) was completed for the site in March 1997, which concluded that the remediation of the lagoons remains protective of human health and the environment. It also recommended that the planned landfill remedy and further groundwater investigation continue as planned.

During routine groundwater monitoring in 1995, organic compounds were detected above action levels north of the landfill. Additional investigation was conducted by the PRPs to determine the need for additional response activities. Additional investigation activities included: construction of monitoring wells and 14 sampling events, with vertical aquifer sampling; surface water and sediment sampling; and sampling of residential wells. It was discovered that contamination had migrated beyond the property boundary. The PRPs were tasked with developing a comprehensive summary of all of the north plume investigation data so that data gaps could be identified. The Agencies received a draft Summary Report in the spring of 2002. Following review and comments, the report was finalized in October 2003. EGLE performed additional site investigations in 2002 and into 2003, including a further lake study to determine if contaminated groundwater was venting to the lake. Definitive evidence of venting was not found. A monitoring well on the south end of the lake was identified as the compliance monitoring point for groundwater venting to the surface water.

The Second FYR for Forest Waste was finalized at the end of September 2002. The FYR concluded that the remedy in place was protective in the short term because there was no evidence of exposure. However, it stipulated multiple actions were needed in order to maintain its protective status. Included in the list of actions were: the necessity to delineate and characterize the north plumes and control them; evaluate the need to monitor for PBBs in groundwater; either update the groundwater action levels in the scope of work to be protective for exposure to multiple contaminants, or impose usage restrictions on the shallow sand, and deep sand and gravel aquifers north of the landfill property, and on the shallow sand aquifer east of the property; and evaluate the need to conduct air sampling and soil gas monitoring for landfill gas emissions, and if deemed appropriate, implement the monitoring programs to assure that landfill gas was not migrating into off-municipally-owned landfill property.

To this end, an initial version of a report detailing remedial alternatives for the contaminated groundwater north of the landfill by Conestoga-Rovers & Associates, the PRP's consultant, was received in December 2002. After receipt and review of multiple versions of this report, it was finalized in 2005.

The PRPs conducted the first landfill gas investigation in August 2005. The investigation revealed the presence of methane in samples beyond the perimeter of the landfill. An additional investigation continued through 2012 to assess the extent of landfill gas migration.

A ROD Amendment, to address the north plume of groundwater contamination also included groundwater/surface water interface criteria and redefined the site property boundaries, which was signed by the EPA in September 2005. EGLE supported moving forward with the proposed remedy described in the ROD Amendment. However, EGLE did not concur with the ROD Amendment because it fell short of compliance with key elements of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Specifically, the ROD Amendment did not comply with Sections 20120b(4) and (5) of Part 201 relative to Remedial Action Plans and the associated Administrative Rules. The Agencies continued to work together toward the successful implementation of the response actions identified in the ROD Amendment.

Pilot-scale treatability studies for in-situ chemical oxidation and in-situ submerged oxygen curtain technologies, selected by the ROD Amendment to treat contaminants in the north plume, were implemented in 2005. After multiple, unsuccessful attempts to get an adequate distribution of oxygen across the contaminant plume immediately north of the landfill, it was decided that the in-situ submerged oxygen curtain technology could not be effectively utilized at the Forest Waste site. Therefore, the pilot equipment was removed and the technology abandoned but monitoring of the contamination in this area of the site continued. Beginning in 2006, multiple phases of the in-situ chemical oxidation pilot studies on both the shallow and deep aquifers were conducted. Difficulty in achieving and sustaining adequate distribution, both vertically and horizontally, of the potassium permanganate solution occurred during the pilot studies. Additional groundwater characterization investigations performed by the PRPs at the urging of EGLE and the EPA, facilitated refinements to the system designs to attempt to enhance groundwater treatment.

The Third FYR was completed in 2007. The conclusions of the FYR were that the remedies are currently protective and with the successful activation of the groundwater treatment, protection should be maintained. Further methane monitoring was determined to be needed, and in order to comply with Part 201 requirements, the PRPs continued to monitor the chemical oxidant near the lake to confirm it was not impacting the surface water. Landfill gas testing and residential well sampling continued through 2008. Impacts to water supply wells were not detected.

Full-scale operation of the in-situ chemical oxidation treatment systems began in 2008. Monitoring was begun for evidence that potassium permanganate was moving toward the lake in the shallow aquifer treatment area and modifications were made to the injection locations if evidence of migration was observed. With each monitoring event, modifications to the treatment systems were made to improve the effectiveness of treatment. A report summarizing the results of one year of treatment was submitted to the agencies in late 2008. The agencies determined that another year of data was needed before real assessments of system success could be measured.

Operation and monitoring (O & M) of the treatment continued through 2009. The annual report documented the treatment was not as successful as anticipated. The agencies directed the PRPs to develop a proposal for modifying the systems and submit their proposal for review. If progress could not be documented in 2010, alternative treatments would be considered. During this phase, residential wells were sampled and the annual groundwater monitoring program was implemented. The in-situ chemical oxidation treatment system for the O & M within the deep aquifer continued through 2010. The annual report summarizing the past year's results of treatment was submitted in November 2010. Results were similar to years past. In December of 2010, the PRPs installed two new sentinel monitoring wells in the shallow aquifer.

At the request of the agencies, the PRPs submitted a draft shallow aquifer long-term in-situ chemical oxidation design document including a pilot-scale test work plan in September 2010. After review and comments from the EPA and EGLE, the design document was revised and submitted in January 2011. The revised design was implemented in the spring of 2011 and continued throughout the year.

In the summer of 2011, the EPA requested a groundwater investigation for 1,4-Dioxane, which was detected in the groundwater contamination plume in concentrations exceeding criteria. At the end of 2011, the PRPs had developed and implemented an expanded 1,4-Dioxane investigation. The results of this investigation confirmed that 1,4-Dioxane was detected in the groundwater contamination plume migrating northward from the landfill.

In 2012, both agencies agreed that the current remedy was not successful in treating the groundwater contamination plume and recommended the pilot test should be terminated. With the discovery of 1,4-Dioxane in the groundwater contamination plume, a new remedy would be required. The PRPs conducted an expanded site investigation in an

attempt to delineate the extent of the 1,4-Dioxane, which was unsuccessful. Additional site investigations were planned in 2013. Both Agencies anticipate initiation of discussion for the development of a ROD Amendment or ESD to address the groundwater contamination plume. Annual groundwater sampling, including residential wells, continued in 2012.

The EPA wrote the 2012 FYR report. The report concluded that the remedies for the lagoon removal action and the landfill and groundwater were protective of human health and the environment in the short term. However, for the remedy to be protective in the long term, the following actions are needed: attainment of groundwater action levels selected in the ROD through groundwater treatment and monitored natural attenuation, and additional investigations to characterize the presence and extent of 1,4-Dioxane in the site groundwater so that a new groundwater treatment technology can be selected, if necessary.

In 2013, both agencies continued dialogue on developing a ROD Amendment or ESD to address the groundwater contamination plume. The PRP group continued work to define the extent of 1,4-Dioxane in the site groundwater and discussions on the new groundwater treatment technology that will be selected to treat the plume. Annual groundwater sampling, including residential wells, continued in 2013.

In 2014, the EPA and EGLE corresponded throughout the year on what delineation efforts should be taken by the PRP group. Through these discussions, the EPA signaled that an eventual cleanup standard for 1,4-Dioxane would likely be 7.8 micrograms per liter (ug/L). Several technical discussions with the EPA, EGLE, and the PRP group resulted in a new delineation plan to determine the extent of the plume. The delineation work continued and once the boundaries of the plume are determined, a groundwater treatment system will begin operation to treat the plume. Technical meetings also continued during this process to ensure issues were resolved and work continued in a timely manner. Annual groundwater sampling, including residential wells was completed in 2014.

In 2015, the PRP group completed the delineation plan agreed upon for the 1,4-Dioxane plume. The extent of the plume was delineated to a screening level of 7.8 ug/L. Upon completion of the plume delineation effort and expanded residential well sampling, the PRP group proposed the replacement of six residential wells located in the shallow aquifer. These wells had detections of 1,4-Dioxane, far below the then current drinking water criteria of 85 ug/L. The residents at four of these locations agreed to the new bedrock wells offered by the PRPs and these were completed by December 2015. Also in 2015, annual groundwater sampling, including residential wells were completed.

In 2016, the PRP group along with the EPA and EGLE continued technical meetings throughout the year to address the treatment of the 1,4-Dioxane plume. A pre-remedial design plan was developed by the PRPs consultant. The annual groundwater sampling, including residential wells, continued in 2016 and will continue into the near future. Also, another resident of the original six proposed residential wells to be replaced had a new bedrock well installed by the PRPs in December 2016. This brings the total number of residential wells replaced on-site to five.

In 2017, the EPA and EGLE met at Region 5 headquarters with the potentially responsible parties (PRP) group to discuss the completed remedial design (RD) plan and how to implement it. The fieldwork for this plan began at the end of 2017. Ongoing investigative work was proposed by the agencies concerning the bedrock aquifer and was discussed with the PRP group. The start date for this work was early 2018. The annual groundwater sampling event, including residential wells was completed in July 2017. Technical phone calls between the agencies and the PRP group have continued throughout the year.

In 2018 discussions on the pre-design plan for the treatment of the 1,4-dioxane plume continued. The PRPs consultants completed drilling activities in the early portion of 2018, and due to weather constraints, will continue those efforts into 2019. The annual groundwater sampling event, including residential wells was completed in June 2018 and the agencies received the annual report, which included the data from that event. The PRPs consultants also completed sampling for PFAS on a subset of site wells per the request of EGLE and the EPA. The results showed no exceedances of GSI or drinking water criteria. Technical phone calls between the agencies and the PRP group have continued throughout the year.

Enforcement

In 1994, the EPA entered into a Consent Decree with the PRP (Forest Waste Coordinating Committee) to complete the RA and O & M for this site. The State entered into a 1993 Administrative Order by Consent with the PRP to reimburse the State for oversight costs associated with the management of this site. The EPA considers the PRP to be in compliance with the Order.

Operable Units for Forest Waste Products

OU1 Lagoons

OU2 Landfill

OU3 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/30/1986

Location Name: OU1 Lagoons

Comments:
All contaminated sediments from lagoons 2, 3, 4, 6, 7, and 8 excavated, treated on-site (solidified), and disposed of off-site at a Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA)-permitted facility. Wastewater in the lagoons removed, then treated and disposed of at an off-site RCRA-permitted facility. Treatment was not specified in the ROD.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/31/1988

Location Name: OU2 Landfill

Comments:
Drum removal, construction of a landfill cap and vertical barrier wall, groundwater monitoring, and deed restrictions.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 5/4/1993

Location Name: OU2 Landfill

Comments:
The primary purpose of the ESD document was to eliminate the vertical barrier from the selected remedy. It was determined by the EPA that a barrier was not needed due to the detection of only low concentrations of contamination east of the landfill. The changes made in the ESD resulted in no additional costs to the remedy.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/31/1988

Location Name: OU3 Groundwater

Comments:
Combined with the Landfill ROD. Remedy for groundwater consists of groundwater monitoring and access restrictions only. This ROD does not address the contamination discovered in 1995 north of the landfill. This contamination addressed separately in the ROD amendment.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/28/2005

Location Name: OU3 Groundwater

Comments:
Remedy changes to address the north plume of groundwater and include groundwater/surface water interface criteria were executed for the site. EGLE did not fully concur with this ROD Amendment.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 4/19/1990 **End Date:** 9/30/2030

Operable Unit:
Forest Waste Products - OU2 Landfill

Status:
Ongoing

Primary Cost:
$6,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Landfill maintenance and groundwater monitoring are the responsibility of the PRPs. Costs are based on the annual O & M cost from the 1988 ROD. Investigative work and remedial alternative evaluation is taking place to address the plumes of contamination emanating from the landfill since implementation of the selected remedy.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/27/2016 | **End Date:** 9/27/2017

Operable Unit:
Forest Waste Products - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fifth FYR written by the EPA , was completed in September 2017.

Activity: Remedial Investigation | **Start Date:** 10/1/2011 | **End Date:** 6/4/2019

Operable Unit:
Forest Waste Products - OU3 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Additional RI was conducted into early 2019 to find the extent of the 1,4-Dioxane in the groundwater contamination plume.

Activity: 5 Year Review | **Start Date:** 9/13/2011 | **End Date:** 9/13/2012

Operable Unit:
Forest Waste Products - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR, written by the EPA and reviewed and concurred with by EGLE, was signed on September 13, 2012. The report concluded that the remedies for the lagoon removal action and the landfill and groundwater were protective of human health and the environment in the short term. However, for the remedy to be protective in the long term, the following actions are needed: attainment of groundwater action levels selected in the ROD through groundwater treatment and monitored natural attenuation, and additional investigations to characterize the presence and extent of 1,4-Dioxane in the site groundwater so that new groundwater treatment technology can be selected.

Activity: 5 Year Review | **Start Date:** 1/25/2007 | **End Date:** 9/21/2007

Operable Unit:
Forest Waste Products - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was signed on September 21, 2007. The remedy for Operable Unit 1 (lagoon removal action) was completed in 1989 and is protective of human health and the environment from the former contents of the lagoons.

The remedy for Operable Unit 2 and 3 (landfill and groundwater) is expected to be protective of human health and the environment upon attainment of the groundwater action levels through groundwater treatment, and natural attenuation. In the interim, exposure pathways that could result in unacceptable risks are being controlled through maintenance of the fencing and landfill cap, monitoring, institutional controls, and a contingency to replace residential wells.

Because the remedial action at both Operable Units are protective, the overall Selected Remedy is protective of human health and the environment.

Activity: Long Term Remedial Action | **Start Date:** 6/30/2006 | **End Date:** 12/30/2012

Operable Unit:
Forest Waste Products - OU3 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Following pilot studies and system design modifications, full-scale treatment began in 2008. In 2011, at the request of the EPA, an additional groundwater investigation for 1,4-Dioxane was conducted. The initial investigation revealed 1,4 -Dioxane concentrations exceeding criteria. An expanded 1,4-Dioxane investigation was conducted in late 2011 into 2012, which did not locate the end of the 1,4-Dioxane plume. Additional investigations were planned for 2013. Both Agencies agreed, however, the pilot remedy was ended because it was not effective in treating 1,4-Dioxane and a new remedy is needed.

Activity: 5 Year Review | **Start Date:** 12/14/2001 | **End Date:** 9/30/2002

Operable Unit:
Forest Waste Products - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
A Second FYR was conducted by the EPA for the entire site.

Activity: 5 Year Review | **Start Date:** 10/31/1996 | **End Date:** 3/28/1997

Operable Unit:
Forest Waste Products - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA completed a FYR. (Dates obtained from the EPA.)

Activity: Remedial Investigation | **Start Date:** 12/12/1995 | **End Date:** 3/31/2003

Operable Unit:
Forest Waste Products - OU3 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
December 12, 1995, was when MW95-1S and MW95-1D were installed north of the landfill. The sampling of these wells resulted in the identification of the northern groundwater plume. The 1988 ROD had addressed the landfill and groundwater monitoring east of the landfill. Another decision document addresses this newly identified contamination. This investigation is labeled as a separate RI, even though previous groundwater work around the landfill, and east of the landfill was completed for the 1988 ROD. Work being done as the separate RI, post ROD, will be included under the Long-Term Remedial Action category.

Activity: Interim Response | **Start Date:** 1/1/1990 | **End Date:** 5/1/1994

Operable Unit:
Forest Waste Products - OU2 Landfill

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Drum removal was conducted by the PRPs. Dates are from the EPA. Costs are paid by the PRPs, so no cost information is available.

Activity: Remedial Action | **Start Date:** 9/29/1989 | **End Date:** 6/30/1990

Operable Unit:
Forest Waste Products - OU2 Landfill

Status:
Construction Complete

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The landfill has been capped by the PRPs.

Activity: Remedial Design | **Start Date:** 6/27/1988 | **End Date:** 3/26/1996

Operable Unit:
Forest Waste Products - OU2 Landfill

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Dates are from the EPA. It lists the RD as performed by the PRPs.

Activity: Remedial Action | **Start Date:** 9/21/1987 | **End Date:** 6/28/1988

Operable Unit:
Forest Waste Products - OU1 Lagoons

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$268,000.00

Secondary Source:
Federal

Comments:
The sediments and contaminated soils associated with the lagoons were excavated and disposed of off-site.

Activity: Remedial Design | **Start Date:** 4/20/1987 | **End Date:** 7/19/1988

Operable Unit:
Forest Waste Products - OU1 Lagoons

Status:
Completed

Primary Cost:
$530,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Activity leads are mostly federal, but the PRPs did conduct some of the work. Dates and cost information are from the EPA.

Activity: Remedial Investigation | **Start Date:** 2/26/1986 | **End Date:** 3/31/1988

Operable Unit:
Forest Waste Products - OU2 Landfill

Status:
Completed

Primary Cost:
$519,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Most of the dates and cost were obtained from the EPA. The landfill RI overlapped and extended beyond the lagoon RI work. The PRPs conducted some of the work for this site.

Activity: Interim Response | **Start Date:** 7/17/1984 | **End Date:** 8/28/1984

Operable Unit:

Status:

Forest Waste Products - OU Entire Site | Completed

Primary Cost: $0.00 | **Primary Source:** Federal | **Secondary Cost:** $0.00 | **Secondary Source:**

Comments:
Fence construction around site.

Activity: Remedial Investigation | **Start Date:** 12/30/1983 | **End Date:** 6/30/1986

Operable Unit: Forest Waste Products - OU1 Lagoons | **Status:** Completed

Primary Cost: $545,000.00 | **Primary Source:** Federal | **Secondary Cost:** $0.00 | **Secondary Source:**

Comments:
Information is from the EPA. According to the ROD, RI field work was initiated during the fall of 1984. RI field work for the lagoons was completed during October 1984. However, the ROD for the lagoons also includes some surface soil data from samples collected during the summer of 1985. The RI for the remainder of the site was not yet complete.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/27/2021 | **End Date:** 9/27/2022

Operable Unit: Forest Waste Products - OU Entire Site | **Status:** Future Need

Primary Cost: $0.00 | **Primary Source:** TBD | **Secondary Cost:** $0.00 | **Secondary Source:**

Comments:
Sixth FYR needed.

State Superfund Contracts

Activity: Remedial Investigation | **Effective Date:** 5/31/1984 | **Most Recent Mod:** 5/27/2020

Location Name: Forest Waste Products - OU Entire Site | **Status:** Final Close

Total Contract: $0.00 | **State Total:** $38,735.00 | **State Share Balance:** $0.00

Expenditures to Date: $0.00 | **Expenditures in FY2019:** $0.00 | **Contracted in FY2019:** $0.00

Summary:

Federal Grants

Grant #: V995260-01 | **Activity:** Negotiations | **End Date:** 9/30/2003 | **Status:** Closed

Fed Total Award: $585,100.00 | **State Total Award:** $0.00 | **Exp to Date:** $10,939.00 | **Exp for Year:** $0.00

Grant #: V995258-01 | **Activity:** PRP Oversight | **End Date:** 9/30/2003 | **Status:** Closed

Fed Total Award: $4,535,600.00 | **State Total Award:** $0.00 | **Exp to Date:** $22,926.00 | **Exp for Year:** $0.00

Grant #: V005843-01 | **Activity:** | **End Date:** | **Status:**

Forest Waste Products

	Management Assistance	9/30/1993	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$1,737,502.00	$0.00	$128,094.00	$0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Gratiot County Landfill

State Site ID:
29000046

Federal Site ID:
05

Full Address:
7391 Croswell Road, St. Louis, MI, 48847

County:
Gratiot

Location

The Gratiot County Landfill site is a 40-acre landfill located on an 80-acre parcel of land at 7391 Croswell Road, formerly 585 East Jackson Road, St. Louis, Michigan. The site is located approximately one quarter mile south of the city of St. Louis. The land surrounding the landfill is primarily used for agricultural purposes.

Status

The Gratiot County Landfill was a landfill that was licensed to receive domestic, commercial, and industrial solid waste. In 1973, polybrominated biphenyl (PBB), a flame retardant was mixed with livestock feed and millions of Michigan's livestock were contaminated with PBB and required destruction. Along with millions of livestock being destructed, tons of eggs, milk, butter, cheese, feed, and meat were destroyed to keep PBB out of the food chain. This incident was one of the most costly and disastrous events that occurred in the United States.Many of the livestock and food were disposed of at this landfill. In 1976, EGLE revoked the landfill's license and closed the facility.

In November 2018, EGLE accompanied the EPA and Gratiot County representatives on a site visit of the landfill. During this visit, staff inspected the landfill cap, fences, monitoring wells and gas vents. All parties discussed landfill maintenance activities, groundwater monitoring activities, and a path forward to improve the gas vents. Operation and maintenance (O & M) activities are conducted annually on the site.

History

The Gratiot County Landfill was licensed in 1971 by the Gratiot County Board of Public Works to receive domestic, commercial, and industrial solid wastes. The landfill was not licensed by EGLE until 1974. In November 1976, because of operating violations, EGLE initiated proceedings to revoke the landfill's license and close the facility. Later that year, the EPA informed EGLE that approximately 269,000 pounds of PBB-contaminated waste was disposed at the Gratiot County Landfill from 1971 to 1974 by the Michigan Chemical Company (Velsicol).

PBB became widely known in 1973 when a flame retardant was inadvertently mixed with livestock feed. The flame retardant was manufactured by Velsicol at its St. Louis, Michigan facility. As a result of this mix-up, millions of Michigan's livestock were contaminated by the PBB-laden livestock feed, requiring their destruction. Tons of eggs, milk, butter, cheese, feed, and meat were also destroyed in an attempt to keep PBB out of the food chain. This incident is considered one of the most costly and disastrous events to have occurred in the United States agricultural history and is estimated to have exposed 90 percent of Michigan's residents to some level of PBB-contamination.

In 1977, an EGLE inspection of the Gratiot County Landfill identified stockpiles of magnesium oxide, a livestock feed additive, with no surface cover along the western boundary of the landfill which apparently came from Velsicol between 1975 and 1977. Analysis of the material indicated that the material contained between 1 and 2 parts per million of PBBs. Based upon those results and due to several other apparent violations, EGLE initiated an extensive sampling program that included the sampling of groundwater, surface water, and soils of the landfill and surrounding area in which PBB was detected.

EGLE initiated remedial measures at the landfill in 1984 in order to attempt to provide containment of the groundwater and to minimize migration of contaminants from the site. The activities included installing an 8-inch pumping well; constructing a slurry wall around the perimeter of the landfill; constructing burial cells in the landfill for PBB-contaminated waste; excavating, transporting, and burying approximately 20,000 cubic yards of PBB-laden waste from

property located on the other side of Jackson Road; installing a perimeter fence around the landfill; capping the landfill with a five-foot-thick compacted clay layer; constructing a lagoon to collect and discharge surface water runoff; and installing an evapotranspiration bed to dispose of water from landfill purge wells used for long-term water level control.

In 1991, an EPA funded Five-Year Review (FYR) was completed which evaluated the effectiveness of the clay cap and slurry wall. It was concluded that the landfill cap was well maintained and provided an effective barrier against surface water infiltration; however, gas venting through the ground surface and vegetation impacts were noted in one area. The evaluation also identified three areas of the slurry wall that were ineffective in controlling groundwater flow: the southern portion of the east wall, the western portion of the south wall, and the southern portion of the west wall. Samples taken from monitoring wells located outside the slurry wall contained volatile organic compounds (VOCs) contamination.

In 1993, EGLE retained Eder Associates (Eder) to prepare a performance evaluation assessment consisting of a groundwater investigation to determine the geology and hydrogeology of the site and the nature and extent of any existing or potential impacts on human health and the environment. Eder concluded that VOCs do emanate from the slurry wall leak in the southern portion of the west wall and appear to be primarily confined to the lower sands within a narrow paleo-river channel. Based on the Eder report review, EGLE determined that a groundwater extraction system should be installed to contain contaminated groundwater southwest of the site and that the extracted groundwater would be treated prior to discharge.

In March 1995, EGLE contracted with ABB Environmental Services, Incorporated to design the groundwater treatment system. The groundwater treatment system was constructed by Materials Testing, Inc., and became operational in June 1998.

Harding ESE (formerly ABB Environmental Services, Incorporated) completed an engineering review of the cap and slurry wall in 2002. In that review it was determined to repair the cap, install additional methane vents and monitoring points, abandon several old and unused monitoring wells, conduct quarterly monitoring of methane, and continue to monitor the wells installed around the perimeter of the slurry wall. Work was completed in the spring of 2004.

In July 2003, methane was detected above its lower explosive limit in monitoring points recently installed outside of the perimeter of the landfill. Based on those readings, the two residential houses in the area were monitored and additional methane vents and monitoring points were installed in the landfill. In addition, four vent flares with solar powered fans were placed in the areas of the highest methane readings to assist in lowering the high methane readings. By October 2003, all methane readings outside of the landfill returned to below five percent of the lower explosive limit. Readings went over the lower explosive limit in 2007, most likely due to malfunctioning flare units. The flares have since continued to undergo a regular maintenance program. Additional methane vents were installed between 2009 and 2012.

Between 1986 and 2005, EGLE utilized funds from the Landfill Maintenance Trust Fund to reimburse Gratiot County for various maintenance activities that were completed. However, in 2005, EGLE did not renew the contract as site inspections identified that the landfill had fallen into disrepair and many of the tasks that were assigned to the county were not being completed as specified in the contract.

A Fourth FYR was prepared by the state and submitted to the EPA in September 2006. The FYR concluded that "The remedy at the (GCL) Gratiot County Landfill is complete and is protective of human health and the environment at this time, and exposure pathways that could result in unacceptable risks are being controlled. However, in order for the remedy to remain protective in the long-term the landfill cap must be maintained and effective (ICs) Institutional Controls must be implemented, maintained, and monitored."

In 2008, necessary major cap repairs were completed. In addition, a new monitoring well network was completed around the perimeter of the landfill. The new monitoring system is better suited for compliance monitoring for metals as well as VOCs. Sampling results of the metals have shown a large decrease in concentrations, as identified by the original monitoring network. This is due in part to the former monitoring well network consisting of multiple wells constructed with metal materials.

The Fifth FYR for the site was completed in September 2011 by EGLE. The FYR confirmed that the facility does not pose a risk as long as it continues to be maintained. The FYR suggested groundwater be monitored for metals (upgradient to confirm background metals) and PBB (due to lack of current data) through 2014. No PBB was detected in the groundwater.

In 2011, EGLE began the transition of the maintenance and sampling back to Gratiot County. In 2014, Gratiot County became fully responsible for all of the sampling and maintenance activities. However, EGLE did provide funds through the Landfill Maintence Trust Fund to cover laboratory expenses and provided additional topographic survey support in 2012 and 2013 as the cap continues to undergo settlement and erosion.

In March 2015, Gratiot County submitted their first monitoring report to EGLE which included data necessary for EGLE to complete its background evaulation of metals in groundwater. Data collected suggests that the presence of various metals in the groundwater are background and not associated with the landfilling activities on the site. A report detailing the findings and the conclusion was completed by EGLE's contractor at the end of 2015.

In 2015, EGLE completed the assessment of the venting system which determined that concentrations from the vents were below acceptable levels.

In March 2016, Gratiot County submitted their second monitoring report to EGLE. EGLE, EPA and Gratiot County met in June 2016 to discuss the status of the landfill and what tasks will need to be undertaken. The EPA has identified that future FYRs of the site are unnecessary because the site does not have a Record of Decision document.

In April 2017, EGLE staff, Gratiot County officials, and EPA staff met and discussed site redevelopment options. All parties met again in June 2017 and discussed the results of EPA's research into site redevelopment options for solar and wind generation.

EGLE staff drafted institutional controls (ICs) on a parcel west of the landfill owned by the State of Michigan. Gratiot County is requesting the State of Michigan to sell the parcel to the county. Discussions on selling the property are currently under way with the county. The ICs will be placed on the property before the parcel is sold. Selling of the parcel is expected once the parcel is transferred the Land Bank.

Enforcement

Through a joint Consent Judgment in 1983 between EGLE, the EPA, and Velsicol Chemical Company, EGLE received $13.5 million to investigate, remediate, and maintain the Gratiot County Landfill and the former Velsicol plant. This source of funds was depleted for the two facilities; however, the state continued to evaluate and address maintenance and other issues at the site using state funds. Currently the site is being maintained by Gratiot County, which is its owner/operator and has obligations pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 9/30/2014 | **End Date:** 11/29/2025

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	Private	$0.00	

Comments:
Continued O & M quarterly monitoring of groundwater and methane. Gratiot County assumed these tasks in 2015. Currently, through the Landfill Maintenance Trust Fund, EGLE is paying for laboratory analysis.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/28/2015 | **End Date:** 9/28/2016

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Cancelled

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The next FYR was due September 28, 2016, but the EPA determined it was not necessary.

Activity: Remedial Action | **Start Date:** 4/1/2014 | **End Date:** 4/1/2015

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Cancelled

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	State	$0.00	

Comments:
Estimated funding of $750,000 was determined to be unnecessary based on engineers evaluation of the cap and the potential migration of water through the cap.

Activity: Operation and Maintenance | **Start Date:** 1/1/2013 | **End Date:** 12/23/2016

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	Private	$0.00	No Financial Source

Comments:
Completed the background evaluation of metals and discharges to ambient air, install additional methane monitoring points and vents, and assisted in the transition to the county.

Activity: 5 Year Review | **Start Date:** 1/10/2011 | **End Date:** 9/30/2011

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
FYR funding provided by the EPA. This FYR concluded that the remedy is protective of human health and the environment.

Activity: 5 Year Review | **Start Date:** 3/24/2006 | **End Date:** 9/28/2006

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Federal	$0.00	

Comments:
The state prepared a FYR report, and concluded that the remedy is protective of human health and the environment.

Activity: Remedial Action | **Start Date:** 1/13/2003 | **End Date:** 10/1/2014

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	State	$0.00	

Comments:
Engineering repairs, assessment, and upgrades to the methane system and existing cap.

Activity: 5 Year Review | **Start Date:** 1/15/2001 | **End Date:** 9/29/2001

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,000.00	Federal	$0.00	

Comments:
The state completed a FYR for the EPA.

Activity: Remedial Investigation | **Start Date:** 1/26/2000 | **End Date:** 9/2/2002

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$576,344.00	State	$0.00	

Comments:
The state assigned Harding ESE to conduct an engineering analysis of the landfill cap, slurry wall, and methane vents; and prepare a feasibility study for possible future remedial actions. Activities include groundwater monitoring.

Activity: Remedial Action | **Start Date:** 11/15/1997 | **End Date:** 6/15/1998

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$384,961.00	State	$0.00	

Comments:
The state contracted for installation of the groundwater extraction and treatment system to capture and treat groundwater.

Activity: Remedial Design | **Start Date:** 6/15/1994 | **End Date:** 6/15/1996

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	Private	$0.00	

Comments:
The state contracted with ABB Environmental Services, Incorporated to design groundwater extraction and treatment system.

Activity: Alternate Water | **Start Date:** 6/15/1994 | **End Date:** 2/15/1995

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,791.00	State	$0.00	

Comments:
Bottled water was provided to one residence adjacent to the landfill where the well was susceptible to impact.

Activity: 5 Year Review | **Start Date:** 5/10/1994 | **End Date:** 8/27/1996

Operable Unit:
Gratiot County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
This FYR concluded that the remedy is protective of human health and the environment.

Activity: 5 Year Review | **Start Date:** 1/23/1992 | **End Date:** 8/4/1992

Operable Unit:

Status:

Gratiot County Landfill - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Federal	$0.00	

Comments:
This FYR concluded that the remedy is protective of human health and the environment.

Activity: Remedial Investigation | **Start Date:** 6/15/1991 | **End Date:** 6/15/1994

Operable Unit: Gratiot County Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$40,000.00	Private	$0.00	

Comments:
State groundwater investigation using settlement funds.

Activity: Remedial Action | **Start Date:** 6/15/1984 | **End Date:** 6/15/1986

Operable Unit: Gratiot County Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000,000.00	Private	$0.00	

Comments:
The state installed a landfill cap and slurry wall to contain waste. Settlement funds from Velsicol were used.

Activity: Remedial Investigation | **Start Date:** 6/15/1974 | **End Date:** 6/15/1980

Operable Unit: Gratiot County Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$500,000.00	State	$386,000.00	Federal

Comments:
The state sampled groundwater, surface water, and soils on and around the landfill.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V00E192-01	5 Year Review	9/30/2011	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$40,000.00	$0.00	$20,000.00	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V965855-01	5 Year Review	12/30/2006	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$10,000.00	$0.00	$9,698.89	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V995339-01	Remedial Investigation Feasibility Study	9/30/2003	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$472,000.00	$0.00	$14,906.36	$0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Velsicol Burn Pit

State Site ID:
29000147

Federal Site ID:
US

Full Address:
1270 W Monroe Road, St. Louis, MI, 48880

County:
Gratiot

Location

The Velsicol Burn Pit covers five acres within the east side of the Hidden Oaks Golf Course on Monroe Road in St. Louis, Gratiot County, Michigan. A residential neighborhood is located adjacent to the site with some residences located less than 50 feet away. This site is located directly across the Pine River from the former Velsicol Chemical Corporation manufacturing plant where the waste was generated.

Status

The Velsicol Burn Pit, formerly known as the Gratiot County Golf Course site or Former Burn Pit, includes an inactive waste burning and disposal site, consisting of an open dump, burn pit, brine well, and brine pond. The Velsicol Burn Pit site was created by the disposal of solid and liquid waste from the Velsicol Chemical Corporation which is a separate National Priorities List (NPL) site known as the Velsicol Chemical Corporation site. The Former Burn Pit was a disposal site for solid and liquid waste from the former Velsicol Chemical Corporation. The Velsicol Chemical Corporation manufacturing plant burned waste liquids weekly at the Former Burn Pit, from approximately 1956 to 1970.

The EPA is also moving forward on the design for the hookup of 11 homes near the site to municipal water. The EPA has received nine of eleven access agreements from homeowners agreeing to be provided municipal water provided by the city of St. Louis, Michigan. The connection design report has been completed.

Thermal treatment of contaminated material at the site as called for in the decision document will not commence until 2021 as sufficient electricity can not be provided for this action at the same time as the same activity is being conducted at the Velsicol Plant Site. The thermal treatment on the Velsicol Plant Site is anticipated to be completed sometime in early 2021, at which point treatment activities at the Burn Pit site can commence.

History

The Velsicol Burn Pit, formerly known as the Gratiot County Golf Course site or Former Burn Pit, includes an inactive waste burning and disposal site, consisting of an open dump, burn pit, brine well, and brine pond. The site is surrounded by a golf course and, to the east, a residential area. The Velsicol Burn Pit site was created by the disposal of solid and liquid waste from the Velsicol Chemical Corporation which is a separate National Priorities List (NPL) site known as the Velsicol Chemical Corporation site. The Former Burn Pit was a disposal site for solid and liquid waste from the former Velsicol Chemical Corporation. The Velsicol Chemical Corporation manufacturing plant burned waste liquids weekly at the Former Burn Pit, from approximately 1956 to 1970.

In 1963, the site expanded northwest of its original operating site, and the area used in the 1950s was covered in vegetation. The dumpsite for the plant was used for disposal of polybrominated biphenyls (PBB), tris (2,3-dibromopropyl)phosphate (Tris), dichlorodiphenyl trichloroethane (DDT), and filter cakes from bromide operations. Records were not available on all materials burned or disposed of at this site. Additional materials that may have been disposed of include: magnesium oxide wastes, sodium chloride wastes, DDT waste, Tris and hydrocarbon wastes, and heavy metal residues (such as copper, cobalt, and zinc).

A gravel pit, east of the Former Burn Pit, was formerly used for disposal of general refuse and municipal materials, and possibly refuse and waste materials from the plant. Another pit was identified south of the Former Burn Pit, this pit was used in the 1940s to 1950s for storage of calcium chloride brine for the chemical plant. The Former Burn Pit, originally a gravel pit approximately 100 feet long and 30 feet wide, was sold in 1970. A nine-hole golf course was constructed in

1972 around the Former Burn Pit and is currently part of the Hidden Oaks Golf Course. As part of the construction activities, the gravel pit was filled and graded after the 1970 purchase and was re-graded in 1978.

This area was originally proposed to the NPL in 1982, but not added to the final list before deletion. In 1983, the potentially responsible party excavated the contaminated soil to different depths depending on the extent of the contamination. EGLE monitored contaminant levels and requested additional excavation for an area with elevated levels of DDT. After removal of an additional 300 cubic yards, no detectable DDT was present.

A 1-to-4-foot layer of a substance, visually identified as magnesium oxide, was left in place and was located just below the imported fill layer. The excavated areas were filled with material from adjacent land, covered with 6 inches of topsoil, seeded, and mulched. All excavated material was disposed of at the Velsicol Plant site located across the river. Among the material removed were domestic refuse and industrial waste, plastic sample bags (containing magnesium oxide), 25 empty drums, and 14 drums containing material such as silica gel, hypo crystals (sodium thiosulfate), magnesium oxide, and filter cakes. Groundwater was also collected and disposed of by deep well injection on the Veliscol Plant site. Levels of contaminants in groundwater were measured in three samples and one duplicate. PBB was not detected, but hexabromobenzene, DDT, and Tris were detected in the samples. The excavation and groundwater collection activities resulted in a proposal to delete the site from the NPL in 1983. This deletion was premature because the contamination had not been adequately remediated.

Soil and groundwater contamination at the former Burn Pit was identified by EGLE in 2006 and the site was again proposed to the NPL in September 2009 and was made final on the NPL in March 2010. Two ash piles, identified during the work in 2006, are present at the site along with an estimated 345,606 square feet of contaminated soil. Municipal and private residential wells, water supplies for about 20,000 residents, are located within three miles of this site. Since the previous work at the site, there have been two investigations conducted by EGLE using state funding to identify contaminants present at the Former Burn Pit. The first investigation, in 2004-2005, identified contamination remaining at the site from the disposal activities decades earlier. A more recent investigation, in 2007-2008, further characterized contamination of the Former Burn Pit and identified off-site migration of the contaminants. The contaminants listed above were detected in the soil and groundwater above a level of concern and are the same as those found at the chemical plant site. The investigation also discovered non-aqueous phase (NAPL) liquid in the groundwater which is considered a Principle Threat Waste by the EPA.

The EPA proposed, and EGLE concurred in 2014, to separate the Velsicol Burn Pit into two separate operable units (OU). OU1 consists of the principal threat waste still remaining at the burn pit and OU2 represents the impacted groundwater remaining at the site.

The Remedial Investigation/Feasibility Study (RI/FS) was completed in October 2013. The Final Focused Feasibility Study for the Velsicol Burn Pit, OU1, was completed in November 2014.

The Proposed Plan public meeting for the Velsicol Burn Pit OU1 was held on December 3, 2014, to discuss remedial alternatives and to present the EPA's preferred alternative. The Proposed Plan deals exclusively with OU1 and depending upon the success of the RAs for OU1 a Record of Decision (ROD) will eventually be required for OU2. The public comment period for the Proposed Plan for remedial actions in the Velsicol Burn Pit, OU1, ended in January 2015.

The EPA selected a cleanup plan as documented in the ROD for the Burn Pit on July 28, 2015. The EPA and EGLE attended the June Pine River Superfund Citizen Task Force meeting to discuss elements of the site and the cleanup technology being considered. EGLE concurred with the ROD.

The EPA completed design activities in 2017 for the proposed in-situ thermal remedial action, which is expected to be initiated in 2021. The objectives of the cleanup are to reduce and remove contaminants, minimize the movement of pollutants into underground water supplies, prevent people from coming in contact with contaminants using a clean soil cover, and to connect houses to a municipal water supply. The cleanup will protect people and the environment, provide long-term effectiveness, and comply with State and federal environmental regulations. It can be implemented and is cost-effective.

Enforcement

None.

Operable Units for Velsicol Burn Pit

OU1 Source Material NAPL

OU2 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 7/28/2015

Location Name: OU1 Source Material NAPL

Comments:
Selected remedy: (1) In situ thermal; (2) Soil cover; (3) Perimeter drain swales; (4) Institutional controls; (5) Nine homes near the Burn Pit will be connected to municipal water.

Response Activities - In Progress

Activity: Remedial Design **Start Date:** 6/1/2015 **End Date:** 12/17/2023

Operable Unit:
Velsicol Burn Pit - OU Entire Site

Status:
In Progress

Primary Cost:
$1,200,000.00

Primary Source:
Federal

Secondary Cost:
$120,000.00

Secondary Source:
State

Comments:
Burn Pit, NAPL, In Situ Thermal Treatment, Design
The EPA began the remedial design for the RA after the ROD was signed. Management assistance funding is necessary to hire contractor support to assist in the review of the design of the selected support remedy.

Response Activities - Completed

Activity: Remedial Investigation **Start Date:** 1/5/2012 **End Date:** 10/1/2013

Operable Unit:
Velsicol Burn Pit - OU Entire Site

Status:
Completed

Primary Cost:
$250,000.00

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
The EPA has made this site a pilot RI/FS site. EGLE worked very closely with the EPA on this project.

Response Activities - Future Need

Activity: 5 Year Review **Start Date:** 7/1/2025 **End Date:** 7/1/2026

Operable Unit:
Velsicol Burn Pit - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
Completion of the initial Five-Year Review for the site.

Activity: Remedial Action **Start Date:** 10/1/2020 **End Date:** 3/1/2021

Operable Unit:
Velsicol Burn Pit - OU Entire Site

Status:
Future Need

Primary Cost:
$700,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Remedial Action for the Burn Pit will be implemented as a phased approach. The first phase will include site prep, ash pile removal, and residential hook-up to municipal water. The requested $700,000 is the required State of Michigan 10 percent of the anticipated $7,000,000 cost.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $596.98	**Exp for Year:** $596.98
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $2,279.43	**Exp for Year:** $45.81
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $2,950.65	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $14,697.35	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $2,813.49	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Velsicol Chemical Corp

State Site ID:
29000070

Federal Site ID:
32

Full Address:
500 Bankston Street, St. Louis, MI, 48880

County:
Gratiot

Location

The Velsicol Chemical Corp. site consists of 52 acres of land adjacent to the Pine River, a portion of the Pine River at and downstream of the former plant site, and nearby properties. The site is located in St. Louis, Michigan. The site consist of operable unit (OU) 1 which includes the former plant site, residential areas adjacent to the former plant site, and groundwater. OU2 includes the Pine River adjacent to the former plant site downstream from highway M-46 to the dam in St. Louis. OU3 includes the Pine River from the dam in St. Louis extending downstream to the confluence with the Chippewa River. Their is a neighborhood located adjacent to the former plant site with some residences less than 50 feet away which has a population of approximately 4,100 people.

Status

From 1935 until September 1978, the Velsicol Chemical Corporation (and its predecessor, Michigan Chemical Corporation) engaged in the production of various chemical compounds and products at its plant site in St. Louis, Gratiot County, Michigan. The plant site encompasses approximately 52 acres and is bordered on three sides by the Pine River. Due to natural topographical, geological, and hydrological conditions, the Pine River and impoundment received surface drainage, soil erosion, and groundwater flow contaminated with hazardous wastes from the main plant site. The site consists of three OUs. OU1 is the former plant site, adjacent residential area, and contaminated groundwater, OU2 is the St. Louis impoundment of the Pine River, downstream of highway M-46 to the St. Louis Dam, and OU3 consists of that portion of the Pine River downstream of the St. Louis Dam to the Chippewa River.

OU1-Plant Site, Residential Area, Groundwater: The Area 2 in-situ thermal design was developed in March 2019. By using the same contractor that performed the in-situ thermal at Area 1, the project savings are expected to be nearly a million dollars since materials and machinery are already on-site, reducing mobilization costs and start-up times. The in-situ thermal treatment of the 3-acre area will be completed in two phases and is estimated to be complete by the fall of 2021. Drilling for the heaters and extraction wells began in the summer of 2019 and the heating of the soil began in the fall of 2019. The EPA held a public meeting in 2019 to discuss the information. Project cost to treat Area 2 is estimated to be $27 million. The treatment of Area 2 Phase 1 is currently on-going with the anticipated conclusion during the fall of 2020.

OU2-Pine River Downstream from M-46 to the St. Louis Dam: Long-term monitoring to assess the effectiveness of the sediment removal in the St. Louis Impoundment continues. Removal and treatment of about 20,000 gallons per week of contaminated groundwater from the site also continues. Contaminated groundwater is transported for treatment at a facility near Detroit. Eventually, this water will be treated in the on-site groundwater treatment plant that is also under design.

OU3-Pine River Downstream of the St. Louis Dam: The Draft Ecological Risk Assessment is expected to be issued in early 2020. The remedial investigation (RI) for OU3 conducted by the EPA's contractor has been completed and is currently in draft phase. Work on the Draft OU3 Feasibility Study (FS) has been initiated with an anticipated completion date sometime in mid-2020.

The EPA is also currently conducting a Carbon Amendment study to determine the effects of applied carbon on the flood plain soils. This study is scheduled to be completed in the Fall of 2020.

History

Velsicol Chemical Corp

The Velsicol Chemical Corporation (and its predecessor, Michigan Chemical Corporation) engaged in the production of various chemical compounds and products at its plant site in St. Louis, Gratiot County, Michigan. The plant site encompasses approximately 52 acres and is bordered on three sides by the Pine River. Operations at the plant site caused contamination of the soil and groundwater on the site as well as into the soils of the adjacent neighborhood. Due to natural topographical, geological, and hydrological conditions, the Pine River and impoundment received surface drainage, soil erosion, and groundwater flow contaminated with hazardous wastes. The main contaminants of concern are hexabromobenzene (HBB), dichlorodiphenyltrichloroethane (DDT), polybrominated biphenyl (PBB), and tris(2,3-dibromopropyl)phosphate. However, numerous other contaminants are found at concentrations that exceed human health and ecological risk-based criteria. The site was placed on the National Priorities List in September 1983.

OU1–Plant Site, Residential Area, Groundwater: A 1982 Consent Judgment between the EPA, EGLE (formerly known as MDEQ), and the Velsicol Chemical Corporation, the potentially responsible party (PRP), provided for demolition and burial of the plant on-site, construction of a slurry wall containment system, construction of a site cap, installation of a groundwater collection system with deep well disposal, and implementation of a long-term maintenance and monitoring system. Construction of the project was completed in October 1984.

The Consent Judgment stipulates that the average water table elevation within the slurry wall is not to exceed 724.13 feet above mean sea level. In March 1989, the measured water table in some of the monitoring wells exceeded this requirement. EGLE oversaw investigations by the PRP into the cause of these exceedances. In 1993, several of the monitoring wells were repaired/replaced by the PRP in hopes that this would resolve the non-compliance of the water table elevation. This action failed to correct the non-compliance.

In June 1994, EGLE and the EPA agreed to allow the PRP to conduct an interim action to lower the water levels within the slurry wall. Approximately 400,000 gallons of water were removed, transported, treated, and discharged by Inland Waters of Detroit. In December 1994, a second interim action was conducted by the PRP, removing 500,000 gallons. A third interim action was conducted in February 1995, removing 750,000 gallons.

In 1997, the PRP completed the following activities to better define current site conditions: 1) replacement of three monitoring wells and installation of two additional wells; 2) assessment of both the landfill and the slurry wall at the main plant site; and 3) completion of the necessary Underground Injection Well Permit requirements to allow them to use their deep well for non-hazardous injection. The assessment included a water balance study for the landfill and slurry wall that concluded that the containment system had lost at least 11 million gallons of water. The assessment was incomplete and did not provide a complete evaluation of the components of the containment system.

The First Five-Year Review (FYR) was completed on August 27, 1997, and found that the structural integrity of the containment system needs to be evaluated to ensure that additional contaminants are not being released to the environment. The Second FYR was completed on September 25, 2002, and found that the remedy at OU1 is not protective. The Third FYR was completed on September 29, 2007, and found that based on the RI conducted by EGLE that the remedy at OU1 is not protective because the containment system implemented under the 1982 Consent Judgment does not meet the original design specifications, is not functioning as designed, and is not preventing the migration of contaminated groundwater and non-aqueous phase liquids (NAPL) from the main plant site. Some areas in the residential neighborhood adjacent to the main plant site had soil concentrations that exceed the state of Michigan's Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Direct Contact Criteria.

A thorough review of all the existing data for the plant site by EGLE in March 2000, determined that the containment system was releasing contaminants to the environment. Around this time, the EPA informed EGLE that the federal government had been in bankruptcy negotiations with the PRPs (i.e., Fruit of the Loom, Northwest Industries, and Velsicol Chemical Corporation) for several months. Due to the insistence of the PRPs, the State of Michigan was asked to join the bankruptcy negotiations.

EGLE conducted Phase I of the RI in 2001. Phase I of the RI assessed the integrity of the slurry wall and concluded that the slurry wall was leaking at numerous places and that the materials used in the construction of the cap did not meet the construction specifications. In October 2001, the EPA, while conducting the contaminated sediment removal in the St. Louis Impoundment OU (OU2), discovered a sand seam within the till that acts as the bottom of the containment system. This sand seam contained NAPL that was 82 percent DDT. This was only one of the many sand seams in the till layer and all of them are potential pathways for the migration of contaminants from the plant site to the Pine River. Phase II further investigated the breaches in the slurry wall, the sand seams in the till, and the groundwater movement within and between the Pine River an the upper and lower aquifer. Phase III investigated the groundwater

flow, contaminant distribution, and migration on- and off-site.

The RI found that the existing containment system had failed and allowed contaminants to be released to both the Pine River and the upper and lower aquifer (which is the source of drinking water for the city of St. Louis). It also found that the existing cap fails to prevent the migration of precipitation into the containment system, that two or three NAPLs exist on-site in soils and groundwater, and that the city's drinking water production wells are contaminated with para-chlorobenzene sulfonic acid.

EGLE submitted the Draft Feasibility Study (FS) to the EPA for review on June 30, 2010. The EPA was the lead Agency for the Proposed Plan released for public comment on February 7, 2012. The public meeting was held on February 16, 2012. The EPA, Region 5 and EGLE recommended that Alternative FPS-3 be selected as the preferred alternative for OU1 of the site. Alternative FPS-3 uses a combination of technologies to address the unacceptable risks and meet the Remedial Action Objectives: including the use of a vertical barrier around the former plant site; a perimeter drain system; continued use of the NAPL collection system; installation of new NAPL collection trenches; in-situ thermal treatment of NAPL contaminated soils; in-situ chemical oxidation or excavation and off-site disposal of areas with extremely high soil and/or groundwater contaminant concentrations; a new engineered hazardous waste landfill cap; replacement of the city of St. Louis municipal water system; restoration of groundwater through extraction and treatment; long-term monitoring; and implementation of institutional controls (ICs). The Record of Decision (ROD) was signed June 2012 and the EPA selected Alternative FPS-3 from the FS. The State of Michigan concurred with the EPA's remedy selection.

A Fourth FYR was completed in September 2012 and confirmed the issues and recommendations made in the 2007 FYR.

A removal action was undertaken by the EPA Emergency Removal Branch in late 2012, removing the most severely DDT-contaminated soil in the residential neighborhood adjacent to the former plant site.

A Superfund State Contract (SSC) between the State of Michigan and the EPA for remedial activities at the adjacent and nearby properties was signed on October 21, 2013, and amended April 14, 2015. These activities involved the excavation and disposal of remaining contaminated soil in the residential neighborhood, as well as property restoration afterwards.

Remedial Actions (RAs) completed during 2014 in the residential area, adjacent to the former plant, included the remediation and restoration of 52 properties and the disposal of 33,000 tons of contaminated soil. Also during 2014, the EPA contractors completed 246 pre-design, roto-sonic borings to further define the vertical and lateral extent of principal threat waste in two potential source areas and two dense non-aqueous phase liquid (DNAPL) areas.

The Gratiot Area Water Authority was formed as a joint venture between the cities of Alma and St. Louis in 2013 to provide a new source of drinking water to residents of St. Louis. This was funded from multiple sources, among them the EPA. The EPA's funding was given in the form of a grant to the city of St. Louis, and an SSC was signed April 29, 2014, between the EPA and the state, to enable the state to provide the EPA the statutorily required 10 percent match for the grant funding. The north transmission main for drinking water from Alma to St. Louis was completed during 2014. In addition, two booster pump stations have been completed.

Cleanup continued in the residential neighborhood next to the former plant site in 2015. The EPA cleaned up 47 residential properties and 9 city-owned properties (three parkways, five alleys and one easement). Trees planted previously that had died were replaced with new trees. The total work completed through 2015 in the residential neighborhood was 99 properties and nearly 44,000 tons of contaminated soil removed and disposed of off-site in an approved landfill. Soil sampling was completed under Watson, Center, and Bankson Streets.

Water main construction continued during the summer of 2015 and was completed. The Gratiot Area Water Authority began providing water to the city of St. Louis on October 12, 2015. A ribbon cutting ceremony commemorating the founding of the Gratiot Area Water Authority and the city of St. Louis’s new source of water took place on October 16, 2015, in the new City Hall.

In May 2015, the EPA provided a presentation to the community on the in-place thermal treatment technology that will be implemented on the plant site, given the possibility of noise or other impacts to the surrounding neighborhood.

The EPA finished the residential neighborhood cleanup next to the former plant site in 2016. The EPA cleaned up five residential properties and a portion of an unpaved section of Center Street. The EPA began the work in early May and

concluded in late May. Aeration of yards was performed to enhance growth and drainage of the sodded yards. This brings the total work complete to date in the residential neighborhood to 103 properties and nearly 45,000 tons of contaminated soil removed and disposed of off-site in an approved landfill, and 276 trees replanted.

An amendment to the SSC for water supply replacement was signed March 30, 2016, to cover cost increases. Raw water main construction from municipal wells 10 and 11 continued during the summer of 2016.

Design activities continued in 2016, including design for the in-situ thermal technology, for excavation and disposal, and for oxidation treatment. An amendment signed August 4, 2016, to the SSC for the adjacent and nearby properties expanded the scope to include in-situ thermal treatment at the plant site Area 1. Work included installation of new monitoring wells and collection of soil borings. Installation of access roads on the site for the two in-situ thermal areas began in early 2017. EPA presented the groundwater investigation report to be used to assist in the design of the groundwater treatment system.

The EPA awarded $9.7 million in funding for the in-situ thermal treatment for Area 1 in June 2017. Site preparation was completed including the installation of on-site roads, installation of a new gate onto M-46, and concrete pads. A new high-voltage circuit constructed to the site from the city of St. Louis' substation was completed in August 2017. This will be used to bring electricity to the site to power the in-situ thermal treatment system. Construction of the in-situ thermal treatment system began in August and was completed in February 2018. During construction, a site perimeter air monitoring program was implemented. This program was finalized after presenting the draft perimeter air monitoring plan to the public. The EPA completed the construction of a website that displays monitoring information of the in-situ thermal treatment system in February 2018. In-situ thermal design for Area 2 began in August 2017. The EPA hosted a public meeting to update the public of the site's activities on September 21, 2017. Additional public meetings were held in 2018.

In order to remediate sub-surface contamination, the in-situ thermal treatment system in the one-acre area, Area 1, began in March 2018. The system operated to October 2018. The system reached the targret temperature of 100 degrees Celsius where it remained for 90 days. Prior to system shut down, the EPA and EGLE met and reviewed the amount of contamination recovered. Over 50,000 pounds of contaminants were recovered from Area 1. This is more than twice the estimated amount of contaminants the system was designed to remove. Approximately 8 million kilowatt hours of electricity was used exceeding the estimate of 7.75 million kilowatt hours of electricity. A final report of the removal activities at Area 1 was completed in March 2019. Soil sampling was performed in the heated area.

Citric acid and peracetic acid were put into the water treatment system to reduce biological growth and prevent the formation of calcium carbonate. The formation of calcium carbonate was producing a white discharge. The peracetic acid has also reduced the biological odor from the discharge. Design of the in-situ thermal treatment of Area 2 began in January 2018 to treat five NAPL areas. This NAPL is located adjacent to the Pine River and has been identified as a principal threat waste. The EPA is expecting the State of Michigan to cost-share in Area 2 as well as on-going costs associated with in-situ treatment of Area 1. The treatment of Area 1 using in-situ thermal treatment has been completed. Area 2 phase 1 is nearing completion and is anticipated to reach diminishing returns during September 2020. Area 2 phase 2 is anticipated to begin in the Spring 2021 as operations will be paused during the winter months.

OU2–St. Louis Impoundment, Pine River Downstream of M-46 to St. Louis Dam: In May 1996, EGLE and the EPA collected sediment samples from the Pine River to determine the distribution of contaminants, volume, mass, human health risk, remedial options, and potential costs associated with the river contamination. Detectable concentrations of DDT, PBB, and HBB were found in all sediment cores located downstream of the former outfalls. The maximum concentrations of total DDT, HBB, and PBB in the core samples were 1,175,000 micrograms per kilogram (µg/kg), 240,000 µg/kg, and 2,900 µg/kg, respectively. In July 1997, additional sediment samples were collected to support the risk assessment. These results were summarized in the final RI/FS documents that were released in June 1998. A Draft Human Health Risk Assessment was completed, which identified potential concerns associated with people eating fish from the Pine River.

In March 1998, the Velsicol Chemical Corporation/Pine River site was reviewed by the National Remedy Review Board for funding priority. The National Remedy Review Board approved the site for the RA. A ROD was signed in February 1999 outlining the remedy, which consists of dredging sediments from the Pine River with DDT concentrations greater than 5 parts per million (ppm); dewatering the sediment; disposing of the sediments off-site at an appropriate landfill; treating the water from the dewatering process; and returning the water to the Pine River.

From May 1998 to October 1999, the EPA conducted a removal action at the site. The state provided a 10 percent cost share for this action, approximately $750,000, which had a total cost of $7.5 million, through a SSC. During this action,

36,000 cubic yards of DDT-contaminated sediments were removed and treated for off-site disposal. Additional sheet piling was installed in 1999 to separate the impoundment into sections in preparation for the remainder of the RA work. The state signed a second SSC with the EPA in April 1999, committing to provide a 10 percent cost share for the RA. Based on amendments to the RA SSC in 2002 and 2004, the cost for the RA was estimated to be $97.3 million, of which $9.73 million is the state share.

From 2000 to 2006, the EPA removed 670,000 cubic yards of DDT-contaminated sediments from the Pine River. During the construction season of 2004, the EPA began the removal of DDT-contaminated sediments on the north side of the river. In 2005, the sediment removal work continued on the north side of the river and included the mill pond. The EPA completed the sediment removal at the end of 2006.

While conducting the sediment removal, the EPA encountered three distinct dense and light NAPLs migrating from the plant site into the Pine River excavation. The migration pathways of the NAPL and dissolved contaminants are through the slurry wall, under the slurry wall, and in the sand seams and fractures within the till. As an interim response, the EPA elected to construct an interceptor trench with a sub-aqueous clay cap over the trench. This interim action will not be sufficient in the long-term to prevent the ongoing migration of NAPL and dissolved constituents to the Pine River in the area that the EPA remediated with the sediment removal. However, removal and treatment of about 20,000 gallons per week of contaminated groundwater continues under the Pine River SSC for remediation of contaminated sediments. Contaminated groundwater is transported for treatment at a facility near Detroit. Eventually, this water will be treated in the on-site groundwater treatment plant that is also under design. The OU1 remedy will address this contaminant pathway on a long-term basis. Two other distinct NAPL plumes are also migrating from the Velsicol Chemical Plant site. One is characterized by the high concentrations of chlorobenzene and the other is characterized by the high concentrations of carbon tetrachloride.

The 1,400 lineal feet of sheet pile wall, which had been in the center of the Pine River since the sediment RA, was removed during the fall of 2014.

Long-term monitoring to assess the effectiveness of the sediment removal in the St. Louis impoundment continues. Fish for the contaminant monitoring program were collected during 2015 by staff from the Water Resources Division for chemical analyses. EGLE staff presented the results of the fish tissue data to the public in December 2016. Results continue to show low levels of DDT in fish tissue.

OU3–Pine River Downstream of the St. Louis Dam: EGLE has completed investigations downstream of the St. Louis Dam to characterize the vertical and lateral extent of contamination in sediments, floodplain soils, fish, and other biota. The EPA has recognized the downstream impacts from the former plant site and has conducted additional investigation of the sediments, floodplain soils (including high school athletic fields), and fish in OU3 to supplement the data previously collected by EGLE. The Pine River Ecological Risk Assessment was completed by EGLE, with the EPA concurrence, in December 2014.

The Removal Program of the EPA, conducted a removal of soil from the St. Louis Schools football practice field, and other areas due to unacceptable ecological risks, primarily to the American Robin. The Removal Program of the EPA does not require a match. Therefore, this removal work did not require EGLE funding.

After examining the soil samples collected from the high school athletic fields, the EPA Emergency Removal Branch found a few areas that contained levels of DDT that posed a risk to wildlife, especially robins. As a result, the EPA removed approximately 6,000 cubic yards of contaminated soil. Work began in May 2015 and was completed in April 2016. After excavation, the athletic fields were backfilled with clean soil. Work crews re-installed the outfield fence in the baseball field and watered the sod on the practice football field and grass seed with mulch in the remaining areas to keep it green. The EPA coordinated with the city and the school district before, during, and after the work.

The RI for OU3 was designed to determine the nature and extent of the contamination in soil, sediments, biota, and surface water of the Pine River downstream of the St. Louis Dam. It also provides baseline data with which to compare the performance of the sediment removal in the impoundment against, and provide additional data for the long-term monitoring of the sediment removal. This work supported the planned development of an FS and ROD that was initiated in 2016. The ROD has not yet been completed for OU3. Additional sampling of the school athletic fields was completed in early 2015 to further delineate the area of contamination. Soil located in the athletic field complex with DDT concentrations greater than 5 parts per million (ppm) was removed in June 2015 to mitigate ecological risks.

The ecological study downstream of the former plant site commenced in 2016. This study examines animals and other organisms and their relationship to the environment to see if there are any impacts from site contaminants. The second

year of the downstream toxicological studies were completed in August 2017. This included American Robin nest surveys, small mammal trapping at multiple downstream floodplain locations, insect collection, bird box nesting success surveys, wood duck nesting success surveys, and collection of biological samples.

Enforcement

Entire Site

A Consent Judgment was signed between the State of Michigan, the EPA, and the Velsicol Chemical Corporation in 1982. This document defines the responsibilities and extent of cleanup that will be completed at this site.

The federal government and the States of Michigan, Tennessee, and New Jersey have negotiated a settlement with the Velsicol Chemical Corporation and bankruptcy/settlement with Fruit of the Loom. Both are PRPs for this site. The federal government and the state governments have also reached a settlement with Fruit of the Loom's insurance carrier, AIG, for $42.5 million. The St. Louis Velsicol Chemical site received $12.5 million from this settlement.

Operable Units for Velsicol Chemical Corp

OU1 Plant Residential Area Groundwater Till

OU2 Pine River

OU3 Pine River Downstream St Louis Dam

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/10/2012

Location Name: OU1 Plant Residential Area Groundwater Till

Comments:
Remedy consists of soil excavation and off-site disposal, upgrades to the existing cap, vertical barrier, perimeter drain system, NAPL collection, in-situ soil treatment, in-situ groundwater treatment, municipal water supply replacement, and long-term monitoring.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 2/15/1999

Location Name: OU2 Pine River

Comments:
Remedy consists of hydraulic modification of the Pine River, Excavation of Sediments, Dewatering and Water Treatment and disposal of contaminated sediments.

Response Activities - In Progress

Activity: Remedial Action **Start Date:** 4/22/2019 **End Date:** 6/29/2030

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$136,617,994.00	Federal	$13,661,799.00	State

Comments:
Main Plant Site, In Situ Thermal Treatment, NAPL/1,2-dibromo-3chloropropane Area 1/2, Potential Source Areas 1 and 2

The remedy for the Plant Site OU is comprised of multiple individual actions, each with its own separate design and implementation schedule. In aggregate, costs are expected to reach $142 million. As such, and also due to anticipated annual funding limitations, it is expected that the period of RA will last as long as 20 years. The EPA will construct the final plant site remedy. This reflects the remaining actions.

Activity: Remedial Action | **Start Date:** 4/29/2014 | **End Date:** 12/16/2022

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$27,100,000.00	Federal	$3,011,111.00	State

Comments:
Drinking Water Supply Replacement is Ongoing. One more well to be installed by city at an estimated cost of $6 million. Estimated end date is December 2022.

The remedy for the Plant Site OU is comprised of multiple individual actions, each with its own separate design and implementation schedule. In this action, the city of St. Louis drinking water supply is being replaced. The replacement is being funded from multiple sources, for a total cost of $38,576,600. The EPA and state share is $30,111,111. The EPA and the state entered into an SSC documenting the state involvement and cost-share. The EPA has a Cooperative Agreement with the city to reimburse the city for agreed upon costs. Then the state reimburses the EPA for 10 percent of those costs through the SSC.

Activity: Remedial Action | **Start Date:** 10/21/2013 | **End Date:** 12/17/2021

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$7,480,000.00	Federal	$831,111.00	State

Comments:
Post-Removal Confirmation Task - Robin Study
This task is postponed until trees mature in the Adjacent Nearby Properties.

The remedy for the Plant Site OU is comprised of multiple individual actions, each with its own separate design and implementation schedule. On October 21, 2013, the EPA and the state signed an SSC in the amount of $4,111,111 for the remediation of the Adjacent and Nearby Properties. This SSC was amended April 14, 2015, for a revised total of $8,311,111. These are primarily residential properties near the plant site. The SSC provides for a 90 percent federal cost-share and a 10 percent state cost-share.

Activity: Remedial Design | **Start Date:** 7/1/2012 | **End Date:** 7/2/2029

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,000,000.00	Federal		

Comments:
Costs shown here are for the engineering services associated with the design of each component of the remedy.

Activity: Remedial Investigation | **Start Date:** 1/1/2003 | **End Date:** 12/1/2021

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Federal		

Comments:
These costs are associated with conducting a federally-funded ecological investigation on the portion of the Pine River, downstream of the St. Louis Dam.

Activity: Remedial Action | **Start Date:** 4/20/1999 | **End Date:** 9/29/2030

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$87,570,000.00	Federal	$9,730,000.00	State

Comments:
Operation of the NAPL Collection Trench

The EPA conducted an RA to remove all contaminated sediments from the St. Louis Impoundment which contain more than 5 ppm total DDT, per the ROD signed February 12, 1999. The state provided 10 percent match as documented in the SSC effective April 20, 1999, Amendment #1 effective March 29, 2002, and Amendment #2 effective September 14, 2004. During the sediment removal, a large quantity of DNAPL containing 28 percent DDT was discovered to be migrating from the plant site. To prevent recontamination of the sediments, the EPA constructed an interim collection system to contain the DNAPL until the permanent plant remedy can address the problem. The sediment removal was completed in 2009; however, the SSC is being kept active to fund the DNAPL collection and disposal until the permanent corrective action is in place.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 2/16/2017 | **End Date:** 9/19/2017

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Fifth FYR recommendations: The remedial design has been completed and the remedial action selected for OU1 continues to be implemented. Continued development and implementation of a long-term monitoring plan for DDT levels in fish tissue and sediment for OU2. Continued development and submittal of IC plans which describe the plan for ensuring that all required ICs at the site are implemented, and all ICs that were implemented, are monitored and maintained for both OU1 and OU2.

Activity: Remedial Action | **Start Date:** 8/4/2016 | **End Date:** 12/14/2018

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$14,806,800.00	Federal	$1,645,200.00	State

Comments:
Adjacent Nearby Properties - Soil Removal
On August 4, 2016, the EPA and the state amended the adjacent and nearby properties SSC to include a new action, the in-situ thermal treatment of Area 1 of the plant site.

Activity: 5 Year Review | **Start Date:** 2/8/2012 | **End Date:** 9/21/2012

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
This Fourth FYR concluded that the sitewide remedy is not protective of human health and the environment because the remedy at OU1 does not meet the original design specifications, is not functioning as designed, and is not preventing the migration of contaminated groundwater from the main plant site.

Activity: 5 Year Review | **Start Date:** 3/1/2011 | **End Date:** 9/21/2012

Operable Unit:
Velsicol Chemical Corp - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$0.00	Federal	$0.00

Comments:
The Fourth FYR confirmed the findings of the 2007 Third FYR that the remedy has failed and is not protective of human health and/or the environment.

Activity: 5 Year Review | **Start Date:** 2/28/2007 | **End Date:** 9/24/2007

Operable Unit: Velsicol Chemical Corp - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR concluded that the Plant Site, Residential Area, Groundwater OU remedy is not protective because the containment system implemented under the 1982 Consent Judgment does not meet the original design specifications, is not functioning as designed, and is not preventing the migration of contaminated groundwater and NAPL from the main plant site.

Activity: 5 Year Review | **Start Date:** 10/31/2001 | **End Date:** 9/25/2002

Operable Unit: Velsicol Chemical Corp - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Second FYR concluded that the Plant Site, Residential Area, Groundwater OU remedy is not protective, but is expected to be protective once a new remedy is selected and implemented.

Activity: Remedial Investigation | **Start Date:** 3/1/2000 | **End Date:** 6/30/2012

Operable Unit: Velsicol Chemical Corp - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$9,500,000.00	State	$0.00	

Comments:
From review of PRP documents and existing data, EGLE determined that the 1983 plant site remedy had failed and began a state-funded RI. This RI was conducted from 2000 to 2012 and documented failure of the original remedy, identified threats to the public water system, characterized multiple NAPLs and defined the nature and extent of groundwater contamination and residential soil contamination. The FS was completed in November 2011 and a ROD was signed by the EPA in June 2012. The State of Michigan concurred with the remedy selected by the EPA.

Activity: Interim Response | **Start Date:** 10/12/1998 | **End Date:** 10/15/1999

Operable Unit: Velsicol Chemical Corp - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,746,070.00	Federal	$749,563.00	State

Comments:
The EPA Removal Program conducted an excavation and disposal of 80 percent of the DDT mass in the St. Louis impoundment by removing over 22,500 cubic yards of the most highly contaminated soils. The state provided a 10 percent match as documented in the SSC effective October 12, 1998, Amendment #1 effective February 7, 2000, and the Reconciliation and Termination Agreement effective June 21, 2004.

Activity: 5 Year Review | **Start Date:** 1/1/1997 | **End Date:** 8/27/1997

Operable Unit: | **Status:**

Velsicol Chemical Corp - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,000.00	Federal	$0.00	

Comments:
The First FYR concluded that the containment system needed to be evaluated to assess its effectiveness.

Activity: Remedial Design | **Start Date:** 1/1/1981 | **End Date:** 1/1/1982

Operable Unit: Velsicol Chemical Corp - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The Velsicol Chemical Corporation designed the containment system while negotiating the Consent Judgment.

Activity: Remedial Action | **Start Date:** 1/1/1981 | **End Date:** 10/1/1984

Operable Unit: Velsicol Chemical Corp - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The Velsicol Chemical Corporation constructed a containment system on the plant site that encapsulated the plant and the contamination at the plant site in 1983. Off-site contaminated soils from the golf course disposal area (former burn pit) were also encapsulated at the plant site. This remedy has failed and the PRPs have gone bankrupt.

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 10/1/2023 | **End Date:** 9/30/2024

Operable Unit: Velsicol Chemical Corp - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$5,000,000.00	State		

Comments:
Ten percent match needed for the estimated $50M of RA work remaining at the Velsicol Plant Site, including the installation of the vertical wall barrier and the construction of the landfill cap. The work is being done in phases, and as it gets nearer, the specific work and accompanying costs will be broken out accordingly.

Activity: 5 Year Review | **Start Date:** 9/17/2021 | **End Date:** 9/17/2022

Operable Unit: Velsicol Chemical Corp - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
Sixth FYR Process

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 4/20/1999 | **Most Recent Mod:** 7/1/2011

Location Name: Velsicol Chemical Corp - OU Entire Site | **Status:** Open - Active

Velsicol Chemical Corp

Total Contract: $1,520,865.00	**State Total:** $9,730,000.00	**State Share Balance:** $9,711,092.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $18,908.00	**Contracted in FY2019:** $0.00

Summary:
453101

Activity: Interim Response | **Effective Date:** 6/21/2004 | **Most Recent Mod:** 5/27/2020

Location Name: Velsicol Chemical Corp - OU Entire Site | **Status:** Final Close

Total Contract: $0.00	**State Total:** $749,563.00	**State Share Balance:** $115,710.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00

Summary:
453101

Activity: Remedial Action | **Effective Date:** 10/21/2013 | **Most Recent Mod:** 8/27/2020

Location Name: Velsicol Chemical Corp - OU Entire Site | **Status:** Open - Active

Total Contract: $1,581,114.00	**State Total:** $4,976,311.00	**State Share Balance:** $3,395,197.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $817,090.00	**Contracted in FY2019:** $0.00

Summary:
This contract addresses the excavation of contaminated soils from Adjacent and Nearby Properties, and the in-situ thermal treatment of plant site soils in Areas 1 and 2.

Activity: Alternate Water | **Effective Date:** 4/29/2014 | **Most Recent Mod:** 3/17/2015

Location Name: Velsicol Chemical Corp - OU Entire Site | **Status:** Open - Active

Total Contract: $944,144.00	**State Total:** $3,011,111.00	**State Share Balance:** $2,999,474.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $11,637.00	**Contracted in FY2019:** $0.00

Summary:
453114

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $30,134.02	**Exp for Year:** $4,152.72
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $108.49	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:**	**End Date:**	**Status:**

	Management Assistance	3/31/2017	Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $21,092.41	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $14,797.50	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $1,460.46	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $462.88	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $20,232.36	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $99,920.35	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $49,201.08	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $126,989.48	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $28,538.75	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $76,226.07	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Torch Lake

State Site ID:
31000003

Federal Site ID:
S8

Full Address:
Ste Route 26 North Of Quincy Mills, Hubbell, MI, 49934

County:
Houghton

Location

The Torch Lake Superfund site is located in Houghton County in Michigan's Upper Peninsula. The Superfund site includes not only Torch Lake, but other water bodies, and adjacent manmade lands into these water bodies to which stampsands, tailings, and slags were deposited in the vicinity of former copper smelters, stamp mills, leach plants, reclamation plants, and power plants. It is important to understand that the Superfund site does not include the production facility areas (such as the smelters, stamp mills, and power plants, etc.) or the mining areas themselves. The Superfund site is limited to the stampsand disposal areas, groundwater under the stampsands, surface waters adjacent to the stampsands and lake sediments.

Status

Copper mining activities in the area from the 1890s until 1969 produced mill tailings that were deposited in Torch Lake, along the shoreline. About 200 million tons of copper mill tailings were dumped into the lake.

Twelve separate Superfund Areas (Sites) were covered with engineered covers. Deed restrictions were required for each covered parcel. Adequate deed restrictions are still not in place on all the covered stampsand parcels. EGLE (formerly known as MDEQ) is working with stakeholders and the EPA to place adequate deed restrictions on all remaining properties that were remediated by the EPA soil cover, however, a question of legal ownership of the properties arose.

The Point Mills, Boston Pond, North Entry, and Scales Creek areas are the only sites that still have not been deleted from the National Priorities List. The EPA and EGLE worked on obtaining acceptable deed restrictions on the covered portions of these sites. EGLE staff prepared the Draft Deed Restrictions for these areas in 2017 and submitted to the EPA for approval. The EPA reviewed and approved the Draft Deed Restrictions in 2019 which is a simpler and shorter version of the deed restriction form that has been used in previous years.

No additional work has been done to investigate the cause of benthos degradation in Torch Lake, which is one of the beneficial use impairments being evaluated under the Area of Concern program. As soon as the Upper Peninsula District Office staff completes their investigations of the industrial areas, EGLE will determine the next course of action to address the benthos problem.

Recently, EGLE and Water Resources Division posted a notice to their internet home page announcing that a resident of the State of Illinois has applied for a permit proposing to mechanically and/or hydraulically dredge an estimated 33,528,422 cubic yards of stampsands extending along the Lake Superior shoreline from the village of Freda to North Portage Entry. MDEQ Superfund staff has requested that if a permit were to be issued, a dredging buffer distance be maintianed between the landward side of the dredging and the lakeward edge of the cap. We have indicated that the integrity of the cap must not be compromised as a result of this operation.

Currently, the Agencies are drafting deed restrictions for each parcel for signing by EGLE Superfund Section. The signed document would then be sent to the individual property owners for filing with the County Register of Deeds.

Based on the 2017 and 2018 site inspection recommendations, observed flood damage, budget evaluation, and the meeting held between AECOM and EGLE on January 4, 2019, 13 locations at 6 sites were identified that required maintenance construction in 2019. The sites requiring maintenance construction were: Boston Pond, Lake Linden, Mason Sands, Michigan Smelter, Point Mills East, and Point Mills west. EGLE obtained access to all sites prior to the

pre-bid meeting on June 12, 2019. The DTMB received the bid results on June 26, 2019. The results showed John Coponen Construction as the responsive and lowest bidder with a base bid of $128,500. The Agencies completed the cover maintenance and repair construction inspection on October 9, 10 and 11, 2019. The annual Operation and Maintenance (O & M) inspection was completed during the week of July 27, 2020.

History

The Site was first identified from contamination impacting Torch Lake. Later several other areas were included in what is now known as the Torch Lake Superfund site. Copper mining activities in the area from the 1890s until 1969 produced mill tailings that were deposited in Torch Lake, along the shoreline. About 200 million tons of copper mill tailings were dumped into the lake. The contaminated sediments in Torch Lake are believed to be 70 feet thick in some areas, and surficial sediments contain up to 2,000 parts per million of copper. In some areas, copper and arsenic concentrations exceed Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), direct contact cleanup criteria. The lake has also received mine pumpage, leaching chemicals, explosive residues and by-products, municipal and industrial trash, and sanitary wastes. In 1972, an estimated 27,000 gallons of cupric ammonium carbonate were released into Torch Lake from storage vats. Barrels were also found at several places along the shoreline of Torch Lake.

The Torch Lake Superfund site includes the stampsands, tailings, and slag disposal areas at Lake Linden, Point Mills, Boston Pond, Mason Sands, Tamarack City, Calumet Lake, the North Entry, Michigan Smelter, Isle Royale mine, Scales Creek, Quincy Smelter, Dollar Bay and the Lake Superior shoreline south of the North Entry. The Torch Lake Superfund site also consists of the groundwater below these sites and the surface water adjacent to these sites. The water bodies impacted include Torch Lake, the north half of Portage Lake, Portage Canal, Boston Pond and Calumet Lake. "Stampsands" will be used throughout this report to represent both "stampsands and tailings." Slags will be referred to as "slags."

Most of the exposed stampsands were unable to support vegetation except at Calumet Lake and Mason Sands, where municipal sewage sludge had been applied, and parts of Isle Royale, where topsoil had been added. The areas designated above as the Superfund site have been remediated with a soil cover and vegetative cap by the EPA.

The initial findings that prompted significant concern at Torch Lake were tumors that were found on the sauger fish population. EGLE funded a study to evaluate the incidence and cause of tumors in sauger fish. The study found no direct cause-effect relationship between the fish tumors and past human activities. The affected fish population has since disappeared due to unknown causes.

In spite of the fact that the sauger fish tumors could not be linked to site contamination, there were enough other significant resource impairments and potential human health risks that the site was listed on the National Priority List (NPL) on June 10, 1986.

The Torch Lake Superfund site has been broken down into three Operational Units (OUs): OU1, consists of Stampsands at Lake Linden, Hubbell/Tamarack City and Mason Sands; OU2, consists of groundwater, submerged tailings, sediments and surface water; OU3, consists of Stampsands along outlying shorelines of Point Mills, Boston Pond, Calumet Lake, the North Entry, Michigan Smelter, Isle Royale, Scales Creek, Quincy Smelter, and Dollar Bay.

A Remedial Investigation/Feasibility Study (RI/FS) for the Stampsands, Torch Lake OU was initiated to determine the extent and nature of the contamination and to evaluate cleanup alternatives. The EPA and EGLE completed fieldwork on the Torch Lake shoreline area during the summer of 1989. The RI report for this area was issued in November 1990 and the risk assessment was issued in July 1991. Additional fieldwork (test pits), conducted in the summer of 1991, discovered buried scrap metal, but removal activities were not necessary.

The RI fieldwork for the Keweenaw Waterways OU was conducted during the summer of 1990. These investigations centered on the surface waters, sediments, drums, and some limited biological assessments. Additional field investigations were conducted during the summer of 1991 to further characterize drum disposal areas. The RI report for the waterways was issued in January 1992 and the risk assessment was issued in March 1992.

The fieldwork for the Stampsands Along Outlying Shorelines OU was conducted during the fall of 1990 and focused on stampsands and slag piles in areas other than the immediate vicinity of Torch Lake. The RI report for these stampsands was issued in January 1992 and the risk assessment was issued in February 1992. An RI addendum was issued in March 1992. A drum removal was conducted at Torch Lake during the summer of 1991. Drums were taken from several shore and lake locations between Lake Linden and Mason Sands. Disposal was completed by a group of

potentially responsible parties (PRPs) in 1992.

An ecological assessment for the Stampsands Along Outlying Shorelines OU was issued in April 1992. An FS and proposed plan were issued in May 1992. A Record of Decision (ROD) was signed in September 1992 for the stampsand deposits, which called for soil cover and revegetation of exposed stampsands and slags along with other use restrictions. A position paper (in lieu of an FS) and the proposed plan for the water bodies were issued in February 1994. A "No Action" (ROD), was signed in March 1994 for the Keweenaw Waterways OU including Torch Lake, Calumet Lake, and Portage Lake.

A baseline lake study was initiated in 1999 for Torch Lake and was completed in 2000. It included water and sediment sampling, with analysis for metals, base-neutral compounds, grain size analysis, and benthic characterization. The study was intended to provide a baseline for comparison to future data in an attempt to show lake recovery over time once the vegetative cover had reduced the erosion of stampsands into the lake. An additional ecological study, to assess and rate repopulation of the terrestrial portions of the site, was conducted by the EPA in the fall of 2002.

Remedial action (RA) designs were approved and RA funding was obtained in September 1998. The EPA entered into a Superfund State Contract (SSC) authorizing the RA in September 1998.

Construction of the cover over the stampsands began in June 1999 (the Stampsands, Torch Lake OU, and the Stampsands Along Outlying Shorelines OU). The Lake Linden stampsands were covered with 6 inches of sandy loam soil, fertilizer, and vegetative cover in 1999. The grading and covering of the Hubbell and Tamarack areas was completed in 2000. Most of the Mason Sands area was covered in 2001, with the remainder covered in early 2002. The Point Mills and Dollar Bay parcels were covered in the 2002 construction season, with the exception of one property with deed restriction/access problems that was completed in 2003 and the active traction material lot at the Houghton County Road Commission Property, which was partially covered by the EPA and EGLE during area remediation efforts. The Michigan Smelter, Calumet Lake, and Boston Pond areas were covered and vegetated in 2003. The Isle Royale Wastewater Treatment Plant property was graded in 2003 and vegetated in 2004. The last two parcels (North Entry and Scales Creek) were covered in 2005. The EPA declared that the construction for the entire site was completed in 2005. EGLE is now responsible for cover monitoring O & M.

The Lake Linden parcel and the Keweenaw Waterways OU were deleted from the NPL in 2002. The Hubbell and Tamarack parcels were deleted from the NPL in 2004.

The EPA conducted the First Five-Year Review (FYR) in 2003, and concluded that the remedy would be protective of human health and the environment once all of the remedy had been completed in accordance with the two RODs and four memoranda to the site file. Recommendations included the following: ensure deed restrictions are in place, conduct periodic review of groundwater uses at the site and the effectiveness of the county well permitting process, repair cover and shoreline protection, as needed, investigate potential surface tailings at Lake Linden, complete restoration of Mason borrow source soils, complete evaluation of North Entry and Scales Creek, access to Point Mills, evaluate Houghton County Road Commission's road traction tailing excavation practices at Point Mills, and deed restrictions to prevent the development of residences in the slag area of Quincy Smelter.

At the Quincy Smelter, to minimize the migration of mining wastes into the water, the EPA Emergency Removal Branch performed regrading activities and constructed a drainage way with a culvert on the property and placed riprap along the potential erosional shoreline area of the site in 2005. The EPA Emergency Removal Branch removed asbestos from portions of the site and constructed a fence around some historical buildings that contained asbestos in 2003 and 2004. The EPA Emergency Removal Branch staff demolished the hazardous smokestack and performed the limited stabilization efforts necessary to allow for removal of the remainder of the bulk asbestos from the Quincy Smelter parcel of the site in 2008.

The EPA conducted a 2007 Emergency Removal of soils at the Lake Linden beach area to address the elevated concentration of contaminants which included arsenic, polychlorinated biphenyl, and heavy metals. In 2008, EGLE staff utilized state funding to perform limited pore water sampling to screen the Lake Linden shore as a preliminary follow-up measure for the emergency removal. This study confirmed that the groundwater is contaminated in this area.

EGLE performed the sampling for the first of the long-term monitoring studies in the summer of 2004. Some additional data was collected in 2005. A comprehensive report, as well as, the long-term monitoring report was finalized in March 2009. EGLE study conducted in 2004 clearly indicates that Torch Lake is not recovering. According to the available data, the top inch of sediments contains higher levels of contamination than the sediments from the years when the

mining operations were discharging mining waste into Torch Lake. The current estimate is that recovery will take 850 years by natural attenuation, but this estimate does not reflect the current data on sediment contamination.

The ROD for the stampsands, anticipated that the Quincy Smelter property would be developed as a National Historic Park. However, since this has not taken place, a ROD Amendment was prepared and an RA was completed in September 2011 at the Quincy Smelter property. The property was turned over to the National Park Service in 2013 after the successful implementation of the Superfund RA.

EGLE and the EPA worked cooperatively on the Second FYR in 2008. The RAs implemented on the stampsands are protective in the short-term, however, not in the long-term. To be protective in the long-term, a review of institutional controls (ICs) must be performed and modified, as appropriate. The review stated that a protectiveness determination for Torch Lake could not be made at this time.

Individual O & M plans were drafted by the Natural Resource Conservation Service for each stampsand parcel as they were completed using a draft created by the EPA.

EGLE concurred with the NPL deletion of the Isle Royale Tailings, Michigan Smelter, and Mason Sands, in a letter dated July 25, 2012. The deletion was effective December 24, 2012.

The Michigan Department of Community Health (MDCH) released Public Health Assessments on the drinking water hazards and the physical hazards posed by the site on June 1, 2012. The MDCH also issued public health risk assessments on risks posed by inhalation and direct contact with stampsands and on consumption of fish from Torch Lake. The MDCH could not determine if there was a health risk from dusts created by use of stampsands as road traction. The MDCH concluded that the stampsands at the Mason Sands Superfund site would not harm human health. They could not make a determination for other sites and beaches at the other Superfund sites due to a lack of data. The MDCH also concluded that eating fish from Torch Lake was harmful to human health.

The Third FYR was finalized on March 27, 2013.

The Quincy Smelter and Calumet Lake portions of the Superfund site were deleted from the NPL by the EPA on November 7, 2013.

EGLE Upper Peninsula District Office performed initial site characterization work in the industrial areas of Torch Lake during the summer and fall of 2014. The final report on the abandoned mining wastes project for Calumet, Hubbell and Tamarack City was issued in 2016.

EGLE staff performed a second site inspection of the caps in the summer of 2014. They were able to obtain access to sites they could not inspect in 2013.

Cap restoration work was conducted on the Point Mills portion of Torch Lake Maintenance project in the summer of 2015. Several cubic yards of top soil was hauled and spread/tilled followed by seeding and mulching at the Point Mills cottages as part of the dust suppression effort at the site.

AECOM and EGLE representatives conducted soil cover inspections from July 12, 2016, through July 14, 2016.

Some landowners have shared discontent over the condition of the cover material. In several areas, the vegetation is not well established in part due to poor soil quality. This pertains to part of Point Mills in particular.

AECOM and EGLE representatives conducted soil cover inspections from September 10, 2017 through September 14, 2017. A total of 10 locations were identified for repair work in 2018.

Deed restrictions for some of the properties are still needed, however, the deed restrictions that are in place are inadequate as they lack provision of access to the EGLE for on going O & M responsibilities.

On August 21, 2017, EGLE received a notification from the EPA announcing the start of the Torch Lake (FYR). On October 24, 2017, EGLE sent a Five-Year issues letter to the EPA. The letter identified issues that need to be included in the upcoming FYR Report for the Site.

On March 22, 2018, the EPA signed the Fourth FYR Report.

AECOM and EGLE representatives conducted soil cover inspections from July 16, 2018, through July 20, 2018, at 13 areas within the Site. The primary focus of the 2018 site inspections was the physical condition of soil cover, vegetation, and erosion protection systems that could indicate a reduction of remedy effectiveness. Several areas of needed cap repairs were identified during the inspection. A total of 14 locations were identified for repair work in 2018. An additional goal of the 2018 inspection was to document the flood damage from the high rain event on June 17, 2018, and to determine how the flood event affected the integrity of the soil cover, vegetation, and erosion protection. To aid in this inspection effort, EGLE's Geological Services Unit Drone Incident and Response Team deployed a drone to take video footage and still photos of the sites most impacted from the flood event and that have had significant shoreline erosion observed in the past. These sites include: Hubbell Beach, Hubbell/Tamarack City, Lake Linden, Mason Sands, Michigan Smelter, North Entry, Point Mills (East), and Point Mills (West). The inspection did not include Freda or Redridge tailings, as these are areas not included in the O & M Plan. There is a plan to perform cap repairs and conduct another round of soil cover inspection in the summer of 2019.

An "Availabilty Session" was held by the EPA in consultation with EGLE on November 14, 2018, at Lake Linden-Hubbell Public Library in Lake Linden. The intent of the availability session was to explain to property owners about placement of deed restrictions/ICs on properties that had clean soil and vegetation placed on top of mine waste on their property to add certain land use controls on their property deeds. The controls would restrict digging into clean soil and vegetative cover. If the owner were to disturb the soil or cover, they would be required to restore the soil and cover. Placing the restriction on the deeds will also ensure that future property owners are aware of the waste that had been left on the property and help ensure future owners are not unknowingly exposed to the contamination.

Enforcement

The EPA entered into a Consent Decree with the Copper Range Company in 1997 that required Copper Range to pay $325,000 to the EPA. The EPA did not pursue the other identified PRPs. The EPA entered into an Administrative Order by Consent with numerous landowners in 1994, which required that all respondents place a restrictive covenant on their property within six months. The restrictions require the landowner to properly recover and revegetate any areas of the cap that they may disturb or otherwise cause to become uncovered.

Numerous PRPs could be liable under Part 201 of the NREPA.

Operable Units for Torch Lake

OU1 Torch Lake Stampsands

OU2 Surface Water

OU3 Stampsands Along Outlying Shoreline

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1992

Location Name: OU1 Torch Lake Stampsands

Comments:
The remedy calls for six inches of sandy loam soil and vegetative cover to minimize wind erosion and direct contact hazards. Also, riprap is being utilized for shoreline protection. The biggest concern is impact to aquatic organisms due to elevated metals and shifting windblown sands.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 3/31/1994

Location Name: OU2 Surface Water

Comments:
This ROD selected "no action" as the remedy for the surface water, sediment, and groundwater. The basis for this decision was the expectation that natural processes will lend to natural recovery.

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 7/31/2009

Location Name: OU3 Stampsands Along Outlying Shoreline

Comments:
Amendment to the Stampsands Along Outlying Shorelines Operable Unit ROD to allow the remediation of the Quincy Smelter, associated stampsands, and slag.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/1/1992

Location Name: Torch Lake - OU Entire Site

Comments:
This ROD addresses only OU1 and OU2. The selected remedy for these OUs addresses the tailings and slag piles/beach at the site. OU2, which is not part of this ROD, addresses the groundwater, surface water, and sediments.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 6/1/2013 | **End Date:** 5/31/2033

Operable Unit:
Torch Lake - OU Entire Site

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$25,000.00	State	$0.00	

Comments:
This is needed to monitor and maintain the soil and vegetative cover of the stampsands. It is based on an assumption of 20 years of O & M, starting in 2002 at a cost of $25,000 per year. However, this has been interrupted by the inability to produce a sustainable vegetative cover. The O & M was to begin after the completion of the establishment period. O & M of the vegetative cover will continue into the foreseeable future.

Activity: Operation and Maintenance | **Start Date:** 3/1/2013 | **End Date:** 4/1/2043

Operable Unit:
Torch Lake - OU2 Surface Water

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$2,500,000.00	State	$0.00	

Comments:
Funding is utilized to periodically assess the recovery of the lake and includes activities such as sediment analysis, groundwater monitoring, ecological assessments, sedimentation studies, and benthos population studies.

Activity: Operation and Maintenance | **Start Date:** 3/1/2013 | **End Date:** 4/1/2053

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$100,000.00	State	$0.00	

Comments:
The soil covers on the stampsands are in need of help to produce a sustainable vegetative cover on them. There is no current threat of a dust storm, but if the current vegetation does not become thicker and sustainable, erosion could reduce the quality of the cover over time and cause portions of the covers to fail.

Activity: Operation and Maintenance | **Start Date:** 1/1/1999 | **End Date:** 12/30/2020

Operable Unit:
Torch Lake - OU2 Surface Water

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$400,000.00	State	$0.00	

Comments:
The ROD called for monitoring to be sure that the lake bottom was recovering and the wastes left in place were stabilized as predicted.

Response Activities - Completed

Activity: Operation and Maintenance | **Start Date:** 10/9/2019 | **End Date:** 10/11/2019

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:
$128,500.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
In October 2019, EGLE and the EPA staff inspected cover repair work completed at 7 prioritized locations by the contractor.

Activity: 5 Year Review | **Start Date:** 8/21/2017 | **End Date:** 3/22/2018

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
On August 21, 2017, EGLE received a notification from EPA announcing the start of the Torch Lake FYR.

On October 24, 2017, EGLE sent a FYR issues letter to the EPA. The letter identified issues that need to be included in the upcoming FYR Report for the Site.

On March 22, 2018, the EPA signed the FYR Report. The Review concluded that the remedy in place protects human health and the environment in the short-term because the vegetative cover prevents erosion of stampsands to Torch Lake.

Activity: 5 Year Review | **Start Date:** 3/4/2012 | **End Date:** 3/27/2013

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Point Mills, Boston Pond, Mason Sands, Tamarack City, Calumet Lake, the North Entry, Michigan Smelter, Isle Royale, Scales Creek, Quincy Smelter, Lake Linden, and Dollar Bay were addressed in the FYR. The Draft was reviewed by EGLE Superfund staff. The EPA chose not to address EGLE's concerns at this time. The Final Third FYR of Torch Lake Superfund Site was completed by the EPA on March 27, 2013, and the EPA did not address EGLE's concerns.

Activity: Operation and Maintenance | **Start Date:** 1/1/2009 | **End Date:** 9/30/2015

Operable Unit:
Torch Lake - OU Entire Site

Status:
Cancelled

Primary Cost:
$100,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE drafted an outline of a Baseline Environmental Assessment and description of due care needs for the historical copper mining stampsands in the Keweenaw Peninsula. EGLE has suspended its efforts until a decision is made on the ownership of bottom lands of the state and lands created by tailings.

Torch Lake

Activity: Emergency | **Start Date:** 4/8/2008 | **End Date:** 4/10/2008

Operable Unit:
Torch Lake - OU3 Stampsands Along Outlying Shoreline

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA Emergency Removal Branch came back to the Quincy Smelter parcel and demolished the hazardous smokestack and stabilized the buildings enough to remove the bulk asbestos from them.

Activity: 5 Year Review | **Start Date:** 10/1/2007 | **End Date:** 3/27/2008

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE and the EPA worked cooperatively on the Second FYR in 2008. The RAs implemented at the Stampsands, Torch Lake OU and the Stampsands Along Outlying Shorelines OU are protective in the short-term. To be protective in the long-term, a review of ICs must be performed and modified as appropriate. Also, the RA at the Quincy Smelter property has not been implemented to date, because the ROD anticipated this area to be developed as a National Historic Park. The determination of protectiveness for the Keweenaw Waterways OU including Torch, Calumet, and Portage Lakes could not be made because the contaminant concentrations in the surface sediments are increasing, and exacerbating the biota impairment and habitat destruction. The associated ecological risks needed further evaluation. The 2004 monitoring data suggests that the time for recovery of area water bodies may be unacceptably long (850 years).

Activity: Emergency | **Start Date:** 7/26/2007 | **End Date:** 10/3/2007

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA performed an emergency removal near the Lake Linden beach, and adjacent to the Lake Linden campground beach, after lowered lake levels exposed a contaminated area in a former backwater portion of the lake.

Activity: Emergency | **Start Date:** 10/17/2004 | **End Date:** 5/17/2005

Operable Unit:
Torch Lake - OU3 Stampsands Along Outlying Shoreline

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
An EPA Emergency Removal Branch effort took place in 2004/2005 to remove drums, boxes, and friable asbestos from the warehouse and other buildings, as well as, numerous chemicals from the chemical assay building. The EPA Emergency Removal Branch also performed waterway routing and shoreline erosion control at the request of the EPA Remedial Superfund Branch.

Activity: Operation and Maintenance | **Start Date:** 4/1/2004 | **End Date:** 3/31/2009

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:
$150,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE performed the sampling for the projected first of the long-term monitoring lake assessment studies in the summer 2004. Additional data was collected in 2005. A comprehensive report, as well as the long-term monitoring report, was finalized in March 2009. Further studies are on indefinite hold.

Activity: 5 Year Review | **Start Date:** 10/9/2002 | **End Date:** 3/4/2003

Operable Unit:
Torch Lake - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The EPA conducted the First FYR in 2003 and concluded that the remedy would be protective of human health and the environment once all the remedy had been completed in accordance with the two RODs and four memoranda.

Activity: Operation and Maintenance | **Start Date:** 4/8/2002 | **End Date:** 9/30/2009

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$35,000.00	State	$0.00	

Comments:
Monitoring and maintaining the soil and vegetative cover of the stampsands.

Activity: Remedial Action | **Start Date:** 9/29/1998 | **End Date:** 9/29/2005

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$13,680,000.00	Federal	$1,520,000.00	State

Comments:
The RA consists of a 6 inch, sandy, loam cover and vegetation over the 10 following parcels according to the following schedule. This work is being conducted by the EPA with the state providing a 10 percent cost share through a SSC.
Lake Linden - 1999
Tamarack City/Hubbell - 2000
Mason Sands - 2001
Dollar Bay and Point Mills - 2002
Boston Pond, Calumet Lake, Michigan Smelter - 2003
Scales Creek, North Entry - 2005
Quincy Smelter - 2011

Note that these costs are estimates from the September 1998 SSC. They do not necessarily represent the actual expenditure amount.

Activity: Remedial Design | **Start Date:** 9/1/1994 | **End Date:** 9/29/1998

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$476,000.00	Federal	$0.00	

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 1/1/1988 | **End Date:** 9/30/1992

Operable Unit:
Torch Lake - OU1 Torch Lake Stampsands

Status:
Completed

Primary Cost:
$1,229,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Remedial Investigation **Start Date:** 1/1/1988 **End Date:** 1/1/1992

Operable Unit:
Torch Lake - OU2 Surface Water

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Response Activities - Future Need

Activity: 5 Year Review **Start Date:** 3/28/2022 **End Date:** 3/28/2023

Operable Unit:
Torch Lake - OU3 Stampsands Along Outlying Shoreline

Status:
Future Need

Primary Cost:

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
The next FYR will be held in 2023 as hazardous waste still remains on site.

Activity: Operation and Maintenance **Start Date:** 10/1/2021 **End Date:** 9/30/2028

Operable Unit:
Torch Lake - OU Entire Site

Status:
Future Need

Primary Cost:
$400,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Conduct O & M inspections and evaluations for the 14 soil covers constructed on the stamp sand areas monitoring the progress of the vegetative cover. This includes O&M for 8 years at $50,000 per year for a total of $400,000.

State Superfund Contracts

Activity: Remedial Action **Effective Date:** 9/13/1998 **Most Recent Mod:** 9/20/2011

Location Name: Torch Lake - OU Entire Site **Status:** Open - Active

Total Contract:
$39,908.00

State Total:
$1,292,029.00

State Share Balance:
$1,292,029.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:
453102

Federal Grants

Grant #:	**Activity:**	**End Date:**	**Status:**
V03E00776	Management Assistance	3/31/2018	Closed

Torch Lake

Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $16,391.46	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $3,594.86	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $9,330.44	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $55,840.67	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $75,364.58	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $106,136.00	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $12,183.56	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $227,487.01	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $36.86	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $14,478.00	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $49,832.68	**Exp for Year:** $0.00

Torch Lake

Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $128,510.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Adams Plating

State Site ID:
33000001

Federal Site ID:
DJ

Full Address:
521 N. Rosemary, Lansing, MI, 48917

County:
Ingham

Location

The now-vacant property is a one-acre facility located in Lansing Township, Ingham County. It is located in a mixed commercial/industrial and residential area.

Status

This site was occupied by an electroplating operation from 1964-2010 and prior to that was a dry cleaning facility. The building on the property caught fire in 2010 and the property has been vacant since.

The EPA and EGLE (formerly known as MDEQ) are in the process of reviewing and finalizing the focused Remedial Investigation (RI).

History

The Adams Plating facility was used for electroplating operations from 1964 through 2010. Prior to 1964, the site was used by a dry cleaning company. From approximately 1964 to 1971, wastewater generated from the plating process was discharged directly to a (clay tile) drain, which is believed to have led to a storm sewer. The drain was damaged in the summer of 1980 during a construction project near the Adams Plating Building. As a result, chromium wastewater was released into the ground and seeped into two residential basements. The residents subsequently brought the release to the attention of the Ingham County Health Department.

The Remedial Investigation/Feasibility Study (RI/FS) was completed in 1993. Based on total estimated exposures and current toxicity information, contamination in soil posed an unacceptable risk.

According to the risk assessment, there was not an unacceptable direct contact risk associated with the contaminated groundwater. Residents in the vicinity of the site are connected to a public water supply; therefore, it is unlikely that groundwater would be utilized as a drinking water source.

The Record of Decision (ROD) for this site was signed by the EPA on September 29, 1993. The site remedy consisted of excavation of contaminated soils, which exceeded background concentrations of chromium and arsenic, with off-site disposal; collection and treatment of water encountered during excavation/dewatering activities; replacement of the excavated soil with clean fill and installation of vertical barriers to reduce the potential for recontamination of clean fill; land-use restrictions; and groundwater monitoring.

The original Remedial Design (RD) was streamlined and was completed in 1994. EGLE entered into a State Superfund Contract with the EPA in the amount of $150,000 for the required state 10 percent match of the Remedial Action (RA) costs. Total RA costs were estimated at $1,500,000. MacKenzie Environmental Services, Inc., was retained by the EPA to complete the RA activities. The RA started in August 1994 with completion of the excavation and backfilling by September 1994. A one-year remedy shakedown period ended in September 1995. Long-term groundwater monitoring began in October 1995.

The project moved to the Operation and Maintenance (O & M) phase in October 1995. The O & M consisted of groundwater monitoring for a period of up to 30 years. In April 1997, EGLE successfully negotiated an agreement

which transferred the O & M responsibilities to Adams Plating. State oversight costs were paid by Adams Plating pursuant to this agreement. EGLE sent a letter to the owner of the adjacent warehouse on October 29, 1998, explaining their obligations to notify future prospective purchasers under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201), with regard to the contamination likely to exist under the building.

On October 7, 1999, a Five-Year Review (FYR) document was signed by the EPA. According to the FYR, the remedy selected in the ROD was implemented and remained functional, operational, and effective. The majority of the contaminated soil/source area had been removed from the Adams Plating site and a deed restriction was placed on the soils of that property to ensure the protection of human health. The deed restrictions and/or other institutional controls called for in the ROD, that were meant to prevent exposure to contaminated soil beneath the warehouse (adjacent to the Adams Plating site), were not implemented; and the future protectiveness of the remedy was questionable.

EGLE recommended the following:
(1) Adams Plating should continue to monitor the groundwater to evaluate the effectiveness of the completed remedy.
(2) Semi-annual evaluations should be completed to ensure that the Adams Plating building and the warehouse south of Adams Plating are maintained and not demolished due to the likelihood that contaminated soil remains in these two areas.

On March 12, 2004, Adams Plating submitted a Notice of Migration of Contamination regarding the groundwater contamination to EGLE pursuant to R 299.5522 and R 299.51017(1) of Part 201.

The EPA completed a Second FYR of the remedy on June 27, 2005. The FYR concluded that the remedy at the Adams Plating site currently protects human health and the environment because the groundwater monitoring program and the continued maintenance of the warehouse and the Adams Plating building protect human health and the environment in the short-term. It went on to state, however, in order for the remedy to be protective in the long-term, it may be necessary to have additional institutional controls (ICs) put in place to prevent exposure to contaminated groundwater and soil areas outside of the Adams Plating property. Staff of EGLE alerted the EPA that additional deed restrictions were needed to address contamination under a warehouse building on property adjacent to the Adams Plating site.

The groundwater was initially monitored every two years. In 2005, EGLE agreed with a request from owner, Steve Adams, to reduce sampling frequency to every three years. The 2009 groundwater data and the 2010 FYR revealed continued exceedances of both the maximum contaminant levels (MCLs) and the National Secondary Drinking Water Regulation Criterion. Recent contaminant increases in some wells, were also noted in the 2010 FYR. The 2010 FYR, which was completed and signed on June 25, 2010, also noted a need to expand and update the site monitoring program. The issues in that document outlined concerns over the apparent exceedances, particularly the volatiles, and called for additional evaluation.

Adams Plating continued to operate until a massive fire on December 27, 2010, destroyed the 5,400 square foot building. The fire caused the release of hazardous materials stored and used at the site and affected the one-acre Adams Plating site as well as another acre of ground surrounding the site, including two homes and a vacant lot. Fire suppression water transported leaking chemicals and flowed over frozen ground into a street, stormwater catch basins, and neighboring yards. It also seeped into the ground and into basements of two adjacent homes.

The EPA undertook an Emergency Removal at the site from March through June 2011. A majority of the time was spent sorting and removing fire damaged materials and chemicals from the site. The EPA performed test pits and determined that the soils beneath the building slab were saturated with contaminated liquids. Visible contamination was removed to as much as 8.5 feet below the slab. Contaminated soils were removed, as well as a 10,000 gallon storage tank, from beneath the concrete slab. The tank was severely deteriorated and spilled approximately 100 gallons of (non-water) fluid into the excavation as the backhoe pulled the tank out. Post-excavation samples showed significant concentrations of multiple contaminants remaining on-site in several locations.

The sump of the adjacent house at 517 N. Rosemary Street was found to be pumping highly contaminated groundwater to the surface. During the post-fire removal action, this sump water was collected and contained in a frac tank and transported for proper off-site disposal. The contaminant concentrations in the sump water dropped to below hazardous levels towards the end of the 12 months the EPA Emergency Response Team was involved. The sump water is now being diverted to the backyard of the home to prevent it from discharging to the storm sewer and the Grand River.

Adams Plating

Two municipal wells are in the immediate vicinity of the Adams Plating site. They were both taken off-line for approximately six months during the emergency cleanup. The Board of Water and Light restarted the wells in June 2011. The Board of Water and Light has assured EGLE that the water meets all criteria at the point of effluent from the treatment facility.

EPA staff evaluated the site status and emergency removal data after the fire and determined that a focused RI was needed to evaluate future protectiveness. The EPA hired a contractor, CH2MHill, to perform a focused RI and tasked them with the responsibility of sampling all site wells for semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), and Resource Conservation and Recovery Act, 1986 PL 99-499, as amended (RCRA) metals, including mercury. The sampling plan also included soil gas sampling.

A vacant lot is located adjacent to the facility to the north at 521 N. Rosemary. The house was razed several years ago, but the basement foundation is still in place and may be acting as a source area post fire.

The basement at 531 N. Rosemary also flooded with green water during the fire. The EPA Emergency Removal staff cleaned the basement once the water receded, but residents at this house denied access for any follow-up investigation.

The warehouse at 513 N. Rosemary is periodically inspected to ensure that it remains intact to minimize infiltration and exposure to the contaminated soils beneath the slab. As of 2014, the block structure is showing signs of age and several cracks are developing; cracks are particularly evident on the north (Adams Plating side) of the building.

Steve and Cindy Adams placed limited restrictions on the facility parcels; they need updating. No restrictions have been placed on the adjacent properties.

The Board of Water and Light performs periodic water sampling of all municipal wells and returned the two nearby municipal wells to service approximately six months after the fire.

EGLE staff sampled site monitoring wells in 2014 and installed three additional monitoring wells and sampled all of the site wells in 2015. This data will be used along with EPA's focused RI information to create an updated conceptual site model and soils transmissivity evaluation. It is anticipated that the EGLE will continue to sample site monitoring wells annually. EGLE staff continues to work with the EPA for site characterization and remediation efforts.

The EPA is conducting a focused RI as follow-up to the 2010 Emergency Response Actions and to re-evaluate site conditions. The contracts and work plan development began in 2011. The field work began in the fall of 2013. In May 2015, it was determined that a second mobilization and sampling effort were necessary for the RI/FS efforts. An additional groundwater sampling event took place in late 2015 with groundwater monitoring and well installation done in November and December 2015.

A new site perimeter fence was erected around the site late in 2016.

Two rounds of vapor intrusion (VI) sampling were completed in both March and July 2016 by the EPA Remedial Program. The sampling included the installation of sub-slab sampling points at one residence on Rosemary and the collection of indoor air samples at six residences adjacent to the site. Outdoor air samples were also collected upwind and downwind of those residences. The March round of sampling did not show any contaminants exceeding EGLE action and trigger levels. In January 2017, the EGLE was made aware of letters that were sent out to residents that had samples collected from their homes, which included the results from the July sampling event. The July data indicated concentrations of benzene in two of the residences at concentrations above the EGLE screening level of 3 micrograms per cubic meter (µg/m3).

As a result, EPA Removal Program mobilized to the site March 7, 2017, to conduct additional sampling in order to determine if the VI pathway was complete. The sampling included groundwater, soil gas, sub slab and indoor air samples at three residences. Surface soil samples were also collected at one of the homes to address the resident's concerns regarding storm water runoff from the site on to her property. Of the three homes, there is only one with a sump pump in the basement, so a sump water sample was also collected from the sump. Results from the EPA removal sampling event did not identify exceedances of any screening levels for VI, however, Michigan Department of Health and Human Services (MDHHS) and EGLE requested additional rounds of sampling be completed to ensure no unecessary exposures are taking place. EPA conducted an additional round of sampling in May 2017 which did not identify concentrations of benzene above screening levels.

EGLE and MDHHS decided an additional round of indoor air sampling should be conducted in July 2017 in an attempt to mimic the sampling events in 2016, where the highest concentrations were found in July. EGLE followed up with a state funded round in July 2017. Concentrations of benzene were slightly above in one home in July 2017. MDHHS prepared a document that indicates the reasons why benzene inside the home is not a result of activities that took place on the Adams Plating site as well as why they do not believe it to be a health concern.

A resident contacted EGLE in 2017 with concerns about his yard potentially being impacted during the 2010 fire via a storm sewer manhole in his backyard. EGLE staff followed up on this concern and conducted two rounds of soil sampling on the property. Analytical results from this sampling event have been provided to the resident and found concentrations of various metals, including Chromium, above background concentrations both on the residential property and on the Adams Plating site. EGLE sent soil samples to a lab to distinguish between Chromium III and Chromium VI. The results indicated that the Chromium detected in the yard is not Chromium VI. Concentrations of Chromium III that were detected do not exceed action levels. MDHHS sent a letter on to the resident on December 26, 2018 explaining why the concentrations identified do not pose a risk.

A FYR for the site is currently underway and is expected to be completed in June 2020.

Enforcement

In April 1997, an Agreement for Groundwater Monitoring and O & M was signed by EGLE and Adams Plating. In November 1998, a neighboring business was notified of its due care responsibilities.

The Adams Plating site has deed restrictions in place only for the Adams property, and those are limited to pre-fire conditions with a standing building and an operating facility. EGLE staff has been in contact with the current owner of the adjacent warehouse and continues to discuss with the EPA the need for additional evaluation and implementation of deed restrictions on this property to ensure any remaining contamination under this building does not pose a threat to human health in the future. The absentee owner/landlord and the bankruptcy of the business make communications difficult. EGLE staff has discussed the situation with the EPA Remedial Project Manager and has suggested that restrictions can best be obtained in association with the access agreements for the focused RI. No other enforcement action is anticipated.

Due to the emergency removal costs in addition to the total destruction of the building and business, the EPA determined that the potentially responsible party (PRP) was unable to pay any future costs. The EPA utilized cost recovery funds for removal expenses.

Operable Units for Adams Plating

OU1 Soils Excavation

OU2 Emergency Response

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1993

Location Name: Adams Plating - OU Entire Site

Comments:
Excavation with off-site disposal of soils. Backfill with clean soil. A vertical barrier was installed around the building foundations that protects the clean backfill from contamination present under existing buildings. There was no unacceptable risk associated with the groundwater, since it is not used as a drinking water source, and no other risks were determined. Groundwater monitoring is ongoing to monitor any migration of contamination from the site in the direction of the public water supply.

Response Activities - In Progress

Activity: 5 Year Review **Start Date:** 6/1/2019 **End Date:** 6/15/2020

Operable Unit:
Adams Plating - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	State		

Comments:
The FYR is expected to be complete in June 2020.

Activity: Remedial Investigation | **Start Date:** 9/1/2013 | **End Date:** 9/30/2020

Operable Unit: Adams Plating - OU Entire Site
Status: In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	TBD	$0.00	

Comments:
The EPA is currently conducting a focused RI as follow-up to the 2010 Emergency Response Actions. The RI has been finalized, however, review of the per- and polyfluoroalkyl substances (PFAS) Data Evaluation Report, which will be included in the RI is needed.

Response Activities - Ongoing

Activity: Monitoring | **Start Date:** 9/18/2013 | **End Date:** 9/29/2023

Operable Unit: Adams Plating - OU Entire Site
Status: Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$240,000.00	TBD	$0.00	

Comments:
Groundwater monitoring for eight years (years three through ten) at $30,000/year.

Response Activities - Completed

Activity: Monitoring | **Start Date:** 11/17/2015 | **End Date:** 12/9/2015

Operable Unit: Adams Plating - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$30,000.00	State	$0.00	

Comments:
State funds were utilized to contract with Weston to install four borings and three monitoring wells in November 2015. EGLE staff hand-developed the wells, then sampled them in December 2015.

Activity: Monitoring | **Start Date:** 10/7/2014 | **End Date:** 10/9/2014

Operable Unit: Adams Plating - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Site-wide EGLE groundwater monitoring event completed in October 2014 (previously funded).

Activity: 5 Year Review | **Start Date:** 5/28/2014 | **End Date:** 6/24/2015

Operable Unit: Adams Plating - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
EGLE staff completed the fourth FYR on June 24, 2015. A protectiveness determination cannot be made until further information is obtained with the EPA RI/FS in progress.

Activity: Emergency | **Start Date:** 12/27/2010 | **End Date:** 6/29/2011

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
On December 27, 2010, a fire destroyed the facility. Large quantities of fire suppression water were used and flooded area yards and streets. Additionally, two adjacent homes had green and yellow contaminated water infiltrate their basements. The EPA conducted an emergency removal action at the site from March to June 2011. Actions included the removal of drums stored on-site, chemical vats, the building structure and slab, and large amounts of contaminated soil from the yard and the adjacent properties. Contaminated soils were removed from under the slab to depths of as much as 8.5 feet below grade. In addition to green stained soils, other contaminants were removed as well as a 10,000 gallon underground tank.

Activity: 5 Year Review | **Start Date:** 4/29/2010 | **End Date:** 6/25/2010

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
EGLE staff completed the third FYR on June 25, 2010. It was concluded that the remedy remains protective in the short term, but implementation of additional ICs is necessary for the remedy to remain protective in the long term.

Activity: 5 Year Review | **Start Date:** 6/15/2004 | **End Date:** 6/27/2005

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
The EPA completed the Second FYR on June 27, 2005, and concluded that the remedy remains protective in the short-term, although it may be necessary to implement additional ICs for the remedy to be protective in the long- term.

Activity: 5 Year Review | **Start Date:** 6/1/1999 | **End Date:** 10/7/1999

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The 1999 FYR was completed by the state. The EPA prepared an addendum to the FYR, which was signed by the EPA on September 28, 2001.

Activity: Operation and Maintenance | **Start Date:** 10/1/1995 | **End Date:** 12/27/2010

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	No Financial Source	$0.00	

Comments:
A state agreement with Adams Plating to conduct the O & M and reimburse the state for oversight costs was signed in 1997. Adams Plating started conducting the O & M voluntarily and continued from 1995 through 2010.

Activity: Remedial Action | **Start Date:** 8/1/1994 | **End Date:** 9/14/1995

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,202,000.00	Federal	$0.00	

Comments:
The completed RA consisted of source removal (soil excavation), underground waste tank removal, and groundwater monitoring to evaluate the effectiveness of the completed RA. Construction was completed and demobilization occurred on October 28, 1994. The final RA inspection was on September 14, 1995, at the end of the first year of monitoring.

Activity: Remedial Design | **Start Date:** 9/30/1993 | **End Date:** 5/25/1994

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$395,000.00	Federal	$0.00	

Comments:
On September 29, 1993, the EPA notified Adams Plating that the EPA would do the RD. On September 30, 1993, the EPA issued the work assignment for the RD.

Cost information from the EPA.
May 1994 - completion of RD documents.

Activity: Remedial Investigation | **Start Date:** 10/3/1988 | **End Date:** 9/29/1993

Operable Unit:
Adams Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,857,000.00	Federal	$0.00	

Comments:
The RI was conducted in two phases. Phase I of the RI was conducted in August and September 1989. Phase II fieldwork was conducted between March 1992 and July 1992. The final RI Report is dated March 29, 1993, and the Final FS is dated July 30, 1993.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 6/1/2024 | **End Date:** 6/15/2025

Operable Unit:
Adams Plating - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
The next FYR is due in June 2025.

Activity: Remedial Action | **Start Date:** 10/1/2021 | **End Date:** 9/30/2023

Operable Unit:
Adams Plating - OU Entire Site

Status:
Future Need

Adams Plating

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	TBD	$0.00	

Comments:
Although the need for RA has not been determined at this time, the need for 10 percent state match of a Federal/State funded remedy is noted for potential future RA costs. A draft of the Final RI was submitted to EGLE in December 2019.

State Superfund Contracts

Activity: Remedial Action	**Effective Date:** 6/1/1994	**Most Recent Mod:** 5/27/2020
Location Name: Adams Plating - OU Entire Site		**Status:** Final Close
Total Contract: $0.00	**State Total:** $75,860.00	**State Share Balance:** $0.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00
Summary:		

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $14,057.31	**Exp for Year:** $5,601.07
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $16,623.45	**Exp for Year:** $2,049.21
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $24,868.64	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $26,409.20	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $12,896.68	**Exp for Year:** $0.00
Grant #: V00E192-01	**Activity:** 5 Year Review	**End Date:** 9/30/2011	**Status:** Closed
Budget Amount: $20,000.00	**State Total Award:** $0.00	**Exp to Date:** $19,976.40	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed

Adams Plating

Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $4,708.10	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $13,941.00	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $6,302.00	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $11,058.00	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $50,000.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Motor Wheel, Inc.

State Site ID:
33000033

Federal Site ID:
S5

Full Address:
2401 North High Street, Lansing, MI, 48906

County:
Ingham

Location

The Motor Wheel, Inc., site is located at 2401 North High Street in Lansing, Ingham County. The site is located in an area of residential, industrial, and commercial development. Part of the site has been excavated below the water table, creating a large pond on-site. Several municipal drinking water production wells are located nearby.

Status

From approximately 1938 to 1979, Motor Wheel, Inc., used this 22-acre site as a disposal site for paints, solvents, and other wastes generated in the manufacture of wheels for the automotive industry. Wastes were placed directly on the ground, disposed of in containers, and buried. Waste disposal operations resulted in contaminated soil and groundwater with volatile organic compounds (VOCs), organics, pesticides, and metals.

The primary responsible party, Goodyear Tire & Rubber Company (Goodyear) manages the site's long-term remedy included capping the waste disposal area, extraction and treatment of contaminated groundwater, land use restrictions, and monitoring to assess the status of the remedy. Groundwater contamination and the infrastructure for the site's groundwater extraction system extend about 1.5 miles south of the waste disposal area. Operation and maintenance (O & M) activities are ongoing.

The EPA and EGLE (formerly known as MDEQ) are reviewing Goodyear's proposal to modify the current groundwater pump and treat (P &T) system, including the installation of an additional Glacial Aquifer extraction well and shutting down a Saginaw Aquifer extraction well. The agencies are also exploring the possibility of additional sources of contamination. Trends in vinyl chloride (VC) are being assessed to determine if offsite sources are contributing to the groundwater plume. Goodyear is evaluating options to update the restrictive covenant on the adjacent landfill parcel with the current property owner.

Goodyear is working to complete the first phase of the site-wide soil gas investigation in accordance to a work plan approved by the agencies. It is expected that Goodyear will have completed a report to summarize the results of the initial phase of the soil gas investigation by Fall 2020. This information will be used to determine if additional investigation is necessary.

History

From approximately 1938 to 1979, Motor Wheel, Inc., used this 22-acre site as a disposal site for paints, solvents, and other wastes generated in the manufacture of wheels for the automotive industry. Wastes were placed directly on the ground, disposed of in containers, and buried. Additionally, W.R. Grace and Co., contributed waste to the site from their fertilizer and pesticide reformulation plant adjacent to the Motor Wheel, Inc., property.

In 2017, the Fourth Five-Year Review (FYR) determined that the remedy is protective in the short-term with adherence to institutional controls (ICs). Long-term protectiveness is dependent upon the continued effectiveness of the landfill cap and groundwater extraction and treatment systems maintaining capture of the plumes. Additionally, the EPA recommends that Goodyear evaluate whether there is a potential for a completed vapor intrusion (VI) pathway at the site from constituents in the Glacial Aquifer.

In 1970, EGLE directed Motor Wheel, Inc., to remove oils floating on ponds and containerized some waste materials and soils. A clay cap was also placed over a portion of the site during this time-frame. In 1978, the property was sold

to MSV Associates for mining sand and gravel. During these activities, the clay cap was broken on at least one occasion which exposed buried tanks and drums. The exposed material was characterized and then sent to a local licensed landfill.

Between 1982 and 1984, Motor Wheel, Inc., initiated hydrogeologic investigations which showed that groundwater in the shallow glacial drift aquifer was contaminated with VOCs. These investigations also indicated that contaminated groundwater was migrating on-site from other sources, as well as migrating off-site. As a result, the site was placed on the National Priorities List on June 10, 1986, and an Administrative Order by Consent (AOC) went into effect on October 7, 1987. Pursuant to this order, Motor Wheel, Inc., Goodyear, and W.R. Grace and Co., agreed to conduct a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of the contamination and to evaluate cleanup alternatives. As part of the 1987 AOC, EGLE was reimbursed for previous response costs of $7,160.

The RI was completed May 15, 1990, and reported groundwater contamination with VC, fluoride, ammonia, and other hazardous compounds. The Baseline Risk Assessment was issued on February 28, 1991, and the FS for the waste source and shallow groundwater was issued in August 1991. The investigations determined that waste remaining on the property were a continuing source of groundwater contamination. The chosen remedy was selected and outlined in the Record of Decision (ROD), effective September 30, 1991. The selected remedy included a hazardous waste cap over the waste disposal area, a slurry wall, and extraction and treatment of groundwater in the glacial and perched aquifers.

In 1992, the potentially responsible parties (PRPs) agreed to conduct the remedial design (RD) for the waste source and shallow groundwater. Pre-design investigations to define the extent of the groundwater contamination in the glacial aquifer also determined that migration of contamination to the deeper bedrock aquifer. Because of this, the PRPs installed a series of wells into the bedrock. Analytical results of samples collected from the bedrock wells confirmed contamination at low concentrations. The slurry wall was eliminated as a component of the remedy because it was determined to no longer be an effective alternative to mitigate contaminate migration.

Pursuant to the AOC entered with the EPA in 1994, the remedial action (RA) design was finalized in spring 2017 and construction completed later the same year. The RA consisted of a hazardous waste cap over the disposal area, one extraction well in the perched aquifer, six extraction wells in the glacial aquifer, and the construction of the treatment plant. Despite no enforceable agreement for cleanup of the Saginaw Aquifer at that time, the PRPs installed two extraction wells in the Saginaw plume and tied them into the treatment system. The treatment system has been operational since November 1997.

In February 1999, the EPA Water Division issued an Administrative Order to the W.R. Grace and Co., to clean up the Saginaw Aquifer to background concentrations for ammonia. After issuance of the 1999 Order, W.R. Grace and Co., expressed interest in working with the regulatory Agencies to develop a strategy acceptable to all parties. Shortly afterward, the EPA withdrew the 1999 Order with an understanding that further discussions would form a basis for new Administrative Order. Although the W.R. Grace and Co., initially expressed willingness to cooperate with the Agencies, they filed a request for judicial review of the Order with the Third United States Circuit Court of Appeals in Philadelphia.

Saginaw Aquifer Technical Evaluation Team was established and consisted of representatives from W.R. Grace and Co., the EPA Superfund Division, the EPA Water Division, EGLE, and the Lansing Board of Water and Light (BWL). Their primary objective was: 1) to finalize a recommendation for the approach to dealing with ammonia in the Saginaw Aquifer, and 2) to obtain commitment from W.R. Grace and Co., to implement the Saginaw Aquifer Technical Evaluation Team's recommendations. The Saginaw Aquifer Technical Evaluation Team's recommendations included a long-range goal of aquifer remediation and a short-term goal of managing the BWL pumping to ensure that ammonia influent concentrations at the BWL water conditioning plant remained below advised levels. W.R. Grace and Co., refused to commit to the cleanup voluntarily.

On July 29, 1999, the EPA Water Division issues a new Administrative Order under Section 1431 that required W.R. Grace and Co., to prevent ammonia from reaching the capture zone of the BWL wells in concentrations equal to or exceeding 1.2 milligrams per liter (mg/L). The EPA and EGLE continued settlement discussions with W. R. Grace and Co., centered around the development of a Statement of Work to implement response activities. Simultaneously, W.R. Grace and Co., entered litigation with Goodyear resulting in an out-of-court settlement whereby Goodyear assumed complete responsibility for responding to the July 29, 1999, Section 1431 Administrative Order.

By the end of 2000, discussions between the EPA, EGLE, and Goodyear resulted in a preliminary agreement on a Statement Of Work for response to the July 1999 Order. The installation of a series of monitoring wells began in December 2000 and was completed in the spring of 2001. By summer 2001, agreements for an amended AOC and

Statement of Work had been tentatively approved when the Third United States Circuit Court released its decision on the W.R. Grace and Co., appeal. The opinion of the court was to vacate the July 29, 1999, Section 1431 Administrative Order which greatly complicated negotiations with Goodyear.

In July 2001, the EPA Superfund Division released an Explanation of Significant Difference (ESD) which amended the original ROD in two ways. First, the Saginaw Aquifer cleanup was added as a component of the overall site remedy. Secondly, cleanup standards were evaluated and revised as needed. EGLE sought to have the ammonia standard changed to 1.2 mg/L to be consistent with the criteria set by the EPA drinking water program and be protective of the Lansing BWL operations. However, the EPA chose to leave the standard at 34 mg/L. EGLE did not concur with the ESD.

The EPA , ELGE, and Goodyear negotiated an amendment to the existing 1994 AOC, along with a Statement Of Work, for necessary response activities in the Saginaw Aquifer. These documents were finalized in mid-2002 and logged with the court in 2003. As a result of these documents, Goodyear installed a fourth extraction well in the Saginaw Aquifer and upgraded the pumps in two other Saginaw Aquifer extraction wells. The four well extraction system became operational in early 2003. To improve extraction system performance in the glacial aquifer, Goodyear installed new, higher capacity pumps in the Zone 1 and Zone 2 extraction wells in early 2003.

In 2005, it was evident that the Saginaw Aquifer ammonia plume was expanding to the north, west, and south, despite the increased pumping rates in 2003. To address this issue, Goodyear overhauled extraction well SEW-1, to increase the pumping volume and installed another high capacity extraction well, designated SEW-5. This well was installed closer to the center of the plume, thereby removing a greater mass of contaminants, while also increasing the capture zone of the combined Saginaw Aquifer extraction system. Once operational in mid-2006, SEW-5 improved capture of the Saginaw Aquifer plumes.

The FYR was conducted in 2007 and 2012. Both FYRs concluded that the remedy is protective in the short-term. Long-term protectiveness is dependent upon the continued effectiveness of the groundwater extraction and treatment systems maintaining capture of the plumes.

In 2010 and 2011, Goodyear conducted investigations to determine the extent of down gradient VC and aquifer characteristics which involved a seismic study, groundwater sampling and monitoring, and groundwater modeling. This information was used for the engineering design and optimum placement of the extraction wells in the aquifer. Goodyear constructed a major expansion of the glacial aquifer groundwater P & T system in 2012 to capture the VC plume down gradient from the Zone 2 extraction wells. A long-term groundwater monitoring plan was finalized in 2015.

A deed restriction on use of the landfill property owned by Goodyear was recorded at the Ingham County Register of Deeds on February 10, 2016. The IC Plan was approved by the EPA in December 2016. The Fourth FYR was completed on July 14, 2017, by the EPA and assistance from EGLE staff.

Enforcement

Work at the site is currently being conducted pursuant to the 1994 AOC with the EPA and the 2003 Amendment to the Consent Decree with the EPA.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1991

Location Name: Motor Wheel, Inc. - OU Entire Site

Comments:
The remedy calls for a hazardous waste cap over the waste disposal area, a slurry wall around the southern and western portions of the waste disposal area, and extraction and treatment of contaminated groundwater in the perched and glacial aquifers. This ROD did not address potential contamination in the Saginaw Aquifer. The slurry wall called for in this ROD was later eliminated by the EPA as a component of the remedy.

Record of Decision	**Amendment:** 0	**ESD:** 1	**Effective:** 7/12/2001

Location Name: Motor Wheel, Inc. - OU Entire Site

Comments:
The ESD addresses groundwater at the site. The original ROD set cleanup standards for site contaminants at levels established under the Michigan Environmental Response Act, 1982 PA 307, as amended (Act 307). Also, the original ROD only addressed the shallow perched and glacial aquifers. The ESD added the deep Saginaw Aquifer as an extension of the site and revised the cleanup standard for VC from 1 parts per billion (ppb) to 2 ppb. The state did not agree with the ESD because the cleanup standard for ammonia is not at the level protective of Lansing BWL operations, 1.2 mg/L. There were no cost estimates included in the ESD for cleaning up the Saginaw Aquifer.

Response Activities - In Progress

Activity: Remedial Investigation | **Start Date:** 1/1/2019 | **End Date:** 9/30/2021

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
In Progress

Primary Cost:
$350,000.00

Primary Source:
Private

Secondary Cost:

Secondary Source:

Comments:
PRP will develop and implement a work plan to evaluate the Glacial Aquifer impacts on soil gas conditions, including the installation of soil gas monitoring points above key areas of the VC groundwater plume. The cost estimate includes the first phase of the investigation. The results will be used to determine if additional investigation is necessary.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 4/9/1998 | **End Date:** 10/1/2033

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:
$9,250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M activities for the groundwater extraction and treatment systems will be conducted until cleanup standards are met. With a projected 30-year timeframe to reach cleanup standards, O & M will likely be conducted until 2033. It is estimated that O & M costs are approximately $1,000,000 per year.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 1/2/2017 | **End Date:** 7/14/2017

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
The Fourth FYR was conducted and found that the remedy is protective in the short-term with adherence to ICs. Long-term protectiveness is dependent upon the continued effectiveness of the landfill cap and groundwater extraction and treatment systems maintaining capture of the plumes.

Activity: Remedial Action | **Start Date:** 4/4/2012 | **End Date:** 7/25/2012

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Implementation of expanded P & T system for the VC plume, south of the glacial aquifer Zone 2 extraction wells.

Activity: 5 Year Review | **Start Date:** 10/1/2011 | **End Date:** 7/20/2012

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
The Third FYR concluded that the remedy is protective in the short-term. Long-term protectiveness is dependent upon the continued effectiveness of the groundwater extraction and treatment systems maintaining capture of the plumes.

Activity: Remedial Design | **Start Date:** 3/1/2008 | **End Date:** 3/31/2012

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Conduct pre-design and design activities for implementation of a cleanup of the VC plume, south of the glacial aquifer Zone 2 extraction wells for the shallow aquifer.

Activity: 5 Year Review | **Start Date:** 9/1/2006 | **End Date:** 7/20/2007

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
The Second FYR concluded that the remedy is protective in the short-term. Long-term protectiveness is dependent upon the continued effectiveness of the groundwater extraction and treatment systems maintaining capture of the plumes.

Activity: Remedial Action | **Start Date:** 1/1/2006 | **End Date:** 5/31/2006

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Installation of extraction well (SEW-5) near the center of the deep aquifer plume. The cost shown for this work is an estimate.

Activity: Remedial Design | **Start Date:** 10/1/2005 | **End Date:** 12/1/2005

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Design an expansion to the existing groundwater P & T system to further enhance the capture zone in the Saginaw Aquifer, with the goal of complete capture of the ammonia. This expansion consisted of the design of one additional extraction well, SEW-5.

Activity: 5 Year Review | **Start Date:** 5/14/2002 | **End Date:** 7/22/2002

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$5,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
The First FYR found that immediate threats associated with the site had been effectively dealt with, but long-term threats remained. The primary concern was the lack of capture of groundwater contaminant plumes.

Activity: Remedial Action **Start Date:** 10/1/2001 **End Date:** 3/1/2003

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Construct expansion of the existing groundwater P & T system in the Saginaw Aquifer. This action focused on an area of contamination in the northwest portion of the site and included the installation of two new high-capacity extraction wells. Costs shown are estimated.

Activity: Remedial Design **Start Date:** 10/1/2000 **End Date:** 10/1/2001

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigate extent of contamination in the Saginaw Aquifer and design an expansion to the existing groundwater P & T system to incorporate cleanup of the Saginaw Aquifer. Costs shown are estimated.

Activity: Remedial Action **Start Date:** 5/1/1997 **End Date:** 10/31/1997

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$10,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
This activity includes construction of the landfill cap over the waste mass area and construction of the groundwater extraction and treatment system by the PRPs pursuant to the 1994 AOC with the EPA. Costs shown are estimates derived from the 1991 ROD.

Activity: Remedial Design **Start Date:** 5/1/1992 **End Date:** 5/1/1997

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The RD was conducted by the PRPs pursuant to the 1992 Order with the EPA. The design consisted of the engineering specifications for a landfill cap over the waste mass and a groundwater extraction and treatment system for the shallow perched and glacial aquifers. Also, included was an extensive pre-design investigation. Costs shown are estimated.

Activity: Remedial Investigation **Start Date:** 1/1/1989 **End Date:** 8/1/1991

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Private	$0.00	

Comments:
The RI/FS was conducted by the PRPs pursuant to the 1987 Order with the EPA and EGLE. Costs shown are estimated.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/30/2021 | **End Date:** 6/1/2022

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	Federal

Comments:
The Fifth FYR will be needed in 2022.

Activity: Operation and Maintenance | **Start Date:** 10/1/2020 | **End Date:** 9/30/2022

Operable Unit:
Motor Wheel, Inc. - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$618,000.00	Federal		

Comments:
A groundwater contractor will review the groundwater model established by the PRP, review pumping efficacy and efficiency, propose remedy optimization, assess off-site groundwater migration, and review soil gas investigation data. EPA will seek cost reimbursement by PRP.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$11,078.19	$2,605.19
V03E00776	Management Assistance	3/31/2018	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$279,328.61	$0.00	$11,905.05	$0.00
V02E00776	Management Assistance	3/31/2017	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$629,172.00	$0.00	$18,551.77	$0.00
V01E007761	Management Assistance	3/31/2015	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$651,876.00	$0.00	$28,692.61	$0.00
V00E00776-0	Management Assistance	3/31/2013	Closed

Motor Wheel, Inc.

Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $24,203.95	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $12,190.92	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $129,275.63	**Exp for Year:** $0.00
Grant #: V995259-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $39,449.00	**State Total Award:** $0.00	**Exp to Date:** $30,933.00	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $36,010.90	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $359,967.63	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $48,288.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: American Anodco, Inc.

State Site ID:
34000001

Federal Site ID:
2N

Full Address:
28 North Beardsley Road, Ionia, MI, 48846

County:
Ionia

Location

This site is located at the eastern edge of the city of Ionia, at 28 North Beardsley Road, between Main Street and M-21. The site is bordered by residential areas to the west and south. Areas to the north and east are bordered by Prairie Creek and adjacent wetlands. Prairie Creek enters the Grand River approximately 1/2 mile downstream of the site.

Status

American Anodco, Inc., was an anodizing facility which brightened, cleaned, and sealed aluminum parts from 1962 to 1987. Acid and quench oil sludge was discharged to unlined seepage lagoons and contaminated groundwater in the area. The 1993 ROD called for no action with monitoring after lagoon sludges were removed and the lagoons abandoned. Extensive groundwater studies were done at the time of the ROD to ensure that the municipal drinking water wells were not impacted by the discharges from the site. A one-time pore water sampling event was done using filtered samples in 2012. Those results indicated that concentrations of site contaminants were below residential drinking water and GSI criteria. The current site owner, Ventra, completed actions and collected documentation for the development of the Draft Final Closeout Report in 2017, but the document has not been completed to date. The remaining 24 monitoring wells were plugged and properly abandoned in December 2017. This site is a candidate for deletion from the NPL but the recent discovery of per- and polyfluoroalkyl substances (PFAS) in process and closed discharge lines has resulted in an additional investigation by NPDES staff as well as additional evaluation of the potential for contamination of area residential wells.

The Ventra operations at the site were found to be the primary contributor of PFAS to the Ionia city wastewater treatment plant (WWTP) through closed discharge lines in 2019. NPDES staff worked with them to find and clean contaminated process lines and tanks and to install a pre-discharge treatment system for long-chain PFAS. PFAS is also thought to be going through the roof scrubbers, settling on the roof, and potentially being discharged to Prairie Creek through storm drains. Investigations to evaluate and mitigate this potential discharge are ongoing. Due to the history of multiple unlined ditches and lagoons on site, there is potential for PFAS contamination in the groundwater beneath and around the site.

Ventra filed a restrictive covenant to restrict site groundwater use on August 22, 2016, but it only covers its property and does not cover the properties immediately adjacent to the site. The city of Ionia also has a groundwater ordinance, but properties that do not have access to municipal water are exempt from it. As a result, several residential drinking water wells have been installed close to the site in the past few years. Hydrogeological conditions in the area are complex so further evaluation of area residential drinking water wells is needed before this site can be deleted.

The EPA and EGLE staff continue to work together to develop an updated hydrogeological assessment and determine whether nearby residential wells should be sampled.

History

American Anodco, Inc. was an anodizing facility which brightened, cleaned, and sealed aluminum parts from 1962 to 1987. Sludges were discharged from acid and quench oil tanks into unlined seepage lagoons. A hydrogeologic study performed in 1985 indicated elevated phosphate levels in monitoring wells. In 1987, American Anodco, Inc., removed the lagoon sludge, disposed of it in an off-site landfill, capped the lagoons, and began discharging its process water to the Ionia treatment works. Also in 1987, American Anodco, Inc., was connected to the municipal water supply for its

drinking water, and merged with (and was renamed) American Bumper and Manufacturing Company. American Bumper and Manufacturing Company then began to manufacture bumpers at the facility. In 1999, the company changed its name to Meridian Automotive Systems.

A remedial investigation/feasibility study (RI/FS) was conducted by American Bumper and Manufacturing Company from 1988 through 1993. Groundwater samples were obtained from newly installed and existing monitoring wells. Soil borings were obtained from the former on-site lagoon area.

RI groundwater monitoring found low, residual concentrations of metals in the aquifer between the plant and Prairie Creek. Analyses indicated elevated manganese and boron concentrations on the plant property, which exceeded residential drinking water criteria by two to five times. Manganese exceeded the industrial criterion by a factor of two. Because manganese also exceeded its draft Groundwater/Surface Water Interface (GSI) criteria near Prairie Creek, the state requested that a mixing zone determination be completed for the wetlands and Prairie Creek. Phosphorus concentrations at the GSI and upgradient wells near the former lagoons continued to show exceedances of surface water quality criteria. No mixing is allowed for phosphorus since it has an additive effect on algal blooms in the Great Lakes and connecting waterways.

The Record of Decision (ROD) was signed in September 1993. The ROD called for no-action with continued groundwater monitoring. The State supported the main concept in the ROD of not pumping and treating the groundwater, but the state did not concur with the remedy because the remedy was not implemented in a way to meet all applicable state requirements.

Meridian Automotive Systems expanded the facility building so it now completely covers the lagoons source area. Further groundwater investigation was conducted in 2001. The monitoring report was completed in May 2002 and identified a few potential exceedances of GSI mixing zone-based criteria. These findings also showed a continuous release of phosphorus, but just one hot spot of manganese in the floodplain.

In 2003, EGLE requested an additional investigation of manganese and phosphorus at the GSI. The company performed this investigation in February 2004 and submitted a report in March 2004. EGLE told the company that based on the results of the 2004 report they would need to remove some phosphorus from the groundwater, and determine whether the high concentrations of manganese on the Girl Scout Association property to the southeast were attributable to Meridian Automotive. EGLE communicated with Meridian Automotive regarding these issues again in February and November of 2008.

Ventra purchased Meridian Automotive in 2009 and continues to operate the facility to the present time. Ventra conducted the final groundwater sampling event in 2011 and 2012. Manganese, arsenic, boron, and phosphorous were not detected above either residential drinking water or GSI criteria on the property or in Prairie Creek.

In 2016, both the EPA and EGLE reviewed the site file and the accumulated groundwater data through 2012 and determined that site contaminant concentrations were below the residential drinking water and GSI criteria. The agencies determined the site was a candidate for deletion from the National Priorities List (NPL) and Ventra initiated actions and provided documentation for the NPL deletion process. The recent discovery of emerging contaminants in the process and closed discharge lines from the facility has resulted in additional investigatory efforts by the National Pollutant Discharge Elimination System (NPDES) staff and further evaluation of area residential drinking water wells.

Enforcement

The previous owner of the site, American Bumper Company, fulfilled all the requirements of their March 1994 Administrative Order of Consent (Order) with the EPA through implementation of the ROD. Meridian Automotive Systems owned the property from 1997 through 2009. The current owner of the site is Ventra Ionia Main LLC (2009 to present). Ventra Ionia Main LLC is liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended. They may also be liable under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

NPDES staff have been working with Ventra to reduce the discharge of per- and polyfluoroalkyl substances (PFAS) through closed discharge lines and storm drains to the river. They are currently evaluating stormwater discharge from roof drains directly to Prairie Creek because of the potential for PFAS from the scrubbers to settle on the roof and flow

to storm drains during rain events.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/27/1993

Location Name: American Anodco, Inc. - OU Entire Site

Comments:
The ROD called for no-action with continued groundwater monitoring. The state tentatively concurred with the ROD with the contingencies that the draft Part 201 regulations [including the need for EPA to waive- rather than disregard as they did- MERA Rule 299.5705(6) groundwater MCLs, MERA Rule 299.5719 land use restrictions and MERA Rule 299.5717(3)(1) drinking water protection and MERA Rule 299.5713 ground water surface water interface] be adopted, which they were, and the company would establish groundwater use restrictions for its property to prevent use of groundwater for drinking water. The company offered to establish groundwater use restrictions in October 2007. The MDEQ wrote Meridian in February 2008 detailing how to apply groundwater use restrictions, and requesting a remedial plan for the phosphorus plume.

Response Activities - In Progress

Activity: Project Closeout **Start Date:** 11/1/2017 **End Date:** 9/30/2019

Operable Unit:
American Anodco, Inc. - OU Entire Site

Status:
In Progress

Primary Cost:
$25,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Ventra hired a contractor to pull, plug and abandon the site monitoring wells. This task was completed in late 2017.

Response Activities - Completed

Activity: Operation and Maintenance **Start Date:** 4/13/1994 **End Date:** 12/1/2012

Operable Unit:
American Anodco, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Groundwater and surface water monitoring continued from ROD implementation, April 13, 1994, until the last monitoring report on September 18, 1998. Subsequent sampling has been conducted by the PRP pursuant to an MDEQ request to monitor the exceedances of phosphorus, boron, arsenic, and manganese that continue in groundwater. The final groundwater sampling event was conducted in 2011 and 2012. Review of the data indicated that phosphorus, boron, arsenic and manganese were detected on site and in Prairie Creek below the residential drinking water and GSI criteria. Both agencies agree that the site is a candidate for deletion from the NPL.

Activity: Negotiations **Start Date:** 1/3/1994 **End Date:** 4/13/1994

Operable Unit:
American Anodco, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Remedial Design/Remedial Action negotiations.

Activity: Remedial Investigation **Start Date:** 10/23/1987 **End Date:** 9/27/1993

Operable Unit:

Status:

American Anodco, Inc. - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$49,000.00	Federal

Comments:
PRP conducted RI/FS.

Activity: Negotiations | **Start Date:** 6/22/1987 | **End Date:** 10/23/1987

Operable Unit: American Anodco, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
RI/FS negotiations.

Activity: Interim Response | **Start Date:** 5/1/1987 | **End Date:** 9/1/1987

Operable Unit: American Anodco, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Potentially Responsible Parties (PRPs) performed remediation of the on-site lagoon in 1987 including dewatering, and sludge removal and disposal in an off-site landfill.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V00E183-01	Management Assistance	3/31/2009	Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $2,923.49	**Exp for Year:** $0.00
V975853-01	Management Assistance	3/30/2007	Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $8,926.84	**Exp for Year:** $0.00
V995258-01	PRP Oversight	9/30/2003	Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $39,944.12	**Exp for Year:** $0.00
V995260-01	Negotiations	9/30/2003	Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $2,136.00	**Exp for Year:** $0.00
V005851-01	Management Assistance	3/31/1993	Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $16,708.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Ionia City Landfill

State Site ID:
34000004

Federal Site ID:
D7

Full Address:
Cleveland Street/West Main, Ionia, MI, 48846

County:
Ionia

Location

The Ionia City Landfill Superfund site is located southeast of the city, on Cleveland Street, in Ionia, Michigan. This 20-acre site is bounded on the south by the Grand River. Land use surrounding the site ranges from agricultural to the west, recreational to the north/northwest, light commercial/residential to the north, and undeveloped toward the northeast and east. The eastern boundary of the landfill is defined by Kanouse Drain. The Grand River is located about 1,700 feet in the direction of groundwater flow (south to southwest) from the source of contamination. A city of Ionia paved recreation trail crosses the site from east to west between the hazardous waste and solid waste disposal areas.

Status

The Ionia City Landfill site is a former municipal landfill that accepted municipal and industrial wastes, including 55-gallon drums of hazardous wastes. In a letter dated September 4, 2015, both the EPA and EGLE (formerly known as MDEQ) agreed to reduce annual groundwater sampling to once every five years. Therefore, the next groundwater sampling event will be conducted in 2020 to coincide with the 2020 Five-Year Review (FYR). The Annual Long-Term Monitoring Reports are reviewed when they are submitted; these contain a summary of site inspections and site operations and maintenance (O & M) which are conducted on a quarterly basis.

The site visit for the Fourth FYR was conducted on August 18, 2019. The Draft Fourth FYR has been initiated by the EPA for completion in 2020.

History

The site is owned by the city of Ionia. The landfill was classified as an open dump in 1966 by EGLE and operated from the mid-1930s until it closed in 1969. The site was never licensed as a sanitary landfill under the Garbage and Refuse Disposal Act, 1965 PA 87, as amended. The city applied to EGLE for an operating license in August 1967, but the license was not issued. After the site closed, uncontrolled dumping continued into the 1970s. The Ionia City Landfill accepted municipal and industrial waste, including 55-gallon drums of hazardous waste. The site posed an acute public health and environmental problem as a result of the potential for direct contact exposure and discharge of bioaccumulative compounds to surface water.

In 1981, EGLE discovered exposed drums at the northern region of the fill area. About 100 drums containing liquid and solid waste were subsequently excavated. Monitoring wells were placed around the site and monitoring identified inorganic and organic chemical contamination. In 1982, the EPA collected sediment and surface water samples from Kanouse Drain. Traces of volatile organic compounds (VOCs), pesticides, and metals were detected in those samples. In September 1983, the site was placed on the National Priorities List. In 1984, the EPA directed the city of Ionia to remove the remaining drums from the former drum removal area. A fence was placed around the area where buried drums were suspected.

A 1989 remedial investigation/feasibility study (RI/FS) confirmed that the shallow aquifer was impacted by organic and inorganic contaminants. Fieldwork also confirmed the presence of a drum burial area containing an estimated 2,000 drums. About 4,900 cubic yards of drummed materials and associated soils were found to contain paint residues, resins, and solvents. In September 1989, the Record of Decision (ROD) was signed to address the source area. In-situ vitrification of buried drums and contaminated soils was selected in the ROD.

In November 1992, intact drums were either removed or crushed as part of an EPA removal action. Drum liquids were analyzed, removed, treated, or disposed of at an off-site facility, but significant amounts of liquids were released into the landfill. A geomembrane and topsoil were placed over the removal area and seeded to prevent infiltration of rainwater. In December 1992, groundwater monitoring results indicated that a new plume appeared to be migrating toward the Grand River and into and beyond Kanouse Drain to the east as a result of contamination released during drum removal actions.

In April 1994, the EPA issued a letter to the liable parties based on an evaluation of groundwater sampling data. The EPA required a proposal to address shallow groundwater contamination under a removal action. In November 1994, a work plan was completed for final excavation of approximately 6,000 cubic yards of contaminated soil and drum fragments from the point source area instead of in-situ vitrification. A clay cap with topsoil and grass cover was placed over the excavation area. Additional wells were installed and soil boring samples collected to evaluate the extent of groundwater contamination and an air sparge/soil vapor extraction pilot test was completed. In addition, a Technical Memorandum and Aquifer Pump Test Report was submitted to the EPA and EGLE. The report proposed a pump and treat (P & T) removal action downgradient from the source area to capture and prevent the new plume from impacting surface water bodies.

In November 1996, the EPA officially approved a groundwater P & T system to contain the new plume as part of the removal action. Approval to discharge treated effluent into the city of Ionia wastewater treatment plant was also granted. The three recovery/extraction wells and associated monitoring wells were installed in February 1997. The groundwater treatment system became operational in September 1999; however, problems with extraction well groundwater capture occurred due to iron fouling. To address this problem, extraction well RW3 was plugged and abandoned, and a new extraction well, RW3R, was installed in March 2000. Since RW3R was also affected by iron fouling, the groundwater extraction system never operated continuously at full pump capacity.

The liable parties requested a MZD from EGLE for a legal discharge into the Grand River and the Kanouse Drain. The limits for groundwater discharge of contaminants (VOCs and heavy metals) established in the mixing zone criteria have been incorporated into the ROD for the groundwater plume issued in September 2000. From 2000 to 2002, EGLE awarded the city of Ionia three Municipal Landfill Cost-Share Grant (Grant) awards totaling $244,568 to reimburse them for up to 50 percent of their costs. Since the Grant program has been discontinued, no additional Grants have been awarded since 2002.

The long-term remedial action (LTRA) work plan was reviewed by the EPA and EGLE at the end of 2001 and finalized in February 2002. The initial phase of the LTRA was to conduct vertical aquifer sampling via the installation of temporary wells in Area A (north of the paved recreational trail) of the site. This was done in June 2002. The second phase of the LTRA was to conduct vertical aquifer sampling, again using temporary wells, in Area B (south of the paved recreational trail) of the site, which was completed in December 2002. In early 2003, the analytical results of the vertical aquifer sampling from Area A were compiled in the report entitled, Vertical Aquifer Sampling Report for Evaluating Capture of the Groundwater Pumping System-Phase II. The analytical results of the vertical aquifer sampling from Area B were submitted for review in June 2003. As part of the LTRA, four additional permanent monitoring wells were installed at the site in early 2003 and incorporated into the existing site monitoring well network. Quarterly groundwater sampling and reports, following the procedures outlined in the LTRA, began in the second quarter of 2003.

Groundwater sampling from all the site monitoring wells was conducted in April 2001. The sample analytical data was incorporated into a Draft Plume Status Report, a requirement established in the 2000 ROD. The data, however, indicated the current extraction well purge system was not successful in capturing the groundwater contaminant plume. This issue and the expansion of the monitoring well network were addressed in the remedial design and remedial actions for the site, which became the LTRA plan. All parties agreed in mid-2004 to delay the final Plume Capture Report for several years. Since the sampling plan in the LTRA was active, a decision on whether or not capture had been accomplished would be determined upon review of a larger data set.

In late 2003, the potentially responsible parties' consultant requested permission to discontinue sending the treated effluent through the filter system and discharge the waste water directly to the wastewater treatment plant. This would hopefully increase the pump rate capacity of the treatment system. After discussions with the EPA, EGLE, and the city, all agreed to the request. The change was implemented in late 2003. Based upon information collected since 2004, bypassing the filter system improved the pump rate capacity.

The initial stages of the LTRA plan were implemented in 2002 and were projected to continue through 2005, when the First FYR report was written. The First FYR, written by the EPA, was completed in 2005. Based upon the information

gathered, the EPA determined the protectiveness statement would be deferred to a later date until the following two issues of concern were addressed: lack of groundwater plume capture and full delineation of the groundwater plume.

In late 2005, ten additional monitoring wells were installed to fill gaps in both the monitoring well and the Groundwater/Surface Water Interface (GSI) sentinel well network to further delineate the groundwater plume and to monitor two isolated spots in Area B of the site where elevated detections of VOCs were found.

During 2007, the EPA, EGLE, and the city of Ionia held monthly conference calls to discuss the site remedy. During those discussions, it was agreed to reduce the heavy metals monitoring for the Kanouse Drain MZD to manganese and chromium only. It was also determined that cleanup criteria for Area B should meet the MZD criteria for the Grand River rather than the criteria included in the ROD. This would address the two hot spot areas of elevated VOC contamination found in Area B. An additional investigation east of Kanouse Drain to establish the eastern boundary of the groundwater plume was completed in late 2007. Two additional monitoring wells were installed for this purpose. All of these remedy modifications were attached to the ROD in a Memorandum to the ROD-Other Remedy Changes document. Finally, a proposal was developed to expand the current site boundary to the west to address the expanding plume migrating toward the Grand River.

Evaluation of the P & T remedy and collection of data to determine if plume capture had been attained continued through 2008 under the LTRA. Review of the 2008 data indicated plume capture had not been attained but that the plume boundary had been documented. The expansion of the site boundary underwent further discussion and review by the EPA and EGLE in 2008. It was determined, however, not to expand the site boundary into adjoining properties but rather to rely upon the established monitoring well network to determine when plume capture was achieved.

Throughout 2008, the EPA, EGLE, and the city of Ionia continued to hold monthly conference calls to discuss the site remedy. Based upon the review of the groundwater data and the 2007 Memorandum to the ROD-Other Remedy Changes document, it was decided that an Explanation of Significant Differences (ESD) was needed to document the changes to the current ROD remedy. The ESD was developed and approved by both the EPA and EGLE. The ESD contained the following remedy modifications: established that the Kanouse Drain was not a receptor to the site's groundwater contamination and eliminated the need to compare the groundwater data to the Kanouse Drain Mixing Zone criteria; initiation of a two-year Pilot Test Shutdown of the P & T System to monitor for any noticeable changes to the groundwater contamination plume concentrations; comparison of the groundwater data to the Grand River Mixing Zone criteria; and elimination of collecting groundwater samples for heavy metals analysis.

The two-year Pilot Test Shutdown of the P & T System began in June 2008 and was completed in June 2010. Quarterly groundwater sampling data was evaluated and confirmed Monitored Natural Attenuation (MNA) was remediating the groundwater contamination plume while the treatment system was shut down. Development of a MNA Report began in late 2009 and was completed in mid-2010. The report confirmed MNA was actively remediating the groundwater contamination plume and that the treatment system could be shut down permanently.

The EPA completed the Second FYR Report in June 2010. The Second FYR protectiveness statement determined that the remedy is protective of human health and the environment in the short term and is expected to be protective in the long term because the source area has been removed and the current monitoring network shows that the remaining contaminant plume is stable and there are no downgradient receptors that could be affected by the plume. The only area that is showing a high level of total VOCs is at Point Source Monitoring Well PMW-1; however, this location appears stabilized and is monitored to ensure the hot spot was not moving downgradient. A deed restriction prohibiting the construction or use of drinking water wells and residential uses at the site was noted to be needed on the site property.

In 2011, the EPA, with input from EGLE, developed a ROD Amendment to change the site remedy from the P & T System to MNA. The ROD Amendment was approved and signed in September 2011. The ROD Amendment included the following: expanded the site boundary to include the west flowing groundwater plume from Area B and the smaller east flowing groundwater plume from Area A; coverage of the area within the new site boundary with deed restrictions as well as the city of Ionia prohibition of installing water wells for drinking water usage; development of a Groundwater Waiver for the Groundwater Plume Expansion West of the original site boundary; development of a Site-Wide Contingency Plan; development of a Long-Term Monitoring Plan (LTMP); development of a new MZD for the Grand River; expansion of source control options for PMW-1 in Area A; and, installation of a Permanent Marker.

In 2012, the city of Ionia opted to develop several site-specific Restrictive Covenants (RCs) and a groundwater ordinance for the landfill property and initiated the annual groundwater sampling under the LTRA. Development of the site-specific RCs and the groundwater ordinance continued through 2013. The groundwater ordinance was approved

and enacted by the Ionia City Council on July 2, 2014. Both of the RCs were finalized and filed on September 3, 2014. Installation of the Permanent Marker was completed in early 2015.

The Third FYR was completed by the EPA on July 7, 2015. The Third FYR Report determined the soil remedy was protective of long term human health and the environment as the cap over the contaminated area on the site prevents exposure to site contaminants. Implementation of the Institutional Controls (ICs) (i.e. the groundwater ordinance and the two RCs) will ensure long-term protectiveness of human health and the environment for the groundwater remedy.

Enforcement

Operable Units for Ionia City Landfill

OU1 Source Control Soils and Waste

OU2 Groundwater Remediation

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1989

Location Name: Ionia City Landfill - OU Entire Site

Comments:
Proposed remedy was in-situ vitrification. However, the implementation of the remedy was unsuccessful. Excavation and removal of the source area was initiated instead.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/2000

Location Name: OU2 Groundwater Remediation

Comments:
Groundwater P & T remedy and MNA were selected for remediation of the groundwater plume. The contaminant concentration must meet MZD and GSI criteria for Kanouse Drain and MNA for the plume migrating off-site to the southwest. Long-term operation and maintenance, funded by the PRP will also be used.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/29/2008

Location Name: OU2 Groundwater Remediation

Comments:
Based on the remedy changes included in the 2007 Memorandum to the ROD-Other Remedy Changes document, an ESD was developed and approved by both the EPA and EGLE. The ESD contained the following remedy modifications: established that the Kanouse Drain was not a receptor to the site's groundwater contamination and eliminated the need to compare the groundwater data to the Kanouse Drain Mixing Zone criteria; initiation of a two-year Pilot Test Shutdown of the P & T System to monitor if any noticeable changes to the groundwater contamination plume concentrations; comparison of the groundwater data to the Grand River Mixing Zone criteria; and elimination of collecting groundwater samples for heavy metals analysis.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/22/2011

Location Name: OU2 Groundwater Remediation

Comments:
The ROD Amendment developed by the EPA, with input from EGLE, alters the 2000 ROD remedy from P & T to MNA for the entire site. The Amendment also expands the site boundary to include the west flowing groundwater plume from Area B and the smaller east flowing groundwater plume from Area A. The area within the new site boundary is covered by deed restrictions as well as the city of Ionia prohibition of installing water wells for drinking water usage. The ROD Amendment also includes the following: development of a Groundwater Waiver for the Groundwater Plume Expansion West of the original site boundary; development of a Site-Wide Contingency Plan; Development of a LTMP; development of a new MZD for the Grand River; expansion of source control options for Point Source Monitoring Well 1 in Area A; and installation of a Permanent Marker.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 1/1/2011 | **End Date:** 1/1/2021

Operable Unit:
Ionia City Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA developed a ROD Amendment to change the site remedy from P & T to MNA. The ROD Amendment, via the LTMP, reduced the groundwater sampling from quarterly to annually. After completion of the Third FYR report in July 2015, both the EPA and EGLE agreed to reduce the groundwater sampling from annually to every 5 years. Therefore, the next groundwater sampling event will be in 2020.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 1/1/2015 | **End Date:** 7/7/2015

Operable Unit:
Ionia City Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was completed by the EPA on July 7, 2015. The FYR Report determined the soil remedy was protective of the long-term human health and the environment as the cap over the contaminated area on the site prevents exposure to the site contaminants. The implementation of the ICs (i.e., the groundwater ordinance and the two RCs) will ensure the long-term protectiveness of human health and the environment for the groundwater remedy.

Activity: 5 Year Review | **Start Date:** 6/1/2009 | **End Date:** 7/16/2010

Operable Unit:
Ionia City Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA completed the Second FYR report in July 2010. The FYR protectiveness statement determined that the remedy is protective of human health and the environment in the short-term and is expected to be protective in the long-term because the source area has been removed and the current monitoring network shows that the remaining contaminant plume is stable and there are no downgradient receptors that could be affected by the plume.

Activity: 5 Year Review | **Start Date:** 2/1/2005 | **End Date:** 9/30/2005

Operable Unit:
Ionia City Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The First FYR was written by the EPA in 2005. The review determined that the protectivness statement will be deferred to a later time when the plume capture can be proven and full delination of the groundwater plume has been established.

Activity: Long Term Remedial Action | **Start Date:** 1/1/2003 | **End Date:** 12/1/2010

Operable Unit:
Ionia City Landfill - OU2 Groundwater Remediation

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Operate P & T System. Quarterly groundwater monitoring until plume capture has been documented. The LTRA began in 2003. In 2008, the EPA, the EGLE, and the city of Ionia agreed to conduct a two-year Pilot Test Shutdown of the P & T System. The pilot test began in June 2008 and ended in June 2010. Based on the 2010 MNA report, which confirmed MNA was actively remediating the groundwater plume, the treatment system could be shut down permanently. The LTRA was ended in December 2010.

Activity: Remedial Design | **Start Date:** 10/1/2001 | **End Date:** 12/30/2002

Operable Unit:
Ionia City Landfill - OU2 Groundwater Remediation

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
No Comment entered

Activity: Interim Response | **Start Date:** 4/1/1995 | **End Date:** 12/30/2002

Operable Unit:
Ionia City Landfill - OU2 Groundwater Remediation

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Construction of groundwater P & T System. Installation of monitoring wells.

Activity: Remedial Action | **Start Date:** 4/1/1994 | **End Date:** 4/1/1999

Operable Unit:
Ionia City Landfill - OU1 Source Control Soils and Waste

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Excavation of contaminated soils; construction of clay cap with topsoil and grass cover.

Activity: Interim Response | **Start Date:** 11/1/1992 | **End Date:** 12/31/1992

Operable Unit:
Ionia City Landfill - OU1 Source Control Soils and Waste

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Drum removal.

Activity: Remedial Investigation | **Start Date:** 1/29/1986 | **End Date:** 9/29/1989

Operable Unit:
Ionia City Landfill - OU1 Source Control Soils and Waste

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$101,000.00

Secondary Source:
Federal

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 1/29/1986 | **End Date:** 9/28/2000

Operable Unit:
Ionia City Landfill - OU2 Groundwater Remediation

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$21,000.00

Secondary Source:
Federal

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 9/29/1984 | **End Date:** 1/29/1986

Operable Unit:
Ionia City Landfill - OU1 Source Control Soils and Waste

Status:
Completed

Primary Cost:
$171,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Interim Response | **Start Date:** 4/1/1981 | **End Date:** 12/31/1981

Operable Unit:
Ionia City Landfill - OU1 Source Control Soils and Waste

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Drum removal and fencing.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 8/12/2019 | **End Date:** 7/7/2020

Operable Unit:
Ionia City Landfill - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR, to be developed by the EPA, will be due by July 7, 2020.

Federal Grants

Grant #: V03E00776

Activity:
Management Assistance

End Date:
3/31/2018

Status:
Closed

Fed Total Award:
$279,328.61

State Total Award:
$0.00

Exp to Date:
$75.40

Exp for Year:
$0.00

Ionia City Landfill

Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $1,434.34	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $11,865.10	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $20,561.32	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $36,276.97	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $19,126.78	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $92,291.83	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $4,834.52	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $144,575.92	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $49,640.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Hedblum

State Site ID:
35000002

Federal Site ID:
E9

Full Address:
1000 AuSable Road, Oscoda, MI, 48750

County:
Iosco

Location

The Hedblum Industries site is located about one mile southwest of the city of Oscoda. The site consists of the old Hedblum Industries plant, which was occupied by the Aircraft Tool Supply Company, followed by the Amtel Company. Contaminated groundwater flows underneath a portion of the AuSable Heights subdivision to the east of the site before reaching a swampy area, which flows into the AuSable River. The AuSable River is approximately 0.8 miles to the east and flows into Lake Huron about 1.2 miles east of the site.

Status

From 1958 to 1985, several industrial firms manufactured automobile parts on the site. Waste disposal operations contaminated soil and groundwater with hazardous chemicals. The Michigan Department of Natural Resources (MDNR) now known as EGLE, performed a limited hydrogeological study of the Hedblum site in December 1982. This study concluded that TCE was present at the site and that further studies were needed. The site was placed on the National Priorities List on September 8, 1983.

The EPA completed the fifth FYR for the site in the summer of 2019. The PRP completed the evaluation of the VI pathway which began in February 2019. The EPA and EGLE commented on the evaluation and are having ongoing discussions with the PRP on the directions to be taken. SPX continued sampling of the pump and treat systems and site groundwater. The EPA and EGLE completed a site walkover in May 2019.

History

In 2004, the Amtel Company was purchased by SPX Corporation, which is the current owner. SPX Corporation is continuing with the operation of the groundwater pump and treat (P & T) system. Hedblum Industries was a manufacturing plant which produced stamped metal parts for the automobile industry. In conducting production operations, trichloroethylene (TCE) was used as a degreasing solvent. From at least 1968 to 1972, Hedblum Industries discharged over 4,000 gallons of TCE directly onto the ground. Spray tank rinse water and cooling water from a jacket around the degreaser tank were also discharged to the ground surface.

A residential well was found to be contaminated with TCE in 1973. In 1978, after other residential wells were also found to be contaminated, the city of Oscoda's municipal water supply was extended to the affected area. Of the approximately 90 residential wells in the area, all but 23 were hooked up to the municipal system.

The MDNR performed a limited hydrogeological study of the site in December 1982. This study concluded that TCE was present at the site and that further studies were needed. The site was placed on the National Priorities List on September 8, 1983. In 1986, the EPA initiated a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of contamination and to evaluate cleanup alternatives. The RI/FS was completed in August 1989. This investigation found TCE in the groundwater at concentrations up to 4,800 micrograms per liter (µg/l) which exceeded the residential drinking water standard of 5 µg/l. The EPA published a proposed plan in July 1989, which described a remedy that consisted of purging and treating the groundwater, as well as some additional soil investigation. A Record of Decision (ROD) outlining the selected remedy was signed on September 29, 1989. The selected remedy for the site was to pump the contaminated water from the ground, treat it using a carbon adsorption system, and discharge the water to nearby surface water.

The EPA issued a Unilateral Administrative Order (Order) on September 29, 1989, to five companies, directing them to design and construct the groundwater P & T system. One of these companies began work on the design in 1990. As part of the design, additional monitoring wells were installed and additional analysis was performed on the contaminated soils. It was determined that no soil remedy was needed. The design of the groundwater P & T system was completed in September 1992. Construction of the groundwater treatment system began in December 1992 and was completed in July 1993. The treatment system was inspected and tested and began operating in August 1993. The MDNR provided technical review of all design documents as well as assistance in oversight of on-site activities, including sampling and construction.

The First FYR was completed in September 1999. It was estimated the system would have to operate for another five to ten years to achieve the cleanup standards (drinking water standards) throughout the aquifer. A Second FYR, written by the EPA, was completed in 2004. Based upon the information gathered, the EPA determined the protectiveness statement would be deferred to a later date until the following issues of concern identified by the EPA were addressed: the existing monitoring network was not adequate to monitor and capture the plume; groundwater extraction rates of the treatment wells were not consistent; the Substantive Requirements Document (SRD) objectives were not being met; the potential need for additional investigation to determine if a second source was contributing to the elevated concentrations of contaminants in the plume; and, finally, the discovery of TCE at 670 µg/l in one private residential well located within the groundwater plume.

In 2005, with the EPA's approval, the MDEQ (now known as EGLE) conducted an RI of the groundwater plume. The results of the investigation proved that the current treatment system was not adequately capturing the groundwater plume. TCE was detected in two locations in concentrations ranging from 110 µg/l to 3,400 µg/l and tetrachloroethylene from 14 µg/l to 100 µg/l. At the end of 2005, the MDEQ provided the investigation findings to the EPA. The EPA used this information to convince SPX Corporation to undertake enhancement of the treatment system to obtain plume capture.

Based upon the results of the MDEQ 2005 RI, SPX Corporation conducted an additional RI in 2006. This second investigation was conducted in three sampling events in January, June, and August 2006. Results of this RI confirmed the findings of the MDEQ 2005 investigation. SPX Corporation proposed to implement an air sparge type of remediation to address the groundwater contamination, both on-site and off-site, to expedite the cleanup of the site. In 2007, both agencies and SPX Corporation initiated discussions on how to proceed with the new remedy if it was decided to be a viable option to run concurrently with the already existing pump and treat remedy.

Throughout 2008, SPX Corporation worked with the EPA and MDEQ to modify and develop an acceptable work plan to implement the accelerated remediation technologies pilot study. The EPA developed a new draft Statement of Work and Explanation of Significant Differences (ESD) to modify the ROD to include the accelerated remediation technologies remedy. All of these documents (the work plan, the ESD, and the Statement of Work) were finalized in June 2009.

The Third FYR was completed in August 2009. The FYR determined that the current pump and treat groundwater remedy was considered protective of human health and the environment in the short term. Long-term protectiveness will be achieved when the groundwater contamination plume has been remediated. Institutional Controls (ICs) were implemented to prevent the use of the groundwater and soils.

The construction of the remedy developed by accelerated remediation technologies was completed in November 2012 and remains operational. A local ordinance was passed restricting groundwater use within the affected area of the plume. It required the abandonment of existing wells within the affected area. The affected area is serviced by municipal water, which serves as a source of potable water to homes.

The Fourth FYR was completed by the EPA in August 2014. The review determined that the remedy is protective in the short term; risks from soil vapor need to be assessed, and the monitoring network for the groundwater remedy needs to be expanded.

The P & T system remedy that was installed in 2012 is still performing as designed. The enhanced remediation technology is removing contaminants from the groundwater and is intercepting and removing soil vapor contaminants. The MDEQ worked with the MDEQ Water Resources Division on discharge questions that had been identified in the site status.

The MDEQ Water Resources Division along with SPX Corporation's consultant have resolved questions regarding site groundwater discharge from the P & T system and are moving forward to finalize a new sampling plan. The EPA along

with its consultant and MDEQ are in discussion on the approach that will be taken for the evaluation of the VI pathway on the site.

In 2018 the EPA and EGLE discussed the fifth FYR which was due in summer 2019 and the vapor intrusion (VI) pathway evaluation which began in February 2019. EGLE and the EPA were to provide comments on the PRPs findings from this evaluation. SPX continued sampling groundwater discharge from the P & T system in accordance with the newly approved sampling plan. The EPA and EGLE were scheduled to complete a site walkover in February 2019.

Enforcement

The EPA issued an Order on January 4, 1990, directing the Amtel Company to perform the Remedial Design (RD) and Remedial Actions (RA). The Amtel Company designed, constructed, and operated the P & T system. On July 13, 1998, the EPA issued a letter to the Amtel Company informing them that the treatment system was out of compliance with the Order and state SRD. The EPA assured the MDEQ the matter would be referred to the United States Department of Justice for resolution in 2002. Neither the EPA nor the United States Department of Justice pursued the matter in 2002. In June 2003, the EPA drafted a notice letter to the Amtel Company again addressing their failure to comply with the SRD. The MDEQ reviewed this draft letter and provided comments to the EPA. However, this letter was never sent.

With the purchase of the Amtel Company by SPX Corporation and the proposed change to implement the remedy developed by Accelerated Remediation Technologies at the site, the EPA amended the original 1990 Order in 2009. The new Order was completed and signed on June 30, 2009. The new Order gave approval to implement the Accelerated Remediation Technologies remedy while continuing to operate the P & T system. The new Order contained a Statement of Work, for both the RD and the RA, as well as the ICs.

Operable Units for Hedblum

OU1 Groundwater Plume

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1989

Location Name: OU1 Groundwater Plume

Comments:
The ROD remedy selected was P & T of groundwater estimated until 2010 to achieve cleanup standards with long-term operation and maintenance (O & M) funded by the Potentially Responsible Parties (PRPs).

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 4/8/2009

Location Name: OU1 Groundwater Plume

Comments:
The EPA developed an ESD to modify the original ROD P & T remedy to include and implement the remedy developed by Accelerated Remediation Technologies, which will run concurrently with the P & T system.

Response Activities - In Progress

Activity: Remedial Action **Start Date:** 4/12/2011 **End Date:** 9/30/2025

Operable Unit:
Hedblum - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
SPX Corporation is implementing the pump and treat remedy developed by Accelerated Remediation Technologies. Construction of the treatment system was completed in 2012. This action includes continued operation of the remedy.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 9/1/1993 | **End Date:** 9/30/2027

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Operation and maintenance (O & M) consists of monthly sampling of the influent/effluent from the purge wells and the discharge point into a creek that flows into the AuSable River, and quarterly groundwater sampling of the existing monitoring wells. The O & M activities are funded by SPX Corporation, now the current owner. O & M will continue until the cleanup criteria of both the ROD and SRD have been achieved.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 8/1/2018 | **End Date:** 9/30/2019

Operable Unit:
Hedblum - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The fifth FYR was completed in September 2019.

The remedy currently protects human health and the environment because the enhanced remediation system is both removing contaminants from the groundwater and is intercepting and removing soil vapor contaminants. Effective ICs have been implemented and are being monitored to prevent all contact with contaminated groundwater.

However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: complete soil gas monitoring; complete the ICIAP; and include 1,4-dioxane as a parameter for sampling and analysis during the quarterly groundwater monitoring.

Activity: 5 Year Review | **Start Date:** 10/1/2013 | **End Date:** 8/8/2014

Operable Unit:
Hedblum - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR determined that the remedy is protective of human health and the environment in the short term because the enhanced remediation system is removing contaminants from the groundwater and is intercepting and removing soil vapor contaminants. Effective ICs have been implemented and are being monitored to prevent contact with contaminated groundwater. Soil gas monitoring needs to be conducted in order to assess the potential risks from soil VI. In addition, the groundwater monitoring network should be expanded in order to confirm that cleanup goals have been met along the southern margin of the plume for long-term protectiveness to be achieved.

Activity: Remedial Design | **Start Date:** 3/1/2009 | **End Date:** 4/11/2011

Operable Unit:
Hedblum - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA and the MDEQ have accepted the proposed remedy change. A work plan and design document have been

developed. SPX Corporation conducted a pilot study and the design is considered complete.

Activity: 5 Year Review | **Start Date:** 9/10/2008 | **End Date:** 8/1/2009

Operable Unit:
Hedblum - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR determined that the current P & T groundwater remedy was considered protective of human health and the environment in the short term. Long-term protectiveness will be achieved when the groundwater contamination plume has been remediated. ICs were implemented to prevent the use of the groundwater and soils.

Activity: Remedial Investigation | **Start Date:** 1/1/2006 | **End Date:** 10/1/2006

Operable Unit:
Hedblum - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
SPX Corporation conducted a three-phased RI at the site during 2006.

Activity: Remedial Investigation | **Start Date:** 2/1/2005 | **End Date:** 12/31/2005

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$30,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
With the EPA's approval, the MDEQ undertook an RI which proved the current treatment system was not capturing the groundwater plume. Contaminant concentrations were detected at elevated levels above current criteria.

Activity: 5 Year Review | **Start Date:** 1/1/2004 | **End Date:** 9/30/2004

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$6,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Based upon the information gathered, the EPA determined the protectiveness statement would be deferred to a later date until the following issues of concern identified by the EPA were addressed: the existing monitoring network was not adequate to monitor and capture the plume; groundwater extraction rates of the treatment wells were not consistent; the SRD requirements were not being met; the potential need for additional investigation to determine if a second source was contributing to the elevated concentrations of contaminants in the plume; and finally the discovery of TCE at 670 µg/l in one private residential well located within the groundwater plume.

Activity: 5 Year Review | **Start Date:** 4/1/1997 | **End Date:** 9/30/1999

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$40,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA developed the First FYR which was reviewed by the MDEQ. The FYR estimated that the P & T system would have to operate for at least five to ten years to achieve the cleanup standards included in the ROD.

Activity: Remedial Action | **Start Date:** 12/1/1992 | **End Date:** 8/1/1993

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$168,000.00

Secondary Source:
Federal

Comments:

Activity: Remedial Design | **Start Date:** 8/13/1992 | **End Date:** 9/1/1992

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$165,000.00

Secondary Source:
Federal

Comments:
The PRPs conducted the RD. As part of the design, additional monitoring wells were installed as well as additional analysis on the contaminated soils. It was determined that no soil remedy was needed.

Activity: Remedial Investigation | **Start Date:** 2/15/1986 | **End Date:** 5/21/1986

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$543,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA initiated an RI/FS to determine the nature and extent of contamination and to evaluate cleanup alternatives. This investigation found TCE in the groundwater at concentrations up to 4,800 µg/l.

Activity: Interim Response | **Start Date:** 1/1/1977 | **End Date:** 12/30/1977

Operable Unit:
Hedblum - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Oscoda Township Municipal Supply System was extended to those residences with private wells affected by the groundwater plume. The extension was paid for by the municipality.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/1/2023 | **End Date:** 9/30/2024

Operable Unit:
Hedblum - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
Completion of the sixth 5 Year Review.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $522.87	**Exp for Year:** $522.87
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,990.76	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $348.53	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $5,618.07	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $11,003.47	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $14,959.00	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $6,285.71	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $5,952.12	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $40,027.82	**Exp for Year:** $0.00
Grant #: V985560-01	**Activity:** 5 Year Review	**End Date:** 12/31/2003	**Status:** Closed
Budget Amount: $6,487.00	**State Total Award:** $0.00	**Exp to Date:** $6,486.96	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed

Hedblum

Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $46,355.05	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $20,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Allied Paper/Portage Crk/Kalamazoo River

State Site ID:
39000051

Federal Site ID:
9B

Full Address:
Morrow Dam to Lake Michigan, Kalamazoo, MI, 48933

County:
Kalamazoo

Location

The site is located in southwest Michigan and includes approximately 80 miles of the Kalamazoo River from Morrow Lake Dam (upstream of the city of Kalamazoo) to the river's mouth at Lake Michigan. It also includes the lower three miles of Portage Creek, from Cork Street downstream to the confluence with the Kalamazoo River, as well as all properties presently or previously owned or operated by the potentially responsible parties (PRPs).

Status

The Allied Paper Inc./Portage Creek/Kalamazoo River Superfund site is located in Allegan and Kalamazoo Counties, Michigan. The site is primarily contaminated with polychlorinated biphenyls (PCBs) from former paper mills, although other former industrial operations also used PCBs along the Kalamazoo River. The former paper mills recycled and/or de-inked and repulped carbonless copy waste paper which, between the 1950s and 1970s, contained PCBs as an ink carrier. The wastewater from the paper manufacturing operations was historically discharged to the Kalamazoo River. Processed residuals were placed into on-site lagoons for dewatering or into disposal areas directly on the land. The former lagoons and disposal areas later became known as the landfill Operable Units (OUs). The site includes contaminated soils and sediments in approximately 80 miles of the Kalamazoo River (from Morrow Lake Dam to Lake Michigan), adjacent river banks and floodplains, a 3-mile stretch of Portage Creek, the former paper mill properties and their associated disposal areas. The EPA has broken down the site into six segments, or OUs, that require cleanup. The six OUs are as follows:

OU1: Allied Paper Property/Bryant Mill Pond Area;
OU2: Willow Boulevard and A-Site Landfill;
OU3: King Highway Landfill;
OU4: 12th Street Landfill;
OU5: Portage Creek and Kalamazoo River sediments; and
OU7: Plainwell Mill

OU5 includes 80 miles of the Kalamazoo River and 3 miles of Portage Creek. Because OU5 is so large and complex, it has been divided into seven Areas. Each Area is separated by dams and requires its own cleanup.

Substantial portions of this Superfund site remain unaddressed and PCBs in the river continue to pose risks to human health and the environment. Time Critical Removal Actions (TCRAs) were conducted in recent years and are further detailed in the history section. Activities at the site are currently following the schedule set forth in the 2007 Administrative Order between the EPA and Georgia-Pacific.

The PRPs are conducting Supplemental Remedial Investigation and Feasibility Study (RI/FS) investigation activities on several areas of the river and the EPA is beginning to complete Records of Decision (RODs) for upstream areas. Field activities associated with the Remedial Design (RD) began in the fall of 2017 and are ongoing for Area 1 (Morrow Dam to the Plainwell Dam). A ROD was signed in the fall of 2017 for Area 2 (Otsego City). A TCRA was initiated in Area 3 (Otsego Township) in 2016 and was completed in the fall of 2018, with the Final Construction Completion Report expected in early 2020. A draft Alternatives Screening Technical Memorandum was submitted in 2019 and the Michigan Department of Natural Resources (MDNR) began Phase 1 of the Trowbridge Dam removal in 2019.This project is expected to be completed in early 2020 for Area 4 (Trowbridge impoundment). Phase 1 and Phase 2 of Supplemental RI/FS sampling and field activities were completed in 2018 and 2019 with the Supplemental RI Report expected to be submitted in mid-2020 for Area 5 (Allegan City). The PRPs continued to conduct carp management

activities that were initiated in the fall of 2018, and implemented various work plans aimed at evaluating natural recovery in 2019 in Area 6 (Lake Allegan). In July 2019, EGLE provided staff and sediment sampling equipment to assist Michigan Technological University and the local community in evaluating ongoing issues with siltation in Kalamazoo Lake (Area 7). The EPA and the PRPs are implementing the jointly developed long-term monitoring program (LTMP), consistent with previous State-led efforts, with proposed sampling in the reference area, Area 2, Area 3, Area 5, and Area 6 in the fall of 2019.

For the other OUs at the site, the Pre-Investigation Design and the 95% Remedial Design reports were received and approved in 2017, the Final (100 percent) Remedial Design report was received and approved and remedial actions commenced at OU7- Plainwell Mill in 2018. Work at OU7 is currently paused while the relocation of power lines is being negotiated between the city of Plainwell and the power company. A Pre-Design Investigation was completed at OU1-Allied Landfill in 2018 and RD is ongoing. Remedial Action (RA) activities are expected to commence at OU1-Allied Landfill in 2021.

In March 2018, the U.S. District Court issued an opinion and order for the Phase 2 Bench Trial. The opinion and order re-affirmed the Courts' Phase 1 findings that all parties before the Court, Georgia-Pacific (GP), National Cash Register Co. (NCR), International Paper and Weyerhaeuser, are liable under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and assigned liability allocation for past costs incurred at the Site to GP (40 percent), NCR (40 percent), International Paper (15 percent) and Weyerhaeuser (5 percent). The Court cited insufficient information to allocate liability for future response costs. The Phase 2 opinion and order is being appealed by all parties.

EGLE has been in negotiations with the EPA, the Natural Resource Damage (NRD) Trustees, and NCR regarding a proposed Consent Decree (CD) that would result in $27MM in payments to the NRD Trustees, $3MM for past response costs and $3MM for future response costs to the State of Michigan, $1.5MM in past response costs and all future response costs associated with work completed under the CD and the completion of approximately $137.5MM in remedial work. The remedial work will include a time-critical removal action (TCRA) to remove contaminated sediments, stabilize and remediate the riverbanks, and remove the Trowbridge Dam in Area 4, implementation of the Area 2 ROD, and implementation of the Area 3 ROD unless an opt-out provision is exercised.

History

Carbonless copy paper manufactured between 1957 and 1971 contained PCBs as an ink carrier. Such paper was recycled by paper mills on the Kalamazoo River and Portage Creek, resulting in discharge of PCBs. Although PCB use in the manufacture of carbonless copy paper was discontinued in 1971, the waste streams of the Kalamazoo area paper mills most likely contained PCBs for several years after 1971. The PCB-contaminated wastes from these paper mills were discharged directly to the Kalamazoo River and Portage Creek. In later years, waste effluents were sent to clarifiers prior to being discharged to the river and creek. The bottom sludge from these clarifiers was placed in at least five disposal areas along the river and creek. The clarifiers were ineffective for stopping the discharge of PCBs because the PCBs were associated with the suspended fine grained clay particles that did not settle during clarification. The soils, sediments, water column, groundwater, and biota in and adjacent to an 80-mile stretch of the Kalamazoo River and a 3-mile stretch of Portage Creek are contaminated with PCBs.

EGLE has estimated that this area contains over 350,000 pounds of PCBs and millions of cubic yards of PCB-contaminated waste in the river, floodplain, and four disposal areas situated on the river banks. The PCBs continue to migrate into the environment from various pathways. This migration of PCBs is substantially contributing to the ongoing contamination of the water column, sediments, soils, groundwater, and biota, both in and adjacent to the Kalamazoo River, Portage Creek, and ultimately Lake Michigan. Public health advisories have been issued against eating fish caught in this stretch of the Kalamazoo River.

On August 30, 1990, the Allied Paper/Portage Creek/Kalamazoo River Superfund site was officially included on the National Priorities List pursuant to CERCLA. The PRPs for the site have included: Lyondell Basell whose bankruptcy was resolved by Settlement Agreement on March 30, 2010 (formerly Millennium Holdings, LLC, formerly HM Holdings, Inc.,/Allied Paper), Georgia-Pacific, LLC (now owned by Koch Chemical), Plainwell Paper, Inc., (formerly Simpson Plainwell Paper Company) whose bankruptcy was approved by the U.S. District Court in Delaware in May 2005, the Fort James Corporation (formerly James River Corporation) was added as a PRP through a merger with Georgia-Pacific, and Weyerhaeuser Company, who was noticed as a PRP by the EPA in October 2002. In 2010, the EPA sent General Notice Letters to Consumers Energy Co., International Paper Co., MeadWestvaco Corp., and the National Cash Register Co., asserting their status as PRPs under CERCLA. In September 2013, the U.S. District Court issued a

ruling that found National Cash Register Co. liable under CERCLA as an arranger and International Paper Co. liable as an owner.

Initially, EGLE was the lead agency for this Superfund site and had divided it up into numerous smaller operable units (OUs). The EPA has retained the names of OUs 1 through 4 (1: Allied Paper, Inc., 2: Willow Boulevard/A-Site, 3: King Highway Landfill, 4: 12th Street Landfill). The 80 miles of the Kalamazoo River, from the City of Kalamazoo to Lake Michigan, including a 3-mile stretch of Portage Creek were defined as OU5 (Portage Creek and Kalamazoo River sediments). OU5 was subdivided into seven segments (Areas) for cleanup. The EPA also designated the Former Plainwell Paper Mill Property as OU7. There is no OU6 at this time. Cleanup activities identified later in this report as "Operable Unit 00-Entire Site" are associated with OU5.

Allied Paper/Portage Creek-OU1: In May 1999, the EPA completed an emergency removal at the Allied Paper, Inc., site. This action removed 150,000 cubic yards of PCB-contaminated waste from the Bryant Mill Pond portion of Portage Creek to control an upstream, ongoing PCB source at the site. A Draft RI Report for Allied Paper/Portage Creek was submitted by the PRP in November 2000, but it did not adequately address all the risks. In 2003, an extensive monitoring well network was installed for the purpose of completing the RI Report and the PRP continued an interim action by constructing a landfill cap and upgrading a groundwater extraction system, which continues to operate. Also in 2003, an additional 1,000 cubic yards of contaminated material were removed from the Portage Creek floodplain. In a letter dated October 25, 2006, EGLE exercised its right under the Order to take over responsibility for authoring the final RI Report. In March 2008, the final version of the RI was submitted by EGLE to the EPA. After the EPA's review and comments, the EPA became the lead for the site. The EPA and its contractor developed a risk evaluation document that will be used to document the various criteria that need to be considered during FS development. On March 30, 2010, the Settlement Agreement for the Lyondell bankruptcy was executed. As such, a PRP for the Allied Paper OU no longer exists. The field work for the supplemental groundwater investigation at the site, that was initiated due to concerns raised by the city with regard to protection of the city of Kalamazoo’s wellhead, has been completed. The EPA has also completed evaluating the data and prepared a report summarizing the findings of the investigation. A final version of the EPA-authored FS was completed in January 2014, and was modified in 2015 to incorporate another redevelopment-based cleanup option following extensive discussions with the city. In the fall of 2016, the EPA issued the ROD for the site calling for consolidation and capping of the site with active stewardship by the city of Kalamazoo.

Willow Boulevard/A-Site-OU2: An interim action to remove 7,000 cubic yards of PCB-contaminated waste from the river at the Willow Boulevard/A-Site was conducted in 1999. Sheet pile was installed to protect against erosion. EGLE released the final RI/FS report in November 2004, thereby resolving the PRP's dispute regarding the application of cleanup criteria, after which the lead for Willow Boulevard/A-Site was transferred from EGLE to the EPA. In July 2005, the EPA issued a Proposed Plan, and a ROD was finalized in September 2006. Waste generated during the TCRA performed at the former Georgia-Pacific Corporation and Hawthorne Paper Mills was consolidated at the A-Site Landfill in 2007. In May 2009, the EPA and Georgia-Pacific entered into a Decree for RD/RA requiring Georgia-Pacific to perform cleanup. For the Willow Boulevard/A-Site OU, the EPA negotiated a Decree with the PRPs that included consideration of Natural Resource Damage claims. The RD was finalized in May 2011 and RA construction began following the completion of the RD. Construction of the remedy, including residuals consolidation and landfill cap construction, was completed during the 2011 and 2012 construction seasons. Monitoring well installation was completed in 2013. RA completion and construction completion certification was achieved in September 2014. Operation, maintenance, and monitoring has begun and continues.

King Highway Landfill-OU3: A ROD for the King Highway Landfill was signed February 10, 1998. The ROD was implemented by Georgia-Pacific under an Order with EGLE. The remedy included excavation of PCB-contaminated waste from several areas with placement in the landfill. Areas that were excavated include the King Street Storm Sewer (5,000 tons), five former lagoons (38,000 tons), and a small portion of the Kalamazoo River along the edge of the King Highway Landfill (1,000 tons). After this waste was consolidated, a cap and containment system was constructed. A vegetative cover was established on the landfill cap and a long-term groundwater monitoring network, landfill gas monitoring network, and gas venting system were installed. Based on results from the sampling event in November 2003, a gas collection trench was installed on the western side of the property to help mitigate high concentrations of methane. A sedimentation basin (a stormwater control feature) was also cleaned out. A final inspection was conducted in the fall of 2003 and a draft final report on completion of construction was generated. Routine monitoring of landfill gas indicated that methane was migrating off-site to the south and west directions. In the fall of 2008, landfill gas cutoff trenches were installed to mitigate migrating methane. During trench installation, PCB-containing residual material was encountered. During the spring of 2009, additional excavation of the residual material was conducted along the southern portion of the OU. A Construction Completion Report and a Final Operation and Maintenance (O & M) Plan was approved June 26, 2013, and routine O & M is being conducted. In 2014, additional

landfill gas cutoff trenching was installed along a portion of the west side in an effort to mitigate methane migration in that direction. Monitoring is being conducted to evaluate the effectiveness of that and to determine if further action is warranted.

12th Street Landfill-OU4: The ROD for the 12th Street Landfill was signed in September 2001, after which the lead was transferred from EGLE to the EPA. In 2003, the EPA and EGLE conducted additional sampling in the former powerhouse discharge channel, adjacent wetlands, and wooded area around the landfill. In 2005, the EPA and Weyerhaeuser Company entered into a Decree for RD/RA requiring Weyerhaeuser to perform cleanup of the 12th Street Landfill. In the fall of 2007, Weyerhaeuser implemented an emergency removal action along the eastern edge of the landfill in anticipation of the removal of the Plainwell Dam and the resultant redirection of river flow adjacent to the 12th Street Landfill OU. The work was intended to be consistent with the final remedy required in the ROD. In early 2008, the emergency action was completed at the landfill and flow has since been reintroduced into the former powerhouse channel. The PRPs developed an RD work plan for the site which is dated April 2008. The RD report for the 12th Street Landfill OU was approved in early 2010. Remedial activities were initiated in the spring of 2010 and were completed in June 2011. The Final Construction Completion/RA Completion Report was approved in September 2012. Operation, maintenance, and monitoring of the remedy continues.

Portage Creek and Kalamazoo River Sediments-OU5: An ecological risk assessment for the river was completed by EGLE in June 1999, and a human-health risk assessment in August 2000. Both risk assessments were slightly revised in 2003 to address new EPA guidance and obtain formal EPA approval in August 2003. Both documents were an unacceptable risk to human health and the environment. The ecological risk assessment has undergone an expert Peer Panel Review and the EPA approved a work plan in June 2010 to evaluate floodplain cleanup criteria utilizing site-specific data previously collected by Michigan State University while under contract to the PRPs. Final cleanup criteria were developed as a result of this work and will be incorporated into the completion of the various RI and FS documents.

The EPA hosted a series of discussions with the various responsible parties (Kalamazoo River Study Group) in an effort to negotiate voluntarily investigation and RAs. This EPA effort began in 2004, concluded in February 2007, and resulted in the signing of two Administrative Orders by Consent (AOC) with the Kalamazoo River Study Group. Under the first AOC, to which EGLE was a signatory, the PRPs conducted a TCRA at the Plainwell Impoundment. Under the second AOC with the EPA, the PRPs were required to conduct Supplemental RI/FS activities which will be followed by the preparation of Proposed Plans, and RODs relative to the various river Areas.

The TCRA for the Plainwell Impoundment (Area 1) was initiated in the spring of 2007. The majority of activities related to the excavation of contaminated soil and sediment were completed by the end of the 2008 construction season, which included the removal of the former powerhouse section of the Plainwell Dam. The removal action resulted in the excavation of approximately 130,000 cubic yards of contaminated material from the system with subsequent disposal at licensed landfills. The PRPs submitted a Construction Completion Report for the removal action in late 2009, which was approved by the agencies in early 2010.

After reviewing the results of sampling and investigation work in the Plainwell No. 2 Dam Area, the EPA determined that a second TCRA in Area 1 was necessary to address a subset of the contaminated bank material (approximately 12,000 cubic yards) that are acting as a source of PCBs to the river. This removal action was initiated in the summer of 2009 and was largely completed by the end of the 2010 construction season with monitoring of work elements continuing through 2013.

The EPA initiated a third TCRA in Area 1 to address portions of Portage Creek based on the results of recent sampling efforts in the fall of 2011. The work, conducted by the EPA, was completed in the fall of 2013.

In 2016, the EPA issued a Unilateral Administrative Order to several of the site PRPs to conduct a TCRA in Area 3. This work was conducted in conjunction with the removal of the dam by the MDNR and was completed in 2018.

Non-time critical work followed the Supplemental RI/FS process under the second AOC. A ROD was issued in the fall of 2015 for Area 1 (Morrow Dam to the Plainwell Dam). A ROD was issued in the fall of 2017 for Area 2 (Otsego City Impoundment). A Supplemental RI report was approved in 2016 and a revised FS was submitted in July 2018 and disapproved for Area 3 (Otsego Township)for Area 3 (Otsego Township Impoundment). The Final Supplemental RI was submitted in November 2018 for Area 4 (Trowbridge Impoundment). A preliminary field reconnaissance (Recon I) investigation and limited geophysical survey was completed in the summer of 2016, a follow-up field reconnaissance (Recon II) investigation and additional field sampling was completed in the fall of 2017 for Area 5 (Allegan City)for Area 5. A carp tagging and tracking pilot study was initiated in 2016 to evaluate the potential for fish tracking and carp

removal in an effort to expedite natural recovery in Area 6 (Lake Allegan).

Beginning in 1999, EGLE implemented a LTMP for OU5. This program included the collection of surface water samples, resident fish, and caged catfish. The objectives of the program were to develop baseline data for PCBs within specific reaches of the river, and to evaluate the effectiveness of remedial removal actions. EGLE published a series of reports that document the findings of the Long-Term Monitoring activities. In early 2016, EGLE passed the responsibility for the LTMP over to the Responsible Party and published its final report. The PRPs submitted a draft LTMP in the fall of 2016.

Plainwell Mill-OU7: Emergency work at the Plainwell Mill, consisting of partial removal of PCB-contaminated bank sediments, was completed in 2008. Since that time, the EPA and EGLE have worked with the city of Plainwell in redevelopment efforts and with the PRPs in completion of RI/FS activities at the Plainwell Mill. In the summer of 2015, the EPA authored a proposed plan for the site and finalized the ROD in the fall of 2015. The Pre-Final RD Report was submitted in the fall of 2017 and approved in the spring of 2018, the Final Design report was submitted and approved in the spring of 2018, and RA commenced in the summer of 2018 and is expected to be completed by the fall of 2021.

Mill Properties: EGLE has provided support to the EPA and local units of government as it relates to work conducted at the various former paper mill properties located along the Superfund site. Specifically, in 2007, the PRPs completed the EPA-ordered TCRA for the former Georgia-Pacific Corporation and Hawthorne Paper Mills located in Kalamazoo, and EGLE has reviewed documents prepared by the PRPs. EGLE has also worked with the city of Kalamazoo on redevelopment efforts at various sites including the former Performance Paper Mill.

Natural Resource Damage Assessment (NRDA): The state and federally authorized trustee agencies initiated a natural resource damage assessment in 2000 which is continuing in conjunction with the Superfund removal and response process. After settlement of the Lyondell bankruptcy proceedings for OU1 natural resource damage liability, Stratus Consulting, Inc. prepared a restoration plan for OU1 in 2013 utilizing state funding. After public notice of the OU1 restoration plan, the natural resource damage trustees began implementation of projects funded through the Lyondell settlement funds. The natural resource damage trustees prepared a riverwide restoration plan and environmental impact analysis plan which can be used for future restoration actions. The Restoration Plan/Environmental Impact Statement was prepared by Stratus Consulting, Inc., with the state funding allocated for natural resource damage for the Kalamazoo River. The plan was public noticed in 2015 and the trustee agencies finalized the plan in 2016. The trustees are also determining restoration projects that could address injuries to natural resources in Area 1 of the river. The remaining NRDA funding will be used to update injury assessments in Area 1, 2 and 3 for future settlement purposes.

A Five Year Review (FYR) was completed for those portions of the site that have a remedy in-place (OU2, OU3, and OU4) in the fall of 2017. The review found the completed OUs of the site to be protective in the short-term and reliant on implementation of the established ICs for long-term protectiveness.

Enforcement

In addition to being a Superfund site, the Kalamazoo River and Portage Creek have been designated a site of environmental contamination under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Kalamazoo River and Portage Creek have also been identified as an Area of Concern by the International Joint Commission on the Great Lakes. The four PRPs signed an AOC with EGLE to fund and conduct the RI and FS on the River. A separate Order was signed for RA activities at the King Highway Landfill. In June 2001, EGLE asked the EPA to redesignate portions of the greater Kalamazoo River Superfund site as a federal enforcement lead. Portions of the State's Order were terminated in 2007 when the EPA signed a replacement AOC with the Responsible Parties as the lead agency. Transition of the lead is now complete on the river and is also complete at the remaining landfill OUs as investigation milestones were reached. The King Highway Landfill remains the sole OU with EGLE as the lead agency.

The Georgia-Pacific Corporation incurred stipulated penalties for not meeting the Financial Assurance Mechanism requirements specified by the Order for the King Highway Landfill. On October 21, 2001, Georgia-Pacific Corporation agreed to pay $42,000 to settle the non-compliance issue. EGLE has been recovering costs for work conducted at the King Highway Landfill under a separate AOC. EGLE has billed the PRPs over $795,000 since August 2001, successfully recovering the full amount. Cost recovery will continue indefinitely under the King Highway Landfill AOC.

EGLE has completed negotiations with the Kalamazoo River Study Group for payment of past costs as specified in the

state's AOC for the Kalamazoo River RI/FS. Between 1991 and 2006, EGLE billed the Kalamazoo River Study Group over $12,037,000 for costs related to the site. As of June 2007, EGLE had received over $10,325,000 in payments for RI/FS related activities. The balance of the unpaid charges were moved to a cost package which includes expenses incurred by the state for activities on the river not related to the AOC, but still necessary under Part 201. A cost demand package for the lawful expenses incurred by EGLE was sent to the Kalamazoo River Study Group and the Weyerhaeuser Company in a letter dated November 22, 2006, seeking $8.3 million. In June 2008, the Kalamazoo River Study Group paid $4.1 million in order to resolve the state's past response costs with Georgia-Pacific LLC and Millennium Holdings (now Lyondell Basell, but originally a successor to Allied Paper). The Weyerhaeuser Company has yet to resolve these costs. EGLE continues to negotiate recovery of future costs related to activities on the river.

In December 2008, EGLE prepared a cost demand package for expenses incurred by EGLE related to oversight of the Plainwell TCRA. The package combined expenses incurred in 2007 ($161,962.39) and 2008 ($175,000.00) for a total request of $336,962.39.

The Kalamazoo River Study Group incurred stipulated penalties for not meeting the Financial Assurance Mechanism required by the state's AOC for the Kalamazoo River RI/FS. On January 11, 2002, Georgia-Pacific Corporation paid $17,000 in stipulated penalties, the amount requested by EGLE for non-compliance.

The EPA and the Weyerhaeuser Company entered into a CD in 2005 for RD/RA requiring the Weyerhaeuser Company to perform cleanup of the Plainwell Mill and 12th Street Landfill, pay the EPA's past and future response costs, and withdraw objections to the Plainwell Settlement and issues on appeal. All rights with respect to natural resource damages at the Mill and 12th Street Landfill are reserved.

Plainwell Paper, Inc. went bankrupt in 2005. Plainwell Paper, Inc., the State of Michigan, and the United States filed a settlement agreement to the Bankruptcy Court and resolved claims for response costs and natural resource damages.

Lyondell Chemical Company/Millennium Holdings LLC, one of the two remaining PRPs for the Superfund site, filed for bankruptcy in January 2009 along with 90 of its affiliates and subsidiaries. Millennium Holdings LLC acquired Allied Paper, Inc., a chief contributor of PCBs into the Kalamazoo River system and floodplains. Various government parties filed claims for over $2 billion in the bankruptcy, but the Debtors' January 2010 amended filing indicated that the financial status of the Debtors left only $250 million available to address all of the sites of contamination associated with Lyondell/Millennium. On April 23, 2010, the United States Bankruptcy Court for the Southern District of New York confirmed the Debtors' reorganization plan and settlement with the United States, EGLE, and several other state agencies, addressing 23 sites of contamination. The reorganization plan creates a custodial trust that will take ownership of some of the contaminated properties, including the Allied Paper Mill in Kalamazoo, Michigan. Under the reorganization plan and settlement, the EPA received about $103 million total for cleanup of the Allied Paper/Portage Creek/Kalamazoo River site, with about $50 million of that amount dedicated to cleanup of the Allied Paper Mill, and the remainder allocated to resolving environmental liabilities at the Kalamazoo River site as a whole. EGLE received $1,671,850 which was deposited in the Custodial Trust EGLE Cost Account for the Allied Paper Mill. In addition, the federal and state agencies designated as Natural Resource Trustees for the Kalamazoo River received $2,000,000 for restoration work on the river. In 2012, EGLE received a single payment of approximately $201,000 related to the unsecured bankruptcy claim. The reorganization plan liquidates all Lyondell entities connected to the Allied Paper/Kalamazoo River Superfund site, leaving Georgia-Pacific LLC as the major PRP. GP recently brought a contribution action against International Paper, Weyerhaeuser, and NCR. Weyerhaeuser admitted liability while reserving the right to contest divisibility of harm and allocation of damages. After taking evidence and testimony, the U.S. District Court for the Eastern District of Wisconsin also found International Paper liable as an “owner” or “operator” under CERCLA, and found NCR liable as an arranger under CERCLA. In March 2018, the U.S. District Court issued an opinion and order for the Phase 2 Bench Trial. The opinion and order re-affirmed the Courts' Phase 1 finding that all parties before the Court, GP, NCR, International Paper and Weyerhaeuser, are liable under the CERCLA, and assigned liability allocation for past costs incurred at the Site to GP (40 percent), NCR (40 percent), International Paper (15 percent) and Weyerhaeuser (5 percent). The Court cited insufficient information to allocate liability for future response costs. The Phase 2 opinion and ruling is currently being challenged by all Parties. In December 2019, the EPA, EGLE, NRD Trustees, and NCR entered into a proposed CD that would result in $27MM in payments to the NRD Trustees, $3MM for past response costs and $3MM for future response costs to the State of Michigan, $1.5MM in past response costs and all future response costs associated with work completed under the CD and the completion of approximately $137.5MM in remedial work. The remedial work will include a TCRA to remove contaminated sediments, stabilize and remediate the riverbanks, and remove the Trowbridge dam in Area 4, implementation of the Area 2 ROD, and implementation of the Area 3 ROD unless an opt-out provision is exercised. The Action Memorandum for the TCRA in Area 4 was signed by the EPA on April 1, 2020 and a Pre-Design Investigation is ongoing. The public comment period for the CD ended on February 18, 2020 and the Department of Justice entered

the CD in the court on May 22, 2020. In June 2020, Georgia-Pacific, Weyerhaeuser, and International Paper each filed motions to intervene and the court granted the request for all three parties. A formal decision on the CD is pending. Weyerhaeuser Corporation continues to conduct response activities at the 12th Street Landfill (OU4) and the Former Plainwell Mill (OU7).

Operable Units for Allied Paper/Portage Crk/Kalamazoo River

OU1 Allied Paper

OU2 Willow Boulevard

OU3 King Highway Landfill

OU4 12th Street Landfill

OU5 Kalamazoo River and Portage Creek

OU7 Plainwell Mill

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/28/2015

Location Name: Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Comments:
A ROD for Area 1 (Morrow Dam to Plainwell Dam, including Portage Creek) of OU5 was issued by the EPA. It includes Sediment Remedy S-3A (removal of hots spot areas and Crown Vantage Side Channel, Monitored Natrual Recovery, ICs, with additional sampling of the remedial reach) and Floodplain Soil Remedy FPS-4A (removal of floodplain soil in Plainwell with a RA limit of 20 milligram per kilogram PCBs, ICs, engineering controls, and additional floodplain sampling)

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/28/2017

Location Name: Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Comments:
Area 2 ROD of OU5

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/2016

Location Name: OU1 Allied Paper

Comments:
EPA issued a ROD in the fall of 2016 that calls for consolidation and capping with Long-Term O & M.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/27/2006

Location Name: OU2 Willow Boulevard

Comments:
Consolidation and capping of PCB-contaminated material.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 2/27/1998

Location Name: OU3 King Highway Landfill

Comments:
Landfill capped and river edge sheet piled. Groundwater and landfill gas are being monitored.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/28/2001

Location Name: OU4 12th Street Landfill

Comments:
The ROD called for PCB-contaminated soil, sediment, and residual material that eroded from the landfill, into areas adjacent to the landfill, to be excavated and relocated back into the landfill. The landfill was capped and appropriate erosion control measures have been implemented.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/23/2015

Location Name: OU7 Plainwell Mill

Comments:
EPA selected Alternative 3B for OU7 which includes design sampling, excavation of soil, removal of the coal tunnel, verification sampling, backfilling, restoration, monitoring, and implementation of ICs. It is expected that by addressing the soil contamination at the site, that groundwater will achieve appropriate criteria.

Response Activities - In Progress

Activity: Emergency | **Start Date:** 4/1/2020 | **End Date:** 1/1/2023

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
In Progress

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$55,000,000.00	Private		

Comments:
Time Critical Removal Action to remove remaining dam superstructure, contaminated sediments, and stabilize and remove contaminated banks in Area 4 (Trowbridge impoundment).

Activity: Remedial Action | **Start Date:** 5/4/2018 | **End Date:** 7/1/2022

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU7 Plainwell Mill

Status:
In Progress

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$4,360,000.00	Private		

Comments:
The remedy selected for OU7 Plainwell Mill, as outlined in the ROD, includes: RD sampling to delineate extents of soil contamination, the excavation and off-site disposal of contaminated soils, the backfill and restoration of excavation areas, removal of historic sub-grade infrastructure, the implementation of various ICs measures consistent with the future land use plan for each redevelopment area, and monitoring and maintenance of engineering controls.

Activity: Special Programs Funding | **Start Date:** 9/1/2000 | **End Date:** 9/28/2035

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
In Progress

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$1,810,000.00	State	$0.00	

Comments:
The state and federally authorized trustee agencies initiated a natural resource damage assessment in 2000 which is continuing in conjunction with the Superfund removal and response process. The natural resource damage trustees prepared a riverwide restoration plan and environmental impact analysis plan, which can be used for future restoration actions. The Restoration Plan/Environmental Impact Statement was prepared by Stratus Consulting, Inc., with state funding allocated for natural resource damage for the Kalamazoo River. The plan was public noticed in 2015 and the trustee agencies finalized the plan in 2016. The trustees are also determining restoration projects that could address injuries to natural resources in Area 1 of the river. The state has spent approximately $1,810,000 in contractor support for the natural resource damage assessment. The remaining funding will be used for assessment updates in

Area 1, 2, and 3 for settlement of these liabilities.

Activity: Interim Response | **Start Date:** 2/1/2000 | **End Date:** 12/31/2021

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,000,000.00	Private	$0.00	

Comments:
This interim response addressed Historic Residual Dewatering Lagoons/Former Residual Dewatering Lagoons capping, sheet pile installation, and groundwater recovery. Capping activities associated with the Interim Response were completed in the 2005 construction season. Groundwater collection and treatment will be ongoing pending a final remedial decision for the site.

Activity: Remedial Investigation | **Start Date:** 1/1/1993 | **End Date:** 9/30/2030

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$45,000,000.00	Private	$13,280,000.00	State

Comments:
Various RI activities have been conducted at the site to understand the nature and extent of contamination. These sampling activities have been conducted by state and federal entities and private parties. The site was redesignated as federal lead in 2001. A Draft RI/FS submitted by the PRP was rejected by EGLE on July 11, 2002. The EPA initiated Facilitated Discussions via a letter dated December 31, 2003. This process resulted in the EPA and the PRPs entering into an AOC, dated February 2007, to conduct Supplemental RI/FS activities on the river. In accordance with the EPA's AOC, the site was divided into Areas separated primarily by dams, with the different areas in various stages of investigation. RI Reports have been approved for Area 1, 2, 3, and 4. For Area 1 (Morrow Dam to the Plainwell Dam), a ROD was issued by EPA. For Area 2 (Otsego City Impoundment), a ROD was issued in 2017. RI activities were initiated in 2018 and are expected to be completed in 2019 for Area 5. Limited sediment sampling was conducted in 2018 to evaluate natural recovery in Lake Allegan (Area 6). Over the life of the project, EGLE has spent approximately $13,280,000 in contractor support of RI activities on the river portion of the site (of which ~$640,000 was spent on analytical costs for independent sample analysis). A draft version of the RI report for Area 5 was received in 2019, with reports for Area 6 and Area 7 anticipated beyond 2025.

Activity: Recovered/Reimbursed | **Start Date:** 1/1/1993 | **End Date:** 6/30/2008

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$14,425,000.00	Private	$0.00	

Comments:
As of June 2007, EGLE had received over $10,325,000 in payments for RI/FS related activities. In June 2008, the Kalamazoo River Study Group paid $4.1 Million in order to resolve the state's past response costs with Georgia-Pacific LLC and Millennium Holdings (successor to Allied Paper) related to the non-AOC activities. Reimbursed funds may include other costs recovered by EGLE pursuant to Part 201 (e.g., interest, fines, and penalties, etc.) and, therefore, may not reflect the actual dollars expended in the performance of response activities at the site. Full reimbursement of past costs incurred by EGLE has not been completed and cost recovery efforts are ongoing. Settlement of past costs with Weyerhaeuser is not yet concluded.

Response Activities - Ongoing

Activity: Remedial Investigation | **Start Date:** 3/1/2020 | **End Date:** 4/1/2021

Operable Unit:

Status:

Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site | Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$750,000.00	State		State

Comments:
The $750,000 of authorized funds for FY2020 were encumbered to support ongoing work at various OUs at the site during the life of the current PSC contract (FY2018, FY2019 and FY2020) and the remaining funds will be used to provide RD/RA assistance and oversight at OU1, review of RI/FS and RD/RA documents for OU5 and oversight and monitoring of various RI/FS, RD/RA and emergency removal field activities.

Activity: Monitoring | **Start Date:** 9/2/2016 | **End Date:** 9/2/2035

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
	Private		

Comments:
In early 2016, EGLE published its final LTMP report and passed the responsibility for LTMP activities to the Responsible Party group

Activity: Operation and Maintenance | **Start Date:** 9/30/2014 | **End Date:** 1/26/2046

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	

Comments:
PRP lead O & M is ongoing. Migration of landfill gas beyond the perimeter gas collection trench is being evaluated.

Activity: Operation and Maintenance | **Start Date:** 9/25/2012 | **End Date:** 9/25/2042

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$60,000.00	Private	$0.00	

Comments:
PRP lead O & M is ongoing with an annual estimated cost of $60,000.

Activity: Operation and Maintenance | **Start Date:** 1/1/2003 | **End Date:** 1/30/2033

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU3 King Highway Landfill

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$3,750,000.00	Private	$0.00	

Comments:
The landfill has been capped and a Final O & M Plan is being implemented.

Activity: PRP Oversight | **Start Date:** 1/1/1993 | **End Date:** 7/29/2033

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU3 King

Status:
Ongoing

Highway Landfill

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$650,000.00	State	$0.00	

Comments:
EGLE and its contractor have provided oversight of PRP activities including review of documents and site sampling activities. Over the life of the project EGLE has spent approximately $650,000 in contractor support for oversight activities (of which approximately $12,800 has been spent on the analysis of independently collected samples). The PRP oversight will continue throughout the O & M phase.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 4/3/2017 | **End Date:** 10/18/2017

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR report included a protectiveness statement for OU2, OU3, and OU4. Protectiveness determinations for OU1, OU5, and OU7 are not included because RA work has not yet started. There currently is not an OU6 for the site. The remedy at OU2 is expected to be protective of human health and the environment upon completion of the remedy. In the interim, exposure pathways that could result in unacceptable risks are being controlled. The remedy at OU3 and OU4 is currently protective of human health and the environment in the short-term. Long-term protectiveness requires compliance with the existing ICs for both OUs and OU3 requires additional action to address off-site migration of landfill gases.

Activity: Emergency | **Start Date:** 4/6/2016 | **End Date:** 8/31/2018

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$31,951,529.00	Private		

Comments:
The TCRA associated with the Area 3 included dam removal, removal of contaminated sediments and bank soils.

Activity: Remedial Design | **Start Date:** 1/5/2016 | **End Date:** 3/26/2018

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU7 Plainwell Mill

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Private		

Comments:
Activities associated with RD for OU7 Plainwell Mill included pre-remedial design sampling to delineate the vertical and horizontal extent of soil contamination exceeding applicable cleanup levels, the submittal of Remedial Design and Pre-Design Investigation work plans, Pre-Design Investigation, Preliminary (30 percent), 95 %, and Final (100 percent) RD reports and various construction and post-construction monitoring plans.

Activity: Emergency | **Start Date:** 10/1/2012 | **End Date:** 11/15/2013

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$12,000,000.00 Federal

Comments:
After reviewing the results of sampling and investigation work in Portage Creek, the EPA determined that a TCRA was necessary to address a subset of the contaminated sediments and floodplain material (approximately 14,000 cubic yards) that are acting as one of the sources of PCBs to the river. This removal action was initiated in the fall of 2012 and was completed by the end of the 2013 construction season.

Activity: 5 Year Review **Start Date:** 5/1/2012 **End Date:** 10/18/2012

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Second FYR report included a protectiveness statement for OU2, OU3, and OU4. Protectiveness determinations for OU1, OU5, and OU7 are not included because RA work has not yet started. There currently is not an OU6 for the site. The remedy at OU3 and OU4 is currently protective of human health and the environment in the short term. Long-term protectiveness requires compliance with the existing ICs for both OUs. The remedy at OU2 is expected to be protective of human health and the environment upon completion of the remedy. In the interim, exposure pathways that could result in unacceptable risks are being controlled.

Activity: Remedial Action **Start Date:** 3/31/2011 **End Date:** 9/30/2014

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The RA began on the Willow Boulevard Landfill in March 2011 and was certified construction and RA complete in September 2014.

Activity: Remedial Action **Start Date:** 3/12/2010 **End Date:** 9/25/2012

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The RA began in March 2010 and was completed in September 2012, including final reporting.

Activity: Remedial Design **Start Date:** 3/11/2010 **End Date:** 5/4/2011

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Private	$0.00	

Comments:
The RD was completed to consolidate PCB containing materials into the landfill and provide a landfill cap, landfill gas venting sytem, and storm water control.

Activity: Emergency **Start Date:** 6/1/2009 **End Date:** 9/9/2014

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000,000.00	Private		

Comments:
After reviewing the results of sampling and investigation work in the Plainwell No. 2 Dam Area, the EPA determined that another TCRA was necessary to address a subset of the contaminated bank material (approximately 12,000 cubic yards) that are acting as one of the sources of PCBs to the river. This removal action was initiated in the summer of 2009 and was largely completed by the end of the 2010 construction season with monitoring of work elements continuing into 2014.

Activity: Emergency **Start Date:** 5/8/2007 **End Date:** 3/31/2008

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Private	$0.00	

Comments:
In the spring of 2007, Weyerhaeuser initiated Emergency actions at the 12th Street Landfill in anticipation of changes to river flow following removal of the Plainwell Dam. Action included excavation of material from the former powerhouse channel and regrading and stabilization of the east bank. This work was completed in 2008.

Activity: 5 Year Review **Start Date:** 5/1/2007 **End Date:** 10/18/2007

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The protectiveness statement in the report concluded that the remedy at the King Highway Landfill OU currently protects human health and the environment in the short-term, that the remedy at the 12th Street Landfill OU is not protective because the remedy has not yet been constructed and because access controls are inadequate to protect trespassers from short-term risks associated with remedy construction, and that the EPA will ensure that long-term stewardship of the 12th Street Landfill OU, as well as every other OU of the site, includes implementation and maintenance of each component of the selected remedy, including any necessary ICs.

Activity: Emergency **Start Date:** 2/28/2007 **End Date:** 8/27/2013

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$31,000,000.00	Private	$1,000,000.00	Federal

Comments:
In 2007, the PRPs and various state and federal agencies entered an Order to conduct a TCRA in the Former Plainwell Impoundment. This action included excavation and disposal of approximately 132,000 cubic yards of in-stream and floodplain sediment and partial removal of the Plainwell Dam owned by the MDNR. The majority of work was completed by the end of 2008 with some restoration work taking place in 2009. The PRPs will retain maintenance obligations at the impoundment for a period of three years following the completion of construction in 2010.

Activity: Remedial Design **Start Date:** 10/1/2003 **End Date:** 3/12/2010

Operable Unit:

Status:

Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Private	$0.00	

Comments:
The RD was completed in March 2010 by the PRP's consultant.

Activity: Emergency | **Start Date:** 12/7/2000 | **End Date:** 3/30/2001

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$542,785.00	State		

Comments:
Emergency repairs were conducted in 2001 by EGLE for three MDNR-owned dams to prevent catastrophic failure. Repairs were conducted at the Plainwell Dam ($66,745), Otsego Dam ($122,540), and Trowbridge Dam ($233,500). Costs were also incurred for engineering associated with dam repair design and periodic inspection of the structures following repair (~$120,000).

Activity: Interim Response | **Start Date:** 11/1/1999 | **End Date:** 1/31/2000

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	Private	$0.00	

Comments:
7,000 cubic yards of contaminated sediment were excavated from the river and river banks and placed on the landfill.

Activity: Monitoring | **Start Date:** 9/1/1999 | **End Date:** 9/2/2016

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU5 Kalamazoo River and Portage Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,080,000.00	State		

Comments:
Long-term monitoring at the site is ongoing. Long-Term Monitoring Activities were initiated by the state in 1999 in order to establish baseline pre-removal conditions, and to evaluate the effectiveness of removal/remedial actions. The program includes surface water monitoring and resident fish collection, and has evaluated options for using alternatives to using live fish, to evaluate effectiveness of RA activities. Over the life of the project, EGLE spent approximately $6,080,000 in contractor support for implementation of the program (of which ~$1,875,000 was used for analysis of collected samples).

Activity: Interim Response | **Start Date:** 9/1/1999 | **End Date:** 10/29/1999

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	Private	$0.00	

Comments:
A total of 11,314 cubic yards of material were excavated from the former King Mill Lagoons and transported to Cell 4 at King Highway Landfill in September and October 1999. An estimated 5,000 cubic yards of PCB-contaminated

material remains. Areas beyond the lagoons also have not been adequately investigated. Mill properties are not formally considered part of the Superfund Site by the EPA, with the exception of OU7, or Plainwell Mill.

Activity: Remedial Action | **Start Date:** 6/1/1999 | **End Date:** 6/26/2013

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU3 King Highway Landfill

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The King Highway Landfill RA was to eliminate or reduce the potential migration of PCBs to the Kalamazoo River or reduce the risk associated with exposure to PCB-contaminated material. This RA included excavation and on-site containment of PCB-contaminated material from the landfill berms, former GP Corporation lagoons, the landfill itself, and areas adjacent to the property by controlling the current and potential future release of contaminants. A construction completion report has been completed. Additional actions to address methane migration were implemented at a later date.

Activity: Interim Response | **Start Date:** 11/1/1998 | **End Date:** 10/31/1999

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU3 King Highway Landfill

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
PCB-contaminated material was excavated from the King Street Storm Sewer, the Former GP Corporation Mill Lagoons, and from areas directly adjacent to the King Highway Landfill. All material consolidated and capped as part of the King Highway RA. Blasland, Bouck & Lee Inc., prepared Removal Action Summary Reports describing these removal actions in more detail.

Activity: Emergency | **Start Date:** 6/15/1998 | **End Date:** 10/29/1999

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
Completed

Primary Cost:
$7,500,000.00

Primary Source:
Private

Secondary Cost:
$1,000,000.00

Secondary Source:
Federal

Comments:
Approximately 150,000 cubic yards of sediment were excavated from Bryant Mill Pond as part of a TCRA in 1998-99.

Activity: Remedial Design | **Start Date:** 7/31/1997 | **End Date:** 6/1/1999

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU3 King Highway Landfill

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Engineer Design Report submitted in lieu of RD report.

Activity: PRP Oversight | **Start Date:** 3/1/1993 | **End Date:** 9/25/2012

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$90,500.00	State	$0.00	

Comments:
EGLE and its contractor conduct oversight of PRP activities including review of documents and oversight of field activities with a limited amount of samples sent to the lab for independent analyses. Over the life of the project, EGLE has spent approximately $90,500 in contractor support.

Activity: Remedial Investigation | **Start Date:** 3/1/1993 | **End Date:** 7/31/1997

Operable Unit: Allied Paper/Portage Crk/Kalamazoo River - OU4 12th Street Landfill
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The RI for the 12th Street Landfill OU is complete. The EPA is currently the lead agency for this OU.

Activity: Remedial Investigation | **Start Date:** 1/1/1993 | **End Date:** 7/31/1997

Operable Unit: Allied Paper/Portage Crk/Kalamazoo River - OU3 King Highway Landfill
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$4,250,000.00	Private	$0.00	

Comments:
The RI for the King Highway Landfill OU is complete.

Activity: PRP Oversight | **Start Date:** 1/1/1993 | **End Date:** 11/1/2004

Operable Unit: Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	No Financial Source	$235,000.00	State

Comments:
EGLE and its contractor conducted oversight of PRP activities including review of draft documents and field activities including groundwater sampling. Following rejection of the final PRP-authored draft of the RI/FFS, EGLE completed a Final RI and FFS report in November 2004, which transferred the lead to the EPA. In all, EGLE has spent about ~ $235,000 of state funds on contractual services to assist with review, oversight, and writing of the RI/FFS report.

Activity: Remedial Investigation | **Start Date:** 1/1/1993 | **End Date:** 11/1/2004

Operable Unit: Allied Paper/Portage Crk/Kalamazoo River - OU2 Willow Boulevard
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$7,000,000.00	Private	$235,000.00	State

Comments:
EGLE and its contractor conducted oversight of PRP RI activities including review of draft documents and field activities including groundwater sampling. Following rejection of the final PRP-authored draft of the RI/Focused Feasibility Study (FFS), EGLE completed a Final RI/FFS report in November 2004, which transferred the lead to the EPA. In all, EGLE has spent about ~$235,000 of state funds on contractual services to assist with review, oversight, and writing of the RI/FFS report. Initial PRP-generated RI/FFS report was rejected by EGLE who assumed responsibility for authoring the document under the terms of the AOC.

Activity: PRP Oversight | **Start Date:** 1/1/1993 | **End Date:** 10/25/2006

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE and its contractor conducted oversight of the PRP-related activities including review of multiple versions of the Draft RI report and oversight of groundwater sampling. In 2005, following review of a PRP's Draft RI report, EGLE under authority of the AOC disapproved the PRP report and assumed responsibility for authoring an RI for the site with the EPA approving the Final RI in May 2008.

Activity: Remedial Investigation | **Start Date:** 1/1/1993 | **End Date:** 5/30/2008

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$1,490,000.00

Secondary Source:
State

Comments:
EGLE and its contractor conducted oversight of PRP-related activities including review of multiple versions of the Draft RI report and oversight of groundwater sampling. The PRPs submitted the RI report for the Allied Paper OU in December 2003 and a revision of Section 4 in October 2005. In 2005, following review of a PRP's Draft RI report, EGLE under authority of the AOC disapproved the PRP report. In February 2007, EGLE submitted a draft version of the RI to the EPA for review and the EPA approved the Final RI in May 2008. EGLE spent approximately $1,490,000 in contractor support over the life of the project in participating in RI activities and in developing a final report (of which ~$31,000 was spent on the analysis of independently collected samples).

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 12/2/2019 | **End Date:** 12/31/2020

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
Future Need

Primary Cost:
$63,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
RA to implement the RD.

Activity: 5 Year Review | **Start Date:** 5/23/2017 | **End Date:** 11/11/2021

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
A FYR will be needed in fall 2022.

Activity: Remedial Design | **Start Date:** 5/23/2017 | **End Date:** 11/11/2019

Operable Unit:
Allied Paper/Portage Crk/Kalamazoo River - OU1 Allied Paper

Status:
Future Need

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$0.00	Federal	State

Comments:
The RD began in May 2017 and is anticipated to be completed by November 2021.

Federal Grants

Grant #: V00E00999	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Open
Fed Total Award: $198,254.13	**State Total Award:** $0.00	**Exp to Date:** $81,592.09	**Exp for Year:** $24,665.02
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $38,900.51	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $24,624.91	**Exp for Year:** $0.00
Grant #: V975860-01-MA	**Activity:** Management Assistance	**End Date:** 6/30/2009	**Status:** Closed
Fed Total Award: $561,000.00	**State Total Award:** $0.00	**Exp to Date:** $561,000.00	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $8,867.51	**Exp for Year:** $0.00
Grant #: V995088-01-NE	**Activity:** Negotiations	**End Date:** 12/30/2000	**Status:** Closed
Fed Total Award: $327,000.00	**State Total Award:** $0.00	**Exp to Date:** $326,779.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Auto Ion Chemicals, Inc.

State Site ID:
39000005

Federal Site ID:
C4

Full Address:
74 Mills Street, Kalamazoo, MI, 49006

County:
Kalamazoo

Location

This 1.5-acre site is located adjacent to the Kalamazoo River in an industrial area of the city of Kalamazoo, Kalamazoo County, Michigan. A residential area is about one block away and a city park and recreation area is located just upstream and across the Kalamazoo River. There is also a Conrail yard immediately upgradient of the site and across Mills Street. No water supply wells are impacted, but two municipal water supply wells are located within 2 miles of the site.

Status

The site was used as an electrical generating station by the city of Kalamazoo from about 1914 until 1956 when Consumers Power purchased the property and closed and decommissioned the power station. Auto Ion Chemicals, Inc., (Auto Ion) began operation in 1964. Auto Ion used the facility to store and treat electroplating wastes containing heavy metals and cyanide. The facility was abandoned in 1973 when Auto Ion's license to transport, store, and treat industrial wastes was not renewed.

EGLE (formerly known as MDEQ) is not actively working on this site. Due to budget and staffing issues, this site was targeted as a low priority and EGLE involvement ceased in 2015.

History

The facility was abandoned in 1973 when Auto Ion's license to transport, store, and treat industrial wastes was not renewed. Company records have identified approximately 60 potentially responsible parties (PRPs). Liquid waste and sludges were stored at several locations including an unlined surface lagoon on-site. In addition, the building had five process storage tanks containing waste, and liquid waste had flooded the basement. Chromium, nickel, cyanide, mercury, arsenic, lead, vinyl chloride, 1,1-dichloroethane, 1,2-dichloroethane, bromodichloromethane, dibromochloromethane, benzo(b)fluoranthene, methylene chloride, 4-methyl-2-pentanone, acetone, carbon disulfide, trichloroethylene, cadmium, and seven halogenated volatile organic compounds were among the contaminants detected in groundwater samples taken from the site.

Actions taken to date include an immediate removal action in 1982, building demolition in September 1986, and Operable Unit (OU)1 soil remedial investigation (RI) completion in June 1989. A Record of Decision (ROD), which addressed soil contamination, was signed in September 1989. In March 1993, an Explanation of Significant Differences (ESD) established a treatability variance for excavated soils contaminated with classified F006 waste. This treatability variance established alternate treatment standards for cadmium, chromium, nickel, and lead. Other aspects of the OU soil remedy are unchanged. A soil removal action out to the fence line and down to approximately 10 feet below ground surface was completed in November 1993. A second ROD, addressing groundwater contamination, was signed in September 1994. The state did not concur with this ROD because it allows continued venting of the contaminated groundwater plume, including bio-accumulatives, to the river at concentrations exceeding criteria pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The ROD called for monitored natural attenuation and alternate concentration limits (ACLs).

The PRP's consultants analyzed the data and submitted an ACL proposal document in June 2000 for groundwater discharging to the river. The proposed criteria were not acceptable to EGLE and EPA staff. The PRPs June 2003 document entitled Review of Monitoring Results Rounds 1-20 proposed that the sampling parameters be scaled back.

In the First Five-Year Review (FYR) completed September 30, 2001, the EPA delayed making a determination of protectiveness because of ACL exceedances.

In October and November 2003, EGLE, with encouragement from the EPA, conducted two rounds of groundwater sampling under random groundwater gradient conditions to assess the impact, if any, of the groundwater reversals on concentrations of contaminants in groundwater on-site. The report for this sampling was completed in 2004 and the data did not show statistically significant trends of contaminant concentrations up or down. EGLE staff also sampled for additional parameters beyond those being sampled for in the current monitoring program. Some parameters (i.e., Boron) were detected at concentrations significantly greater than Part 201 criteria. Review of field notes also revealed potential differences in sampling protocol between the various parties performing the work.

In the Second FYR completed September 22, 2006, the EPA concluded that the remedy for the Auto Ion site is protective of human health and the environment in the short-term. "To ensure the remedy continues to be protective in the long-term, however, enforceable use restrictions running with the land and required by the OU2 ROD must be implemented. In addition, other Institutional Controls (ICs) or use restrictions may be necessary to ensure the long-term protectiveness of the remedy." An updated restrictive covenant (RC) was registered on June 11, 2013. The EPA began evaluation and implementation of additional issues and recommendations in 2012 and 2013.

The EPA completed the Third FYR in September 2011. The state did not agree with the EPA's conclusion that the remedy was performing as designed. The concentrations of contaminants had not dropped at the rates modeled and predicted by the PRPs in support of the ACL remedy.

Due to budget and staffing issues, this site was targeted as low priority and EGLE involvement ceased. In 2012, the EPA requested EGLE assistance for additional site investigation efforts.

The EPA required the PRPs to perform additional field work in 2012 to better understand groundwater flow direction and mass loading to the Kalamazoo River. The new data has revealed a previously underestimated westerly component of flow. A second phase of the river sampling field work was deemed necessary and took place in October 2014.

The EPA works with the responsible parties to manage the site. EGLE, in a letter dated May 5, 2015, notified the EPA that "...we have determined that it is unlikely that the State of Michigan would consider current groundwater monitoring well concentrations to represent an unacceptable discharge to the Kalamazoo River at this time. Although there are periodic exceedances of some parameters, including the bio-accumulative toxics arsenic and mercury, the concentrations of the eight site chemicals of concern currently monitored in the Point of Compliance wells, do not regularly exceed the estimated site-specific GSI criteria and may not constitute an exposure concern." The site-specific groundwater/surface water interface (GSI) criteria needs to be updated to accurately represent the discharge zone.

Due to budget issues, this site was again targeted as a low priority and EGLE involvement ceased in 2015.

In the fall of 2017, EGLE was contacted by the Kalamazoo County Land Bank and participated in discussions regarding the possibility of including the Auto Ion property in potential brownfield redevelopment opportunities.

Enforcement

This site is a federal-lead site with the PRPs doing the work. The PRPs have secured GHD (formerly Conestoga-Rovers & Associates, Inc.) for the groundwater monitoring.

The PRPs are liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended. No determination about liability under Part 201 has been made.

The PRPs worked with EGLE enforcement staff to complete a RC for the property. The final RC was placed on June 11, 2013.

Operable Units for Auto Ion Chemicals, Inc.

OU1 Soil

OU2 Groundwater

Decision Documents

Record of Decision | **Amendment:** 0 | **ESD:** 0 | **Effective:** 9/27/1989

Location Name: OU1 Soil

Comments:
The ROD calls for excavation, off-site treatment via stabilization, and off-site disposal of approximately 7,200 cubic yards of contaminated soil. Soil removal down to 10 feet below ground surface and out to the site perimeter fence.

Record of Decision | **Amendment:** 0 | **ESD:** 1 | **Effective:** 3/26/1993

Location Name: OU1 Soil

Comments:
This ESD establishes a treatability variance for excavated soils contaminated with classified F006 waste. This treatability variance establishes alternate treatment standards for cadmium, chromium, nickel, and lead. Other aspects of the OU soil remedy are unchanged.

Record of Decision | **Amendment:** 0 | **ESD:** 0 | **Effective:** 9/23/1994

Location Name: OU2 Groundwater

Comments:
The selected remedy includes the establishment of ACLs to be used as action levels for the monitoring of groundwater discharging to the Kalamazoo River. The remedy also includes groundwater monitoring, ICs, and development of a remedial action (RA) plan to be implemented in the event ACLs are exceeded.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 11/2/1998 | **End Date:** 11/2/2048

Operable Unit:
Auto Ion Chemicals, Inc. - OU2 Groundwater

Status:
Ongoing

Primary Cost:
$355,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Includes long-term monitoring, data review, and contingency plan. The site will be closed out once the cleanup criteria have been met for a satisfactory period of time. Cost estimates are secured from ROD estimates. The operation and maintenance process is ongoing.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 5/5/2015 | **End Date:** 8/30/2016

Operable Unit:
Auto Ion Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR OU1 Protectiveness Statement indicates the remedy is currently protective and "...in order for the remedy to be protective in the long-term, the EPA should complete an ESD to incorporate ICs related to soils as part of the OU1 remedy, and the PRPs should complete a LTS (Long Term Stewardship) Plan to define actions needed to confirm the integrity of the remedy and to ensure that ICs remain in place and continue to be effective."

The FYR OU2 Protectiveness Statement indicates the remedy is currently protective and "...in order for the remedy to be protective in the long-term, the PRPs should complete a LTS Plan..., conduct further evaluation of the data collected during the surface water investigation to determine if there are potential risks to the river, and, if an unacceptable risk due to contaminants of concern in pore water is identifeid, the PRPs should review the algorithm

used to evaluate ACL exceedances to determine if it needs to be revised and/or if additional action(s) need to be taken."

Activity: 5 Year Review | **Start Date:** 10/18/2010 | **End Date:** 9/1/2011

Operable Unit:
Auto Ion Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE staff did not agree with the EPA's assessment that the remedy is functioning as designed and is protective of human health and the environment.

Activity: 5 Year Review | **Start Date:** 3/27/2006 | **End Date:** 9/29/2006

Operable Unit:
Auto Ion Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE staff provided a detailed letter of issues to the EPA in preparation for the 2006 FYR. While all of the issues were discussed or at least mentioned in the document, EGLE staff did not agree with several of the assessments made.

Activity: 5 Year Review | **Start Date:** 9/7/2001 | **End Date:** 9/30/2001

Operable Unit:
Auto Ion Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$29,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The 2001 FYR was completed on September 30, 2001. The EPA determined that the ACL exceedances at the time made the determination of protectiveness difficult. The protectiveness determination was delayed.

Activity: Remedial Action | **Start Date:** 11/2/1997 | **End Date:** 11/2/1998

Operable Unit:
Auto Ion Chemicals, Inc. - OU2 Groundwater

Status:
Completed

Primary Cost:
$324,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Well installation and vertical aquifer sampling. Private costs secured from PRP estimates.

Activity: Remedial Action | **Start Date:** 4/1/1993 | **End Date:** 11/1/1993

Operable Unit:
Auto Ion Chemicals, Inc. - OU1 Soil

Status:
Completed

Primary Cost:
$4,000,000.00

Primary Source:
Private

Secondary Cost:
$154,000.00

Secondary Source:
Federal

Comments:
Private expenditures estimated by the PRPs.

Activity: Remedial Design | **Start Date:** 2/1/1993 | **End Date:** 3/1/1993

Operable Unit:

Status:

Auto Ion Chemicals, Inc. - OU1 Soil | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$480,000.00	Private	$305,000.00	Federal

Comments:
Private cost totals were secured from PRP estimates. Remedial design (RD) estimated as 10 percent of the PRPs reported RD/RA costs.

Activity: Remedial Design | **Start Date:** 2/1/1993 | **End Date:** 11/1/1997

Operable Unit: Auto Ion Chemicals, Inc. - OU2 Groundwater | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$36,000.00	Private	$11,000.00	Federal

Comments:
Groundwater monitoring system design and ACL. Private expenses are estimated based on 10 percent of the PRP reported RD/RA costs. Federal expenses as reported in the EPA information.

Activity: Remedial Investigation | **Start Date:** 9/8/1983 | **End Date:** 6/1/1989

Operable Unit: Auto Ion Chemicals, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$495,000.00	Private	$5,000.00	Federal

Comments:
Private funding costs were secured from PRP estimates.

Activity: Remedial Investigation | **Start Date:** 9/8/1983 | **End Date:** 11/1/1993

Operable Unit: Auto Ion Chemicals, Inc. - OU2 Groundwater | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$320,000.00	Private	$55,000.00	Federal

Comments:
The OU for soil RI was amended to include the OU for groundwater. Federal costs are from EPA records.

Activity: Emergency | **Start Date:** 4/30/1982 | **End Date:** 7/30/1982

Operable Unit: Auto Ion Chemicals, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,500,000.00	Private	$0.00	

Comments:
The EPA did an emergency removal in 1982. The EPA's costs were subsequently recovered from the PRPs.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 8/1/2020 | **End Date:** 8/30/2021

Operable Unit: Auto Ion Chemicals, Inc. - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:

Estimated dates based on August 30, 2016 signature of last FYR.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $119.81	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $388.72	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $9,259.55	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $14,986.63	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $685.00	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $92,581.39	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $4,538.02	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $24,782.17	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $9,967.21	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $99,957.99	**Exp for Year:** $0.00

Auto Ion Chemicals, Inc.

Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $40,000.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: KL Avenue Landfill

State Site ID:
39000017

Federal Site ID:
37

Full Address:
8606 West K L Avenue, Kalamazoo, MI, 49009

County:
Kalamazoo

Location

The KL Avenue Landfill is a closed sanitary landfill located on 87 acres in Oshtemo Township, west of the city of Kalamazoo, in Kalamazoo County, Michigan, a light residential area.

Status

In the early 1960s, KL Avenue Landfill was a garbage dump for the township but became a county sanitary landfill in 1968 that also accepted industrial waste. The landfill continued operation until May of 1979. Five million cubic yards of refuse and an unknown amount of bulk liquid and drummed chemical waste were disposed of at the landfill. The landfill contaminant plume has continued to spread over 2.5 miles long. Three surface water bodies, Dustin Lake, Springwood Lake, and Bonnie Castle Lake are located nearby. There are many residences that have historically relied on private wells for drinking water in the vicinity of the site. Many of these wells closest to the site were abandoned as municipal water was extended to the affected areas.

Operation and maintenance (O & M) of the landfill cap system continues including quarterly site inspections and monitoring of the perimeter gas probes in accordance with the June 2007 Landfill Cap O & M Plan.

The agencies have reviewed the addendum to the Third Five-Year Review (FYR) and have determined that in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: fully evaluate potential contingent remedies and emerging technologies against the nine National Contingency Plan criteria; implement a contingent remedy to prevent further downgradient migration of the contaminant plume; continue providing municipal water connections (Kalamazoo County) and new potable wells (Van Buren County) to residents with 1,4-dioxane in their well water at or above 7.2 parts per billion (ppb); as an interim measure, continue offering bottled water to residents with concentrations in well water at or above 7.2 ppb until the home is connected to municipal water or a new potable well is installed; amend the Institutional Control Implementation and Assurance Plan (ICIAP) to include Institutional Controls (ICs) for impacted homes in Van Buren County; modify the decision document to incorporate the new 1,4-dioxane drinking water criterion, ICs, and alternate water supplies for impacted Van Buren County homes; and install additional wells between Fish Hatcheries Road and wetland area to further characterize the 1,4-dioxane groundwater plume.

The potentially responsible party (PRP) Group has concluded conducting bench-scale study to enhance the microbial degradation of 1,4-dioxane through cometabolic oxidation processes utilizing specific strains of bacteria capable of aerobically degrading the chemical.

There is a proposed municipal agreement for Almena Township and other municipalities that would allow residents to connect to the existing water main along VanKal that runs from W.J Avenue and M-43. This option is being made available to the residents in the area as there are two or three residential locations that have low level detection of 1,4-dioxane along VanKal.

The agencies are currently working on an Explanation of Significant Differences (ESD) document in connection with the 1,4-dioxane EGLE (formerly known as MDEQ) cleanup criterion rule changes from 85 ppb to 7.2 ppb.

February 28, 2019 - A meeting was held between the Agencies and the KLA Group to discuss the status of remedial activities and planned 2019 activities.

April 15, 2019 - A meeting was held between the Agencies and the KLA Group to discuss current remedy performance, contingent remedial alternatives and the FYR process.

April 23, 2019 - A letter was issued by the EPA to the Ridgeview Golf Course requesting access to sample two irrigation wells.

May 9, 2019 - A conference call was held between the Agencies and the KLA Group to discuss ICs for groundwater and the updated ICIAP submitted to the Agencies on August 31, 2018.

June 10, 2019 - A Groundwater Modeling Report was submitted to the Agencies in support of the contingent remedial alternatives analysis.

October 28 through October 29, 2019 - Sampling of select wells for per-and polyfluoroalkyl substances (PFAS) analysis was conducted. Four samples were collected from wells east of 4th street adjacent to and near the landfill and two samples were collected from wells west of 4th street in the downgradient plume area.

History

From 1968 to 1979, the site operated as a county sanitary landfill. The landfill was ordered closed by the Michigan Department of Natural Resources in May 1979, after volatile organic compound (VOC) contamination was discovered in ten domestic wells. Many residential wells were closed and 36 homes were connected to municipal water mains by Kalamazoo County. Eleven private wells were replaced with deeper wells. Beginning in 1997, municipal water was extended to residents in subdivisions to the northwest of the site after contamination was found in several domestic wells. It is suspected that this contamination is site-related.

In 1980, as part of the site closure plan, a partial bentonite clay cap was placed on the landfill to reduce soil permeability and retard contaminant migration. Gas monitoring wells, soil gas probes, and gas vents were also installed on the landfill to provide information on methane generation and to vent the facility.

The site was placed on the National Priorities List in September 1983. The EPA initiated a remedial investigation/feasibility study to determine the nature and extent of contamination and to evaluate cleanup alternatives, this was completed in September 1990. On September 28, 1990, the EPA issued a Record of Decision (ROD) that describes the selected cleanup alternative for this site. This alternative requires the extraction and treatment of contaminated groundwater and a modified Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA) Subtitle C cap over the landfill contents.

There is a large plume of groundwater contamination that has migrated west of the site. Levels of contamination in the groundwater exceed federal and state drinking water standards. If unabated, the contaminants may cause health problems for residents drinking the water over a lifetime.

Kalamazoo County and Oshtemo Township continue to own the site. The site remains closed and has not received any wastes since May 1979. In 2001, work on the remedial design (RD) was placed on hold pending a study, by the PRPs and the EPA in conjunction with EGLE, into the possibility of utilizing bioremediation to remedy both the contaminated groundwater and the landfill material. Originally, the cost of the study was to be split between the EPA and the PRPs. However, due to severe budget cutbacks, the EPA was unable to fund their portion of the study. The PRP group agreed to fund the entire study. The study began in mid-1996 and was completed by the end of 1997. The results of the study indicated that some of the primary contaminants of concern in the landfill contents and leachate were indeed biodegradable, although time has shown that the rate of degradation was insufficient to prevent the expansion of the plume, and several contaminants are recalcitrant to biodegradation.

In 1998 and again in 1999, the PRPs conducted a mass water level survey of domestic wells and monitoring wells in downgradient and crossgradient locations from the landfill in order to determine how the local hydrology interacts with the regional hydraulic discharges. The results of these mass water level surveys are evaluated in light of current groundwater contamination data to determine if monitored natural attenuation (MNA) remains an appropriate remedy for the groundwater plume. The nature and extent of groundwater contamination led the EPA and the MDEQ to request that the PRPs design and implement some type of source control for the groundwater contamination emanating from the landfill. The PRPs investigated semi-passive, in-situ measures that can manage and remediate contaminated groundwater emanating from the landfill property. A remedy proposal was submitted to the EPA and EGLE in the form of a second Focused Feasibilty Study (FFS) in the fall of 2001 and a third FFS was submitted in the fall of 2002.

Additional groundwater contamination was discovered during residential well monitoring in 1999 in a subdivision located approximately 1-1/2 miles northwest of the site. These residents were provided with bottled water until municipal water was provided during the fall of 1999. In addition, the PRPs conducted a groundwater investigation in this area to delineate the problem and eventually installed monitoring wells in the area; these are sampled semi-annually.

In 2002, EGLE investigated the groundwater/surface water interface (GSI) at the two nearby lakes and has detected contamination at levels just below maximum contaminant levels (MCLs). It is likely that this contamination is associated with the landfill. In addition, in the Springwood Hills subdivision northwest of the landfill, there was a seepage area that contained contamination at concentrations exceeding the MCLs. EGLE completed an investigation in this area and found that the source was an area of buried and decomposing vegetation. In July 2003, EGLE installed a seepage collection system to collect this seepage and direct it into the ground to eliminate its surface expression. In 2002, EGLE performed vertical soil gas surveys near the landfill and close to nearby residences to determine if landfill gas migration was an imminent threat at the site. While EGLE found elevated levels of methane exist in the soil gas near the landfill, methane was not detected near any of the nearby residences.

In November 2002, EGLE sampled monitoring wells and performed a reconnaissance of a salvage yard downgradient of the landfill to help determine if this property is an additional source of groundwater contamination that has been detected in residential wells in a nearby subdivision. This initial phase of investigation was followed by soil and groundwater sampling at the salvage yard and other nearby properties during the 2005 field season - no sources of contamination were found. EGLE had identified four other potential contaminant source areas northwest of the landfill that were investigated in the spring/summer of 2008 at state expense. Results of this investigation determined that the contaminated groundwater had originated from the landfill and not the other potential sources.

The PRPs had at one time proposed the pilot testing of two innovative remedial technologies. For the groundwater contamination, a sulfate solution would be amended to the groundwater to stimulate bacteria capable of metabolizing the VOC contamination in the leachate contaminated groundwater. The PRPs had also proposed Enhanced Landfill Gas Extraction of the landfill contents. The Enhanced Landfill Gas Extraction system would apply a vacuum to the landfill contents and remove and destroy VOCs at the source, preventing them from entering the groundwater. In February 2004, the Agencies rejected the Enhanced Landfill Gas Extraction/Sulfate addition as not equivalent to a cap for the long-term protection of the groundwater. The pilot testing of these technologies was not conducted by the PRPs.

The EPA initiated a ROD Amendment in 2002 to address the potential risk to nearby residents should the plume expand and affect additional residential wells. The EPA had established a service area within which the PRPs must supply residents with municipal water. This service area encompassed all of the groundwater contamination known at the time to be associated with the landfill and included a small buffer zone. EGLE concurred with this ROD Amendment which was signed by the EPA on February 27, 2003.

During the 2002 construction season Oshtemo Township (also a PRP) extended municipal water to residents both within and outside the EPA defined service area to supply municipal water to residential areas that are in areas where contamination levels are present but below MCLs. EGLE contributed approximately $82,000 towards this project to supply clean water to an area of groundwater contamination that has not been linked to the landfill, but exists in exceedance of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, drinking water criteria.

In February 2004, Oshtemo Township requested an informal dispute resolution action by the EPA to reevaluate the EPA's decision to uphold the ROD and require an impermeable cap on the KL Avenue Landfill.

The dispute by the township was dropped, the landfill capping resumed, and was completed in October 2006. The PRPs agreed to install a portion of the Enhanced Landfill Gas Extraction system as part of the cap construction. In March 2008, the PRPs converted the existing passive gas venting system to an active gas system by installing a flare and condensate pumping system to accelerate the landfill contaminant destruction prior to its leaching to the groundwater.

In early 2004, a new contaminant, 1,4 dioxane, was found in both monitoring and residential wells above drinking water criteria throughout the site. The detection of this compound at the downgradient edge of the buffer zone established by the EPA in their 2003 ROD Amendment necessitated consideration of an expanded buffer zone at its downgradient edge to include an additional 1000 feet of property.

The PRPs submitted a revised petition to substitute MNA for the ROD specified pump and treat (P & T) of the groundwater. This document was reviewed and commented to by EGLE. The EPA issued a ROD Amendment in 2005 to change the groundwater remedy from P & T to MNA. EGLE did not concur with this ROD Amendment primarily due to the uncertainties in the definition of the extent of groundwater contamination to the northwest, and the lack of adequate ICs to limit access to contaminated groundwater.

The EPA issued the First FYR report in May 2009. The FYR concluded the remedy was protective in the short-term but made several recommendations for additional actions needed to ensure the remedy remains protective in the long-term.

As the groundwater contamination plume continues to expand, the PRPs extended municipal water to homes in the affected areas. In November 2013, municipal water hook-ups were provided to seven residences that accepted connection agreements.

In December 2013, November 2014, and again in 2015 the PRPs met with Kalamazoo County Health Department and Van Buren/Cass District Health Department representatives to discuss recent residential monitoring results in Van Buren County and future actions that need to be taken to deal with potential plume migration to Van Buren County including groundwater use contingency measures.

In 2013, EGLE staff reviewed Work Plans prepared by the PRPs for additional investigative work in the plume area as well as proposal for a groundwater use restriction zone at the KL Avenue Landfill site. Approval of the most recent groundwater use restriction proposed by the PRPs that precludes the Chaddsford Way Subdivision, required issuing an Explanation of Signficant Difference (ESD). The ESD was signed by the EPA on June 23, 2014.

Also on May 9, 2014, the EPA signed the Second FYR report for this site. The EPA deferred protectiveness of the current remedy until such time that the following actions are taken: source control/contingent remedies to reduce 1,4-dioxane and tetrahydrofuran concentrations in the groundwater; continue characterizing the movement and full extent of groundwater contamination northwest of the landfill; and investigate the presence of methane gas at nearby structures and, if needed take appropriate measures. It is expected that these actions will take approximately two years to complete, at which time a protectiveness determination will be made.

Public Hearing on the Groundwater Use Restricted Zone was held on June 2, 2015. Again, in 2015 the PRPs met with the Kalamazoo County Health Department and the Van Buren/Cass District Health Department officials as noted above.

Pursuant to the Kalamazoo County Sanitary Code, Kalamazoo County approved the PRP's application for a groundwater use restricted zone on December 2, 2015. This formally implements ICs in the areas where groundwater results have been reported above the Part 201 standards and a 1000 foot downgradient buffer zone.

The Kalamazoo Board of Commissioners approved the Groundwater Use Restricted Zone amendment to the Kalamazoo County Sanitary Code at its January 19, 2016 meeting.

EGLE and the EPA reviewed the "Second Five-Year Evaluation of Monitored Natural Attenuation" document submitted by the PRPs pursuant to the Consent Decree. Further, the Agencies received and approved the ICIAP submitted by the PRPs in May 2015.

EGLE staff reviewed the “2017 Residential Well Replacement Plan” document submitted by the PRPs and provided written comments. On July 27, 2017, EGLE staff reviewed the “Irrigation Well Waiver Requests” document , prepared and submitted by the PRP Consultant on behalf of 21 owners of residential water supply and/or irrigation wells and provided recommendation to the Kalamazoo County Health and Community Services, Environmental Health Director. In May 2017, EGLE staff reviewed “Propane Biosparge Bench Scale Field Study Work Plan” submitted by the PRP Consultant and provided written comments. In August 2017, EGLE staff reviewed and provided written comments on the “Work Plan-For Supplemental Hydrogeologic Investigations, West KL Avenue Landfill Site “ document prepared by Golder Associates. In Spring/Summer 2017, remaining residents within the restricted zone were connected to municipal water.

On July 18, 2018 an update on the pilot test and a schedule extension request for continued implementation of the pilot was issued to the Agencies. On July 27, 2018, a semi-annual RD/remedial action (RA) progress Report was submitted to the Agencies for the period January through June 2018. On July 31, 2018, the Agencies approved the pilot test

schedule extension requested July 18, 2018. On August 8, 2018, a meeting was held between the PRP Group and the Van Buren County Health Board regarding the implementation of ICs for groundwater use in Van Buren County. On August 9, 2018, a Data Summary Report was submitted to the Agencies for the annual residential monitoring conducted June 26 through July 24, 2018.

On August 31, 2018, an updated ICIAP was submitted to the Agencies pursuant to the EPA April 2017 Addendum to the West KL Avenue Landfill Superfund Site FYR. On September 7, 2018, a letter was issued by Golder on behalf of the PRP Group to Ridgeview Golf Course requesting access to sample two irrigation wells. The request to sample was declined on September 13, 2018. On September 18, through September 25, 2018 a semi-annual residential well monitoring was conducted in accordance with the "Updated Residential Monitoring List" provided in the Data Summary Report. On October 5, 2018, Phase ll pilot test injections were completed.

November 13 through November 28, 2018, municipal water connections were made at four residential locations. December 3, 2018, final post injection sampling was completed for Phase ll of the Field Pilot Test on biostimulation of 1,4 dioxane. December 13, 2018, the Annual Report was submitted to the Agencies. December 19, 2018, the enhanced in-situ Biodegradation of 1,4 dioxane Pilot Study Report on biostimulation of 1,4 dioxane degradation was submitted to the Agencies.

O & M of the landfill cap system and the gas collection system continued including quarterly site inspections and monitoring of perimeter gas probes in accordance with the Landfill Cap O & M Plan.

Enforcement

The EPA and a group of PRPs successfully negotiated a Consent Decree for performance of the selected RA. The PRPs have conducted all site-related response activities since 1992. No liability determination has been conducted under Part 201.

The EPA, in consultation with EGLE, renegotiated the site Consent Decree and Scope of Work with the PRPs to include the extension of municipal water to residents within a buffer zone as described in the February 27, 2003, ROD Amendment. This Consent Decree underwent further revision to encompass the requirements and obligations of a MNA solution to the groundwater contamination problem as described in the 2005 ROD Amendment.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/28/1990

Location Name: KL Avenue Landfill - OU Entire Site

Comments:
The ROD requires installation and maintenance of a cap and a gas venting system on the landfill. It also calls for installation and operation of a groundwater extraction and treatment system using a fixed film bioreactor. The remedy also includes deed restrictions or other ICs restricting use of the shallow groundwater and prohibiting construction on the landfill cap.

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 2/27/2003

Location Name: KL Avenue Landfill - OU Entire Site

Comments:
On February 27, 2003, the EPA signed a ROD Amendment to add provisions for municipal water to be extended throughout the known area of groundwater contamination and also a buffer zone downgradient of this contamination. This component of the remedy also includes abandonment of private drinking water wells and enactment of ICs to prevent the use of the affected groundwater as a drinking water source. This amendment did not alter the components of the remedy selected in the 1990 ROD.

Record of Decision	**Amendment:** 2	**ESD:** 0	**Effective:** 9/12/2005

Location Name: KL Avenue Landfill - OU Entire Site

Comments:
On September 12, 2005, the EPA signed a ROD Amendment that changed the groundwater remedy from P & T to MNA. The state did not concur with this change as the areal extent of the 1,4 dioxane groundwater contamination has not been delineated and the area of proposed IC described in the Amendment did not encompass the contamination and provided no buffer zone downgradient to address uncertainties associated with the distribution of the contamination.

Record of Decision **Amendment:** 2 **ESD:** 0 **Effective:** 6/23/2014

Location Name: KL Avenue Landfill - OU Entire Site

Comments:
The EPA signed the ESD in June 2014 to allow potable groundwater use for existing wells within the municipal water supply zone (e.g., Chaddsford Way Subdivision), provided certain conditions are met.

Response Activities - In Progress

Activity: Interim Response **Start Date:** 1/1/1979 **End Date:** 12/28/2020

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
In Progress

Primary Cost:
$50,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Residential well monitoring for homes not monitored by the PRPs is being performed for EGLE by the Kalamazoo County Health Department. The PRPs installed municipal water at 13 residences and abandoned 13 private residential wells on First Street in 2008. The PRPs completed (June 2010) installation of a water main loop from West Main Street to 22nd Street to J Avenue to Wickford Drive back to West Main Street. The construction took about two months to complete. Similar work is anticipated in 2020 going forward.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 6/7/2007 **End Date:** 7/1/2036

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Ongoing O & M of the constructed remedy. The PRPs are maintaining the landfill cap and the active gas collection system on an ongoing basis.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 8/4/2018 **End Date:** 4/3/2020

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Final

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE provided Issues Letter to the EPA in October 2018. The EPA conducted the Third FYR in 2019.The EPA signed the Final FYR on April 3, 2020. The Report determined that the remedy in place is protective of public health and the environment.

Activity: 5 Year Review **Start Date:** 8/4/2013 **End Date:** 5/9/2014

KL Avenue Landfill

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Second FYR for this site was completed in May 2014. The EPA deferred protectiveness of the current remedy until such time that the following actions are taken: source control/contingent remedies to reduce 1,4-dioxane and tetrahydrofuran concentrations in the groundwater; continue characterizing the movement and full extent of groundwater contamination northwest of the landfill; and investigate the presence of methane gas at nearby structures and, if needed take appropriate measures.

Activity: Remedial Investigation **Start Date:** 12/10/2008 **End Date:** 5/11/2009

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The EPA issued the First FYR report in May 2009. The FYR concluded the remedy was protective in the short term but made several recommendations for additional actions needed to ensure the remedy remains protective in the long term. EGLE staff sent a letter dated September 14, 2009, to the EPA expressing concerns about the omission of relevant issues and recommendations suggested by EGLE.

Activity: Remedial Action **Start Date:** 10/1/2005 **End Date:** 6/7/2007

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$25,150,985.00	Private	$0.00	

Comments:
This cost reflects the PRP's estimates of a modified RCRA Type C cap, MNA, and sulfate addition to the groundwater near the landfill. The EPA wrote a ROD Amendment in 2005 to change the groundwater remedy from P & T to MNA. Preparations for capping the landfill began in the fall of 2005 with the majority of the cap construction completed during the 2006 field season.

Activity: Alternate Water **Start Date:** 9/1/2004 **End Date:** 5/1/2005

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	Private

Comments:
Municipal water extension (per 2003 ROD Amendment) to residents along 2nd Street, Almena Drive, and M-43.

Activity: Alternate Water **Start Date:** 7/8/2002 **End Date:** 11/29/2003

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,000,000.00	Private	$82,000.00	State

Comments:
The state started a monitoring program for residential wells surrounding the KL Avenue Landfill for groundwater contamination that are threatened by groundwater contamination sources that do not seem associated with the landfill. The state financed the extension of municipal water to the homes between Almena Drive and M-43 on 4th

Street at a cost of ~$82,000. Additional homes were connected to municipal water as the PRPs complied with the February 27, 2003, ROD Amendment.

Activity: Remedial Investigation | **Start Date:** 7/2/2001 | **End Date:** 10/31/2008

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$285,000.00	State	$0.00	No Financial Source

Comments:
Supplemental investigation of potential off-site contamination sources, GSI discharges, and methane migration. Some of the groundwater discharge has been found in Dustin Lake, but indications from upgradient wells show little potential for discharge to the lake above generic GSI criteria. EGLE conducted a limited soil gas survey of the nearest residents to the landfill to determine if there was an acute methane migration problem. The remainder of this investigation was conducted by the PRPs. Other potential off-site contaminant source areas on the former Minott property were investigated by EGLE during the summer and fall of 2005. Investigation of the remaining properties was completed in the fall of 2008 and confirmed that the source of contamination is within the confines of the landfill.

Activity: Remedial Design | **Start Date:** 8/1/1992 | **End Date:** 8/1/2004

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,200,000.00	Private	$140,000.00	Federal

Comments:
The RD was on hold while pre-design investigations were being completed by the PRPs. Design of an impermeable cap resumed in 2002 and was completed by the EPA's deadline of August 2004.

Activity: Remedial Investigation | **Start Date:** 1/1/1985 | **End Date:** 12/31/1990

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,334,000.00	Federal	$49,540.00	State

Comments:
No Comment entered

Activity: Alternate Water | **Start Date:** 1/1/1980 | **End Date:** 12/31/1980

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The county replaced 11 residential wells with deeper wells. The cost of this effort is unknown.

Activity: Alternate Water | **Start Date:** 1/1/1980 | **End Date:** 12/29/2013

Operable Unit:
KL Avenue Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The county installed a new water main for 36 residences in 1980 and for several residents in distant subdivisions in

1997, 1999, 2000, 2002, 2004, and 2013. The cost of this effort is unknown.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 8/5/2024	**End Date:** 4/3/2025
Operable Unit: KL Avenue Landfill - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** State	**Secondary Cost:**	**Secondary Source:**
Comments: Another FYR is required in Fiscal Year 2025			

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $27,194.91	**Exp for Year:** $10,138.83
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $7,079.18	**Exp for Year:** $3,617.60
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $26,275.99	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $43,848.91	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $33,153.63	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $37,803.84	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $16,195.51	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $12,498.27	**Exp for Year:** $0.00

KL Avenue Landfill

Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $117,239.46	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $19,900.88	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $179,512.17	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $49,540.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Michigan Disposal (Cork St LF)

State Site ID:
39000010

Federal Site ID:
Q2

Full Address:
2800 East Cork Street, Kalamazoo, MI, 49007

County:
Kalamazoo

Location

The Michigan Disposal Landfill Site is located at 2800 East Cork Street in the city of Kalamazoo, Kalamazoo County, Michigan. The landfill is located in the southeastern portion of the city of Kalamazoo. The landfill is bounded to the north by Cork Street where the entrance is located, Conrail Railway to the west, Interstate I-94 to the south, and both Davis Creek and a Grand Trunk Western Railway line to the east. The area surrounding the landfill is immediately bordered by a wetland area and a county drain. Otherwise, the landfill area is generally industrial/commercial in nature.

Status

The Michigan Disposal (Cork Street Landfill) site is a closed landfill located in Kalamazoo, Kalamazoo County, Michigan. From 1925 to 1961, a waste disposal facility operated at the 68-acre area. The site's long-term remedy, selected in 1991, included capping of the entire site; pumping and treating contaminated groundwater, and discharging it to a publicly owned wastewater treatment facility; groundwater monitoring; installing fencing and signage around the site, and institutional controls (ICs) such as notice to future property owners and deed restrictions to regulate development and groundwater use. Construction of the remedy started in 2000 and finished in 2002.

EGLE staff have provided review and comments regarding the need for updated restrictive covenants (RCs) and provided specific revisions to the draft ICs study submitted by the PRPs in early 2015. This document is still pending final approval. On October 4, 2013, the PRP group submitted a revised petition to the EPA for the current groundwater/surface water interface (GSI) Monitoring Plan to a reduced semi-annual and annual monitoring schedule. A response to the request is still pending. However, the EPA has verbally approved that the frequency of the GSI Monitoring can be reduced to semi-annually.

The EPA initiated the Fourth Five-Year Review (FYR) on October 7, 2019, completed the site inspection visit on March 9, 2020, and submitted the draft FYR report to EGLE on June 30, 2020. EGLE staff are reviewing the data to provide comments on this draft report. The Fourth FYR is due on September 29, 2020.

History

The Michigan Disposal site, also known as the Cork Street Landfill, was operated as a general refuse landfill from 1925 to 1968. It was owned and operated by the city of Kalamazoo from 1961 to 1968, during which time a Wilco incinerator was operated on-site. The site was sold to the Dispos-O-Waste Company (later becoming Michigan Disposal), which operated a Type III landfill on top of the old municipal landfill until mid-1992.

Various contaminants have been found in the groundwater. Benzene, at 150 parts per billion (ppb), and lead, at 28 ppb, are above the state Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) drinking water cleanup standards of 5 ppb and 4 ppb, respectively. There are no private wells in use near the site. It is believed that historical early operations at the site are the primary cause of the contamination.

The site was placed on the federal National Priorities List on February 21, 1990. The PRPs completed a remedial investigation/feasibility study (RI/FS) in 1991. These studies were conducted to determine the nature and extent of the contamination and to evaluate remedial alternatives. The EPA issued a Record of Decision (ROD) in September 1991, selecting a groundwater pump and treatment (P & T) remedy and the installation of an enhanced landfill cap. Design of

the landfill cap portion of the remedial action (RA) was completed in 1999. The RA construction of the landfill cap, that began in April 2000, was completed in 2002.

In lieu of implementing the ROD groundwater P & T remedy for groundwater prior to it discharging to Davis Creek, the city requested a mixing zone determination from EGLE. After evaluation by EGLE Surface Water Quality Division, it was determined that a mixing zone was allowable. The mixing zone approval was contingent upon an acceptable Groundwater Monitoring Plan being put into place and continued compliance with the allowable discharge criteria. A ROD Amendment was issued on September 25, 2002, with state concurrence.

The site Operations and Maintenance (O & M) Plan was approved in 2004.

A Five-Year Review (FYR) of the protectiveness of the remedy was completed in December 2004. This review stated that the remedy is considered protective in the short term because there is no evidence of a cap breach, groundwater use, or exceedance of GSI calculated mixing zone criteria and thus no current exposure. It went on to say, however, since the gas probes were not installed, there was no data to positively affirm that landfill gas was not escaping the landfill and migrating laterally. Therefore, in order for the remedy to be demonstrated to be protective and to remain protective in the long-term, the gas probes were installed in October 2005, and monitoring of landfill gas commenced. Two probes revealed elevated gas concentrations. The FYR also identified a concern with contaminated leachate potentially venting to the ground surface and also possible problems with the condition of the gas vents.

The zinc and arsenic concentrations in groundwater have been found to exceed criteria in some sampling rounds and specific wells. In October 2005, additional groundwater monitoring wells (including the replacement of galvanized wells) were installed adjacent to existing wells to better understand the elevated concentrations. Installation of required gas probes was also performed in October 2005. Data was received from the PRPs late in 2006 revealing elevated gas levels existing only at the toe of the cover and not above criteria in nearby buildings. Additional data collected in 2008 and 2009 revealed extremely high methane concentrations in probes and manholes on site.

The remedy is considered to likely be protective in the short term in the 2010 FYR. This FYR concluded that in order for the remedy to remain protective in the long term, implementation of the Institutional Controls (ICs) was necessary and noted that further evaluation of the elevated site methane levels and potential leachate from the site were needed. EGLE staff was only minimally involved in this site at this time. The EPA and the PRPs began investigations in early 2012 to determine the impact and potential migration of the methane gas from the Michigan Disposal Landfill.

In early 2014, the EPA requested EGLE technical assistance in preparation for the 2015 Third FYR. On June 30, 2014, EGLE sent a letter to the EPA stating concerns regarding the following issues: elevated methane levels, the GSI/Mixing Zone Determination, gas probe construction, groundwater, and surface water collection procedures, and the "seep area" continuing to be cause for concern. In addition to this letter, EGLE staff also provided review and comments regarding the need for updated RCs and provided specific revisions to the draft ICs study submitted by the PRPs in early 2015. The EPA finalized the Third FYR on September 29, 2015, stating the following remedy performance recommendations: 1) localized settlement in the cap near many of the passive gas vents areas should be corrected by filling them with top-soil, re-grading the surface to promote proper runoff and restoring the vegetation; and 2) replace or repair the inoperable turbine tops for long-term functionality to reduce landfill gas pressure and gas migration. Furthermore, the EPA recommended developing a Long-Term Stewardship Plan and completing and recording environmental RCs to ensure that implemented ICs are effective and properly maintained, monitored, and enforced.

In 2016-2017, the PRP group conducted quarterly landfill inspections, O & M activities, and bi-annual landfill gas and groundwater monitoring events. During quarterly O & M activities, the PRP group completed maintenance in several areas to address the 2015 Third FYR remedy performance related concerns. This included filling various settled areas around gas vents, repair of animal burrows, gas turbine repairs, and fence repairs.

In April 2018, as part of EGLE's Industrial Pretreatment Program, the city of Kalamazoo Waste Water Treatment Plant (WWTP) tested leachate coming from the Michigan Disposal (Cork Street) Landfill for per- and polyfluoroalkyl substances (PFAS) compounds. Results (Perfluorooctanesulfonic acid [PFOS] [230 nanograms per liter [ng/L]] and Perfluorooctanoic acid [PFOA] [410 ng/L]) from the leachate showed levels of PFOS+PFOA at concentrations exceeding the Part 201 criteria of 70 parts per trillion. On July 19, 2018, EGLE reported this new finding to the EPA (lead agency) to determine the path moving forward to resolve this issue.

Enforcement

Michigan Disposal (Cork St LF)

The city of Kalamazoo and Michigan Disposal entered into an Administrative Order by Consent (Order) with the EPA in December 1987. Kalamazoo County and Upjohn Company (now Pharmacia) are contributing parties under the Order. The Order directs that the selected ROD remedy be implemented at the landfill. EGLE was also involved in litigation with the PRPs regarding the licensing and proper closure of the site under Part 115, Solid Waste Management, of the NREPA. Due to the Order, the EPA is the primary enforcement authority for the site.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1991

Location Name: Michigan Disposal (Cork St LF) - OU Entire Site

Comments:
The major components of the selected remedy include the following:
1.Groundwater use restrictions;
2.Groundwater extraction followed by treatment of the extracted contaminated water at a POTW. Extracted water will be treated on site to meet POTW pretreatment standards if necessary, before being sent to the POTW
3.A leachate extraction system will be installed to reduce the amount of leachate in the landfill. Leachate extracted would be treated at a POTW. Extracted leachate will be treated on site to meet POTW pretreatment standards if necessary, before being sent to the POTW.
4.Landfill contents will be contained by utilizing a RCRA Subtitle D type consisting of (from bottom up) a 2-foot clay layer, topped by a 6-inch layer of topsoil. Gas venting and leachate breakout collection will be incorporated into the cap design.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/25/2002

Location Name: Michigan Disposal (Cork St LF) - OU Entire Site

Comments:
The EPA issued a ROD amendment with utilization of the state's Mixing Zone Determination. The concentrations of contaminants leaving the site are thought to be low; not high enough to justify the implementation of a pump and treat groundwater treatment system.

Following major component of the selected remedy was changed, other components remained unchanged: Installation of monitoring wells and performing periodic groundwater monitoring as detailed in the January 2002 Groundwater/Surface Water Interface (GSI) Monitoring Plan. The groundwater remedy also includes a contingent treatment component for the Site which includes the design and implementation of a groundwater extraction system with discharge to the City of Kalamazoo's Publicly Owned Treatment Works (POTW) if monitoring indicates that there are long-term exceedances in the GSI monitoring wells.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 9/26/2002 **End Date:** 9/27/2032

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Ongoing

Primary Cost:
$41,300.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M includes cap maintenance and groundwater monitoring with a contingency for additional action if GSI criteria are exceeded.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 6/30/2014 **End Date:** 9/29/2015

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$0.00	Federal	$0.00

Comments:
The EGLE project manager prepared a FYR Issues letter in June 2014 outlining outstanding site issues and concerns. The EPA finalized the FYR.

Activity: 5 Year Review | **Start Date:** 5/6/2009 | **End Date:** 9/30/2010

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The issues from the Second FYR are primarily methane concerns, unionized ammonia, and potential leachate discharge along the creek. The remedy is considered to be protective in the short term. Analytical results postively affirm escape of landfill gas at or near the property boundary. In order for the remedy to be protective in the long term the PRPs must evaluate the lateral extent of landfill gas migration to determine whether or not a more aggressive landfill gas system is needed. ICs are also necessary for long-term protectiveness.

Activity: 5 Year Review | **Start Date:** 10/1/2004 | **End Date:** 12/10/2004

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The First FYR for the site was performed in 2004. It noted an area of potential leachate seep, potential methane gas migration concerns, and a potential zinc and ammonia problem in site groundwater.

Activity: Remedial Action | **Start Date:** 4/1/2000 | **End Date:** 9/25/2002

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,920,000.00	Private	$97,000.00	Federal

Comments:
Note: The city of Kalamazoo has been awarded $3,210,285 in state funding under the Michigan Landfill Cost-Share Grant Program to help offset their costs for construction of the landfill cap and associated work. The city of Kalamazoo repaid $525,563 to the state in 2005 as a result of recovering some of their costs from other liable parties.

Activity: Remedial Design | **Start Date:** 10/1/1998 | **End Date:** 11/30/1999

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$600,000.00	Private	$139,000.00	Federal

Comments:
The remedial design (RD) was conducted by the city of Kalamazoo. This includes Pre-RD/GSI monitoring, which provided information to seek a Mixing Zone Determination from the state. The Mixing Zone was allowed contingent upon continued monitoring to show compliance.

Activity: Remedial Investigation | **Start Date:** 12/15/1987 | **End Date:** 9/30/1991

Operable Unit:
Michigan Disposal (Cork St LF) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$500,000.00	Private	$34,000.00	Federal

Comments:
The RI/FS was conducted by the city of Kalamazoo.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 6/30/2019	**End Date:** 9/30/2020
Operable Unit: Michigan Disposal (Cork St LF) - OU Entire Site		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** TBD	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Five Year Review for the Site as required by Section 121 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The purpose of the review is to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $5,047.75	**Exp for Year:** $895.01
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $53.30	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $8,068.65	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $3,259.79	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $5,307.83	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $2,588.81	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $2,684.36	**Exp for Year:** $0.00

Michigan Disposal (Cork St LF)

Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $33,757.10	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $30,191.67	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $70,931.99	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $9,094.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Roto-Finish Co., Inc.

State Site ID:
39000042

Federal Site ID:
4X

Full Address:
3700 East Milham Road, Portage, MI, 49002

County:
Kalamazoo

Location

Roto-Finish Co. Inc., is an inactive manufacturing facility located at 3700 East Milham Road, Portage, Michigan. The site is located approximately 0.2 mile west of Sprinkle Road and directly east of the Kalamazoo/Battle Creek International Airport. The land surrounding the site is zoned for industrial use and is used for industrial activities. Residential areas near the site include the Colonial Acres mobile home park, 0.5 mile north of the site; the Lexington Green residential development, 0.3 mile northeast of the site; and the Fairfield residential development, 1.0 mile northwest of the site, west of the airport.

Status

During its years of operation, Roto-Finish Co. Inc., manufactured specialized equipment to debur and polish metal castings, mechanical parts, and similar objects that required smooth finishes. Operations began in the late 1940s to early 1950s and ceased in 1988. Manufacturing wastes were disposed of in a variety of ways: a system of septic tanks, dry wells, and a tile field handled the sanitary wastes and non-processing and laboratory wastes; and three lagoons handled the process and testing wastes.

In July 2017, as a result of state-funded sampling, a downgradient private drinking water well (located at a small business) was identified as containing contaminants also found at the Roto-Finish site. Resampling confirmed detections of one compound above drinking water standards. Fortunately, the business was only using their well water for non-potable purposes. The Roto-Finish responsible party, through the county health department, conducted several rounds of sampling at several private drinking water wells. EGLE (formerly known as MDEQ) and the EPA discussed the next steps that the responsible party needs to conduct: continued sampling at select locations, connect affected wells to long-term clean drinking water and pay for interim bottled water, install and monitor sentinel wells to the private drinking water wells, conduct a hydrogeological investigation to bound the contaminant plume and re-evaluate and implement a remedy that will adequately address the contaminant plume. The responsible party has reimbursed the impacted business the cost of bottled drinking water for the past year.

The EPA plans to work on the 2017 Five-Year Review (FYR) recommendations.

Agencies reviewed and evaluated responsible party proposed modifications to the monitoring program and discussed with the responsible party the need to conduct source area investigation and vapor intrusion (VI) evaluation. A work plan for this work may be forthcoming in 2020.

History

In 1980, the facility was connected to the municipal sanitary sewer system. The lagoons and areas visibly stained were excavated and disposed of in the early 1980s. The site was placed on the National Priorities List in 1986, and the potentially responsible party (PRP), Illinois Tool Works, agreed in 1987 to perform a Remedial Investigation/Feasibility Study (RI/FS) to characterize the remaining environmental impacts at the site and evaluate potential cleanup alternatives. The RI revealed that, while remaining soils pose no health concerns, the groundwater beneath and hydraulically downgradient of the site was contaminated with organic compounds and inorganic chemicals.

A Record of Decision (ROD) was signed by the EPA in March 1997, selecting monitored natural attenuation (MNA) as the cleanup alternative for the groundwater contamination. The estimated time to achieve Michigan drinking water criteria and federal maximum contaminant levels was identified as 15 to 60 years, depending upon the actual rate of

natural attenuation. EGLE determined that MNA was an acceptable remedial alternative for the site. However, since the EPA did not specifically stipulate which institutional controls (IC) would be imposed to assure protection of public health during the MNA process, EGLE was not able to concur with the ROD. The PRP and Illinois Tool Works, signed a voluntary Consent Decree (Decree) in 1998 to implement the selected remedy.

From June 1995 until July 16, 2001, the PRP operated a non time-critical removal action groundwater extraction system followed by discharge to the Kalamazoo Wastewater Treatment Plant for treatment and discharge. With EPA approval, the extraction system was deactivated to complete plume delineation and evaluate the adequacy of contaminant degradation rates for MNA under natural conditions. The extraction system will continue to be maintained in operational condition as the contingency in the event MNA is determined to not be the remedy for the site. Private well sampling performed in 2002 did not indicate impact from this site. However, there was the potential for future impact due to plume migration and/or identification of additional private downgradient wells.

After repeated efforts to obtain an acceptable remedial design (RD) Work Plan from the PRP proved unsuccessful, the EPA finalized a Pre-Design Work Plan and Field Sampling Plan for the pre-design field work at the site. These documents were forwarded to the PRP in February 2001. Later in 2001, the PRP conducted Phase I pre-design field activities including vertical aquifer sampling west of the plant property to complete characterization of the westerly component of the contaminant plume. Complete plume characterization was postponed by the PRP during the RI until the pre-design phase. Although the work plan anticipated continuing the plume delineation investigation until the extent of the contaminant plume was completely defined, the PRP demobilized in December 2001 after completing the first eight vertical aquifer sampling borings.

The Phase I Report, May 2002, indicated that the plume was much larger than the PRP had anticipated. In late summer 2002, the PRP field work included multiple vertical aquifer sample locations and the installation of six shallow piezometers. In June 2003, the PRP submitted a MNA Assessment Report. EGLE's comments on this report indicated that the plume has yet to be completely delineated, additional investigations are needed to be able to demonstrate MNA at this site, and a comprehensive private well survey needs to be conducted to ensure protection of public health.

The 2002 FYR concluded that it was not possible at this time to determine whether the remedy contained in the ROD was protective. Additional information was needed before this determination would be made. Some of the information lacking included full plume delineation; identification of the core(s) of the plume; installation of numerous monitoring wells within and at the edges of the plume and the collection of several rounds of biogeochemical data from them; evaluation of whether it was possible to determine a biodegradation rate for the plume; and evaluation of potential downgradient recipients. The FYR called for a milestone supplemental update report in September 2003 to incorporate all additional data collected during late 2002 and in 2003.

In the summer of 2004, the PRPs vertically sampled the aquifer in several locations on the western side of the airport runway to better understand groundwater contaminant distribution. In the fall of 2004, the PRPs installed several core monitoring wells to collect data to be used to determine degradation rates in the aquifer.

Quarterly sampling of the plume core monitoring wells commenced in spring 2005. This sampling was conducted for at least two full years. These are the wells that supply the biogeochemical data to demonstrate whether the MNA remedy is effective or not. Additional field work was performed in the fall of 2005 for plume delineation purposes with the installation of several more monitoring wells. More locations were vertically profiled and two more monitoring wells were installed in 2006 to help delineate the groundwater plume to the west.

In 2007, the PRP replaced one of three core monitoring wells that were abandoned due to airport runway expansion. The PRP's installed several additional monitoring wells and sentinel wells. Continued effort is needed to comply with the ROD.

On May 1, 2007, the EPA issued the Second FYR for the site. The EPA determined that "...all immediate threats to human health and the environment have been eliminated....Long-term protectiveness will be determined when:
1) the rate of attenuation is accurately calculated,
2) an adequate groundwater monitoring well network is installed to fully bound the plume, to detect any expansion and migration of the groundwater plume, and to monitor for potential impact on downgradient receptors,
3) the long-term groundwater monitoring and monitoring well maintenance plan is implemented,
4) ICs are implemented and monitored to restrict groundwater use in all areas affected by the contaminated groundwater plume until groundwater restoration cleanup standards are achieved,
5) an appropriate and effective contingency remedy is proposed,

6) a contingency plan is developed which identifies the triggers that will indicate when additional actions need to take place, indicate what actions will be taken, and the implementation time frame."

In September 2007, the EPA approved the Field Sampling Plan and the Performance Monitoring Plan thus signaling the end of the RD and the commencement of the Remedial Action (RA) phase. The PRP has declined to actually perform the appropriate degradation rate calculations to determine the viability of continuing with MNA as the site remedy. Subsequent to the PRP degradation rate submittal, the groundwater flow direction at the site changed, necessitating installation of new plume core monitoring wells, additional data collection, and calculation of subsequent degradation rates. To date this work has not yet been undertaken.

EGLE has also requested that the EPA require the PRP to design and implement a program to install and monitor sentinel wells and private drinking water wells to minimize the potential for the downgradient private drinking water wells to be impacted.

In December 2011, EGLE provided the EPA with a letter identifying key issues that need to be addressed in the upcoming Third FYR. This letter pointed out that the key issues in the 2007 Second FYR had not been substantially addressed. The December 2011 letter also notified the EPA that EGLE was withdrawing from active participation in site management due to funding limitations, staffing, and a lack of site progress.

The EPA subsequently drafted the Third FYR without addressing EGLE's comments. EGLE provided substantial comments essentially indicating that the remedy is not functioning as intended and is not appropriate for site conditions, an appropriate contingency remedy needs to be developed and implemented, and that there are downgradient receptors that are not being protected.

Since the December 2011 notification to the EPA, EGLE has not participated in site management at this site.

In anticipation of the 2017 FYR, EGLE reviewed the 2014 annual performance monitoring report and provided EPA with extensive comments. Comments included the need to implement a contingency remedy because the groundwater contaminant plume had expanded, making natural attenuation an inappropriate remedy. Many of the comments were focused on the type and quality of site data. The goal was for EPA to use these comments to have the PRPs change their approach and collect quality data by which the site could be evaluated in the 2017 FYR. EGLE provided comments in April 2015 and resent them in September 2015. The EPA responded they were conducting a technical review of EGLE's comments. Results of their technical review have not been shared with EGLE.

EGLE restated numerous key issues that should be addressed in the 2017 FYR. In December 2016, the EPA submitted the Draft FYR indicating there are no issues or recommendations. EGLE worked with the new EPA project manager to ensure the Final FYR addressed many of EGLE's key issues by including the following recommendations: 1) continue monitoring to determine the need for enhancements to the remedy, 2) develop and implement new monitoring program (including installation of additional monitoring wells) and conduct downgradient private drinking water well inventory and sampling, 3) assess the potential for VI pathway and conduct appropriate investigations and RAs as needed, 4) update existing Restrictive Covenants (RCs) (EGLE wants implementation of a Groundwater Use Restriction Zone within the county ordinance), 5) develop/implement procedures to track ICs. The EPA also agreed to several additional items that need to be addressed (Other Findings) as part of the remedy.

Enforcement

Illinois Tool Works signed a voluntary Decree in 1998 agreeing to implement the remedial alternative stipulated in the ROD.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 3/30/1997
Location Name: Roto-Finish Co., Inc. - OU Entire Site			

Comments:
EGLE determined that MNA (with a contingency plan of on-site pumping) was an appropriate remedy for the site. However, adequate ICs were not identified as required by Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; and, for this reason, EGLE could not concur on the ROD.

The EPA waived Part 201 Rule R299.5705(5) (horizontal and vertical extent of hazardous substances is not to increase after the initiation of remedial activities unless a waiver has been granted) by stating that they have made a finding that the RA is protective of public health, safety, and welfare, and the environment and therefore, according to Section 324.20118(5), it is not necessary to comply with R299.5705(5).

Response Activities - Ongoing

Activity: Monitoring | **Start Date:** 9/28/2007 | **End Date:** 10/1/2048

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
MNA commenced following the ROD. To date, the plume has expanded and there have been no accurate attenuation calculations made indicating the need to modify the remedy. The MNA remedy does not appear to be effective.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 3/30/2016 | **End Date:** 4/18/2017

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR included the following recommendations: 1) continue monitoring to determine the need for enhancements to the remedy, EGLE had stated the MNA remedy is not working as intended, 2) develop and implement new monitoring program, including installation of additional monitoring wells, and conduct downgradient private drinking water well inventory and sampling, 3) assess the potential for VI pathway and conduct appropriate investigations and RAs as needed, 4) update existing RCs, EGLE wants implementation of a Groundwater Use Restriction Zone within the county ordinance, 5) develop/implement procedures to track ICs. The EPA also agreed to several additional items that need to be addressed as part of the remedy.

Activity: 5 Year Review | **Start Date:** 12/22/2011 | **End Date:** 5/1/2012

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA incorrectly concluded that the remedy is protective and functioning as intended. The issues and recommendations from the 2007 FYR were not addressed in this Third FYR.

Activity: 5 Year Review | **Start Date:** 9/24/2006 | **End Date:** 5/1/2007

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$0.00	Federal	$0.00

Comments:
The review indicated the remedy is protective in the short-term and "Long-term protectiveness will be determined when:
1) the rate of attenuation is accurately calculated,
2) an adequate groundwater monitoring well network is installed to fully bound the plume, to detect any expansion and migration of the groundwater plume, and to monitor for potential impact on downgradient receptors,
3) the long-term groundwater monitoring and monitoring well maintenance plan is implemented,
4) ICs are implemented and monitored to restrict groundwater use in all areas affected by the contaminated groundwater plume until groundwater restoration cleanup standards are achieved,
5) an appropriate and effective contingency remedy is proposed,
6) a contingency plan is developed which identifies the triggers that will indicate when additional actions need to take place, indicate what actions will be taken, and the implementation time frame.

Activity: 5 Year Review | **Start Date:** 6/30/2002 | **End Date:** 9/24/2002

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The EPA completed a FYR, and concluded that it was not possible at this time to determine whether the remedy contained in the ROD is protective.

Activity: Remedial Design | **Start Date:** 6/16/1998 | **End Date:** 9/28/2007

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$94,000.00	Federal

Comments:
The PRP completed the first phase of field work for the pre-design study in 2001. The second phase of the pre-design field work was conducted in the summer and fall of 2002. Further plume delineation work was performed and plume core monitoring wells were installed in the fall of 2004, and again in the fall of 2005. Both Agencies agreed that additional plume delineation was necessary as well as the installation of sentinel monitoring wells. After several iterations of the Field Sampling Plan and the Performance Monitoring Plan, the EPA approved these two documents on September 28, 2007.

Activity: Remedial Investigation | **Start Date:** 12/18/1987 | **End Date:** 3/31/1997

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$99,000.00	Federal

Comments:
PRP Lead RI/FS with an EPA oversite contractor and EGLE in support.

Activity: Interim Response | **Start Date:** 6/15/1979 | **End Date:** 6/15/1984

Operable Unit:
Roto-Finish Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Lagoon/soil removal.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 4/18/2021	**End Date:** 4/18/2022
Operable Unit: Roto-Finish Co., Inc. - OU Entire Site		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** TBD	**Secondary Cost:** $0.00	**Secondary Source:**
Comments: Dates estimated based on completion of prior FYR.			

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $9,721.57	**Exp for Year:** $4,092.87
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $696.52	**Exp for Year:** $509.76
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $600.72	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $5,105.68	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $7,667.60	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $88,511.90	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $4,790.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $118,921.52	**Exp for Year:** $0.00

Roto-Finish Co., Inc.

Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Butterworth Landfill #2

State Site ID:
41000008

Federal Site ID:
D6

Full Address:
1500 Butterworth SW, Grand Rapids, MI, 49504

County:
Kent

Location

The 180-acre site is located adjacent to the north bank of the Grand River on the west-central side of the city of Grand Rapids and is estimated to contain about 4,825,000 cubic yards of combined residential, municipal, and industrial waste. The landfill is fenced and near industrial, residential, and recreational areas.

Status

The landfill was owned and operated by the city of Grand Rapids until the State of Michigan ordered it closed in 1973 for improper operations. Prior to closure, the landfill accepted industrial waste, including plating wastes, cyanide, and organic solvents. The site was added to the National Priorities List (NPL) on September 8, 1983.

Based upon the findings of the Fourth Five-Year Review (FYR), completed September 2019, EGLE continues to work with the EPA and the PRPs to modify the groundwater monitoring program, determine the presence of per- and polyfluoroalkyl substances (PFAS), assess ground water/surface water interface (GSI) impacts of ammonia and assess any vapor intrusion (VI) concerns.

The passive solar project that has been proposed for this site is currently on hold. The city of Grand Rapids is currently evaluating options to move the project forward. The PRPs continue to maintain the cover on the landfill and monitor the groundwater.

History

After the site was placed on the National Priorities List, the potentially responsible parties (PRPs), including the city of Grand Rapids, agreed to conduct a Remedial Investigation/Feasibility Study (RI/FS). This work began in January 1988 and was completed in December 1989. Monitoring wells located between the landfill and the river exhibited concentrations of chromium, iron, manganese, cadmium, and lead above federal drinking water standards. Site soils were found to contain unacceptable levels of polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons, and heavy metals. Analysis of site soils indicated that the site could pose a direct contact threat to the public. PCBs and inorganic compounds were detected at elevated levels in surface soils. No potable water supply wells were known to be impacted. The waste is partially saturated by a shallow aquifer that has been contaminated with volatile organic compounds (VOCs) and inorganic contaminants, including ammonia, from the waste. The contaminated groundwater from this aquifer discharges directly to the Grand River. The concentrations of ammonia have exceeded the acute and chronic GSI criteria of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201).

The PRPs removed a hotspot of PCB-contaminated soil in May 1990 as an interim response under the EPA's removal authority. A human health assessment was completed in May 1991. In the spring of 1991, the PRPs, at the request of EGLE and the EPA, completed additional investigations. An ecological assessment was also prepared to evaluate the effect of the landfill on the Grand River.

On October 31, 1991, the PRPs submitted a feasibility study (FS) that was accepted as a final product. In that document, at the EPA's request, the PRPs evaluated the appropriateness of implementing alternate concentration limits (ACLs) as cleanup criteria for the site groundwater.

On September 29, 1992, the EPA signed a Record of Decision (ROD) for the site. The remedy consisted of placement

of a clay cap over the landfill; monitoring of surface water, river sediment, and biota; removal of surface drums; and establishment of ACLs for groundwater. EGLE did not agree with the establishment of ACLs and did not concur with the ROD.

In January 1993, the EPA entered into an Administrative Order by Consent (Order) with six PRPs for the remedial design (RD). In June 1996, the PRP group submitted a request to EGLE for a preliminary mixing zone determination for the groundwater discharge to the Grand River. In November 1996, without Agency approval of their work plan, the Butterworth site PRP group installed a GSI monitoring well network. The well network was later deemed inadequate by the EPA and EGLE.

In October 1998, the EPA issued an Explanation of Significant Differences (ESD) to the ROD. The document called for the implementation of a GSI performance monitoring program, using individual final acute values established by EGLE. The comparison of groundwater contaminants to final acute values allowed the original requirement for monitoring of surface water, river sediment, and biota to be discontinued, as long as GSI criteria are met. The ESD also allowed the installation of a 12-inch soil cover (instead of a clay cap) in the site's radio tower and station area, where wastes are highly weathered. EGLE concurred with the revised remedy required by the ESD. In December 1998, an amendment to the ESD specified new GSI criteria for 1,1-dichloroethane and chloroethane.

In May 1999, a Consent Decree (Decree) for the remedial actions (RAs) was filed in Federal Court. The Decree outlined work to be performed under the ROD and the ESD, as amended. In June 1999, the EPA and EGLE approved an amended RD, allowing landfill capping and installation of new GSI wells and gas probes. The final RA work plan was approved by the Agencies in August 1999.

In 1999, much of the site was re-graded and a clay cap was placed on 82 acres of the western side of the landfill. Placement of frost protection and topsoil layers was completed on 53 acres. Two rounds of groundwater sampling in the new GSI wells along the Grand River indicated that vinyl chloride, ammonia, and biological oxygen demand exceeded GSI criteria.

The State of Michigan awarded the city of Grand Rapids $3,703,203 between 1998 and 2005 under the Municipal Landfill Cost-Share Grant Program to reimburse the city for up to 50 percent of their costs. The city of Grand Rapids paid $208,733 back to the state in 2005 because of the money they received from other liable parties to help pay for cleanup costs.

The EPA completed a FYR report on September 23, 2004, and concluded that "the remedy is protective of human health and the environment". However, this report did not address ammonia venting to the Grand River at levels that exceed both the acute and chronic water quality criteria of the State of Michigan and EGLE did not concur with the protectiveness statement. Data collected in 2008 and 2010 confirmed that in addition to ammonia exceedances of GSI criteria that mercury, chloride, Total Suspended Solids, arsenic, barium, and manganese periodically exceed the GSI criteria.

In August 2008, EGLE conducted groundwater sampling to assess the adequacy of the PRPs groundwater sampling program, the PRP's analytical methods, and to collect representative groundwater samples to gain a more accurate picture of the on-going contaminant migration into the Grand River. The data indicated exceedances of the chronic and acute criteria of the State Water Quality Standards for ammonia.

In 2012, the EPA contracted with Skeo Solutions to develop a FS for reuse of a portion of the site for solar power generation. EGLE staff participated in meetings to discuss the potential for site reuse in 2013. The FS for solar site reuse was finalized in November 2013. In 2015, the city of Grand Rapids competitively bid a solar reuse project entitled, "The Butterworth Acres Solar Project" entailing passive solar panels placed at the Butterworth Landfill to provide electricity for the Grand Rapids Waste Water Treatment Plant directly across the Grand River from the landfill. American Capital Energy was the successful bidder and was awarded the project in December 2015. The project stalled in 2016 due to non-responsiveness from American Capital Energy.

In June 2014, EGLE participated in the Third FYR process. The Third FYR determined that the remedy is protective of human health and the environment in the short term. Long-term protectiveness issues included: the need to file restrictive covenants (RCs) for use restrictions on the landfill property, performance of a vapor intrusion (VI) study to determine if there are relevant methane and other contaminant vapor pathways in buildings on the landfill or at the landfill boundaries, and to continue to assess groundwater migration pathways to surface water.

In September 2014, the Restrictive Covenants (RCs) for the landfill property were filed at the Kent County Register of

Deeds office, by the PRPs. Operation and maintenance (O & M) activities on the landfill continue to be conducted by the PRPs.

Enforcement

The remedial investigation/feasibility study (RI/FS) was conducted by six PRPs under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA) pursuant to a 1986 Decree with the EPA. The RD was conducted by the PRPs pursuant to the Order with the EPA for the RAs. The EPA sent general and special notice letters to approximately 100 parties who are PRPs under CERCLA. Settlement negotiations began in early 1998 and a Decree for RAs was entered into Federal Court in May 1999. No liability determination has been conducted under Part 201.

Operable Units for Butterworth Landfill #2

OU1 Landfill Cap and Containment

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1992

Location Name: OU1 Landfill Cap and Containment

Comments:
The ROD calls for a clay cap on the landfill, removal of surface drums, ACLs for groundwater, and monitoring of surface water, river sediment, and biota.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 10/23/1998

Location Name: OU1 Landfill Cap and Containment

Comments:
The ESD changed the ROD to allow the PRPs to construct an alternative cap. Also, in December 1998, an amendment to the ESD specified new GSI criteria for 1,1-dichloroethane and chloroethane.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 10/1/2000 **End Date:** 10/1/2030

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Ongoing

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Maintenance of the cap and monitoring of groundwater are ongoing tasks. An evaluation of VI pathways was performed as part of on-going O & M activities. Evaluation of groundwater contaminants which may migrate to surface water will continue to be assessed including the presence of PFCs.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 6/27/2018 **End Date:** 9/30/2019

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:

Butterworth Landfill #2

The Fourth FYR was completed by the EPA on September 30, 2019. EGLE reviewed and provided comments to the EPA on July 31, 2019. The Fourth FYR determined that the remedy is protective of human health and the environment in the short-term. Long-term protectiveness requires the following actions: conduct sampling to determine nature and extent of PFOA/PFOS contamination; amend the site O&M plan to include procedures for monitoring and tracking compliance with existing ICs; and conduct a VI survey using appropriate EPA guidance including an analysis of methane migration at the property boundary.

Activity: 5 Year Review | **Start Date:** 1/10/2014 | **End Date:** 6/27/2014

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR was completed by the EPA on June 27, 2014. The MDEQ reviewed and provided comments to the EPA on June 3, 2014. The Third FYR determined that the remedy is protective of human health and the environment in the short-term. Long-term protectiveness issues were the need to file RCs for use restrictions on the landfill property and to perform a VI study to determine if there are relevant methane and other contaminant vapor pathways in buildings on the landfill or at the landfill boundaries. Groundwater migration to surface water will also continue to be assessed.

Activity: 5 Year Review | **Start Date:** 1/5/2009 | **End Date:** 9/29/2009

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,000.00	Federal	$0.00	

Comments:
The Second FYR was performed by the EPA and concluded that the remedy is protective of human health and the environment. Based upon the 2008 and 2010 state funded groundwater analytical data the MDEQ disputes this conclusion.

Activity: Remedial Action | **Start Date:** 8/1/2004 | **End Date:** 10/1/2010

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,500,000.00	State	$0.00	

Comments:
Conducted additional groundwater investigation to further define the source and extent of the acute and chronic ammonia GSI exceedances at the site, as well as evaluate the levels and extent of groundwater PCBs and mercury.

Activity: 5 Year Review | **Start Date:** 4/1/2004 | **End Date:** 9/30/2004

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The FYR was performed by the EPA and concluded that the remedy is protective of human health and the environment. Based upon the existing data this conclusion is inaccurate and the MDEQ disagreed with the conclusions.

Activity: Remedial Action | **Start Date:** 2/3/1998 | **End Date:** 10/1/2000

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$21,347,000.00

Primary Source:
Private

Secondary Cost:
$24,000.00

Secondary Source:
Federal

Comments:
Construction of the cap has been completed.

Activity: Remedial Design | **Start Date:** 2/23/1993 | **End Date:** 2/3/1998

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$200,000.00

Secondary Source:
Federal

Comments:
Design of the landfill cap.

Activity: Interim Response | **Start Date:** 1/1/1989 | **End Date:** 1/1/1990

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Removal of PCB contaminated soil.

Activity: Remedial Investigation | **Start Date:** 4/22/1987 | **End Date:** 9/29/1992

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 9/26/1984 | **End Date:** 4/22/1987

Operable Unit:
Butterworth Landfill #2 - OU1 Landfill Cap and Containment

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 10/1/2023 | **End Date:** 9/30/2024

Operable Unit:
Butterworth Landfill #2 - OU Entire Site

Status:
Future Need

Butterworth Landfill #2

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
The Fifth Five Year Review

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $21,103.23	**Exp for Year:** $14,461.43
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $3,272.13	**Exp for Year:** $672.66
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $1,232.52	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $5,087.36	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $9,248.50	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $1,608.83	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $5,490.60	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $26,736.28	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $79,045.98	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:**	**End Date:**	**Status:**

Butterworth Landfill #2

	Management Assistance	9/30/2004	Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $28,734.61	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $189,670.70	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $8,030.47	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $88,211.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: ChemCentral

State Site ID:
41000011

Federal Site ID:
W5

Full Address:
2940 Stafford Avenue SW, Wyoming, MI, 49548

County:
Kent

Location

The Chem Central property is a two-acre parcel of land located in a mixed residential and commercial section of the city of Wyoming that includes small industrial facilities. The nearest residences to the facility are located approximately 500 feet west of the property boundary. There are two hotels within 800 feet of the site. Cole Drain is located about 100 feet west of the site's western boundary and enters Plaster Creek about 2,500 feet north of the site. Plaster Creek flows into the Grand River approximately 2.5 miles northwest of the site.

Status

The site has been used as a chemical distribution facility since 1957 and remains active.

Univar USA, the potentially responsible party (PRP) continues to operate the groundwater purge and treat and the soil vapor extraction (SVE) systems at the site. Over the last two years almost the entire groundwater purge and treat system has been replaced and updated. The systems may have to operate for 30 years to achieve the site cleanup standards.

History

The Chem Central (now Univar USA) site is an active facility that has distributed chemicals to the industry since its construction in 1957. The plant site covers approximately two acres and a large area of the property has been contaminated. Chemicals entered the ground during a five-year period (between 1957 and 1962) via a construction flaw in a T-arm transfer pipe used to transfer liquid products from bulk storage tanks to small delivery trucks. The T-arm pipe was located on the west side of the building near the southwest corner. Bulk transfer operations resulted in additional losses in and around the plant facility.

Contamination was first noted in 1977 when a ditch downgradient of the property was found to be contaminated with oils, polychlorinated biphenyls, heavy metals, and other organic compounds. EGLE and the EPA traced contamination in the ditch back to Chem Central. Soil and groundwater are contaminated primarily with oils and volatile organic compounds, including toluene, TCE, chloroethane, and xylene. Concentrations of these contaminants in groundwater exceed the unrestricted residential cleanup levels by up to 500 times. These contaminants posed health threats to potential future users of groundwater and environmental risks to Cole Drain.

EGLE sued Chem Central in 1980 asking for an injunction, reimbursement of expenses, a hydrogeologic study, correction of contamination, institution of a monitoring program, civil penalties and damages, a restrictive covenant on the property, and an order to obey the law. The site was added to the National Priorities List on September 8, 1983. In 1984, the Kent County Circuit Court ordered Chem Central to define the groundwater contamination plume, design and construct a groundwater purge system and air stripping treatment system, and establish shutdown criteria for the treatment system.

Pursuant to the 1984 court order, a groundwater purge and treat system was installed. An underdrain collection system to intercept the flow of contaminated groundwater to Cole Drain was installed in 1986. The system became operational in June 1988.

The EPA and Chem Central signed an Administrative Order by Consent on June 30, 1987, wherein Chem Central agreed to conduct the remedial investigation/feasibility study (RI/FS). This additional investigative work was needed to

determine the extent and nature of the contamination. The RI/FS began in August 1988. The final RI report was issued in April 1990, and the final Baseline Risk Assessment was issued in July 1990. The FS was finalized in July 1991.

The EPA issued a Record of Decision (ROD) for the site on September 30, 1991. The ROD requires expansion and continued operation of the existing groundwater purge and treat system, installation and operation of a soil SVE system, imposition of soil and groundwater deed restrictions on contaminated property, and a groundwater monitoring system.

On April 7, 1992, the EPA issued a Unilateral Administrative Order to Chem Central to conduct the remedial design/remedial action (RD/RA) activities. Chem Central complied with this order. The RD/RA work plans were completed in June 1993. The SVE system became operational in December 1995. Multiple legal actions were taken before Chem Central actually implemented the required investigation and remediation components. The final Order was effective as of March 23, 2001. Chem Central completed all the expansions to the groundwater purge and treat system in 2004, with the exception of the extension to the north underdrain extraction system, which was determined to be unnecessary by that time.

Chem Central asked the EPA and EGLE to re-evaluate the need for the underdrain extension based on additional data and amendments to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Chem Central began additional investigation work in September 1997 to provide information to support their request. Subsequently, the Agencies reviewed the report entitled, "Report on the Review and Update of Site Hydrogeology" dated April 1998. Chem Central developed a plume dynamics report and a groundwater surface water interface (GSI) monitoring program for review by both Agencies. This monitoring program was implemented for four years, from 2000 through 2004. Review of the accumulated sample data indicated that the current operating remedy system appeared to be adequately treating the groundwater plume and, therefore, extension of the underdrain was unnecessary.

The FYR was written and completed by the EPA in 1999. The review concluded the selected remedy, as designed, was protective of human health and the environment.

The Second FYR was written and signed by the EPA in 2004. Again the review concluded the selected remedy, as designed, was protective of human health and the environment. The EPA determined an Explanation of Significant Differences (ESD) would be written for the ROD stating that the current treatment system, as constructed, was an adequate remedy for the site and the extension of the underdrain would not be required. EGLE agreed with this decision. The EPA also discovered that several deed restrictions had not been registered, as required in the ROD, for affected properties located in the off-site groundwater contamination plume path.

In 2007, Univar USA purchased Chem Central and became the PRP, assuming the responsibility for all of the site related remediation.

The EPA provided notification to both EGLE and Univar USA, via a November 2008 letter, that the development of the Third FYR had been initiated. This FYR was completed on November 12, 2009. The review concluded that the current remedy was protective of human health and the environment. However, long-term protectiveness required compliance with effective Institutional Controls (ICs) which need to be monitored, maintained, enforced, and updated as needed to prevent exposure to the contaminated groundwater and soils.

In May 2009, Univar USA proposed, in a Conceptual Remediation Enhancement Plan, a bioremediation remedy to address the source area contamination located under the building and the groundwater contamination plume extending to 28th Street. This Aerobic Bioremedy, approved by both the EPA and EGLE, operates concurrently with the pump and treat remedy. The initial review of the Conceptual Remediation Enhancement Plan by both the EPA and EGLE was completed in August 2009 and comments were provided to Univar USA. The EPA gave its conditional approval of the Aerobic Remediation Enhancement Plan 90 percent Design document in a letter dated October 29, 2010. Univar USA began the installation of the Aerobic Bioremedy in 2011 and began operations on December 15, 2011; this action was undertaken without incorporating EGLE comments or final Agency approval.

Univar USA recently shifted operations from a rail and tank farm based chemical transport system to a truck transport system. The pump and air sparge treatment, SVE, and carbon vapor adsorption systems were shut down on August 8, 2011, to accommodate facility improvements and construction of an aerobic remediation enhancement system.

Traditional remediation systems are extremely costly and long-term in nature. The PRP implemented an aerobic

bioremedial enhancement action and planned to utilize the data collected for design and implementation of an anaerobic remediation activity, downgradient of the initial treatment area, with the intent of cleaning up the remaining contaminants prior to off-site migration. The Agencies continue to work with the PRP and the new consultants to evaluate the quality of existing data, gather new data, fill data gaps, and develop an updated conceptual site model. The information will be used to determine next steps for moving toward closure on site remediation efforts.

The aerobic sparge system was shut down in 2015 with EGLE and EPA staff evaluating the completeness and compliance with remediation requirements. Only a portion of the SVE system is functioning at this time. EGLE staff have concerns over accuracy of post-shutdown data and have requested additional post-shutdown monitoring.

Pumping Well-4 and the north underdrain system suffered repeated problems and reduced functioning in 2014 and 2015. A complete blockage of the conveyance lines back to the treatment system forced shut down of that system in July 2015. Drinking water criteria exceedances have also been documented to be migrating beyond the site property lines as well as last extraction pumps. Monitoring efforts were shifted to monitoring the GSI and north underdrain portion of the site for the past few years. EGLE staff determined that the ROD requirements of contaminant capture and antidegradation were not being met and raised their concerns of drinking water protection to the EPA and the PRP in late 2015.

Univar USA staff attempted to find alternatives to stop the migration of contaminated groundwater exceeding drinking water standards and the associated aquifer degradation at the toe of the plume. In late 2016, new pumps, conveyance lines and electrical wiring and controls were installed at PW-1, PW-2 and PW-3. The new system is currently up and running and EGLE, the EPA, and PRP are re-evaluating the ability of the system to capture the plume.

The PRP submitted a workplan in 2017 for evaluating on and off-site VI risks associated with contamination in the groundwater as a result of activities on the site. EGLE had been working with the EPA and approved the workplan in 2018. On-site sampling took place in July and August 2018 and the offsite sampling point installation was completed in late 2018. Univar USA did not believe they were responsible for the contamination found on the western side of the plume and, therefore, did not want to proceed with the VI investigation in this area. The EPA was able to obtain federal funding to complete the VI work, and the first round of sampling was conducted in March 2018 and result letters were sent to residents in October 2018. Due to lack of VI risks present in the data, the EPA did not have plans to sample further.

Enforcement

Chem Central is conducting the work under the April 7, 1992, Unilateral Administrative Order issued by the EPA and under the 1984 Kent County Circuit Court Order. Multiple Orders have been placed since the original 1984 Order. The Final Order was effective as of March 23, 2001, and specifically outlines future remediation requirements.

Operable Units for ChemCentral

OU1 Groundwater Plume

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1991

Location Name: OU1 Groundwater Plume

Comments:
The ROD requires expansion and continued operation of the groundwater purge and treat system, SVE for the contaminated soils, groundwater monitoring, and deed restrictions. In 2002, both the EPA and EGLE agreed the expansion of the underdrain portion of the remedy was no longer required. The EPA has yet to write the ESD to make official this change to the ROD.

Response Activities - In Progress

Activity: Remedial Investigation	**Start Date:** 7/1/2018	**End Date:** 3/1/2020

Operable Unit:	**Status:**
ChemCentral - OU Entire Site	In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	State		

Comments:
On and offsite VI investigation is being conducted by the PRP. The investigation was estimated to end late 2019, however some sub-slab monitoring points will need to be sampled in the first quarter of 2020.
Whether or not the investigation will need to continue will be determined based on further results.

Cost information for this action was requested by the PRP, but was not made available.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 12/15/2011 | **End Date:** 12/15/2041

Operable Unit: ChemCentral - OU1 Groundwater Plume
Status: Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The groundwater purge and treat system continues to operate. This is funded by the PRP and costs are unknown to EGLE.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 11/7/2018 | **End Date:** 11/15/2019

Operable Unit: ChemCentral - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Fifth FYR for the site was completed in November 2019.

Activity: 5 Year Review | **Start Date:** 11/7/2013 | **End Date:** 11/7/2014

Operable Unit: ChemCentral - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Fourth FYR was completed in November 2014. The document details ongoing characterization efforts and concludes that the remedy is protective in the short-term but needs implementation and enforcement of updated ICs to prevent exposure to contaminated groundwater and soils.

Activity: Remedial Action | **Start Date:** 8/8/2011 | **End Date:** 12/15/2011

Operable Unit: ChemCentral - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The PRP Group implemented the Aerobic Remediation Enhancement System starting on August 8, 2011, and completed on December 15, 2011.

Activity: Remedial Design | **Start Date:** 5/1/2009 | **End Date:** 12/15/2011

Operable Unit:
ChemCentral - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
In May 2009, Univar USA proposed, in a Conceptual Remediation Enhancement Plan, a bioremediation remedy to address the source area contamination located under the building and the groundwater contamination plume extending to 28th Street. The EPA gave its conditional approval of the Aerobic Remediation Enhancement Plan 90 percent Design document in a letter dated October 29, 2010.

Activity: 5 Year Review | **Start Date:** 11/26/2008 | **End Date:** 11/12/2009

Operable Unit:
ChemCentral - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was completed on November 12, 2009. The review concluded that the current remedy was protective of human health and the environment. However, long-term protectiveness required compliance with effective ICs which will need to be monitored, maintained, enforced, and updated as needed to prevent exposure to the contaminated groundwater and soils.

Activity: 5 Year Review | **Start Date:** 1/1/2004 | **End Date:** 11/16/2004

Operable Unit:
ChemCentral - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR report was written by the EPA in 2004 and determined that the remedy was protective of human health and environment.

Activity: 5 Year Review | **Start Date:** 1/2/1999 | **End Date:** 11/16/1999

Operable Unit:
ChemCentral - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR report was written by the EPA and determined that the remedy was protective of human health and environment.

Activity: Remedial Action | **Start Date:** 8/1/1994 | **End Date:** 9/30/2000

Operable Unit:
ChemCentral - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$14,000.00

Secondary Source:
Federal

Comments:
SVE system for soil treatment.

Activity: Remedial Design | **Start Date:** 4/1/1992 | **End Date:** 8/1/1994

Operable Unit: ChemCentral - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$125,000.00	Federal

Comments:
No Comment entered

Activity: Remedial Investigation **Start Date:** 6/1/1987 **End Date:** 7/1/1991

Operable Unit: ChemCentral - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
RI conducted to determine the nature and extent of contamination.

Activity: Interim Response **Start Date:** 3/1/1984 **End Date:** 6/1/1988

Operable Unit: ChemCentral - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Groundwater Purge and Treat System funded by the PRPs.

Response Activities - Future Need

Activity: 5 Year Review **Start Date:** 11/7/2023 **End Date:** 11/15/2024

Operable Unit: ChemCentral - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Sixth FYR for the site should be completed in November 2024

Federal Grants

Grant #:	Activity:	End Date:	Status:
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$9,757.65	$1,908.16

Grant #:	Activity:	End Date:	Status:
V03E00776	Management Assistance	3/31/2018	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$279,328.61	$0.00	$10,854.60	$0.00

Grant #:	Activity:	End Date:	Status:
V02E00776	Management Assistance	3/31/2017	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$629,172.00	$0.00	$22,526.63	$0.00

ChemCentral

Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $46,783.93	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $10,800.47	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $18,271.14	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $6,563.38	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $53,753.91	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $2,641.72	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $13,089.23	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $89,757.89	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $2,638.00	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $24,952.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: H. Brown Co., Inc.

State Site ID:
41000031

Federal Site ID:
1A

Full Address:
2200 & 2160 Turner Ave. NW, Walker, MI, 49504

County:
Kent

Location

The site is located in an industrial area along the west side of U.S. 131 in Walker, Michigan, just north of downtown Grand Rapids. A Grand Rapids city park and the Grand River are located 1/4 mile to the east of the site. The property was redeveloped as a Brownfield site and the original addresses (2200 and 2160 Turner Ave. NW) were changed to 2204, 2280 and 2356 Turner Ave. NW.

Status

The site still needs a stewardship plan, including landfill gas monitoring, groundwater monitoring, well maintenance, and cap monitoring and maintenance. The EPA was supposed to develop this, but actions on the site slowed when General Motors filed for bankruptcy and stopped working on the site in 2009. EGLE staff have raised concerns over lack of any follow-up data, particularly since elevated methane concentrations were found in the passive venting system of the first building shortly after construction in 2003. The status of the venting system in the other two buildings is unknown and no sampling or screening has been done since. The EPA is developing the Draft Final Closeout Report. The site was potentially eligible to be deleted from the National Priorities List (NPL) in 2019. This did not occur. EGLE submitted a Five Year Review (FYR) Issues Letter to the EPA dated April 3, 2018, outlining outstanding issues to be evaluated and addressed as part of the 2019 FYR Report. The FYR was completed in 2019, but no additional efforts have been made by the EPA to move forward on this site.

History

Before 1961, the area along the river where H. Brown Company, Inc. is now located was an uncontrolled dump. Mr. Herman Brown and his heirs owned most of the property, now called the H. Brown Company, Inc. Superfund site, from 1957 to 1998. In 1998 the site property was purchased by DBV Partners LLC.

Between 1961 and approximately 1982, H. Brown Company, Inc., reclaimed lead from wet cell batteries at the site. During that period until 1978, battery acid, believed to be contaminated with heavy metals, was reportedly poured directly on the ground prior to shredding the battery casings. The total volume of battery acid disposed of at the site has been estimated to be between 170,000 and 460,000 gallons.

Due to the battery reclamation practices at the site, lead was the primary contaminant in surface soils, subsurface soils, groundwater, surface water, and sediments. Other metals were detected but at much lower concentrations. Of the organic contaminants: volatile organic compounds, semi-volatile organic compounds, and polychlorinated biphenyls were detected in surface and subsurface soils, sediments, and groundwater.

Lead concentrations in surface soil were detected at levels as high as 380,000 parts per million (ppm) and, in subsurface soils, as high as 649,000 ppm. Air at the site was contaminated by dust carrying lead and other compounds. The groundwater was contaminated with inorganic contaminants, such as antimony, lead, cadmium, and nickel; and organic contaminants, such as benzene, vinyl chloride, and polycyclic aromatic hydrocarbons (PAHs). Lead levels in the surface waters, in sediments in storm sewers in front of the site, in drainage ditches, and in wetlands east of the site were above state and federal standards and guidelines.

The site posed an acute public health risk to anyone who would come into direct contact with, ingest, or inhale particulates of the soils, and to anyone who would ingest the groundwater. The site also posed an acute environmental threat to wildlife having repeated or prolonged exposure to the contaminated surface water and sediments, or direct

contact with, ingestion, or inhalation of surface soil particulates.

After the remedial investigation was completed in September 1992, it was determined an imminent public health risk existed at the site and emergency action was performed. The EPA fenced off the site to reduce access and initiated measures to suppress lead-contaminated dust from blowing off-site.

A Record of Decision (ROD) was signed in December 1992 which called for the demolition of the on-property buildings, consolidation of surface soils onto the property, in-place solidification of contaminated surface and subsurface soils, construction of a containment wall around the solidified mass, and construction of a hazardous waste landfill cap. The ROD also called for collection, treatment, and discharge of contaminated groundwater, implementation of land and groundwater use restrictions, fencing, and installation of additional wells for a pre-design study. The 1992 ROD was amended in 1995 based on the results of the pre-design study that showed contaminants to be adhering to soil particles on the property and not migrating in the groundwater. The ROD Amendment called for a solid waste management cap, groundwater, and surface water monitoring, consolidation of contaminated soils onto the property, fencing, land and groundwater use restrictions, monitoring for landfill gas, and cleaning of the Turner Avenue storm sewer. An Explanation of Significant Difference (ESD) was issued by the EPA in March 1999, which modified the ROD Amendment by deleting the soil solidification and slurry wall requirements and removing some non-site related constituents. The State concurred with the ESD. The First FYR was completed by the EPA in May 2004 and it concluded that the remedy continues to be protective of human health and the environment.

The site is currently owned by DBV Partners L.L.C., a non-potentially responsible party, under both the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA), and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). DBV Partners L.L.C. entered into a prospective purchasers agreement with the EPA and the potentially responsible parties (PRPs) to redevelop the site to limited industrial use.

A second ROD Amendment was finalized in 1998 in order to facilitate redevelopment plans. The second ROD amendment called for the consolidation of contaminated soils onto the H. Brown Company, Inc. property, demolition of the current building, construction of new warehouses, utilization of the site buildings, parking lots, and landscaping as a portion of the cover for the contamination, as well as placement of deed restrictions and implementation of landfill gas monitoring. DBV Partners L.L.C., applied for and received state Brownfield Redevelopment grant funds to facilitate some of the redevelopment. Redevelopment is 100 percent complete.

A Restrictive Covenant (RC) was filed on the H. Brown site on September 21, 2005, placing restrictions on both the soil and the groundwater on and under the property.

The Second FYR was completed in May 2009. The assessment of this FYR determined that the remedy was constructed in accordance with the requirements of the 1992 ROD, the 1998 ROD Amendment, and the 1999 ESD. The remedy components, including the excavation and removal of contaminated soils, maintenance of the cover systems, and long-term groundwater monitoring, are functioning as designed. There is no evidence of cap breach and thus no current exposure. The remedy components of the decision documents are operating as intended and are considered to be protective of human health and the environment in the short term. The immediate threats have been addressed and the remedy will be protective in the long term once institutional controls (ICs) are fully implemented at the site.

The Third FYR was completed in May 2014 by the EPA. The review found that the remedy was functioning as designed and is protective in the short term because no unacceptable exposures are occurring. The soil cover, building foundations, and asphalt pavement are intact and in good condition, and the fencing encircling the property limits site access. To be protective in the long term the following needs to be addressed: re-evaluate the need for soil and groundwater RCs to be filed on the adjacent Baker Property; collect one final round of groundwater data; implement the sampling activities required in the Operation and Maintenance (O & M) Plan. The FYR also calls for the development and implementation of an IC Action Plan to document PRP activities, plan for necessary corrective measures, and additional activities to ensure implementation of effective ICs by PRPs and ensure that the long term stewardship procedures are in place. Additionally, an IC Work Plan is needed to ensure that effective ICs are implemented, monitored, maintained, and enforced. Maintenance and stewardship activities include reporting requirements, logs, report development, and submittal, as well as specific action levels and response actions.

In 2016, the MDEQ (now known as EGLE) petitioned the EPA to consider the H Brown site a candidate for deletion from the NPL.

Enforcement

DBV Partners L.L.C., entered into a prospective purchasers agreement with the EPA. General Motors and several other PRPs entered into a Consent Decree with the EPA to implement the excavation and consolidation of contaminated soils, installation of a cap, and landfill gas monitoring. General Motors, et. al., are liable under CERCLA and Part 201, Environmental Remediation, of the NREPA. General Motors filed bankruptcy in 2009 and has stopped participating in site efforts. All other parties had previously negotiated with the EPA to attain de minimus contribution status so there are no liable parties currently associated with this site.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1992

Location Name: H. Brown Co., Inc. - OU Entire Site

Comments:
Hazardous waste landfill cap, pump and treat of contaminated groundwater, consolidation and solidification of landfill mass, installation of slurry walls, fencing, land and groundwater use restrictions, demolition of on-property buildings. Installation of additional wells for pre-design study.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/29/1995

Location Name: H. Brown Co., Inc. - OU Entire Site

Comments:
Consolidating contaminated surface soil in the area where subsurface soil cleanup will be required. Placing a Part 115, Solid Waste Management, of the NREPA, multi-layer cap over soils exceeding 500 ppm of lead. Long-term monitoring of the shallow and intermediate aquifers to monitor effectiveness of the remedy. Restricting the use of the land and the groundwater. Maintaining a fence around the site to prevent access.

Record of Decision **Amendment:** 2 **ESD:** 0 **Effective:** 2/25/1998

Location Name: H. Brown Co., Inc. - OU Entire Site

Comments:
The remedy was amended to facilitate redevelopment of the property by building warehouses on the property. The revised remedy includes: installation of a landfill cap consisting of 2 feet of clean fill material with a top layer of either concrete or asphalt and a 3-foot cap thickness in vegetated areas, landfill gas monitoring, groundwater and surface water monitoring, land and groundwater use restrictions, cleaning of the Turner Avenue storm sewer, and a contingency for implementation of ROD Amendment #1 if redevelopment design fails for some reason.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 3/30/1999

Location Name: H. Brown Co., Inc. - OU Entire Site

Comments:
Modification of the ROD Amendment's cleanup constituents to delete the non-site related contaminants.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 1/31/2001 **End Date:** 1/30/2029

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Ongoing maintenance of the site capping, which includes warehouses with concrete floors, paving, and landscaping. Periodic indoor air monitoring and groundwater monitoring. O & M also calls for groundwater, surface water and sediment sampling every five years, as noted in 2014 FYR

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 4/3/2018 | **End Date:** 9/18/2019

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
All monitoring and O&M efforts terminated when General Motors filed for bankruptcy in 2009. This site needs a long term stewardship plan, including the required plan to monitor landfill gasses that were evident in the passive venting system when the first building was constructed. Institutional Controls need to be completed along with monitoring and O&M activities. The inspection was performed by EGLE staff but no other work has been completed.

Activity: 5 Year Review | **Start Date:** 5/1/2013 | **End Date:** 5/20/2014

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was completed in May 2014 by the EPA. The review found that the remedy was functioning as designed and is protective in the short term because no unacceptable exposures are occurring. The soil cover, building foundations, and asphalt pavement are intact and in good condition, and the fencing encircling the property limits site access.

To be protective in the long term the following needs to be addressed: re-evaluate the need for a RC to be filed on the adjacent Baker Property; collect one final round of groundwater data; and implement the required O & M activities, and develop and implement a long term O & M Plan including a contingency plan.

Activity: 5 Year Review | **Start Date:** 10/30/2008 | **End Date:** 5/20/2009

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was completed in May 2009. The assessment of this FYR determined that the remedy was constructed in accordance with the requirements of the 1992 ROD, the 1998 ROD Amendment and the 1999 ESD. The remedy components, including the excavation and removal of contaminated soils, maintenance of the cover systems, and long-term groundwater monitoring, are functioning as designed. There is no evidence of cap breach and thus no current exposure. The remedy components of the decision documents are operating as intended and are considered to be protective of human health and the environment in the short term. The immediate threats have been addressed and the remedy will be protective in the long term once ICs are fully implemented at the site.

Activity: 5 Year Review | **Start Date:** 1/30/2004 | **End Date:** 5/28/2004

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The First FYR was completed by the EPA in May 2004 and it concluded that the remedy continues to be protective of human health and the environment.

Activity: Remedial Action | **Start Date:** 1/30/1999 | **End Date:** 1/30/2001

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$5,200,000.00

Primary Source:
Private

Secondary Cost:
$289,300.00

Secondary Source:
State

Comments:
Remedial Action of ROD Amendment #2.

Activity: Remedial Design | **Start Date:** 8/19/1996 | **End Date:** 7/12/1998

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$49,000.00

Secondary Source:
Federal

Comments:
Remedial Design of ROD Amendment #2.

Activity: Remedial Design | **Start Date:** 3/30/1993 | **End Date:** 7/1/1996

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$1,062,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Hazardous waste landfill cap, pump and treat of contaminated groundwater, consolidation and solidification of landfill mass, installation of slurry walls and fencing (The solidification and slurry wall requirements were later removed with the first ROD Amendment)

Activity: Interim Response | **Start Date:** 1/30/1991 | **End Date:** 1/30/1992

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Site fencing to reduce access and initiated measures to suppress lead contaminated dust from blowing off-site. Amount expended is unknown at this time as well as the actual months of start and end dates. The file states a start in 1991 and completion in 1992.

Activity: Remedial Investigation | **Start Date:** 9/12/1988 | **End Date:** 9/30/1992

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$815,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/18/2023 | **End Date:** 9/18/2024

Operable Unit:
H. Brown Co., Inc. - OU Entire Site

Status:
Future Need

H. Brown Co., Inc.

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	No Financial Source		

Comments:
Fifth Five Year Review

Federal Grants

Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $8,537.26	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $9,210.36	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $35,658.33	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $9,040.43	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $40,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Kentwood Landfill

State Site ID:
41000039

Federal Site ID:
F1

Full Address:
4900 Walma Avenue, Kentwood, MI, 49508

County:
Kent

Location

The 72-acre Kentwood Landfill Superfund Site is located at 4900 Walma Road in the city of Kentwood, Kent County, Michigan, about two miles southeast of Grand Rapids. The site is bordered by city of Kentwood municipal buildings to the west, a church and a residential area to the south, a shallow ravine and Plaster Creek to the east, and a residential subdivision and municipally-owned property to the north. In 2009, the city constructed the Kentwood Public Library adjacent to the site.

Status

The 72-acre Kentwood Landfill site is located in Kentwood, Michigan. In the early 1950s, the area was the town dump. It became a licensed solid waste disposal facility in 1966. The city of Kentwood operated the landfill from 1968 to 1970 and Kent County operated it from 1971 to 1975. It was capped and closed in early 1976. Landfill operations contaminated soil, leachate, and groundwater with hazardous chemicals. Following the remedial activities, operation and maintenance activities and groundwater monitoring are ongoing.

On October 18, 2019, the EPA finalized the fifth five-year review outlining the following issues and recommendations:
1. Issue an Explanation of Significant Differences (ESD) that updates contaminant concentration cleanup levels to current promulgated and risk-appropriate levels.
2. Determine whether groundwater-surface water interface (GSI) goals and a GSI monitoring program are needed for the groundwater and/or leachate discharging into the Plaster Creek ravine and if so, develop GSI goals and a monitoring program.
3. Delineate the limits of waste; assess, and if appropriate, upgrade or repair, the cap in any areas that are included within the area of waste; and revise the Institutional Control Implementation and Assurance Plan (ICIAP) to accurately map the waste boundary.
4. Determine whether the 1992 deed restriction is adequate to prevent human exposure and protect the remedy. If not, update or replace it with a new restrictive covenant.
5. Revise the ICIAP to include a Long-Term Stewardship (LTS) plan that specifies effective LTS procedures and reporting.
6. Investigate the extent of per- and polyfluoroalkyl substances (PFAS) contamination in groundwater.
7. Design and install a PFAS pre-treatment system to meet standards and permit limitations.
8. Detail low-flow sampling procedures to be used at all monitoring wells, and describe periodic well inspection and maintenance procedures, in the Operations Monitoring and Maintenance (OM&M) Plan.
9. Evaluate the cause of the arsenic increases and if appropriate, evaluate mitigation strategies to address it.
10. Fully characterize methane migration, and determine whether expansions to the active landfill gas collection system are needed to prevent methane from migrating outside of the landfill. If so, construct them, place them into operation, and monitor their impact until monitoring confirms that landfill gas is prevented from migrating.
11. Secure access to permanently close the private water wells within the isolation zone.

Currently, the EPA and EGLE are working with the PRPs to address all of the issues outlined in the five-year review. As of now, the PRPs are working with their consulting firm to prepare work plans and sampling plans to address #3 and #6 issues. The EPA is also working to prepare an ESD to resolve issue #1. In the meanwhile, both agencies will review a revised OM&M plan and Quality Assurance Project Plan (QAPP) submitted by the PRPs. In 2019, the PRPs completed bi-annual monitoring and Operations and Maintenance (O&M) activities and submitted reports for agencies review. EGLE and the EPA are currently reviewing these reports.

History

The site was placed on the National Priorities List on September 8, 1983. Until 1972, the site was used as an open dump. From 1972 until 1975, Kent County operated the site as a municipal landfill. It remains uncertain whether the landfill received hazardous industrial wastes; no documentation has been found which definitively answers this question. The county installed a leachate collection system, but maintenance problems led to contamination of nearby Plaster Creek with leachate containing organic compounds, heavy metals, and cyanide.

The city of Kentwood and Kent County conducted a Remedial Investigation/Feasibility Study (RI/FS) and evaluated the measures needed to control leachate and protect groundwater. The Record of Decision (ROD) was issued on March 29, 1991, requiring an upgrade of the cap to meet the requirements of the Solid Waste Management Act, 1978 PA 641, as amended, extraction and treatment of contaminated groundwater to achieve health-based groundwater cleanup criteria, installation of a leachate outbreak control system, construction of a fence around the site, institutional controls (ICs), and deed restrictions. In August 1991, the city of Kentwood and Kent County signed a Consent Decree for Remedial Design/Remedial Action (RD/RA) to implement the ROD. Construction of all RA elements was completed in 1995, and the Construction Completion report was submitted on December 27, 1995.

The EPA conducted Five Year Reviews (FYRs) in 1999 and 2004. Findings of both the reviews included: continuing leachate outbreaks at a few locations; lead of uncertain origin in a residential well at intermittent and low concentrations; perched leachate in the northwest corner of the main (northern) landfill as well as in the southwest end of the southern extension; a submerged gas vent; small areas of vegetative cover erosion; and a small area of fencing in need of repair.

On June 2, 2009, the EPA approved an exemption to the existing ICs. Originally, the deed restriction preventing construction of buildings on the site and the restriction of people on the site for any purpose other than operation and maintenance (O & M) of the remedy. This exemption was made to allow a public library to be constructed within approximately 50 feet of the solid waste fill boundary. The EPA required the PRPs to complete a limited methane investigation and implement a methane monitoring plan for the area between the solid waste fill and the proposed library building. The investigation found that methane gas was present in the subgrade at concentrations up to 40 percent by volume. Construction of the library building was completed in July 2010, including engineering controls to address methane migration. The EPA and EGLE worked together to assist the PRP with determining acceptable methane gas mitigation measures for the area of the site by the library building.

The Third FYR was completed by the EPA on October 23, 2009. The EPA determined that the remedy is protective of human health and the environment in the short term and that long-term protectiveness requires compliance with effective ICs that must be maintained, monitored, and enforced. EGLE had a different interpretation of how the remedy is being implemented, level of protectiveness, and compliance with the ROD. EGLE agreed that the remedy is likely protective in the short term because although aluminum, arsenic, and lead have been detected in residential wells, there is no information to suggest that the residential wells are being used as drinking water supplies. Site chemical monitoring of the groundwater indicated that after 15 years of active remediation, contamination (volatile organic compounds and metals) still persists, and at perimeter monitoring locations, contamination levels are increasing. Deed restrictions and a groundwater use ordinance were executed to prevent use of the groundwater.

In response to the recommendations from the IC Study to determine if the isolation zone needs to be expanded, the PRPs sampled additional existing monitoring wells to verify the boundaries of the contaminated groundwater plume in June 2011. A summary of the groundwater sampling event indicated that contaminated groundwater has migrated in a radial pattern from the landfill in both upgradient and downgradient locations.

The PRPs completed vertical aquifer profiling of the upper aquifer and aquitard at the landfill ravine perimeter and shallow water sampling in the surrounding wetlands in June 2011. The study identified the continued contamination of the upper aquifer that discharges via leachate breakouts to Plaster Creek. However, amendments to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), relating to groundwater surface water interface pathway which became effective in June 2012 were evaluated and it was determined that no additional response activities would be required beyond improved leachate collection and achievement of the groundwater cleanup standards.

The Fourth FYR Report was signed on October 20, 2014. Recommendations for follow-up actions included addressing landfill gas migration to the adjacent public library and Department of Public Works Building, ongoing leachate breakouts into the Plaster Creek Ravine, and improvement of collection system operation to allow all extraction points to operate continuously and improve the reduction of contaminant concentrations outside of the waste.

In 2015, the PRPs voluntarily designed and installed a supplemental leachate collection system in the Consumer's Energy ravine between the original and southern extension landfills. The system consists of media and pipe drains to collect leachate migrating from the southern extension landfill into the ravine. The collected leachate is piped to the on-site pre-treatment plant for discharge to the local publicly owned treatment works. The supplemental collection system has improved leachate collection in the Consumer's Energy ravine, however, additional collection is still necessary to eliminate leachate breakouts into the ravine.

In 2015, the PRPs designed and installed an active landfill gas collection system for the areas of the public library and Kent County Department of Public Works buildings. The system consists of modified landfill gas vents into gas collection wells with flaring of the collected gases. The system was started up in late 2015.

In 2016, the PRPs completed a landfill gas migration study for the areas northeast of the public library (original landfill) and east of the Public Works building (southern extension). The investigation confirmed migration of landfill gases beyond the solid fill boundary in both locations. The PRPs installed monitoring gas probes and designed an active landfill gas extraction system to address these areas. The construction completion of the active gas extraction system was achieved in December 2017. The PRPs voluntarily monitored indoor air in nearby residential buildings and the Public Works building. Methane gas was not detected during indoor air monitoring events.

The original estimated duration of operation of the groundwater extraction and treatment systems was nine years; however, the system has currently been operating for more than twice the estimated duration of years without achieving the ROD's cleanup goals. The extraction and treatment system will need to operate for a significant duration until the volume of leachate within the landfill is reduced and kept under control to eliminate leachate and contaminated groundwater breakouts at the landfill perimeter.

In August 2017, the PRPs finalized design of the expansion of the active gas collection and control system. The system includes shallow and deep extraction wells at nine locations at the western edge of the Original and Southern Extension Landfill areas. Construction completion of the active gas collection system was achieved in December 2017 and the system has been operational ever since. Eleven new shallow and deep gas probes were installed west of the nine newly installed extraction wells to monitor effectiveness of the active gas collection system. The PRPs have been collecting weekly methane readings from monitoring probes and extraction probes. Evaluation of the performance of the system is ongoing as the PRPs have submitted a limited amount of construction and operational data.

In March 2018, the city of Kentwood requested Kent County to sample existing residential wells near the landfill. The city of Kentwood made this request out of an abundance of caution due to the possibility of per- and polyfluoroalkyl substances (PFAS) from the landfill being in the groundwater. Kent County collected drinking water samples from three homes. Kent County analyzed those residential well samples for 21 PFAS compounds using the isotope dilution laboratory method. The results were non-detect for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) for all three homes. In May and August 2018, as part of EGLE's Industrial Pretreatment Program, the Wyoming Waste Water Treatment facility tested leachate coming from the Kentwood Landfill for PFAS compounds. Results from the leachate showed levels of PFOS+PFOA at concentrations exceeding the Part 201 criteria of 70 parts per trillion. Even though the residential well results from March 2018 were non-detect, EGLE requested that the PRP sample existing groundwater monitoring wells throughout the landfill to determine the extent of potential PFAS contamination.

The 2018 Kentwood Landfill Remedial Action Operation and Maintenance Semi-Annual activities were completed as scheduled. The semi-annual progress reports for 2018 were submitted. No significant issues were reported thru these monitoring events.

Enforcement

Two PRPs have assumed responsibility for conducting and paying for remediation of the site: the city of Kentwood and Kent County. They have an agreement that the county pays 80 percent and the city pays the remaining 20 percent of site costs. Under various agreements with the EPA, these PRPs have covered most of the remedial costs for this site. The PRPs continue to conduct site work and pay for site costs, which are limited now to groundwater treatment and monitoring, O & M, and agency oversight costs. Pursuant to the Municipal Landfill Cost-Share Grant Program, the state provided 50 percent cost-share to the PRPs for the remedial and O & M costs for the site incurred from July 1996 through 2005. The site was eligible for the State's Municipal Landfill Cost-Share Grant Program which reimbursed 50 percent of eligible costs incurred from July 1996 to 2005. In total, Kent County has received $1,548,763 in such funds.

The above PRPs are liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980

PL 96-510, as amended. Due to their association with the deposition of the wastes on the site, they may also be liable under Part 201, of the NREPA.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/29/1991

Location Name: Kentwood Landfill - OU Entire Site

Comments:
The ROD was issued on March 29, 1991, requiring an upgrade of the cap to meet the requirements of the Solid Waste Management Act, 1978 PA 641, as amended; extraction and treatment of contaminated groundwater to maintain health-based groundwater cleanup criteria; installation of a leachate outbreak control system; construction of a fence around the site; ICs; and deed restrictions. The state concurred with the ROD and participated in negotiation of the RD/RA Decree.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 3/26/1996 **End Date:** 1/1/2026

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$500,000.00	Private	$0.00	Federal

Comments:
The EPA estimates that O & M for this landfill will continue for at least 30 years, for an approximate total of $5,000,000. Average annual cost is $167,000. O & M costs estimated by the PRPs for 2009 through 2012 ranged from $300,000 to $500,000. Significant capital costs are necessary to upgrade aged, failing infrastructure as well as for landfill gas mitigation systems to protect the public library and other adjacent buildings.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 10/9/2018 **End Date:** 10/18/2019

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The purpose of the review was to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment. This FYR concluded that yes, the components of the remedy are functioning, and have made significant progress in meeting cleanup levels outside the limits of the waste, but are not fully meeting remedial expectations and performance criteria.

Activity: Remedial Action **Start Date:** 9/25/2017 **End Date:** 10/22/2018

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Construction of the expanded active landfill gas system. Final construction completion reports have been submitted.

Activity: Remedial Design **Start Date:** 8/1/2016 **End Date:** 8/31/2017

Operable Unit: **Status:**

Kentwood Landfill - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Design of the expansion of the active landfill gas collection system to control migration of the landfill gases.

Activity: Remedial Investigation | **Start Date:** 1/1/2016 | **End Date:** 7/31/2018

Operable Unit: Kentwood Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Private	$0.00	

Comments:
In response to the FYR recommendation, the PRPs investigated the potential landfill gas migration north of the public library and east of the Public Works building. Methane concentrations up to 60 percent were identified as various locations. Field work has been completed but summary documentation of the investigation has not yet been submitted.

Activity: Remedial Action | **Start Date:** 1/1/2015 | **End Date:** 10/22/2018

Operable Unit: Kentwood Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$500,000.00	Private	$0.00	

Comments:
PRP-lead construction of the landfill gas mitigation system and improvements to the contaminated groundwater and leachate collection system. Construction of an active gas collection system and supplemental leachate collection in the Consumer's Ravine was completed in 2015. The PRPs have supplied limited construction and operation documentation; construction completion has not yet been awarded for either system. Construction completion report of this activity was finalized in October 2018.

Activity: 5 Year Review | **Start Date:** 11/1/2013 | **End Date:** 10/20/2014

Operable Unit: Kentwood Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	Private

Comments:
The EPA determined the site to be protective of human health and the environment in the Fourth FYR Report, signed on October 20, 2014. A summary of recommendations for follow-up actions includes addressing landfill gas migration to the adjacent public library and Department of Public Works Building, ongoing leachate breakouts into the Plaster Creek Ravine, and improvement of collection system operation to allow all extraction points to operate continuously and improve the reduction of contaminant concentrations outside of the waste.

Activity: Remedial Design | **Start Date:** 9/14/2010 | **End Date:** 8/31/2015

Operable Unit: Kentwood Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	Private	$0.00	

Comments:
The PRPs designed a landfill gas mitigation system for the area between the solid fill boundary and the new library. Additional design work was completed to provide capture of leachate from the southern extension landfill that is discharging to the Consumers Energy ravine and into the stormwater handling system for the ravine.

Activity: Remedial Investigation | **Start Date:** 10/12/2009 | **End Date:** 12/1/2011

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$60,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs submitted a work plan to investigate the groundwater to surface water interface discharge of leachate and contaminated groundwater from the landfill into the wetlands surrounding the site and Plaster Creek. Field work was completed in June 2011 and summary of the work was submitted in December 2011.

Activity: 5 Year Review | **Start Date:** 7/21/2009 | **End Date:** 10/23/2009

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
A FYR was completed by the EPA on October 23, 2009. The EPA determined that the remedy is protective of human health and the environment in the short term and that long-term protectiveness requires compliance with effective ICs that must be maintained, monitored, and enforced. EGLE had a different interpretation of how the remedy is being implemented, level of protectiveness, and compliance with the ROD.

Activity: Remedial Action | **Start Date:** 3/10/2009 | **End Date:** 6/2/2009

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
On June 2, 2009, the EPA approved an exemption to the existing ICs (deed restriction preventing construction of buildings and the presence of humans for any purpose other than O & M of the remedy) to allow a public library to be constructed within approximately 50 feet of the solid waste fill boundary.

Activity: Remedial Investigation | **Start Date:** 1/21/2009 | **End Date:** 9/1/2009

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$5,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
On January 21, 2009, soil gas concentrations of methane were discovered to be greater than 5 percent (the lower explosive limit) in soil borings located within the footprint of the proposed public library. The EPA required the PRPs to complete a limited methane gas investigation and monitoring plan which documented methane concentrations in soil gas at concentrations 49 to 60 percent by volume.

Activity: 5 Year Review | **Start Date:** 6/1/2004 | **End Date:** 9/30/2004

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Findings: continuing leachate outbreaks at a few locations; lead of uncertain origin in a residential well, at intermittent and low concentrations; perched leachate in the northwest corner of the main (northern) landfill, as well as in the

southwest end of the southern extension; a submerged gas vent; small areas of vegetative cover erosion; and a small area of fence in need of repair.

Activity: 5 Year Review | **Start Date:** 6/8/1999 | **End Date:** 10/15/1999

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted the review and their report concluded that the remedy was protective of human health and the environment.

Activity: Remedial Action | **Start Date:** 3/17/1994 | **End Date:** 12/27/1995

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$5,000,000.00

Primary Source:
Private

Secondary Cost:
$194,000.00

Secondary Source:
Federal

Comments:
RA consisted of an upgrade of the cap to meet the requirements of the Solid Waste Management Act, 1978 PA 641, as amended; extraction and treatment of contaminated groundwater to maintain health-based groundwater cleanup criteria; installation of a leachate outbreak control system; construction of a fence around the site; ICs; and deed restrictions.

Activity: Remedial Design | **Start Date:** 11/27/1991 | **End Date:** 3/17/1994

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$237,000.00

Secondary Source:
Federal

Comments:
Private (PRP) expenditures are unknown.

Activity: Negotiations | **Start Date:** 4/16/1991 | **End Date:** 8/28/1991

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:
Federal

Comments:
RD/RA negotiations.

Activity: Remedial Investigation | **Start Date:** 12/13/1985 | **End Date:** 3/29/1991

Operable Unit:
Kentwood Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$2,500,000.00

Primary Source:
Private

Secondary Cost:
$13,000.00

Secondary Source:
Federal

Comments:
Investigation of the groundwater.

Activity: Negotiations | **Start Date:** 5/15/1985 | **End Date:** 11/15/1985

Operable Unit:		Status:	
Kentwood Landfill - OU Entire Site		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	Federal

Comments:
RI/FS negotiations.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 10/17/2022	**End Date:** 10/17/2024
Operable Unit:		**Status:**	
Kentwood Landfill - OU Entire Site		Future Need	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
	Federal		

Comments:
Five Year Review for the Site as required by Section 121 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The purpose of the review is to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $9,950.49	**Exp for Year:** $7,691.19
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $4,508.95	**Exp for Year:** $1,787.79
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $8,605.01	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $14,118.13	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $20,320.66	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $27,488.96	**Exp for Year:** $0.00

Kentwood Landfill

Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $30,114.77	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $175.89	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $16,582.85	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $63,825.35	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $30,842.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Organic Chemicals, Inc.

State Site ID:
41000051

Federal Site ID:
9P

Full Address:
3291 Chicago Dr., SW, Grandville, MI, 49418

County:
Kent

Location

Organic Chemicals, Inc. is located at 3291 Chicago Drive SW, Grandville, Kent County, Michigan. The site occupies five acres of land approximately three quarters of a mile southeast of the Grand River.

Status

Starting in the early 1930s, the site was used for petroleum refining, transport, and storage. Spartan Chemical bought the property in 1968 and it was used by its subsidiary, Organic Chemicals, Inc., for solvent reclamation and chemical manufacturing. In 1979, Organic Chemicals, Inc. took ownership of the property.

The potentially responsible party (PRP) completed the annual post-shutdown groundwater monitoring event December 2018. The PRP continues to monitor the groundwater and submits an annual post-shutdown groundwater monitoring report to the EPA and EGLE (formerly known as MDEQ).

EGLE Superfund staff has documented to the EPA numerous technical concerns and compliance issues at the former Organic Chemicals, Inc., facility. The most immediate concerns are the direct contact and indoor air human health exposures that are occurring at the former Organic Chemicals, Inc., facility which has been redeveloped by JJ Trucking, and the contaminated groundwater flowing beneath the building located on the adjacent property.

A Fifth-Five Year Review (FYR) was completed in 2019 concluding that the site remedy is protective in the short-term. Long-term protectiveness requires that Site Operations and Maintenance (O & M) Plans be updated to include Long-Term Stewardship of the institutional controls (ICs) which prevent removing site buildings floor slabs and concrete to prevent human health exposures to contaminated soils, facility piping, and waste that remain underneath, and to ensure the soils underneath all site buildings are not disturbed and no erosion is taking place preventing exposure to contaminated groundwater and soil.

History

Starting in the early 1930s, the site was used for petroleum refining, transport, and storage. A succession of petroleum-related industries operated on the property until its purchase in 1968 by Spartan Chemical. Spartan Chemical bought the property to be used by its subsidiary, Organic Chemicals, Inc., for solvent reclamation and chemical manufacturing. In 1979, Organic Chemicals, Inc. became the owner of the property by conveyance of deed from Spartan Chemical.

Operations included recycling approximately 100,000 gallons of used solvents (such as paint thinners) per month and manufacturing specialty chemicals used in pharmaceuticals and industry. Between 1968 and 1980, company records indicate process waste and cooling water containing listed and characteristically hazardous materials was discharged into a seepage lagoon located on the property. In November 1979, an employee of Organic Chemicals, Inc., spilled 2,200 gallons of lacquer thinner. Some of the spilled thinner was recovered and disposed of into the seepage lagoon. Discharge of wastewater into the seepage lagoon ceased in 1980 because a pre-treatment facility was constructed on-site. Soils beneath the former lagoon were found to be heavily contaminated with hazardous materials. In September 1981, 280 cubic yards of lagoon sludge were excavated and removed. That same year EGLE directed Organic Chemicals, Inc. to conduct a hydrogeological study to determine the effect of past disposal practices on the groundwater. This study indicated the groundwater was contaminated with site-related volatile organic compounds (VOCs). Organic Chemicals, Inc., closed the seepage pond in 1980 and installed the wastewater pre-treatment facility. Remedial investigation (RI) data indicate that this seepage lagoon was a major source of non-petroleum hazardous

waste contamination at the site. The EPA placed Organic Chemicals, Inc., on the National Priorities List in September 1983.

In 1986, EGLE investigated a complaint that Organic Chemicals, Inc., personnel were illegally disposing of hazardous wastes at the facility. As a result of this investigation, the EPA cited Organic Chemicals, Inc., as being in violation of the Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA), which regulates the handling and disposal of hazardous wastes, and fined the company for these violations. In 1987, Organic Chemicals, Inc., in cooperation with EGLE, voluntarily conducted an investigation. Approximately 150 buried drums were discovered and removed from near the southwest corner of the warehouse building. Groundwater samples from monitoring wells near the burial location and soil samples from the bottom of the excavated area showed VOC contamination. Organic Chemicals, Inc., was not able to obtain a RCRA permit and went bankrupt before the RCRA closure could be performed. Organic Chemicals, Inc., was never decommissioned or properly closed and subsequently abandoned.

The EPA, in cooperation with EGLE, began an RI at the site in April 1989. The first phase of this investigation indicated that the most significant area of contamination at the site is a plume of upper groundwater contamination under the location of the former seepage lagoon. The RI identified contaminants of concern, determined the extent of this contamination in the upper groundwater system, and assessed the risks associated with these contaminants.

The Organic Chemicals, Inc., facility was unable to obtain a RCRA hazardous waste treatment, storage, and disposal permit and subsequently tried to obtain a RCRA closure which was denied in 1991. The company subsequently filed for bankruptcy. The RCRA closure activities were never completed. The Organic Chemicals, Inc., site still has some of the existing piping from the production of pharmaceutical intermediates and solvent recovery present. This includes the underground piping throughout the facility connecting the former chemical buildings, former aboveground storage tanks, former solvent recovery buildings, and former pre-treatment facility. These pipes contain both listed and characteristically hazardous wastes and act as a potential and actual continual source of VOCs to the groundwater. The concentrations and spatial distributions of VOCs found during the RI/Feasibility Study (FS) were indicating hot spots in the soils throughout the site. The EPA has not required the Organic Chemicals, Inc., Soils remedial action (RA) to include remediation of the VOC-contaminated soils present on-site.

There is also significant petroleum-related contamination caused by past refinery operations and leakage from former bulk storage terminals. The Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, "petroleum exclusion rule" prevented the EPA from addressing petroleum-related contamination at the Organic Chemicals, Inc., facility. To address oil-related contamination at the site, the state notified Total Petroleum of their liability at Organic Chemicals, Inc., under Part 201. Total Petroleum removed and backfilled four seepage lagoons near the Organic Chemicals, Inc., property in 1998. There was no closure certification for the removal of the lagoons, and no further effort has been made by Total Petroleum to address the petroleum contamination. The former refinery underground piping is also in existence at and around the Organic Chemicals, Inc., facility.

On September 30, 1991, the EPA issued a Record of Decision (ROD) for an interim groundwater extraction and treatment system. The PRP group installed and operated a groundwater extraction well and water treatment system pursuant to this ROD.

On January 17, 1997, the EPA issued a second ROD for the final groundwater and soil remedy. The ROD called for the continued operation of the groundwater extraction well and treatment system remedy, and expansion of the system if necessary, as well as excavation and/or solidification of contaminated soils. In 1997, after the PRPs received a letter from EGLE informing them that their treated groundwater discharge failed effluent toxicity tests and was, therefore, out of compliance, the PRPs turned the extraction system off and to date, it has not been reactivated.

The PRPs completed their RA for contaminated soil at the site. The soil RA used existing soil data obtained from the RI and allowed excavation of heavily contaminated soils as identified in the RI. These excavations did not remove all the contaminated soils, but removed some contaminated soils. After excavation, the site-wide risk was recalculated. This RA did not address all the highly contaminated soils of the site, since VOCs were not chemicals of concern for soils. The PRPs failed to address the numerous Organic Chemicals, Inc., facility subsurface pipes containing RCRA hazardous waste or the pre-treatment facility that contains heavily contaminated water and sludge.

The EPA drafted an Explanation of Significant Differences (ESD) and the Preliminary Close Out Report, both of which were signed on September 30, 2003. A FYR was conducted and signed on September 30, 2004. EGLE's review of the EPA FYR found that the report did not accurately describe the remaining contamination problems at the site. Contamination remains above human health-based risk criteria.

The site is zoned for industrial use and was sold to JJ Trucking and redeveloped. Commercial development has been active in the immediate areas and most of the adjacent land has commercial buildings.

Groundwater continues to exceed the required cleanup objectives of the ROD and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, criteria at the alternate point of compliance. The PRPs are not monitoring the groundwater for all the contamination emanating from the former Organic Chemicals, Inc., facility. In an attempt to accelerate the groundwater remediation, the PRPs implemented an in-situ enhanced biodegradation Groundwater Pilot Study in May 2010. An emulsified oil was injected into the shallow groundwater aquifer.

EGLE and the EPA worked with the PRPs to execute ICs in the form of a Restrictive Covenant to institute use restrictions of the soils in the area which was executed and recorded by Kent County on December 13, 2013.

A Fourth FYR was completed in 2014 concluding the site is protective in the short-term. Long-term protectiveness requires: compliance with ICs, specifically for the soils; updating the Site Operations and Maintenance (O & M) Plans to prevent moving site buildings floor slabs and concrete to prevent human health exposures to contaminated soils, facility piping, and waste that remain underneath, and to ensure the soils underneath all site buildings are not disturbed and no erosion is taking place; investigating the potential vapor intrusion threat posed by contaminants in soil and groundwater; and, develop and implement an IC Implementation and Assurance Plan.

The PRP continues to monitor the groundwater and submits an annual post-shutdown groundwater monitoring report to the EPA and EGLE.

Enforcement

On January 6, 1992, the EPA issued a Unilateral Administrative Order (Order). The Order required the PRPs to institute the RA at the site. On September 21, 1992, the EPA executed a de minimis Order with 100 PRPs providing for payment of past costs in the amount of $1,384,714.

On June 5, 1995, the EPA issued a general notice letter and information request to an additional five PRPs. The PRP group stopped implementing the groundwater pump and treat (P & T) interim action. The EPA completed the RI and FS. The PRP group is responsible to implement the final site groundwater remedy.

The EPA negotiated with Total Petroleum to implement the soils remedy as outlined in the ROD. On March 16, 1994, the state notified Total Petroleum of their liability for the petroleum-related contamination at the facility. This notification was reissued on March 1, 1996, under Part 201.

EGLE may eventually need to require the PRPs to remediate the site to a level that complies with Part 201 cleanup requirements if the RAs pursuant to Superfund are not adequate.

Operable Units for Organic Chemicals, Inc.

OU1 Interim Action Contaminated Groundwater

OU2 Final Remedy Groundwater and Soil

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/30/1991

Location Name: OU1 Interim Action Contaminated Groundwater

Comments:
The Operable Unit (OU) 1, Interim Action, Contaminated Groundwater, ROD required the capture and treatment of the on-site contaminated groundwater.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 1/17/1997

Location Name: OU2 Final Remedy Groundwater and Soil

Comments:
Excavation of contaminated site soils, continuation and expansion of groundwater extraction and treatment.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/30/2003

Location Name: OU2 Final Remedy Groundwater and Soil

Comments:
The ESD allows the continued shutdown of the groundwater extraction and treatment system while the Alternate Point of Compliance is being studied. It also allows soil to be disposed of off-site without treatment.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 10/1/2002 **End Date:** 9/30/2027

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:
$35,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Long-term monitoring of groundwater alternate point of compliance and groundwater/surface water interface. Costs are estimated at $7,000/year. Vinyl chloride (VC) and benzene exceedances have been documented during the O & M period greater than maximum contaminant levels at the alternate point of compliance.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 11/23/2018 **End Date:** 9/30/2019

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
A Fifth FYR was conducted by the EPA . The Fifth FYR did not address all contamination problems at the site. Contamination still exists above risk-based criteria in the soil and at the alternate point of compliance. The report indicates the remedy is protective of human health and the environment in the short-term, and long-term protectiveness requires Long-Term Stewardship of ICs to prevent moving Site buildings' floor slab and concrete to prevent human health exposures to any contaminated soils, facility piping, and waste that remain underneath.

Activity: 5 Year Review **Start Date:** 1/6/2014 **End Date:** 9/23/2014

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
A Fourth FYR was conducted by the EPA in fiscal year (FY) 2014, and signed September 23, 2014. The Fourth FYR did not address all contamination problems at the site. Contamination still exists above risk-based criteria in the soil and at the alternate point of compliance. The report indicates the remedy is protective of human health and the environment in the short term, and long-term protectiveness requires compliance with effective ICs, specifically for the soils.

Activity: Remedial Action **Start Date:** 5/17/2010 **End Date:** 5/15/2015

Operable Unit:
Organic Chemicals, Inc. - OU2 Final Remedy Groundwater and Soil

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
As a response to the continuing exceedance of VC and benzene at the alternate point of compliance, the PRP's consultant proposed a pilot study for enhancing remediation of source area (former seepage lagoon) groundwater and capillarity fringe soils. The pilot study consists of injection of an emulsified soy-lactate solution by low pressure pumping or gravity using direct push probing. The pilot study may have been successful in achieving slight reductions of contamination, however, pushing of the contamination beyond the study zone is suspected.

Activity: 5 Year Review | **Start Date:** 7/16/2009 | **End Date:** 9/25/2009

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
A Third FYR was conducted by the EPA in Fiscal Year (FY) 2009, and signed September 25, 2009. The Third FYR did not address all contamination problems at the site. Contamination still exists above risk-based criteria in the soil and at the alternate point of compliance. The report indicates the remedy is protective of human health and the environment in the short-term, and long-term protectiveness requires compliance with effective ICs, specifically for the soils.

Activity: 5 Year Review | **Start Date:** 11/3/2003 | **End Date:** 9/30/2004

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
A Second FYR was conducted by the EPA in FY 2004, and signed September 30, 2004. The Second FYR did not address all contamination problems at the site. Contamination still exists above risk-based criteria. The report indicates, "The remedy is protective of human health and the environment in the short term and measures are being put in place to ensure protectiveness in the long term."

Activity: Remedial Action | **Start Date:** 10/1/2001 | **End Date:** 6/30/2003

Operable Unit:
Organic Chemicals, Inc. - OU2 Final Remedy Groundwater and Soil

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$96,000.00	Private	$0.00	

Comments:
Soil removal is complete but not adequate. Alternate point of compliance for the groundwater contamination has been proposed by the PRPs. Costs are from the ROD estimates.

Activity: 5 Year Review | **Start Date:** 3/1/1999 | **End Date:** 9/15/1999

Operable Unit:
Organic Chemicals, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The EPA conducted a FYR of the site, concluding that the remedies selected for this site remain protective of human health and the environment. The EPA recommended that an alternate point of compliance for groundwater be granted, assuming that the PRPs obtained enforceable land use controls and demonstrated that the groundwater is

naturally attenuating and that the contaminated soil was remediated in accordance with the OU2, Final Remedy, Contaminated Groundwater & Soil Remedy, ROD.

Activity: Remedial Design | **Start Date:** 1/1/1998 | **End Date:** 10/1/2001

Operable Unit:
Organic Chemicals, Inc. - OU2 Final Remedy Groundwater and Soil

Status:
Completed

Primary Cost:
$250,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Design of the soil removal.

Activity: Remedial Action | **Start Date:** 5/9/1995 | **End Date:** 7/11/1997

Operable Unit:
Organic Chemicals, Inc. - OU1 Interim Action Contaminated Groundwater

Status:
Cancelled

Primary Cost:
$20,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs designed, constructed, and operated the groundwater P & T system from 1995 through 1997. They aborted operation of the groundwater P & T system in 1997 due to high effluent toxicity which was in violation of the state of Michigan water quality standards.

Activity: Remedial Design | **Start Date:** 5/1/1992 | **End Date:** 2/9/1994

Operable Unit:
Organic Chemicals, Inc. - OU1 Interim Action Contaminated Groundwater

Status:
Completed

Primary Cost:
$60,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Design of the on-site groundwater P & T system. The system was damaged during the soil removal action and is no longer functional. This is a violation of the ROD which indicates that this system must be maintained and functional.

Activity: Interim Response | **Start Date:** 4/22/1988 | **End Date:** 9/30/1991

Operable Unit:
Organic Chemicals, Inc. - OU1 Interim Action Contaminated Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Excavation and removal of 150 buried drums.

Activity: Remedial Investigation | **Start Date:** 4/22/1988 | **End Date:** 9/30/1991

Operable Unit:
Organic Chemicals, Inc. - OU1 Interim Action Contaminated Groundwater

Status:
Completed

Primary Cost:
$822,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Initial investigation of soil and groundwater contamination.

Activity: Remedial Investigation		**Start Date:** 4/22/1988	**End Date:** 2/5/1997
Operable Unit: Organic Chemicals, Inc. - OU2 Final Remedy Groundwater and Soil		**Status:** Completed	
Primary Cost: $1,357,000.00	**Primary Source:** Federal	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Investigation of the extent of soil contamination and the nature and extent of groundwater contamination.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 9/23/2023	**End Date:** 9/23/2024
Operable Unit: Organic Chemicals, Inc. - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**

Comments:
The Sixth FYR to be completed.

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,056.78	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $721.32	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $28,942.13	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $11,475.88	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $25,492.20	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $11,997.14	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:**	**End Date:**	**Status:**

	Management Assistance	3/30/2007	Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $82,064.60	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $23,587.34	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $62,886.64	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $126,105.75	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $8,317.24	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $75,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Sparta Landfill

State Site ID:
41000060

Federal Site ID:
3N

Full Address:
10322 Alpine Avenue, Sparta, MI, 49504

County:
Kent

Location

The Sparta Landfill site is a 27-acre, closed, solid-waste landfill located one-mile southeast of Sparta, Michigan. The area surrounding the site is rural.

Status

The landfill accepted municipal and household refuse. In 1977, the landfill was closed and inadequately capped with a 3-foot sand cover. In 1979, organic solvents including benzene, toluene, ethylbenzene, and carbon disulfide were found in groundwater samples from on-site and nearby residential wells.

Currently, the groundwater at the site is being monitored quarterly and the landfill cap is being maintained by Kent County Department of Public Works (DPW). EGLE (formerly known as MDEQ) continues to review and provide written comments on the groundwater monitoring reports. The county has developed a long-term monitoring plan for the site. The state is continuing to fund monitoring of the nearby residential wells at a cost of approximately $3,600 per year.

The EPA has identified Sparta Landfill as a site that is "ready for anticipated use".

In July 2018, EGLE received the per- and polyfluoroalkyl substance (PFAS) analytical test results for samples collected from eight residential wells near the landfill. No PFAS was detected in those samples. There are no current plans for additional PFAS work at this time. The results were shared with the Michigan Department of Health and Human Services staff and the EPA in August, 2018.

EGLE staff has reviewed the "2017 and 2018 Annual Groundwater Monitoring Reports" and provided written comments.

EGLE staff has reviewed and commented on the "Groundwater Monitoring Report, July through December 2019" submitted by Kent County Department of Public Works.

History

The site is owned by Kent County and Sparta Township and was operated by Kent County from 1972 to 1977. The landfill accepted municipal and household refuse. In 1977, the landfill was closed and inadequately capped with a 3-foot sand cover. In 1979, organic solvents including benzene, toluene, ethylbenzene, and carbon disulfide were found in groundwater samples from on-site and nearby residential wells.

Four contaminated residential wells were replaced by Kent County in 1979. In 1982, nine monitoring wells were installed at the site as part of a hydrogeologic investigation performed by EGLE. The site was nominated to the National Priorities List in 1983. In 1991, the site was fenced and posted against trespassing by the Kent County DPW under the direction of EGLE.

The EPA has identified the KCDPW and Sparta Township as potentially responsible parties (PRPs) for this site. The PRPs signed a Consent Order with the EPA in September 1993, agreeing to perform a remedial investigation/feasibility study (RI/FS). The PRPs and EGLE negotiated an Administrative Order by Consent (AOC) for a "presumptive remedy" that required the installation of a clay cap compliant with Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). The AOC was signed on February 7, 1994,

and the landfill cap was completed in July 1996.

The RI was initiated in August 1996 and completed in 2000 to determine the nature and extent of groundwater and surface water contamination, including the potential threat to public health. The EPA approved a revised groundwater monitoring plan and focused FS submitted by the county in 2000.

The EPA issued a Record of Decision (ROD) on September 27, 2000, which specified a "no further action" remedy for the site but required long-term groundwater monitoring. EGLE did not concur with the EPA proposed remedy of "no-action" because it does not comply with Part 201, Environmental Remediation, of the NREPA. The major concerns with the EPA selected remedy are that it does not adequately address the contaminated groundwater discharge to the Rogue River, does not adequately restrict use of groundwater with contamination above drinking water standards, and does not provide for a suitable alternate water supply for the area affected by the plume.

The EPA and the KCDPW signed another AOC on September 26, 2002, for implementation of the long-term monitoring program.

The First Five-Year Review (FYR) for this site was completed and signed by the EPA in September 2007. The FYR recommended implementation of Institutional Controls (ICs) and development of a landfill gas monitoring plan and a contingency plan for the site.

The Second FYR Report was signed in August 2012. The Report indicated that the remedy is protective of human health and the environment in the short-term because all known exposure pathways have been eliminated and ICs that protect the integrity of the landfill cap and other remedial components and prohibit site groundwater use are in place. The Review also recommended to expand the current IC to include a parcel in the southeast corner that could potentially be impacted by the plume.

In 2015, EGLE staff performed statistical analysis of groundwater data collected at Sparta Landfill Site from 2007 through the current date. Based on the analysis, it was recommended to re-evaluate the hydrology of the landfill, particularly in the broader context of the potential hydraulic influence of the wetlands south and west of the Site; evaluate potential ammonia discharge from the Site; and update the current monitoring plan. On April 29, 2016, EGLE staff provided issues recommended for inclusion in the upcoming FYR Report. On June 2, 2017, the EPA and EGLE staff along with the PRP and their consultant conducted the FYR Site inspection.

The EPA signed the FYR Report on August 8, 2017. The issues in the FYR Report consisted of: Fallen tree branches on the fence Operation and Maintenance (O & M); IC needed for a small corner parcel; Evaluate whether landfill gas/methane is migrating to nearby residences (conduct a soil/gas investigation for methane and continue monitoring for methane gas in wells as elevated levels of dissolved methane in groundwater were discovered from the January 2017 hydrogeological investigation); Evaluate potential ammonia discharge from the Site; and Shallow wells may exist near the Site that need to be identified and/or properly abandoned if found.

In June 2017, EGLE approved the "Revised Work Plan for Methane Soil Vapor Sampling" prepared by FTCH consultants on behalf of the potentially responsible parties (PRP). The investigation for both the soil vapor investigation and the existing vapor point monitoring was completed in August 2017. The results showed "normal" concentrations of methane in the existing vapor points and no detectable methane in the perimeter soil vapor points was observed. The results were compiled into a report in 2018.

Enforcement

Kent County completed the capping activities under an Order with the State of Michigan. The groundwater RI was conducted under a AOC with the EPA. The state had attempted to take enforcement action lead to implement the selected remedy. The EPA and KCDPW signed an AOC on September 26, 2002.

Operable Units for Sparta Landfill

OU1 Soil and Landfill Cap

OU2 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/27/2000

Location Name: Sparta Landfill - OU Entire Site

Comments:
The EPA issued a "No Action" ROD, with groundwater monitoring remedy, without state concurrence.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 9/30/2003 **End Date:** 9/30/2020

Operable Unit:
Sparta Landfill - OU2 Groundwater

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$300,000.00	Private	$3,600.00	State

Comments:
Kent County continues to monitor the groundwater at the site. EGLE continues to review and provide written comments on the groundwater monitoring reports.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 8/8/2016 **End Date:** 8/8/2017

Operable Unit:
Sparta Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The EPA signed the FYR Report on August 8, 2017. The issues in the FYR consisted of: Fallen tree branches on the fence, O & M issue; ICs needed for a small corner parcel; Evaluate whether landfill gas/methane is migrating to nearby residences (conduct a soil/gas investigation for methane and continue monitoring for methane gas in wells as elevated levels of dissolved methane in groundwater were discovered from the January 2017 hydrogeological investigation); Evaluate potential ammonia discharge from the Site; Shallow wells may exist near the Site that need to be identified and properly abandoned if found.

The FYR Report concluded that the Site remedy is protective of human health and the environment because the implemented remedy is functioning as intended and all exposure pathways have been eliminated.

Activity: 5 Year Review **Start Date:** 7/8/2011 **End Date:** 9/28/2012

Operable Unit:
Sparta Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Second FYR Report was signed on September 28, 2012. The Report indicated that the site is protective of human health and the environment in the short-term because all known exposure pathways have been eliminated and ICs that protect the integrity of the landfill cap and other remedial components and prohibit site groundwater use are in place.

Activity: 5 Year Review **Start Date:** 9/30/2006 **End Date:** 9/30/2007

Operable Unit:
Sparta Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$0.00	Federal	$0.00

Comments:
The Fifth FYR for this site was completed and signed by the EPA in September 2007. The FYR recommended implementation of ICs, development of a landfill gas monitoring plan, and completion of a contingency plan for the site.

Activity: Remedial Design | **Start Date:** 10/30/2002 | **End Date:** 9/30/2004

Operable Unit:
Sparta Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Kent County conducted the design of the long-term groundwater monitoring system.

Activity: Remedial Investigation | **Start Date:** 9/30/1996 | **End Date:** 9/30/2000

Operable Unit:
Sparta Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$770,070.00	Private	$0.00	

Comments:
Kent County implemented the RI pursuant to the 1993 Consent Order.

Activity: Remedial Action | **Start Date:** 9/30/1995 | **End Date:** 9/30/1996

Operable Unit:
Sparta Landfill - OU1 Soil and Landfill Cap

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,779,738.00	Private	$0.00	

Comments:
Kent County installed the landfill cap as a presumptive remedy for the landfill.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 7/8/2021 | **End Date:** 7/8/2022

Operable Unit:
Sparta Landfill - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
No Comment entered

Federal Grants

Grant #:	Activity:	End Date:	Status:
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$0.00	$0.00	$1,369.73	$197.97
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed

Sparta Landfill

Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $9,292.56	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $12,482.19	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $7,873.69	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $17,418.99	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $2,765.37	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $12,404.97	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $47,586.96	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $38,212.09	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $74,943.39	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Spartan Chemical

State Site ID:
41000119

Federal Site ID:
EP

Full Address:
2539 28th Street SW, Wyoming, MI, 49509

County:
Kent

Location

The Spartan Chemical Company is located at 2539 28th Street SW in the city of Wyoming, Kent County, Michigan. Commercial and industrial businesses border the site to the north, south, and west. Residential properties and a school are located east and northeast of the site.

Status

The Spartan Chemical Superfund site was a former bulk chemical storage, transfer, and repackaging facility operating between the 1950s and the 1990s. Extensive contamination to shallow soil and groundwater resulted from operations and wastewater disposal practices. Various investigations and remedial actions (RAs) have been completed at the site since operations ceased.

An excavation and soil vapor extraction RA began in 2015 and were terminated because site conditions differed from the current site conceptual model of the contamination. Investigation activities began in 2015 to define the newly discovered contamination in the shallow site soils. The 2015 characterization effort revealed that existing data does not sufficiently identify the nature and extent of contamination at the site. To reduce risk of remedy failure, the RA was postponed until a more thorough characterization could be conducted and appropriate remedial technologies can be re-evaluated. To reduce risk to the community prior to the RA, an interim cover consisting of a geosynthetic clay liner and clean fill was placed over impacted areas of the site to prevent contact with soils, volatilization, and leaching to groundwater.

In November 2018, an Explanation of Significant Differences (ESD) was signed by the EPA. The ESD allows for an expansion of the site remedy to include excavation and off-site disposal of additional soils beyond principal threat wastes and removed the soil vapor extraction remedy component for remediation of shallow soils.

Field work activities for additional characterization efforts and evaluation of vapor intrusion (VI) into adjacent structures was completed in 2018. Limited additional characterization and VI sampling began in 2019. VI investigations at adjacent structures will continue through 2020.

Pilot study field work is planned for first quarter 2020 to determine an appropriate method to limit ambient air volatilization during excavation of shallow soil and appropriate soil mixing additives to bind metals and organic chemicals in the soils to reduce future leaching. Full scale remediation of onsite source area soils is planned for mid 2020.

History

The Spartan Chemical Company was a bulk chemical storage transfer, and repackaging plant from 1952 to 1991. During its operation, the Spartan Chemical Company handled a variety of chemicals including aromatic solvents, napthas, alcohols, ketones, ethers, chlorinated solvents, and lacquer thinners. Prior to 1963, the company discharged its wastewater to the groundwater. Both above and underground storage tanks were used to store chemicals at the Spartan Chemical Company.

In 1975, groundwater contamination was detected during dewatering operations at a facility adjacent to the Spartan

Chemical Company. The groundwater was contaminated with compounds including benzene, toluene, ethylbenzene, xylenes, and 1,1,1-trichloroethane. At that time, the Spartan Chemical Company was the only known handler of solvents in the area.

In 1984, the Spartan Chemical Company signed a consent order with EGLE (formerly known as the MDEQ) agreeing to conduct an investigation and cleanup of the contaminated groundwater. After investigation of the site, the owner of the Spartan Chemical Company installed a groundwater extraction and treatment system. The treatment system consisted of a modified air stripper (originally designed to operate in the deep vacuum mode) and an incinerator for treatment of off-gases, with discharge of treated groundwater to the city of Wyoming's Publicly Owned Treatment Works (POTW).

The Spartan Chemical Company filed for bankruptcy in February 1992. For about one year, EGLE assumed responsibility for the continued operation and maintenance (O & M) of the groundwater treatment system as well as semiannual groundwater sampling. In 1993, the groundwater treatment system was shut down because the POTW refused to continue accepting treated groundwater from the site due to permitting issues.

This site is different than most Superfund sites because the typical Superfund process, including a Remedial Investigation (RI) Report, Feasibility Study (FS) Report, Proposed Plan, and Record of Decision (ROD) were not completed before construction of the treatment system. However, when the Spartan Chemical Company went bankrupt, it was necessary to complete the Superfund process to allow the state to receive federal funding under Superfund.

EGLE completed an RI/FS summary document in November 1992. A Proposed Plan went out for public comment in November 1992. The Proposed Plan recommended continuation of the existing groundwater treatment system as an interim cleanup action. The interim ROD for this site was signed by the EPA and EGLE in June 1993. EGLE retained a contractor to complete the design work needed to modify the existing treatment system. The design work was terminated due to the likelihood that excessive levels of contamination, detected during additional RI fieldwork conducted during 1994, would significantly alter the treatment needs. The RI study focused on characterization of the site soils with additional groundwater characterization. This phase of the RI was completed in 1997. At that time, the EPA did not believe that there was enough information on the groundwater to support selection of a recommended alternative. It was decided that a remedy would move forward on the soil contamination while additional data were gathered to select a remedy for the groundwater. A focused FS, addressing the contaminated soil, was completed in October 1997. An Interim Action ROD selecting soil treatment using soil vapor extraction (SVE) was signed by both the EPA and EGLE in April 1998.

EGLE received federal funding in September 1998 for design of the SVE soil treatment system. The final design was completed in 2000. In September 1999, the EPA approved federal funding for the construction of the SVE system which began in the summer of 2000. Construction of the SVE system was completed in January 2001 and was scheduled to begin its 90-day Start-up and Demonstration period in April 2001. Due to problems in obtaining the necessary permit to discharge the process water to the city's Clean Water Plant, the Start-up and Demonstration period did not begin until September 2001. Upon start-up of the system in September 2001, it was discovered that operation of the system caused an exceedance of the local noise ordinance for both daytime and nighttime periods. Actions were taken to remedy the situation in the fall of 2001, but it was determined that permissible nighttime noise levels were still being exceeded. Due to the fact that the system cannot operate during winter months, the system was again shut down for the winter. In April 2002, work was started to remedy the noise issues with the system. A stack silencer was installed in the system in October 2002. This installation successfully remedied the noise issues and the 90-day Start-up and Demonstration period was officially begun. The system was again shut down for the winter months in late November 2002 and was restarted on April 1, 2003. Due to all the delays encountered, the initial twelve-month operation of the system was completed in September 2004. The EPA refused to fund the operation of the SVE system in 2005, so state funds were expended to continue operating the system. In 2006, the system was no longer effeciently removing volatile organic compounds (VOCs) from the site soils and the system was shut down. Though the SVE removed an estimated 20,000 pounds of VOCs, there still remains a large source area that will continue to impact the groundwater at the facility and that will continue to impact groundwater quality.

EGLE received federal funding to further characterize the groundwater contamination and evaluate cleanup options in March 1999. The additional investigation activities were initiated in 2000 and included the installation and sampling of monitoring wells, soil sampling, soil vapor sampling, treatability tests, and groundwater monitoring for the evaluation of natural attenuation as a potential remedy. A draft Technical Memorandum on the additional field investigations was submitted in September 2001. Additional sampling to support the RI was completed by EGLE in April 2003. EGLE also collected an additional round of groundwater samples in June and July 2005.

Spartan Chemical

The final Additional RI Technical Memorandum addressing groundwater was submitted to the EPA on April 22, 2004. The Final FS Addendum for the groundwater was submitted to the EPA on May 10, 2004. EGLE submitted a final version of a draft Proposed Plan to the EPA presenting the final cleanup plan for the site on May 2, 2005, after gathering some additional information to support the evaluation of alternatives being considered. The EPA sent a response to the draft Proposed Plan in December 2005 requesting additional information. EGLE submitted a revised Proposed Plan in 2006.

An office building, warehouse, drum/tank storage building, storage/maintenance buildings, tank farm area, and loading dock were demolished in 2006 as part of site restoration activities. Two warehouses still remain. An inactive groundwater treatment system (air stripper) formerly located in the northwest corner of the site was also demolished in 2006. Thirty-four aboveground storage tanks were also removed from the site during the demolition activities. Funding for these restoration activities was provided by Kent County utilizing Brownfield Grant Money.

Soil samples collected from the central source area in 2006 confirmed that concentrations above soil saturation levels persist in some areas. These saturated soils continue to provide a source for further groundwater contamination and potential impact to the drinking water and surface water pathway. The 2006 soil gas study across the former plant site also indicated that remaining VOC levels could also present inhalation risks for any future site development. However, the final RA that will address the drinking water and the surface water pathway may also address the VI pathway.

A final ROD addressing both soil and groundwater contamination was issued by the EPA on September 26, 2007. The major components of the selected remedy in the final ROD include the following remedial activities:

1. Institutional Controls Restricting Groundwater Use and Land Use.
2. Excavation and Off-site Disposal of Highly Contaminated Soils.
3. Expansion of the SVE System for Mitigation of Vapors.
4. Air Sparging/SVE.
5. In-situ Chemical Oxidation.
6. Contingency for Enhanced In-situ Bioremediation (if necessary).
7. Monitored Natural Attenuation (MNA).

The selected remedy is site-wide in scope and addresses all contaminated media; i.e., soil and groundwater, at the facility. A limited portion of the soils on the site are believed to contain principal threat wastes because of the high concentrations of highly mobile solvents that are present. Such soils that cannot be efficiently treated on-site will be excavated and disposed of off-site. The remaining contaminated soils and groundwater will be treated in-situ.

The EPA and EGLE agreed in late 2009 on an approach to address the remedial design (RD). Though funds to implement the RD were requested by EGLE in 2009, it was not made available by the EPA until 2010. In December 2012, EGLE and EPA agreed with the designation of complete for the RD for all of the RA activities except the contingency for the enhanced in-situ bioremediation and potential modifications to the MNA.

The RA activities began in early 2015 and actual on-site activities began in July 2015. However, during the initial phases of remedy implementation, discolored soils (e.g., purple, green, and red) were identified which were not sufficiently explained by the conceptual site model. Sampling results indicated metals and VOCs present in surficial soils in excess of direct contact and soil volatilization criteria. Site work was temporarily halted to reassess the change in site conditions and further actions are being discussed with the EPA. A limited number of test pits were completed across the historic process area and samples collected for laboratory analysis. This work required supplied air personal protection equipment for all employees within the exclusion zone to minimize their exposure risk. Routine employee air monitoring and community air monitoring were conducted. To reduce risk of remedy failure, RA was postponed until a more thorough characterization could be conducted and appropriate remedial technologies can be re-evaluated. To reduce risk to the community prior to RA, an interim cover consisting of a geosynthetic clay liner and clean fill was placed over impacted areas of the site to prevent contact with soils, volatilization, and leaching to groundwater.

A Five-Year Review was completed in 2017. The site protectiveness was deferred until VI to adjacent structures and investigation of polychlorinated biphenyls (PCBs) and soils contaminated with metals is completed. Recommendations for follow up actions included investigation of VI, the extent of PCB and metals in soils onsite, and review of institutional controls (ICs).

Field work activities for additional characterization efforts and evaluation of VI into adjacent structures was completed in 2018. Limited additional characterization and vapor intrusion sampling began in 2019.

In November 2018, an ESD was signed by the EPA. The ESD allows for an expansion of the site remedy to include excavation and off-site disposal of additional soils beyond principal threat wastes and removed the soil vapor extraction remedy component for remediation of shallow soils.

Enforcement

The Spartan Chemical Company filed for bankruptcy in February 1992. There are no other known liable parties. A third party was paying the taxes for previous years in an attempt to assume property ownership. However, in early 2003 it was discovered that the property was going through foreclosure and would be deeded to the county. EGLE obtained an easement in June 2003. A restrictive covenant was placed on the property in October 2003 by Kent County, the property owner. The restrictive covenant prohibits use of the groundwater and establishes a restricted area of the site where excavation of soil, building demolition, and building construction are prohibited unless prior approval is granted by EGLE.

Operable Units for Spartan Chemical

OU1 Plant Property Soils

OU2 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 4/9/1998

Location Name: OU1 Plant Property Soils

Comments:
This was an interim action ROD to remediate contaminated soils using SVE.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/29/1993

Location Name: OU2 Groundwater

Comments:
This was an interim action ROD that called for continued operation of the existing groundwater treatment system that was installed by the Spartan Chemical Company in 1988. There were no capital costs associated with this remedy and operations and maintanence (O & M) cost was estimated at $6,000 per month.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 7/11/1995

Location Name: OU2 Groundwater

Comments:
This ESD modified the June 29, 1993, interim action ROD to postpone the design of the groundwater treatment system modifications until after all source area and groundwater data can be adequately evaluated.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/26/2007

Location Name: Spartan Chemical - OU Entire Site

Comments:
This ROD selects the final cleanup plan for the site, which includes both soil and groundwater cleanup actions.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 11/19/2018

Location Name: Spartan Chemical - OU Entire Site

Comments:
The purpose of this ESD is to document a final decision to expand the scope of the soil excavation portion of the remedy to include shallow fill soils containing polychlorinated biphenyls (PCBs) and characteristically hazardous concentrations of metals. This change increases the volume of soils intended for off-site disposal from quantities anticipated in the 2007 ROD, as it requires the excavation and disposal of additional soils contaminated with PCBs and characteristically hazardous metals.

Response Activities - In Progress

Activity: Remedial Design | **Start Date:** 9/1/2016 | **End Date:** 12/31/2020

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,740,731.00	Federal	$0.00	

Comments:
Investigation to delineate fill material and deep aquifer contamination because of data limitations and unknown site conditions discovered during the RA work that began in 2015. Work is 100 percent federally funded. Partial award of $580,369 has been received.

Activity: Remedial Action | **Start Date:** 7/1/2015 | **End Date:** 1/1/2022

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$8,828,240.00	Federal	$980,915.00	State

Comments:
Partial federal funding was received on October 1, 2014, in the amount of $3,179,700. Additional federal funding in the amount of $2,036,700 was received June 11, 2015. The balance is still pending at this time. Excavation of source material and installation of a redesigned SVE system began in the summer of 2015; however, site conditions identified previously unknown contamination and work has been temporarily placed on hold. Pilot testing of methods to excavate highly impacted soils that are characteristically hazardous are planned for 2020.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 11/1/2016 | **End Date:** 9/26/2017

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$30,000.00	Federal	$0.00	

Comments:
Site protectiveness was deferred until VI to adjacent structures and investigation of PCBs and soils contaminated with metals is completed. Recommendations for follow up actions included investigation of VI, the extent of PCB and metals in soils onsite, and review of ICs.

Activity: Remedial Design | **Start Date:** 2/1/2010 | **End Date:** 12/24/2014

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,250,000.00	Federal	$0.00	

Comments:
Federal funding has been received for the remedial design (RD) for the entire site including soil and groundwater. This federal funded RD began in 2010 and was completed in 2014.

Activity: Remedial Design | **Start Date:** 12/3/2007 | **End Date:** 12/31/2012

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
Completed

Primary Cost:
$150,000.00

Primary Source:
State

Secondary Cost:
$100,000.00

Secondary Source:
Federal

Comments:
Final RA design was completed in 2012.

Activity: Remedial Action | **Start Date:** 6/30/2000 | **End Date:** 2/28/2006

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
Completed

Primary Cost:
$1,770,300.00

Primary Source:
Federal

Secondary Cost:
$180,700.00

Secondary Source:
State

Comments:
State lead operation of the SVE system.

Activity: Remedial Design | **Start Date:** 9/30/1998 | **End Date:** 3/31/2000

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
Completed

Primary Cost:
$100,245.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
This was a state lead RD.

Activity: Remedial Design | **Start Date:** 9/26/1993 | **End Date:** 12/31/2007

Operable Unit:
Spartan Chemical - OU2 Groundwater

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:
State

Comments:
Preliminary RD work done by DLZ; work revisited as part of the 2007 ROD.

Activity: Remedial Investigation | **Start Date:** 10/1/1992 | **End Date:** 4/9/1998

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
Completed

Primary Cost:
$691,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
State lead.

Activity: Remedial Investigation | **Start Date:** 10/1/1992 | **End Date:** 4/1/2007

Operable Unit:
Spartan Chemical - OU2 Groundwater

Status:
Completed

Primary Cost:
$1,245,905.00

Primary Source:
Federal

Secondary Cost:
$80,000.00

Secondary Source:
State

Comments:
State lead RI.

Response Activities - Future Need

Activity: Monitoring | **Start Date:** 10/1/2023 | **End Date:** 9/30/2032

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Future Need

Primary Cost:
$2,025,000.00

Primary Source:
Federal

Secondary Cost:
$225,000.00

Secondary Source:
State

Comments:
Nine years of MNA monitoring at $250,000 per year. State will match 10 percent of total MNA cost for first 10 years.

Activity: Monitoring | **Start Date:** 10/1/2022 | **End Date:** 9/30/2023

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Future Need

Primary Cost:
$225,000.00

Primary Source:
Federal

Secondary Cost:
$25,000.00

Secondary Source:
State

Comments:
One year of MNA groundwater monitoring. State will match 10 percent of total cost for the first 10 years of monitoring.

Activity: Operation and Maintenance | **Start Date:** 8/1/2022 | **End Date:** 2/1/2026

Operable Unit:
Spartan Chemical - OU2 Groundwater

Status:
Future Need

Primary Cost:
$800,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M estimated at $200,000 per year.

Activity: 5 Year Review | **Start Date:** 1/3/2022 | **End Date:** 9/26/2022

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Future Need

Primary Cost:
$30,000.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Long Term Remedial Action | **Start Date:** 8/1/2021 | **End Date:** 8/1/2023

Operable Unit:
Spartan Chemical - OU2 Groundwater

Status:
Future Need

Primary Cost:
$900,000.00

Primary Source:
Federal

Secondary Cost:
$100,000.00

Secondary Source:
State

Comments:
O & M of the air sparge system and monitoring groundwater concentrations.

Activity: Remedial Action | **Start Date:** 7/1/2021 | **End Date:** 7/1/2022

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Future Need

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$10,000,000.00	Federal	$1,111,111.00	State

Comments:
Excavation to remove onsite contaminated fill material and soil using best technology determined during the planned pilot study. Work is funded with a federal grant with a 10 percent state match. Total project cost estimated at $11,111,111.

Activity: Operation and Maintenance | **Start Date:** 10/1/2020 | **End Date:** 9/30/2023

Operable Unit:
Spartan Chemical - OU1 Plant Property Soils

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	State	$0.00	

Comments:
Three year operation of a SVE system to complete soil remediation (three years at $150,000 for a total of $450,000). Currently on hold pending outcome of pilot test for soil removal and further discussions with EPA.

Activity: Remedial Action | **Start Date:** 3/1/2020 | **End Date:** 6/30/2021

Operable Unit:
Spartan Chemical - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,150,000.00	Federal	$350,000.00	State

Comments:
Excavation Pilot study to pilot three different vapor suppression techniques to control ambient air concentrations of VOCs. This work is funded with a federal grant with 10 percent state match. match.

Activity: Remedial Action | **Start Date:** 1/1/2019 | **End Date:** 12/1/2021

Operable Unit:
Spartan Chemical - OU2 Groundwater

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,970,000.00	Federal	$330,000.00	State

Comments:
Install and implement remedial activities including air sparging with ozone and chemical injection. This activity is currently waiting EPA funding.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V00E01389	Remedial Action	1/15/2026	Open
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$4,213,222.93	$869,449.91	$177,373.73	$104,464.57
Grant #:	**Activity:**	**End Date:**	**Status:**
V00E02053	Remedial Design	9/30/2024	Open
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$965,397.16	$0.00	$438,169.75	$312,144.76
Grant #:	**Activity:**	**End Date:**	**Status:**
V00E01389-RA	Remedial Action	9/30/2020	Open
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$1,003,177.07	$111,465.09	$1,083,117.22	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V00E02053-RD			

	Remedial Design	9/30/2018	Closed
Fed Total Award: $146,391.84	**State Total Award:** $0.00	**Exp to Date:** $146,391.84	**Exp for Year:** $0.00
Grant #: V00E01982	**Activity:** 5 Year Review	**End Date:** 9/30/2017	**Status:** Closed
Budget Amount: $30,000.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00
Grant #: V995884-02-RD	**Activity:** Remedial Design	**End Date:** 12/31/2014	**Status:** Closed
Fed Total Award: $1,480,137.00	**State Total Award:** $0.00	**Exp to Date:** $1,480,137.01	**Exp for Year:** $0.00
Grant #: V995884-01-RA	**Activity:** Remedial Action	**End Date:** 6/30/2010	**Status:** Closed
Fed Total Award: $1,626,300.00	**State Total Award:** $180,700.00	**Exp to Date:** $1,802,698.42	**Exp for Year:** $0.00
Grant #: V995884-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/2010	**Status:** Closed
Fed Total Award: $1,481,405.00	**State Total Award:** $0.00	**Exp to Date:** $1,936,905.00	**Exp for Year:** $0.00
Grant #: V995884-01-RD	**Activity:** Remedial Design	**End Date:**	**Status:** Closed
Fed Total Award: $0.00	**State Total Award:** $0.00	**Exp to Date:** $186,659.15	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: State Disposal Landfill

State Site ID:
41000062

Federal Site ID:
BS

Full Address:
3954 East Beltline Avenue, Grand Rapids, MI, 49505

County:
Kent

Location

The State Disposal Landfill, Inc., site is located in Plainfield Township, Michigan at 3954 East Beltline Avenue in a mixed residential and agricultural zoned area.

Status

The landfill is currently owned by S.C. Holdings, Inc., a subsidiary of Waste Management of Michigan, Inc. (WMMI). The State Disposal Landfill was a licensed landfill that operated from 1966 to 1976. The landfill accepted residential, commercial, and other wastes. Response actions have included the construction of a landfill cover, installation of a leachate collection system, and installation of the landfill gas venting system.

In August 2019, EGLE (formerly known as MDEQ) submitted to WMMI a comment letter defining groundwater investigation objectives necessary to protect the public health, safety, or welfare, or the environment by requesting further evaluation the nature and extent of hazardous substances within and emanating from the Site. EGLE and WMMI negotiated throughout 2019 for an acceptable work plan for further per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane delineation. Negotiations have extended into fiscal year 2020.

Currently, WMMI is coordinating with EGLE to revise the 2007 Groundwater Monitoring Plan and develop a Declaration of Restrictive Covenant for the landfill portion of the site.

History

The State Disposal Landfill, Inc., was a licensed waste disposal facility from 1966 until 1976. During this time, the landfill accepted residential, commercial, and other wastes. Unconfirmed reports of liquid industrial waste disposal at the site are noted in EGLE files.

Early assessments detected contaminants in surface soils, surface water, sediments, perched water (leachate), landfill gas, and groundwater. In surface soils, surface water, and sediments, multiple inorganic constituents were detected above state and federal standards. Some semi-volatile organic compounds and pesticides were detected above upstream levels in surface water and sediments. Sediments were found to contain one volatile organic compound (VOC) in excess of upstream levels. Perched groundwater contains VOCs, multiple metals, and cyanide above federal and state standards. Additionally, VOCs were detected in one or more of the landfill gas samples. Chemicals detected at elevated concentrations include lead, zinc, iron, thallium, trichloroethylene, vinyl chloride, benzene, and perfluoronated compounds.

The site presented an acute public health concern due to the migration of contaminants offsite. Contaminated groundwater above acceptable state standards was located downgradient in residential wells and in the Plainfield Township municipal water supply wells at the Versluis Well Field. The affected homes were provided with alternate water supplies and were subsequently hooked to municipal water main extensions in May and November 1991. The township installed an additional well field with the Versluis Well to be used only during peak demand times and its water was treated prior to distribution. In 1994, WMMI, the potentially responsible party (PRP), began cost-sharing this treatment with the township.

WMMI submitted several versions of a Remedial Action Plan (RAP) that EGLE staff determined to be administratively incomplete. After several years of negotiations failed to result in an approvable RAP, WMMI notified EGLE that they no

longer wished to negotiate an Administrative Order by Consent (AOC), which would govern response actions at the site. In the summer of 2005, the PRPs implemented a voluntary interim response which resulted in the installation of a cap, gas vents, and a leachate collection system.

On October 2, 2012, a Certificate of Completion was issued that documented the finalization of the remedial investigation/feasibility study (RI/FS). This document forgave WMMI for years of outstanding costs associated with EGLE management of the site, with the understanding WMMI would: 1) effectively monitor the groundwater-to-surface water interface (GSI) pathway going forward, 2) perform its other operation and maintenance (O & M) obligations, including monitoring the effectiveness of the Landfill Gas Monitoring System for methane gas, and 3) assure effective deed restrictions and institutional controls (ICs) are in place.

As an interim response, an air stripper was constructed for treatment of the groundwater extracted by the Versluis Well Field. WWMI in conjunction with Plainfield Township sampled the water from the five production wells, the air stripper “raw water”, and air stripper "treated water." In 2015, monthly monitoring, May through September, indicated that all production well and “raw water” samples were below Part 201 residential drinking water criteria for the parameters being monitored. The parameters perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were not included in the analysis. A comparison of the raw water samples collected before and after air stripping indicate that VOCs were removed from the treated groundwater to levels below detection. However, based on the discovery of potential PFOS and PFOA contamination, the Versluis Well Field was shut down from production in 2015 and will remain so until further notice.

EGLE received the 2016 Annual Environmental Monitoring Report for the State Disposal Landfill site which presented results of environmental monitoring, inspection, and maintenance activities conducted during the year. Subsequently, improvements were made toward the collection of methane in the upper vadose zone at the landfill. However, improvements to the groundwater monitoring network had not been initiated.

Although municipal water was extended to areas with known impacts to the underlying aquifer, Kent County (in cooperation with Plainfield Township) worked toward identifying other properties in proximity to the site that were potentially impacted by landfill contamination. The PRPs provided an updated residential “Water Supply Well Survey” in 2016, but this evaluation was not comprehensive and limited to areas where the PRPs believed the plume existed. One residential well near the landfill is sampled quarterly because concentrations of site contaminants are detectable in the well water. An additional residential well near the landfill is sampled annually beginning in 2017. The sampling is conducted by the Kent County Health Department through a contract with EGLE. The 2016 results are below Part 201 residential drinking water criteria for the parameters being monitored. The parameters PFOS and PFOA are not included in the analysis.

In March 2016, Plainfield Township sampled the Versluis Well Field to confirm detections made earlier by the EPA as part of the Unregulated Contaminant Monitoring Rule monitoring. The results of the Plainfield Township sampling were above EPA Lifetime Health Advisory (LTHA) concentration for combined PFOS and PFOA (70 parts per trillion) and 1,4-dioxane. The township ceased production at the Versluis Well Field and exclusively pumped from wells in the East and West well fields for municipal water. The Township analytically confirmed that the East and West well fields contained PFOS and PFOA concentrations below the LTHA value.

EGLE requested that WMMI include PFAS and 1,4-dioxane in the annual groundwater monitoring and to delineate the extent of PFAS contamination to the Versluis Well Field. In 2017, additional groundwater samples were taken from monitoring and private residential wells downgradient of the State Disposal Landfill for PFAS analysis. PFAS was detected in several groundwater monitoring wells above the LTHA value at the State Disposal Landfill.

In 2018, EGLE requested that WMMI sample 27 additional residential wells to the east of State Disposal. WMMI sampled only a portion of these wells; EGLE sampled the 10 remaining wells with state funding. Of residential wells samples to date, no residences had PFAS results above 70 parts per trillion. At the request of EGLE, WMMI installed 5 groundwater vertical aquifer borings which were sampled every 5 feet to the lower permeable clay layer of the aquifer to delineate the groundwater migration of PFAS and other contaminants from the landfill. Analysis of the groundwater boring samples detected PFAS, 1,4-dioxane, benzene, and metals above Part 201 criteria. WMMI installed a permanent groundwater monitoring well in one boring location for future monitoring events.

At the request of EGLE, WMMI installed an additional groundwater monitoring well at one of the vertical aquifer boring locations drilled in late December 2018. Additionally, PFAS and 1,4-dioxane were added to the list of parameters to be analyzed in select existing groundwater monitoring wells beginning with the second 2018 semi-annual monitoring event.

In 2019, WMMI installed a sixth groundwater vertical aquifer boring, which was sampled every 5 feet through the entire thickness of the aquifer to better delineate groundwater migration of PFAS and other contaminants from the landfill.

Enforcement

S.C. Holdings, Inc., a subsidiary of WMMI, is a PRP under both the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The state signed an AOC with the PRPs in August 1994 to conduct an RI/FS. The PRPs agreed to develop the RAP. The 1994 agreement provided for past as well as future oversight costs for the RI/FS. S.C. Holdings, Inc., continued to pay the state's oversight costs for review of RAP submittals.

An approvable RAP was never submitted and negotiations failed to implement a document to ensure continued progress occurred at the site. As documented in the Certificate of Completion, costs were forgiven with the understanding that future progress at the site would continue.

Operable Units for State Disposal Landfill

OU1 Landfill

OU2 Groundwater

Response Activities - In Progress

Activity: Interim Response | **Start Date:** 10/1/2017 | **End Date:** 9/30/2022

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
In Progress

Primary Cost:
$546,000.00

Primary Source:
Private

Secondary Cost:

Secondary Source:

Comments:
Estimated cost shown reflect private expenses Fiscal Year (FY) 2017 through FY 2019 for additional hydrogeological investigation for PFAS delineation, including work plan development and implementation, sampling, and reporting. Arrangements for additional work will commence pending EGLE's approval of a work plan.

Activity: Interim Response | **Start Date:** 9/30/2017 | **End Date:** 9/30/2021

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
In Progress

Primary Cost:
$480,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE sampled residential wells adjacent to the State Disposal Landfill in 2018. The total estimated costs includes additional hydrogeological investigation to address data gaps, define the nature and extent of PFAS and 1,4-dioxane contamination, and evaluate GSI compliance along the southern edge of Versluis Lake. State funds will be used to undertake the response activities unless WMMI agrees to perform the work. Arrangements for field activities will commence pending EGLE's approval of a work plan.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 10/2/2012 | **End Date:** 10/1/2032

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Ongoing

Primary Cost:
$2,080,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M with annual reports discussing landfill cap, leachate collection system, and landfill gas collection system and updated residential well survey report. Annual cost is approximately $180,000 .

Response Activities - Completed

Activity: Interim Response | **Start Date:** 2/14/2018 | **End Date:** 9/30/2019

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:
Private

Secondary Cost:

Secondary Source:

Comments:
WMMI conducted additional hydrogeological investigation to evaluate contamination downgradient of the landfill, including the installation of 6 vertical profile soil borings and additional monitoring well locations. Cost estimates were requested but not provided by WMMI.

Activity: Interim Response | **Start Date:** 4/1/2005 | **End Date:** 9/30/2005

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRP completed a voluntary interim response which included installation of a landfill cap, gas venting, and leachate collection system.

Activity: Remedial Action | **Start Date:** 1/2/2005 | **End Date:** 3/6/2006

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Having ended negotiations on an AOC with EGLE, the PRPs proceeded with landfill cap, leachate collection system, and gas venting system construction without benefit of an approved RAP. No changes in groundwater response. EGLE and the PRP met in March 2008 negotiations did not resolve disputes regarding the need for additional investigation.

Activity: Remedial Design | **Start Date:** 6/1/2004 | **End Date:** 1/2/2005

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Design of a landfill cap, leachate collection system, and gas venting system was conducted without benefit of an approved RAP. No change in groundwater response. Dates estimated.

Activity: Negotiations | **Start Date:** 1/30/2003 | **End Date:** 10/1/2004

Operable Unit:
State Disposal Landfill - OU Entire Site

Status:
Cancelled PRP

Primary Cost:
$30,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Waste Management of North America advised EGLE that they no longer wished to pursue an AOC under which to perform remedial actions at the site.

Activity: Interim Response | **Start Date:** 8/15/1994 | **End Date:** 8/15/2014

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs signed an agreement with the township to cost-share for the treatment of contaminated groundwater at the township well field. Given the termination of the administrative order with this PRP, tracking an agreement that the department was not a party to is being terminated as well.

Activity: Interim Response | **Start Date:** 7/1/1994 | **End Date:** 7/3/1994

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Removal of three buried drums found during test pitting.

Activity: Remedial Investigation | **Start Date:** 4/30/1992 | **End Date:** 8/30/1995

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$81,000.00

Secondary Source:
State

Comments:
The state provided oversight of the RI/FS performed by the PRPs. Secondary costs were state contractual oversight costs.

Activity: Alternate Water | **Start Date:** 4/15/1991 | **End Date:** 12/30/1993

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$100,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Homes with contaminated water supplies were connected to municipal water lines..

Activity: Bottled Water | **Start Date:** 1/15/1990 | **End Date:** 12/30/1992

Operable Unit:
State Disposal Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Supplied bottled water until affected residents were connected to the municipal water lines.

Activity: Remedial Investigation | **Start Date:** 4/15/1989 | **End Date:** 11/30/1996

State Disposal Landfill

Operable Unit:		Status:	
State Disposal Landfill - OU2 Groundwater		Completed	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Private	$0.00	

Comments:
PRPs conducted an RI to determine the extent of groundwater contamination.

Superfund Legislative Report
Fiscal Year 2019

Site Name: Wash King Laundry

State Site ID:
43000007

Federal Site ID:
B3

Full Address:
M-37, Baldwin, MI, 49304

County:
Lake

Location

The former Wash King Laundry (WKL) site is located along M-37 in Pleasant Plains Township, Lake County, about 1,500 feet south of the Pere Marquette River and about three miles south of Baldwin, Michigan. The former WKL building has been razed. Current site boundaries are generally defined by the Pere Marquette River to the north, Star Lake Road (76th Street) to the south, by the C & O Railroad to the west, and by a line approximately 300 feet east of highway M-37 on the east.

The Pere Marquette River is classified as a "Blue-Ribbon Trout Stream" and "Wild and Scenic River" and that is the downstream boundary of the site. The area is very accessible and is a popular destination for vacationers, outdoor recreationalists, and anglers.

Status

The Site is a former privately owned laundromat/dry cleaner that operated between 1962 and 1991. Liquid laundry waste and a leaking underground storage tank (LUST) that contained PCE contaminated soil and groundwater. A community water supply was required and installed by the former owner/operator and there are currently 20 homes and 3 businesses utilizing the community water wells. A groundwater pump and treat (P & T) system and a soil vapor extraction (SVE) system began remediation of the site in 2001.

Since 2012, the state has been responsible for funding the ongoing treatment systems. EGLE continues to monitor remedy performance and groundwater quality operates and maintains the P & T remedy system, and conducts extraction well maintenance/rehabilitation annually to maintain effective capture and containment of contaminated groundwater. Annual costs for operations and maintenance (O & M) are approximately $160,000. The projected operations of the P & T system is scheduled out to 2042.

The glacial till beneath the former laundromat, seepage lagoons, and the piping run between those areas have been designated by the EPA as Operable Unit 2 (OU2). The 2016 grant from the EPA funds the Supplemental Remedial Investigation/Feasibility Study RI/FS for OU-2. The RI report was completed in June 2017, while the FS was finalized in April 2019. In June 2019, EGLE submitted a Draft Proposed Plan to EPA. The Proposed Plan is scheduled to be finalized in early 2020. As a result of the Proposed Plan, a Record of Decision (ROD) is set to begin being drafted in Fiscal Year 2020.

Stating in June 2018, EGLE proactively collected groundwater samples from on-site wells to evaluate potential per- and polyfluoroalkyl substances (PFAS) contamination at the site. PFAS was detected in a couple of on-site wells, but not in the treated groundwater discharge or in the community water supply system. In February 2019, nearby residential drinking water wells were sampled at two locations. One of these samples had a low level detect of4 nanograms per liter (ppt) of PFAS. This location is considered to be located side-gradient of the currently known contamination plume but relatively close to the site. The second sample location had perfluorooctanesulfonic acid (PFOS) + perfluorooctanoic acid (PFOA) of about 60 ppt and is located immediately (hydraulically) up-gradient of the site. That resident has been provided a filter to treat the water supply prior to use.

EGLE, the Michigan Department of Health and Human Services (MDHHS), and the Lake County Health Department are currently considering the next steps including options to connect the resident whose water supply is being filtered to the community water supply system.

History

The Wash King Laundry (WKL) site was a privately-owned laundromat/dry cleaning facility in operation between 1962 and 1991. The dry-cleaning operation used tetrachloroethylene, also known as PCE, which was stored at the building in a (leaking) underground storage tank. The leaking of solvent from the UST created a source area. Facility operations also discharged contaminated wastewater to seepage lagoons located approximately 500 feet to the west, thereby creating a secondary source location.
At the time the Record of Decision (ROD) was published in 1993, the Pere Marquette Subdivision Plat, which comprises the Site, included 123 residential lots. Several commercially developed lots are within the Site, along M-37. Approximately 30 private wells were impacted. A community water supply system was installed on-site, and affected residents were required to connect. The ROD called for off-site disposal of contaminated lagoon sediments, demolition of the building, and installation of a groundwater pump and treatment (P & T) system and a shallow soil vapor extraction system in the vicinity of the former building. With the closing of the facility, wastewater in the lagoons seeped into the ground and the lagoons have remained dry. Sediment subsequently was viewed as surface soils, and sample results indicated excavations of soil shallow soil was not warranted.

An Explanation of Significant Difference (ESD) was signed and included the following: no excavation of the lagoons; use of soil vapor extraction (SVE) for treatment of contaminated vadose zone soils under and around the WKL building; groundwater extraction with treatment for organic contaminants; no deed restrictions on the area to be remediated; and drainage and removal of sumps in the WKL building, along with the demolition of the building. Expected remediation times were five years for soil and ten years for groundwater. The SVE and groundwater treatment systems were completed and deemed operational and functional in April 2002.

In 2006, EGLE assisted the EPA in conducting a Long-Term Monitoring Network Optimization Evaluation (Optimization Evaluation). On September 29, 2006, EGLE authored the First Five Year Review (FYR), wherein many of the recommendations from the Optimization Evaluation were included. Both the Optimization Evaluation and the First FYR recommended additional activities to ensure protectiveness. Those activities included supplementing the existing groundwater monitoring well network to better characterize the extent of contaminated groundwater, conducting a capture zone study, delineating and more aggressively addressing a PCE source area (beneath the former WKL building), and installing additional optimally located and higher-yielding groundwater extraction wells. Subsequent FYRs acknowledged additional source area soils remained i.e., beneath the former wastewater lagoons and piping run, and that they required further evaluation. The source area soils were deemed Operable Unit 2 (OU2) in 2014.

EGLE received grants or grant amendments in 2007, 2010, 2012, 2014, and 2016 to fund source area(s) delineation; better characterize site contamination; to improve control of contamination migration; and, to implement an in-situ technology to further remediate the primary, most concentrated source area soils beneath the former WKL building in low permeability glacial till. The delineation of the primary source area near the former WKL building was conducted between 2008 and 2014. The groundwater remedy was augmented with 27 additional monitoring wells to better characterize the full (horizontal and vertical) extent of contamination and to evaluate the effectiveness of Remedial Actions (RAs). Three new extraction wells were installed to improve control and containment of contaminant migration and the extraction system is slowly reducing the footprint and/or magnitude of impacted groundwater. Implementation of an in-situ bioremediation effort for source area soils beneath the former WKL building via a total of 67 injection wells between 2009 and 2011 helped reduce PCE concentrations but did not affect the concentrations in the basal portion of the till. The contaminated groundwater and till unit were found to release low concentrations of vapors containing volatile organic compounds (VOCs).

The primary source area characterization was summarized in a Remedial Investigation/Focused Feasibility Study (RI/FFS) report dated August 2014. The FFS served the purpose of the initial screening of remedial alternatives. Without addressing the remaining source areas, Operations and Maintenance (O & M) of the remediation system(s), including monitoring, is expected to be on the order of a hundred years or more. Institutional controls (ICs) will be required and (re)development of several parcels of property will be unlikely. In 2017, an OU2 RI was completed. That RI included results of the soil delineation completed for the former seepage lagoon area and along the piping run between the lagoons and former facility building.

The SVE system has been shut down and no longer operates. Vapor wells were installed in September 2016 and April 2017 and air samples were collected on a quarterly basis. Results of the vapor sampling indicate that all VOCs are below applicable criteria.

Between June 2018 to September 2018 EGLE conducted groundwater and drinking water PFAS investigations at the Site as described below:

• On June 19, 2018, a preliminary PFAS sampling event was completed to assess the possibility of PFAS attributable to the Site. Results indicated the presence of PFAS in a couple of the groundwater well samples.
• On July 17-18, 2018, additional PFAS groundwater sampling was conducted to confirm the previous results and to further evaluate the extent and potential for treated groundwater to contain PFAS. This sampling confirmed the previous results and noted that the treated groundwater discharge did not contain PFAS.
• On September 18-19, 2018 additional PFAS sampling occurred including collecting a sample from the community water supply system. PFAS was not detected in the community water supply.

Enforcement

In October 1991, Wash King Laundry filed for bankruptcy. The site is an orphan site.

Operable Units for Wash King Laundry

OU2 Source Areas

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/31/1993

Location Name: Wash King Laundry - OU Entire Site

Comments:
EPA concurrence; state initiated the ROD. The remedy consists of off-site disposal of contaminated lagoon sediments and groundwater treatment.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 7/1/1996

Location Name: Wash King Laundry - OU Entire Site

Comments:
O & M costs were not provided in the ESD. The overall change in remedy included adding SVE for treatment of soils at the Wash King Laundry building, elimination of lagoon excavation, updating cleanup criteria, elimination of treatment for inorganics in the groundwater, change of discharge location, removal of deed restrictions, and adding the possible demolition of the Wash King Laundry building.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 4/17/2012 **End Date:** 4/17/2042

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Ongoing

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$4,800,000.00	State	$0.00	

Comments:
A groundwater pump and treat remedial system consisting of five extraction wells operates continuously to contain migration of, and to treat contaminated groundwater. Groundwater is extracted at a rate of about 300 gallons per minute. The SVE system has been shut down. The in-situ biosolution injection system no longer injects a biosolution, but rather, only nutrient enriched treated groundwater. Each of the 67 injection wells receives approximately 225 gallons per week.

The extraction wells are on an annual maintenance/rehabilitation program to maintain desired maximum effectiveness and zone of capture. Groundwater samples are collected from the treatment system to monitor effectiveness and to ensure that treated discharged water does not impact the aquifer. Annual O & M costs are approximately $160,000. The O & M activities were projected to continue for 30 years through 4/17/2042.

As the pump and treat system ages, repairs and maintenance costs are becoming more routine.

It is anticipated the the proposed remedial action will greatly shorten this operation and maintenance task and cleanup

the groundwater to remediation goals earlier than the estimated end date.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 2/16/2016 | **End Date:** 9/23/2016

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
The cost for completing the FYR was funded by a grant from the EPA. The remedy at OU1 currently protects human health and the environment because there is no exposure to contaminated groundwater or soil. However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: conduct a vapor intrusion investigation, prepare an IC Implementation and Assurance Plan; implement ICs; develop a long-term stewardship (LTS) plan or amend the existing O & M Plan to incorporate LTS procedures; complete a decision document requiring ICs; and, conduct the OU2 Supplemental RI/FS.

Activity: Remedial Investigation | **Start Date:** 2/1/2014 | **End Date:** 2/4/2019

Operable Unit:
Wash King Laundry - OU2 Source Areas

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	Federal	$0.00	

Comments:
The investigation of the remaining source areas beneath the former site building was completed and an RI/FFS Report dated August 2014 summarized the findings. Cost associated with this activity was $100,500. In the fall of 2016, additional investigation ($99,500) was completed to define the extent of remaining source areas beneath the former piping run and wastewater seepage lagoons and an OU2 RI report was completed in June 2017. An FS was finalized and a proposed plan was completed in January of 2020. A ROD for OU2 is scheduled to be completed in mid 2020.

Activity: 5 Year Review | **Start Date:** 3/1/2011 | **End Date:** 9/29/2011

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The cost for completing the FYR was funded by a grant from the EPA. In order for the remedy to continue to be considered protective of human health and the environment, ICs (e.g., groundwater protection zones, well-drilling restrictions) are needed to prevent exposure to contaminants until soil and groundwater cleanup standards are achieved. Recommendations and follow-up actions identified within this report also need to be completed to further define the extent of impact. Long-term protectiveness will be achieved once the pump and treat system reaches cleanup levels (e.g., Maximum Contaminant Levels, state standards, etc.) in the groundwater.

Activity: 5 Year Review | **Start Date:** 3/28/2006 | **End Date:** 9/29/2006

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Federal	$0.00	

Comments:
The state received funding from the EPA to conduct the FYR. On September 29, 2006, EGLE authored the First FYR, wherein many of the recommendations from the Optimization Evaluation were added. Both the optimization report

and the FYR recommended that some additional activities would be necessary to ensure protectiveness. Those activities include supplementing the existing groundwater monitoring well network, conducting a capture zone study, delineating and addressing an additional PCE source area, and installing additional extraction wells if deemed appropriate.

Activity: Long Term Remedial Action | **Start Date:** 4/17/2002 | **End Date:** 4/16/2012

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:
$1,170,000.00

Primary Source:
Federal

Secondary Cost:
$130,000.00

Secondary Source:
State

Comments:
The ten-year Long-Term Remedial Action (LTRA) period ended in 2012 and the state has assumed 100 percent costs for O & M.

Activity: Remedial Action | **Start Date:** 9/28/1998 | **End Date:** 7/30/2003

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:
$2,131,773.00

Primary Source:
Federal

Secondary Cost:
$236,864.00

Secondary Source:
State

Comments:
The RA work is complete and the RA Report was received by EGLE in July 2003.

Activity: Remedial Design | **Start Date:** 9/21/1993 | **End Date:** 1/14/1998

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:
$692,487.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
State lead remedial design.

Activity: Remedial Investigation | **Start Date:** 9/10/1987 | **End Date:** 3/31/1993

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:
$555,813.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
State lead RI/FS.

Activity: Alternate Water | **Start Date:** 1/1/1983 | **End Date:** 1/1/1984

Operable Unit:
Wash King Laundry - OU Entire Site

Status:
Completed

Primary Cost:
$35,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The potentially responsible party provided a municipal-type water supply for the affected homes and businesses.

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 10/1/2021 | **End Date:** 9/30/2022

Operable Unit:		**Status:**	
Wash King Laundry - OU Entire Site		Future Need	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$13,500,000.00	Federal	$1,500,000.00	State

Comments:
Proposed thermal remediation for each of the OU2 source areas. State 10 percent cost share of $15,000,000 total RA cost ($1,500,000)

Activity: 5 Year Review		**Start Date:** 9/24/2020	**End Date:** 9/23/2021
Operable Unit:		**Status:**	
Wash King Laundry - OU Entire Site		Future Need	
Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	TBD	$0.00	

Comments:
Fourth FYR needed.

Federal Grants

Grant #: V00E1983	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2019	**Status:** Open
Fed Total Award: $91,710.98	**State Total Award:** $0.00	**Exp to Date:** $49,354.99	**Exp for Year:** $25,359.18
Grant #: V00E01983-RI	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2018	**Status:** Open
Fed Total Award: $141,157.02	**State Total Award:** $0.00	**Exp to Date:** $141,157.02	**Exp for Year:** $0.00
Grant #: V00E01514-RE	**Activity:** 5 Year Review	**End Date:** 9/30/2016	**Status:** Closed
Budget Amount: $20,000.00	**State Total Award:** $0.00	**Exp to Date:** $20,000.00	**Exp for Year:** $0.00
Grant #: V00E1307-RI	**Activity:** Remedial Investigation	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $100,561.00	**State Total Award:** $0.00	**Exp to Date:** $100,561.00	**Exp for Year:** $0.00
Grant #: V005950-01-RI	**Activity:** Remedial Investigation	**End Date:** 4/17/2012	**Status:** Closed
Fed Total Award: $783,997.00	**State Total Award:** $183,338.00	**Exp to Date:** $555,813.00	**Exp for Year:** $0.00
Grant #: V005950-01-LT	**Activity:** Long Term Remedial Action	**End Date:** 4/17/2012	**Status:** Closed
Fed Total Award: $1,901,884.00	**State Total Award:** $55,760.00	**Exp to Date:** $2,375,847.52	**Exp for Year:** $0.00
Grant #: V005950-01-RA	**Activity:** Remedial Action	**End Date:** 4/17/2012	**Status:** Closed

Wash King Laundry

Fed Total Award: $2,131,773.00	**State Total Award:** $236,864.00	**Exp to Date:** $2,370,417.32	**Exp for Year:** $0.00
Grant #: V005950-01-RD	**Activity:** Remedial Design	**End Date:** 4/17/2012	**Status:** Closed
Fed Total Award: $714,303.00	**State Total Award:** $0.00	**Exp to Date:** $692,487.00	**Exp for Year:** $0.00
Grant #: V00E192-01	**Activity:** 5 Year Review	**End Date:** 9/30/2011	**Status:** Closed
Budget Amount: $40,000.00	**State Total Award:** $0.00	**Exp to Date:** $19,080.30	**Exp for Year:** $0.00
Grant #: V965855-01	**Activity:** 5 Year Review	**End Date:** 12/30/2006	**Status:** Closed
Budget Amount: $10,000.00	**State Total Award:** $0.00	**Exp to Date:** $9,886.36	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Metamora Landfill

State Site ID:
44000005

Federal Site ID:
H9

Full Address:
1811 Dryden Road, Metamora, MI, 48455

County:
Lapeer

Location

The Metamora Landfill site (the site) is located in Metamora Township, Lapeer County, Michigan, about 1/2 mile east of the village of Metamora. The area is rural agricultural with housing developments interspersed. There are approximately 20 homes near the site with residential water supply wells, that are located north (generally downgradient) of the site. Some additional development is taking place.

Status

The Metamora Landfill Site includes a 25-acre landfill that was closed in 1980 for failure to meet requirements under the Solid Waste Management Act, PA 641 of 1978, as amended. Although licensed to receive only general refuse, large amounts of industrial waste (e.g., tens of thousands of 55-gallon drums) were also disposed of in the landfill. The site includes the landfill as well as areas down-gradient where contaminated groundwater has migrated.

The MLSPG, the potentially responsible party (PRP) settling group for the site, continues to negotiate with the village of Metamora officials regarding a possible extension of the municipal water supply to the area residents affected or potentially affected by the contaminated groundwater from the site. Currently, bottled water is supplied to the four affected residents.

The EPA and EGLE have drafted the first Investigative Work Plan (IWP) to serve as a directive for the installation of monitoring wells at specified locations. This is the first step to provide the MLSPG with a list of required actions in an attempt to delineate the groundwater plume. The Sixth Five Year Review (FYR) was completed on September 18, 2019. It is documented in this FYR that the groundwater plume has yet to be defined and therefore the remedy selected for Operable Unit 2 (Monitored Natural Attenuation) can not be fully evaluated.

History

The now-capped Metamora Landfill is about 25 acres in size; there is no bottom liner. The landfill was closed in 1980 for failure to meet requirements under the Solid Waste Management Act, PA 641 of 1978, as amended. Although licensed to receive only general refuse, large amounts of industrial wastes (e.g., tens of thousands of 55-gallon drums) were also disposed of at the site. Remedial actions at the site are being conducted on two discrete operable units (OUs). OU1, Drummed Waste, and Contaminated Soil, addressed the remediation of drummed waste and contaminated soils in two (Drum Area 1 and Drum Area 4) of the five known drum areas on-site. OU2 includes Landfill Capping and Monitored Groundwater Natural Attenuation.

Magnetometer studies and other investigations suggested as many as 20,000 drums of waste existed in the fill. Limited excavation and sampling of drums in two areas of the site were conducted in 1982. Various solvents, paint sludge, and other organic compounds were found. Sampling of monitoring wells began in August 1984. The site was placed on the National Priorities List on October 15, 1984.

OU1 removal activity entailed the excavation and off-site incineration of drummed waste and contaminated soils from Drum Areas 1 and 4. During the course of this removal, it was discovered that the original estimate of the number of buried drums had been grossly underestimated. By December 1990, approximately 25,000 drums and 12,500 tons of contaminated soils had been excavated from just those two areas. The state's excavation activity was terminated in December 1990 due to a funding shortfall. In addition, as a result of difficulties encountered in finding incineration capacity for the types of wastes uncovered at the site, approximately 9,600 85-gallon over-packed drums and 4,100 30-

gallon and 16-gallon plastic drums containing excavated waste were staged on-site. In May 1991, a group of potentially responsible parties (PRPs), known as the Metamora Landfill Settling Party Group (MLSPG) entered into a Consent Decree (Decree) with the EPA to complete the drum removal and to perform the OU2 remedial action (RA). Approximately $4,133,087 of state funds and $29,742,834 in federal funds were allocated to this project as of December 1993.

The PRPs completed the RA for Drum Areas 1 and 4 in 1994 and shipped excavated drums and only the most heavily contaminated soils to off-site licensed incinerators. The excavated soils that were not as heavily contaminated were placed under the landfill grading layer during 1998 in preparation for final cap construction in 1999.

Groundwater contamination is present in multiple aquifers, including the bedrock aquifer in which nearby residential wells are installed. The contamination is not fully defined in any of the aquifers but, at locations explored and/or sampled, it is known to extend approximately 3/4 of a mile north of the landfill and over 200 feet below ground surface. Various industrial-type organic chemicals and heavy metals are present in groundwater, and it is expected that the buried industrial waste will act as a continual source of contamination. A Record of Decision (ROD) Amendment for Landfill Capping and Monitored Groundwater Natural Attenuation OU was signed in 2001, changing the remedy for groundwater to monitored natural attenuation (MNA), and maintained that landfill gas must be controlled at the landfill boundary. In April 2002, EGLE concurred with the ROD Amendment, contingent upon and with the understanding that an adequate long-term groundwater monitoring system would be installed to properly evaluate the MNA remedy.

In fall 2007, 1,4-Dioxane was first detected in a residential well located north of the northeast portion of the landfill. By 2013, the number of residential wells being impacted with contamination from the landfill had risen to as many as ten; however, the concentrations were below the criterion at the time of 85 micrograms per liter (µg/L). In 2016, the criterion for 1,4-Dioxane was revised and lowered to 7.2 µg/L and residences with 1,4-Dioxane present in their water supply were supplied and/or offered alternate drinking water.

Landfill gas is migrating beyond the property landfill boundaries above the lower explosive limits, which is inconsistent with the ROD; but sampling in the off-site gas probes that have been installed suggests the extent may be limited.

EGLE has submitted numerous documents and conducted management level meetings and conference calls with the EPA in an effort to ensure the ROD and ROD Amendment for OU2 were implemented; to encourage addressing and implementing the issues and recommendations of the Third Five-Year Review (FYR) from 2004, Fourth FYR in 2009, Fifth FYR in 2014, and the Sixth FYR in 2019; and to be protective of public health in the short and long term.

In July 2015, the EPA required additional investigation; however, subsequent work plans submitted by the MLSPG were inadequate and do not meet the intent of the required additional investigation. An additional vertical profile boring was conducted in early 2016 at a previously under-investigated area, and results indicated elevated levels of benzene and 1,4-Dioxane in several intervals of the shallow and intermediate aquifers, extending to 197 feet or more below ground surface.

A hydrogeologic investigation conducted in 2015 pursuant to a proposed sand and gravel mining operation northeast of the site indicated the presence of 1,4-Dioxane beyond any monitoring points associated with the landfill, and further downgradient than some residential wells being sampled. Such data confirms migration pathways exist beyond the established monitoring network.

The last FYR completed by the EPA in 2019 recognized that long-term protectiveness cannot be obtained without land and groundwater use restrictions. The EPA has not yet required the PRPs to fully define the extent of impacted groundwater or methane.

The current remedy being implemented includes MNA for groundwater contamination; however, EGLE believes the monitoring network is not consistent with MNA guidance. The need for proper groundwater use restrictions for all aquifers continues to be emphasized by the EGLE. EGLE also continues to assert the groundwater monitoring network does not define the extent of contamination and that the monitoring being conducted is inconsistent with MNA remedies. A completed exposure pathway exists and
1,4-Dioxane continues to migrate within the aquifer used as the drinking water source for area residents.

The MLSPG continues to negotiate with the village of Metamora officials regarding a possible extension of the municipal water supply to the affected residents; and, bottled water is supplied/offered to affected residents. Investigation via vertical aquifer profiling is being conducted, which EPA believes will aid in determining where additional investigation and monitoring wells are required. Access is being negotiated with property owners

downgradient of the landfill.

The Sixth FYR was completed on September 18, 2019. It is documented in this FYR that the groundwater plume has yet to be defined and therefore the remedy selected for OU2 (MNA) can not be fully evaluated.

Enforcement

In May 1991, a group of PRPs, known as the MLSPG, liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, entered into a Decree with the EPA to complete RA for the Drummed Waste and Contaminated Soil OU (source control) and for the Landfill Capping and Monitored Groundwater Natural Attenuation OU (landfill capping and addressing impacted groundwater). The State completed cost-recovery actions against the PRPs in 1999 and has recovered a large portion of past state expenditures.

Operable Units for Metamora Landfill

OU1 Drummed Waste and Contaminated Soil

OU2 Landfill Cap Groundwater MNA

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/2/1986

Location Name: OU1 Drummed Waste and Contaminated Soil

Comments:
In September 1986, the EPA signed a ROD requiring remediation of two of five detected drum disposal areas. This removal action, known as the Drummed Waste and Contaminated Soil OU, was mobilized in May 1989, and completed in 1994. Several thousand drums of waste and thousands of tons of contaminated soil were incinerated off-site at a licensed incinerator.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/5/1991

Location Name: OU1 Drummed Waste and Contaminated Soil

Comments:
This Explanation of Significant Differences (ESD) occurred due to the lack of available capacity by off-site incinerators. The significant difference between the ROD and the ESD is the location of the incinerator unit. On-site incinerators were demonstrated to be a safe and proven technology.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 8/28/1996

Location Name: OU1 Drummed Waste and Contaminated Soil

Comments:
This amendment replaces off-site incineration of Drum Area 1 and Soil Staging areas soils by relocating these soils to the south slope of the landfill and including them under the Landfill Capping and Monitored Groundwater Natural Attenuation OU landfill cap. This remedy includes installation of a groundwater collection and treatment system as well as long-term groundwater monitoring.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/28/1990

Location Name: OU2 Landfill Cap Groundwater MNA

Comments:
The ROD consists of: (1) groundwater treatment through extraction utilizing precipitation/flocculation, air stripping, and recharge of the treated groundwater back into the shallow aquifer, and (2) containment of the landfill contents through a 90-centimeter clay cover meeting the requirements of Michigan Act 64, utilizing a passive gas collection system and flaring.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/27/2001

Location Name: OU2 Landfill Cap Groundwater MNA

Comments:
The ROD Amendment includes an MNA alternative to groundwater remediation. EGLE's concurrence is contingent upon an adequate groundwater monitoring network being installed. Well installation to complete an adequate monitoring well network still has not been completed.

Response Activities - In Progress

Activity: Remedial Design | **Start Date:** 5/1/1998 | **End Date:** 3/19/2021

Operable Unit:
Metamora Landfill - OU2 Landfill Cap Groundwater MNA

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
An adequate long-term groundwater monitoring network has not been completed, and additional groundwater monitoring wells are needed to better evaluate and delineate the extent of contamination originating from the landfill. In addition, the extent of methane migrating away from the landfill needs to be fully evaluated to determine if enhancements to the landfill cap system are necessary to meet objectives of the ROD of not allowing landfill gas to migrate beyond the landfill boundaries. Additional investigation is being planned and access is currently being negotiated.

Activity: Remedial Action | **Start Date:** 5/1/1998 | **End Date:** 3/19/2021

Operable Unit:
Metamora Landfill - OU2 Landfill Cap Groundwater MNA

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Construction of the landfill cap is complete. Landfill gas monitoring is being conducted semi-annually; however, the agencies have discussed the inability of the passive gas system in reducing landfill gas concentrations, but there is not currently a plan to address methane migrating beyond the landfill. Additional gas probes are required to fully delineate the extent of elevated methane levels. The extent of impacted groundwater has not been delineated and an adequate long-term groundwater monitoring network does not exist; however, additional investigation is planned and access to those locations is currently being negotiated.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 10/1/2002 | **End Date:** 10/1/2032

Operable Unit:
Metamora Landfill - OU2 Landfill Cap Groundwater MNA

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Operation and Maintenance (O & M) for the landfill is being conducted. Although neither the groundwater or methane monitoring networks are adequate to determine the extent of impact, monitoring is being conducted for both methane and groundwater. The state did not concur with the O & M plan being implemented. Annual sampling of residential wells in the area is also conducted, with low-level contamination associated with the landfill being identified in several area drinking water wells. A total of four residences have detection's of 1,4-Dioxane in their residential well with one location having detection's that exceed the current cleanup criteria. All four residents are currently being provided with bottled water. The settling group was asked if they would take over the annual sampling; however, to date they prefer to have the state of Michigan continue with the program and reimburse us for the associated costs.

Response Activities - Completed

Metamora Landfill

Activity: 5 Year Review | **Start Date:** 2/4/2019 | **End Date:** 9/18/2019

Operable Unit:
Metamora Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The sixth Five-Year Review in 2019 has been completed. The EPA concluded the remedy was protective of human health and the environment in the short term. In order for the remedy to be protective in the long-term residential well installations restrictions, sufficient monitoring well network to evaluate MNA, and include 1,4-dioxane as a Site COC will need to be accomplished.

Activity: 5 Year Review | **Start Date:** 3/18/2014 | **End Date:** 9/18/2014

Operable Unit:
Metamora Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR completed in 2014 by the EPA concluded the remedy was protective of human health and the environment in the short term, and would be protective long term if groundwater use restrictions were implemented for properties located north of the landfill. EGLE has a different interpretation, based upon the review. Additional site characterization is required in order to determine appropriate groundwater use restrictions.

Activity: 5 Year Review | **Start Date:** 1/30/2009 | **End Date:** 9/23/2009

Operable Unit:
Metamora Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR authored by the EPA concluded the remedy is protective of human health and the environment in the short term. There are no current exposure pathways and the remedy appears to be functioning as designed. Long-term protectiveness for groundwater would be assessed in the next FYR.

The report also indicated that EGLE has a different interpretation than the EPA on how the remedy is being implemented, level of protectiveness, and compliance with the ROD Amendment; and, included EGLE's comments as an attachment to the report. EGLE documented its disagreement with where the site stands for this Fourth FYR in a letter dated August 17, 2009.

Activity: 5 Year Review | **Start Date:** 5/13/2004 | **End Date:** 9/27/2004

Operable Unit:
Metamora Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR report was authored by the EPA and concluded that the remedies are protective of human health and the environment and that there are no exposure pathways. The report recognized that there are outstanding issues relating to installing an adequate groundwater monitoring network and delineating the extent of elevated concentrations of methane.

Activity: 5 Year Review | **Start Date:** 6/15/1999 | **End Date:** 9/14/1999

Operable Unit:
Metamora Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Second FYR report was completed on September 14, 1999.

Activity: 5 Year Review | **Start Date:** 6/15/1993 | **End Date:** 8/24/1993

Operable Unit: Metamora Landfill - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The initial FYR concluded that the remedies selected were protective of human health and the environment.

Activity: Remedial Action | **Start Date:** 5/1/1991 | **End Date:** 12/31/1994

Operable Unit: Metamora Landfill - OU1 Drummed Waste and Contaminated Soil
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
In May 1991, a group of PRPs entered into a Decree with the EPA to complete the RA. The PRPs completed the RA in 1994 and shipped excavated drums and the most heavily contaminated soils off-site to a licensed incinerator.

Activity: Remedial Design | **Start Date:** 1/15/1987 | **End Date:** 1/15/1988

Operable Unit: Metamora Landfill - OU1 Drummed Waste and Contaminated Soil
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$625,678.00	Federal	$0.00	

Comments:
The design of a removal action for several thousand drums of waste and thousands of tons of contaminated soils for incineration off-site at a licensed incinerator.

Activity: Remedial Investigation | **Start Date:** 3/15/1985 | **End Date:** 7/15/1990

Operable Unit: Metamora Landfill - OU1 Drummed Waste and Contaminated Soil
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,258,705.00	State	$927,563.00	Federal

Comments:
Remedial Investigation to determine the nature of the drummed wastes and contaminated soils.

Activity: Remedial Action | **Start Date:** 1/1/1982 | **End Date:** 10/28/1994

Operable Unit: Metamora Landfill - OU1 Drummed Waste and Contaminated Soil
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$28,702,704.00	Federal	$2,874,382.00	State

Comments:
In 1986, the EPA signed a ROD (OU Drummed Waste and Contaminated Soil ROD) requiring remediation of two of

the detected drum areas. This removal action was initiated by the state in June 1989, and included the excavation and off-site incineration of drummed waste and contaminated soil from Drum Areas 1 and 4.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 2/4/2024	**End Date:** 9/30/2024
Operable Unit: Metamora Landfill - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**
Comments: The seventh FYR			

Activity: Monitoring		**Start Date:** 10/1/2020	**End Date:** 9/30/2023
Operable Unit: Metamora Landfill - OU Entire Site		**Status:** Future Need	
Primary Cost: $60,000.00	**Primary Source:** State	**Secondary Cost:**	**Secondary Source:**
Comments: Annual Residential Well Sampling for three years at $20,000 per year.			

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $29,786.88	**Exp for Year:** $16,032.92
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $10,642.81	**Exp for Year:** $1,568.51
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $2,122.84	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $27,144.34	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $20,268.52	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $11,069.69	**Exp for Year:** $0.00

Metamora Landfill

Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $31,235.06	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $21,461.62	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $95,756.29	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $8,634.04	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $13,735.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $199,884.45	**Exp for Year:** $0.00
Grant #: V005836-01-RD	**Activity:** Remedial Design	**End Date:** 6/30/1994	**Status:** Closed
Fed Total Award: $81,825.00	**State Total Award:** $0.00	**Exp to Date:** $62,541.00	**Exp for Year:** $0.00
Grant #: V005836-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/1994	**Status:** Closed
Fed Total Award: $8,932,818.00	**State Total Award:** $3,234,072.00	**Exp to Date:** $1,262,216.00	**Exp for Year:** $0.00
Grant #: V005836-01-RA	**Activity:** Remedial Action	**End Date:** 6/30/1994	**Status:** Closed
Fed Total Award: $20,678,147.00	**State Total Award:** $899,015.00	**Exp to Date:** $31,553,785.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Grand Traverse Overall Supply Co.

State Site ID:
45000004

Federal Site ID:
3G

Full Address:
10725 Cherry Bend Road, Greilickville, MI, 49684

County:
Leelanau

Location

The GTOS site is located at 10725 Cherry Bend Road, Greilickville, Michigan, approximately one and one-half miles north of the city limits of Traverse City. The site is in the southeast one fourth of section 28, T28N, R11W, Elmwood Township, Leelanau County, located just west of Highway M-22, on the north side of Cherry Bend Road and south of Cedar Creek. The area surrounding the GTOS facility is primarily residential. The former Norris Elementary School is directly east of the site while the Elmwood Volunteer Fire Department is located to the south. Private residences border the site to the west. The West Arm of the Grand Traverse Bay is located approximately 600 feet east of the site.

Status

Grand Traverse Overall Supply (GTOS) was a commercial laundering and dry-cleaning facility, operated from 1950-1987. Numerous federal and state sampling events over 15 years (1990-2005) have indicated the presence of groundwater and soil contamination. From 2005-2015, the EPA in conjunction with EGLE completed investigations, remedial designs and remedial actions such as a soil vapor extraction (SVE) system (2005-2017), soil excavations (2007 and 2011), a groundwater pump and treat (P & T) system (2013-2018), and finally in-situ treatment of groundwater (2014) to expedite the cleanup of the contaminated soil, groundwater and vapors (soil-gas).

During the first two quarters of 2019, time-concentration plots of soil-gas sampling near the former Norris Elementary School appeared to exhibit an increasing trend since shutdown of the SVE system. Furthermore, TCE in indoor air at the former school has exceeded the EGLE Recommended Interim Action Screening Levels (RIASLs). Therefore, EGLE recommended to EPA that mitigating vapor intrusion at the former School and investigating the vadose zone and shallow groundwater near or underneath the building was needed to discover the source of these vapors.

As of now, EPA's contractor SulTRAC submitted all four quarters of 2019 soil-gas reports and groundwater reports. EGLE is currently reviewing these reports to provide comments and concerns. No significant groundwater contamination issues were reported during this reporting period. However, to address the vapor issues under the western end of the former school, SulTRAC completed pressure field extension (PFE) testing to design a mitigation system. Due to technical limitation to investigate under the building, EPA and EGLE decided to install a scaled down targeted SVE system to treat a potentially contaminated area of soil under the building. This SVE system will be a similar but bigger version of a sub-slab depressurization system which will be designed to extract soil gas vapors from all the soils under the building rather then just from under the slab. This system will replace the existing SVE system which is not considered effective due to its limited footprint at the former school.

The first two quarters of 2020 groundwater and vapor sampling events were completed. SulTRAC on behalf of EPA requested to remove five sets of groundwater extraction wells and associated piezometer pairs installed in 2011 to remove and treat contaminated groundwater. EGLE approved this request.

History

In 1948, the facility originally known as Pick Wick Wipers began operation and, in 1950, it became Grand Traverse Overall Supply Company (GTOS). Dry cleaning operations began in 1968. Until December 1977, the laundry and process waste from dry cleaning operations were discharged to seepage lagoons and a dry-well on the site. Cooling

water used in dry cleaning operations was discharged to Cedar Creek from 1968 to 1978. In December 1977, the company began discharging to the sanitary sewer system, and the lagoons and dry-well were abandoned. In 1978, perchloroethylene (PCE), trichloroethylene (TCE), and 1,2-dichloroethene (1,2 DCE) were detected in the water supply of Norris Elementary School. Chemicals used in the dry-cleaning operations (and break-down products derived from these chemicals), include PCE, TCE and 1,2 DCE. Therefore, the likely source was traced to the GTOS site. A follow-up investigation revealed that ten private drinking water wells were also impacted. The contaminated private wells were replaced by new wells that extended into a deeper uncontaminated semi-confined aquifer. EGLE performed some investigative work during the 1980s. EGLE supervised initial cleanup operations undertaken at the site from 1978 through 1980. The site was placed on the National Priorities List in 1983.

The EPA conducted the remedial investigation (RI) at the site between 1988 and 1991. The RI concluded that no significant contamination was present at the time of the investigation. Based on the results of that investigations, the EPA issued a Record of Decision (ROD) in 1992 that determined no further remedial action (RA) would be undertaken. In 1978, the maximum concentrations of TCE and PCE detected in residential wells were 600 parts per billion (ppb) and 740 ppb, respectively. The maximum concentrations of these two compounds detected in 1990 were estimated at 0.14 ppb of TCE and 0.24 ppb of PCE. EGLE was concerned that the RI did not adequately characterize the extent of contamination at the site. The primary concern to EGLE was the absence of samples to evaluate possible vertical stratification of contamination within the aquifer. Therefore, EGLE declined to concur with the ROD, signed in February 1992, when the resolution of EGLE's concerns was not achieved.

In 1996, a Baseline Environmental Assessment was performed prior to the sale of the site. Significant concentrations of PCE were detected in soil samples collected from beneath the GTOS building. Water samples collected from sumps inside the building (formerly used to contain/separate dry-cleaning solvents) detected high concentrations of TCE and PCE. PCE was also detected in a tap water sample; however, the concentration found, 2.0 ppb, was less than the drinking water criterion of 5 ppb under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

In 1998, EGLE received a citizen's inquiry regarding the quality of drinking water in the vicinity of the GTOS site. The local health department sampled residential wells but no contaminants from GTOS were found. In 1998, EGLE obtained funds from the EPA to perform the Five-Year Review (FYR) at the site to determine the effectiveness of the selected remedy. EGLE determined that additional information was needed for the review. Therefore, EGLE received funding of $250,000 from the State of Michigan to conduct an RI at the GTOS site in conjunction with the FYR. From October to December 2001, phase I of the RI was undertaken which focused on the collection of groundwater samples from the existing monitoring wells and vertical aquifer sampling from 21 locations around the former GTOS facility and the former Norris Elementary School. The groundwater samples were analyzed for volatile organic compounds (VOCs) and heavy metals. The results indicated that the initial response to the former lagoons had remediated the contaminant plume located behind the building during the EPA-funded RI in the late 1980s. However, a second groundwater plume of VOCs, at concentrations that exceeded NREPA groundwater criteria, was detected originating from contaminated soils located under the facility building and migrating east/southeast toward the west arm of Grand Traverse Bay. Based upon this discovery, EGLE obtained an extension from the EPA to complete the FYR.

In August 2002, a state-funded Phase II investigation was conducted at the site. Phase II involved additional vertical aquifer sampling to delineate the plume width and collection of soil gas samples along the shoreline. The final portion of Phase II was completed in January 2003. This involved the following: 1) the installation of three permanent monitoring wells; 2) the collection of residential well samples from properties adjoining and downgradient of the site; and 3) collection of soil gas samples from the Harbor West Condominium complex located at the edge of the bay. All this information was included in a Phase II Technical Memorandum document.

In June 2004, the FYR report was completed by EGLE and submitted to the EPA. The FYR report stated the current No Action remedy was not protective of human health and the environment. EGLE recommended an additional investigation to delineate the extent of the plume, remediation of the groundwater plume, and development of a mixing zone determination (if the investigation documented contaminants of concern discharging into the bay above groundwater/surface water interface [GSI] criteria of the NREPA). The EPA declined to accept the final report as written by EGLE. However, after reviewing the 2001 and 2002 investigations findings, the EPA decided to conduct additional investigation to more fully characterize the nature and extent of additional contamination in soil, soil vapor, and groundwater.

In March 2005, the EPA's initial response was to conduct indoor air sampling at the GTOS facility. A second and third air sampling investigation were conducted at the adjacent former Norris Elementary School in early April and late August 2005. Based upon the preliminary analytical results, levels of TCE and PCE in soil beneath the former GTOS

building and the school exceeded indoor air screening criteria and represented a potential indoor air threat. Air monitoring levels within Norris Elementary School, however, did not exceed current protective health screening criteria. To prevent further contamination migration from the contaminated soils under the GTOS building to the school, the EPA removal program installed an SVE treatment system in November 2005. The EPA's removal program operated and maintained the SVE system for one year. In April 2007, EGLE took over the operation and maintenance (O & M) of the SVE system until August 1, 2008, when EPA again took over operation of the system. The EPA's removal program also conducted a time-critical removal action (TCRA) at the site during the period 2007 through 2008. The removal activities included razing the on-site building and excavation and removing for off-site disposal approximately 2,075 tons of contaminated soils containing the highest level of VOCs that constituted the principle treat waste.

During the summer of 2005, the EPA conducted vertical aquifer sampling to complete the delineation of the groundwater plume from the GTOS building to the west arm of Grand Traverse Bay. Based upon the initial findings of the vertical aquifer sampling investigation, monitoring wells were installed to complete the groundwater monitoring network and GSI sentinel monitoring network. In December 2005, monitoring well installation was completed and the EPA conducted a round of groundwater sampling. EGLE undertook groundwater sampling in October 2006, May 2007, November 2007, and May 2008. In October 2006, the EPA conducted an additional indoor air investigation in the West Bay Covenant Church, located south of the GTOS site. In 2007, EPA conducted a limited indoor air investigation in several condominium buildings in the Harbor West Condominium property located east and downgradient of the GTOS site along the shore of the bay. Also, a second indoor air sampling event at the church was conducted as well.

In June 2007, the EPA decided to undertake additional remedial actions (RAs) at the GTOS site. The EPA developed both human and ecological risk assessment reports which were completed in September 2007. This was followed by the development of both a feasibility study (FS) and a proposed plan in November 2007. Both were presented to the public in a public meeting held at the end of November.

In March 2008, EPA, with the concurrence of EGLE, issued a ROD addressing the entire site. The remedy selected in the 2008 ROD was a final RA and included the following major components: 1) Limited action with excavation of any soil contamination remaining on-site that exceeds the RA objectives; 2) Institutional Controls (ICs) restricting groundwater use and land use at the site and in areas where site-related contaminants have migrated, until drinking water standards and soil cleanup levels are achieved; 3) Groundwater extraction, treatment, and discharge with a contingency for groundwater in-situ treatment if necessary; and 4) Continued operation of the SVE system that is currently operating at the Norris Elementary School pursuant to an action memorandum dated August 10, 2005. The EPA also developed and implemented a non-intrusive vapor monitoring program to assure there are no other vapor issues associated with the soil and groundwater contamination for this site.

In June 2009, the initial round of groundwater sampling of the contamination plume and air sampling for buildings located over the plume was conducted by the EPA. Additional source area soil sampling was also conducted in June 2009 to assist the Petition to Delist Hazardous Waste (Petition) review process. The EPA submitted a Petition to EGLE to determine if the remaining on-site source contamination soils are not considered hazardous waste and can be excavated and disposed of in a local landfill. EGLE review of the information provided in the Petition was completed and approval of the Petition was granted in June 2010. With EGLE's approval of the Petition, the EPA developed a ROD Amendment to address the remaining on-site contaminated source area soils. The ROD Amendment was signed in April 2011 along with an amended Superfund State Contract (SSC). The excavation of the remaining contaminated soils was completed in November 2011.

In June 2012, the EPA developed the final design for the groundwater pump and treat (P & T) system, which included a source area in-situ bioremedy, not in the initial groundwater P & T design. This revised design was reviewed and approved by EGLE to satisfy the requirement of the 2008 ROD. Construction of the groundwater P & T system began in November 2012 and the one-year operation shakedown phase began in June 2013. In February 2014, the Remedial Action Completion Report Groundwater System document was completed by the EPA. Both the EPA and EGLE agreed the P & T system achieved operational and functional status as documented in the Operational and Functional Determination letter dated September 29, 2014. The ten-year Long-Term Remedial Action (LTRA) for the P & T system began on October 1, 2014.

Based upon review of the collected air vapor data (which for several years did not detect any contaminant concentrations), the EPA discontinued air vapor sampling at the West Bay Covenant Church, located south of the GTOS site in December 2014.

Between April and July 2015, the EPA conducted an RA at the GTOS site to treat groundwater and soil at the source. In-situ treatment included enhanced reductive dechlorination by injecting zero-valent iron and organic carbon substrates

with bioaugmentation. An additional ten RA monitoring wells were installed at the site to monitor groundwater treatment performance. In the June 2015 quarter, these RA monitoring wells were gauged for static water levels and were sampled for analysis of VOCs. These RA monitoring wells have also been sampled for additional parameters specific to evaluating the performance of in-situ groundwater treatment. The in-situ bioremedy injections to treat the remnant contamination source area soils began in the spring of 2015 with the installation of six nested monitoring well locations within the source area. The primary purpose of these monitoring wells is to monitor the effectiveness of the in-situ remedy. The actual bioremedy injections were performed in April and May 2015. The 2015-16 quarterly collected groundwater data confirmed a significant reduction in VOC concentration near the source area. However, the concentration of contaminants of concerns remained above the drinking water criteria.

Quarterly air vapor sampling continued in 2015 for the former Norris Elementary School and the Harbor West Condominiums as these properties overlie the groundwater contamination plume. In August 2014, the EPA-Environmental Response Team (ERT) initiated the vapor intrusion (VI) study at the condominium located downgradient of the GTOS property. The VI study was begun to characterize the presence of VOC contamination at the condominiums and assist in determining if there is an indoor air impact at the residences. Between 2014-2017, the EPA collected soil-gas, crawl space, indoor air, and ambient air data. Technical memorandums prepared by the EPA ERT were submitted to EGLE and the Michigan Department of Health and Human Services. The EPA's remedial branch also collected quarterly soil-gas data at the GTOS property, former school property, and the condominiums since 2008. Based on EGLE site-specific VI Criteria, concentrations of VOCs detected in indoor air samples and sub-slab samples at the residential property, indicate that the VI pathway is fully evaluated and does not pose an immediate risk to human health.

In early 2016, an orange discoloration was noticed on the rocks in the creek at the P & T system outfall. Although the P & T system effluent discharge is clear, an orange discoloration is still present at the outfall. This orange discoloration appears to be the same iron bacteria growth that has been observed in the P & T system. A chlorine treatment was applied, which was somewhat effective at reducing the iron bacteria growth within the treatment system and reducing the discoloration at the outfall area. It was determined that iron bacterial growth doesn't have any known detrimental impact on human health and the environment. In 2017, discoloration already became less noticeable than the previous year. However, both agencies decided to continue to monitor the orange discoloration until it completely disappears and is no longer noticeable.

Under the 2008 ROD Remedy, the EPA finalized the first FYR with assistance from EGLE on May 17, 2017. A number of issues related to land use and groundwater use restrictions, vinyl chloride migration to Grand Traverse Bay, and P & T and SVE system effectiveness were acknowledged. The EPA and EGLE are continuing to work on these issues to resolve them in a timely manner.

The EPA continued the quarterly groundwater sampling and operation of the SVE system at the site through 2017 in accordance with the 2008 ROD. 2016 and 2017 quarterly groundwater data shows concentrations of contaminants of concerns at the GTOS property have decreased substantially following source area removal and remedial activities. 2017 groundwater analytical data indicated that plumes downgradient (condominium area) of the GTOS property continue to decrease gradually as a result of natural attenuation processes. In addition, to better understand the GSI pathway and to address possible emerging contaminants, the EPA collected pore water samples along the shore of Grand Traverse Bay and groundwater samples for 1,4-Dioxane analysis. Low levels of contaminants of concerns were detected from five out of eight pore water samples collected for VOC analysis during the December 2016 sampling event. 1,4-Dioxane was not detected above the Method Detection Limit of 2.8 ppb in the shallow and deep monitoring wells (ET-MW-5, MW-108, MW-111, MW-101, MW-109, and MW-110) sampled during the March 2017 sampling event.

Based on soil-gas, crawl space, and indoor air data, the indoor air monitoring program at the condominium area conducted by EPA was ended in early 2017. However, EPA committed to continue to monitor soil-gas probes and groundwater on a quarterly basis to evaluate the VI risk. During one of the early 2017 quarterly sampling events, an elevated level of methane was detected near the condominiums. Therefore, investigation to determine the source and extent of the methane gas was conducted by the EPA in July 2017. Early investigation indicated that some residential structures are located near buried, decomposing sawdust that is generating the high level of methane. The EPA completed investigation activities in August 2017 to delineate the extent of a buried sawdust layer beneath the area where high levels of methane gas are accumulating around the condominium complex. The sawdust layer is likely related to historical sawmill operations which occurred at the condominium complex property dating back to the early 1900s. To address this issue, EPA installed a passive ventilation system as a part of the long-term solution. The construction started in early November 2017 and was completed in December 2017. A final report (area wide investigation summary report – revision 4) was submitted to EGLE on June 25, 2018, documenting all investigative activities and findings.

On May 24, 2018, EGLE reviewed past quarterly collected soil vapor and groundwater data and provided a recommendation letter to the EPA. The letter recommended the following: 1) turn off the P & T system and continue to monitor the impacts of this action on the contaminant migration and concentrations in the plume through at least the next eight quarterly sampling events; 2) collect pore water samples on a regular basis upgradient of Cedar Creek, and especially at the shore of Grand Traverse Bay where past surface water sampling has detected site-related contaminants and computer simulations suggest discharge of the plume as well (monitoring well installations would be appropriate upgradient of the Cedar Creek, but not along the shoreline); 3) discontinue all surface water sampling and switch to pore water sampling; 4) collect soil vapor samples from the dormant SVE system at its various sampling points or ports to evaluate contaminant rebound; 5) collect soil gas samples from existing and new soil gas wells/points on a regular basis; 6) monitor methane gas from monitoring points located near the former Norris School; 7) collect sub-slab and indoor air (if necessary) samples on a regular basis; and 8) follow the recommendations provided by the EGLE project manager regarding the SVE System Evaluation and Recommendations correspondence of February 28, 2018. Based on these recommendations, the EPA turned off the P & T system in October 2017 and the SVE system in June 2018 and began collecting data for further evaluations. In addition, the EPA installed new soil-gas probes, added more sub-slab points in quarterly soil-gas monitoring events, and collected pore water samples along the Grand Traverse Bay near the condominium area.

The EPA's contractor completed all quarterly groundwater monitoring events and soil vapor monitoring events in 2018 and quarterly reports for both groundwater and soil-gas events were submitted to EGLE. No significant issues were reported during this reporting period

Enforcement

Operable Units for Grand Traverse Overall Supply Co.

OU1 Offsite Groundwater Plume

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 3/3/2008

Location Name: Grand Traverse Overall Supply Co. - OU Entire Site

Comments:
In 2008, the EPA finalized a second ROD for the GTOS site. The remedy includes the following: demolition of the GTOS building; excavation of the source soil contamination which underlie the building; continued O & M of the SVE system installed in 2005; air monitoring of building overlying the groundwater contamination plume; and quarterly groundwater monitoring of the in-place monitoring network to track the groundwater contamination plume and monitor GSI at the bay shoreline, and installation of a groundwater P & T system.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 4/8/2011

Location Name: Grand Traverse Overall Supply Co. - OU Entire Site

Comments:
The EPA developed this ROD Amendment to address the remaining on-site source-area contaminated soil. The remaining contaminated soil was excavated from October through November 2011. The major components of the remedy selected in the 2008 ROD that remain unchanged by this ROD Amendment are: institutional controls restricting groundwater use and land use, groundwater P & T System and SVE system.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 2/3/1992

Location Name: OU1 Offsite Groundwater Plume

Comments:
The selected remedy for the ROD was no action. The state did not concur with the remedy. This has now been replaced by the new ROD for the entire site executed in 2008.

Response Activities - In Progress

Activity: Long Term Remedial Action | **Start Date:** 10/1/2014 | **End Date:** 10/1/2024

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,512,000.00	Federal	$168,000.00	State

Comments:
LTRA of the SVE system and P & T groundwater system began on October 1, 2014. The initial overall cost listed above is based on the 2013 second amendment to the SSC. The state will pay 10 percent of this cost; 90 percent of the cost will be paid by the EPA for the ten-year LTRA operation period.

Response Activities - Completed

Activity: Emergency | **Start Date:** 10/2/2017 | **End Date:** 12/19/2017

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$607,000.00	Federal	$0.00	

Comments:
The EPA Emergency Response Branch is installing a passive ventilation system with the capacity to make it active if necessary. Pilot study testing to evaluate viable alternatives for mitigating the accumulation of dangerous levels of methane gas has also been completed by EPA's contractor and full-scale design of methane engineering controls was completed in December 2017.

Activity: Remedial Investigation | **Start Date:** 6/5/2017 | **End Date:** 8/31/2017

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	Federal	$0.00	

Comments:
EPA's contractor conducted methane monitoring at existing soil vapor monitoring points, condominium unit interiors, and condominium crawlspaces located near the soil vapor monitoring points.EPA's contractor completed a soil gas investigation of the condominium grounds in July and August 2017. EPA's contractor also completed investigation activities in August 2017 to delineate the extent of a buried sawdust layer beneath the area where high levels of methane gas are accumulating around the condominium complex.

Activity: 5 Year Review | **Start Date:** 5/17/2016 | **End Date:** 5/11/2017

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:

Under the 2008 ROD Remedy, the First FYR was finalized May 11, 2017. The FYR was prepared by the EPA with assistance from EGLE. Recommendations from this report has initiated additional actions at the site.

Activity: Remedial Action | **Start Date:** 4/22/2015 | **End Date:** 7/23/2015

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,791,900.00	Federal	$199,100.00	State

Comments:
The EPA added an in-situ bioremedy component into the design of the groundwater treatment system to address the remaining soil contamination in the source area soils. The In-Situ bioremedy injections to treat the remnant contamination source area soils began in spring of 2015 with the installation of six nested monitoring well locations within the source area to monitor the effectiveness of the in-situ remedy. The actual bioremedy injections were performed in April and May 2015. State match for this work is provided through amendment #2 to the SSC for this site.

Activity: Monitoring | **Start Date:** 8/1/2014 | **End Date:** 4/18/2017

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
In August 2014, in support of the ongoing VI study near GTOS property, the EPA/Environmental Response Team issued Work Assignment to assist the EPA Remedial Response Team during the performance of the VI study at the Harbor West Condominiums downgradient to the GTOS Site. From August 2014 to March 2017 field activities (total 6 activities) included sample collection from previously installed soil vapor probes, crawl spaces and first floor of units (indoor air), and ambient locations. In addition to this effort, the EPA/Remedial Response Team is also collecting vapor samples quarterly from only soil vapor probes located near buildings 3 and 4.

Activity: Interim Response | **Start Date:** 10/1/2011 | **End Date:** 12/1/2011

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Excavation and removal for the remaining on-site source area contaminated soils was conducted from October through November 2011.

Activity: Remedial Action | **Start Date:** 8/1/2008 | **End Date:** 9/30/2014

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,056,051.00	Federal	$339,561.00	State

Comments:
As part of the ROD remedy, the EPA resumed O & M of the SVE system in August 2008. Completed ROD requirements in 2013 included the installation and startup of the groundwater P & T system to remediate the groundwater contamination plume and excavation of the remaining on-site source area contaminated soil. In 2009, the EPA began the quarterly groundwater sampling and air vapor monitoring and sampling for those buildings overlying the groundwater contamination plume. The remaining on-site source area contaminated soil was excavated

in 2011. Since October 1, 2014, the required state match for this RA is provided through a SSC between the state and the EPA.

Activity: Interim Response | **Start Date:** 9/1/2007 | **End Date:** 7/15/2008

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
No Financial Source

Secondary Cost:
$0.00

Secondary Source:

Comments:
The building was demolished and removed in late 2007. The EPA Emergency Removal Branch conducted a partial excavation of the source area contaminated soils from the former building site in 2008.

Activity: Operation and Maintenance | **Start Date:** 4/1/2007 | **End Date:** 8/1/2008

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:
$200,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
EGLE took over the O & M of the treatment system after the EPA completed installation. EGLE operated the SVE system until August 1, 2008, when the EPA resumed O & M under the new ROD remedy for the site.

Activity: Remedial Investigation | **Start Date:** 10/1/2006 | **End Date:** 9/30/2008

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:
$100,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
After one year of groundwater monitoring and sampling by the EPA, EGLE took over this task conducting groundwater sampling every six months (October 2006, May 2007, November 2007, and May 2008) until funding for this task was spent. Future quarterly groundwater sampling will be conducted by the EPA under the March 2008 ROD.

Activity: Emergency | **Start Date:** 10/10/2005 | **End Date:** 4/1/2007

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Completed

Primary Cost:
$2,697,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA funded installation of an SVE system to prevent further contamination migration from contaminated soils under the facility to Norris Elementary School. The EPA operated the system until April 1, 2007, when the state took over operation.

Activity: Remedial Investigation | **Start Date:** 1/2/2005 | **End Date:** 12/30/2006

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Further investigations to delineate the vertical and horizontal extent of the plume boundary; establish optimal locations for and installation of GSI compliance wells; and develop and implement a work plan for performing a site-wide groundwater monitoring investigation. Installation of treatment system to address the groundwater plume.

Activity: 5 Year Review | **Start Date:** 5/1/2003 | **End Date:** 6/18/2004

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$30,000.00	Federal	$0.00	

Comments:
The state prepared a FYR that concluded that the site remedy was not protective of human health and the environment. The EPA disagreed and did not accept the report.

Activity: Remedial Investigation | **Start Date:** 1/1/2001 | **End Date:** 1/31/2003

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$250,000.00	State	$0.00	

Comments:
Sampled all existing monitor wells, vertical aquifer sampling, installation of three additional monitoring wells, soil gas survey, and residential well sampling.

Activity: Remedial Investigation | **Start Date:** 4/9/1987 | **End Date:** 2/3/1992

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,340,000.00	Federal	$0.00	

Comments:
The EPA conducted an RI/FS.

Activity: Alternate Water | **Start Date:** 1/1/1979 | **End Date:** 12/1/1979

Operable Unit:
Grand Traverse Overall Supply Co. - OU1 Offsite Groundwater Plume

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Former owner/operator of GTOS paid for replacement of several private wells affected by the groundwater contamination. The replacement activity was included in a lawsuit filed against the Potentially Responsible Party (PRP) . No state funding was involved.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 5/17/2021 | **End Date:** 5/11/2022

Operable Unit:
Grand Traverse Overall Supply Co. - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Under the 2008 ROD Remedy, the Second FYR process should begin in May 2021. The FYR will be developed by the EPA with assistance from EGLE.

State Superfund Contracts

Activity: Remedial Action	**Effective Date:** 7/1/2008	**Most Recent Mod:** 3/15/2012
Location Name: Grand Traverse Overall Supply Co. - OU Entire Site		**Status:** Open - Active
Total Contract: $132,227.00	**State Total:** $706,662.00	**State Share Balance:** $653,006.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $22,799.00	**Contracted in FY2019:** $0.00
Summary: 453111		

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $12,295.98	**Exp for Year:** $8,256.65
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $8,834.04	**Exp for Year:** $97.95
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $1,521.02	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $6,152.34	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $4,734.54	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $7,441.92	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $8,580.22	**Exp for Year:** $0.00

Grand Traverse Overall Supply Co.

Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $15,838.93	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $59,925.07	**Exp for Year:** $0.00
Grant #: V985560-01	**Activity:** 5 Year Review	**End Date:** 12/31/2003	**Status:** Closed
Budget Amount: $30,000.00	**State Total Award:** $0.00	**Exp to Date:** $29,992.54	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $4,994.76	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $20,000.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Rasmussen's Dump Site

State Site ID:
47000025

Federal Site ID:
B4

Full Address:
9040 Spicer Road, Brighton, MI, 48116

County:
Livingston

Location

The Rasmussen's Dump site encompasses approximately 33 acres situated south of an unpaved secondary road (Spicer Road) about 40 miles west of Detroit and 5 miles south of Brighton, in Green Oak Township, Livingston County, Michigan. Woods, open fields, and rural residences surround the property. The Rasmussen's Dump site is located immediately east of the adjacent Spiegelberg Landfill Superfund site.

Status

The Rasmussen Dump is a 33-acre site that accepted domestic and drummed industrial waste during the 1960's and 1970's. The site was never properly capped and closed prior to termination of landfill operations in 1977. The landfill has now been capped.

Their are multiple groundwater contaminant plumes at this site. Ozone sparging systems are operating within each plume; however, the full extent of what is called the southern plume has not been defined; and, it extends onto an adjacent property to the west. Ongoing migration beyond the site and influence of the sparge system is not consistent with the Record of Decision (ROD), which requires preventing off-site migration of contamination during remedial action (RA).

There is no apparent plan in place to conduct additional investigation or to supplement the biosparge system; however, EGLE (formerly known as MDEQ) has requested that along with the needed additional investigation, that per- and polyfluoroalkyl substances (PFAS) sampling also be conducted. Residential well sampling in the immediate vicinity of the site is conducted annually, and EGLE is in the process of trying to cost recover funding for those efforts and analytical expenses.

It is unclear if the EPA will require the extent of the southern plume to be defined, as recommended in previous reviews of this site, or if Institutional Controls (ICs) will be required on the adjacent property where the southern plume has migrated.

History

The Rasmussen's Dump accepted domestic and industrial wastes during the 1960s and early 1970s, which were stockpiled and formed a ridge-like crest across the southern portion of the site and property. There were also areas of drummed waste and other industrial waste disposal areas on-site. Numerous incidents of burning were reported during the dump's operation. Several attempts were made by the county and state to bring the Rasmussen's Dump into compliance with state laws, but the dump was never properly capped and closed prior to termination of landfill operations in 1977. Sand and gravel mining, which began after closure in 1977, undermined the landfill and resulted in the redistribution of fill and drummed waste.

Groundwater contamination (i.e., chlorobenzene, 1,2-dichloroethylene, 1,1,1-trichloroethane, toluene, ethylbenzene, trichloroethylene, benzene, vinyl chloride [VC], and methylene chloride) was detected in 1981 by EGLE. The EPA's Field Investigation Team conducted a site inspection in 1982 and the site was placed on the Federal National Priorities List of hazardous waste sites in 1983. The EPA and EGLE commenced a remedial investigation (RI) and feasibility study (FS) at the site in 1984. The EPA Emergency Response Team removed approximately 3,000 drums and 250 yards of contaminated soil from the top and south face of the dump. The RI and subsequent investigations identified contaminated soil, buried drums, and surface and groundwater contamination areas.

In early 1987, several thousand yards of contaminated soil were sold by the property owner. The state obtained an injunction prohibiting further mining activities or interference by the property owners. The potentially responsible parties (PRPs) were required to return the soils to the site to be addressed in the final remedy.

An administrative order for removal of buried drums was signed by the EPA and the PRPs. Fieldwork for the removal action was conducted primarily during December 1989 and January 1990. In July and August 1990, 651 drums of polychlorinated biphenyls (PCB)-containing waste were excavated and disposed of off-site.

A FS was issued in January 1990. A ROD for the site was issued in March 1991. The final remedy required installation of a cap on the site, groundwater extraction and treatment, long-term control and maintenance of the site, and residential well monitoring until the remedy was shown to be operational and effective. The remedial design (RD) phase was conducted from 1992 to 1994 and construction of the landfill cap began in April 1994 and was completed in September 1995. The construction of the groundwater treatment system began in July 1995 and was completed in September. The final inspection for the site was conducted in February 1996. Residential well monitoring by the PRPs was discontinued in 1997. However, EGLE continues the drinking water monitoring by collecting water samples from those residential wells closest to the site.

In an effort to define the capture zone of the extraction wells, additional investigation was conducted in 2000 which revealed the extraction system was not fully capturing the groundwater contamination. Results of the additional vertical aquifer sampling indicated that VC was present at a location and depth not previously identified. A ROD Amendment was signed in 2001 which changed the groundwater extraction/treatment system remedy to an in-situ ozone/oxygen oxidation system.

Two separate contaminated groundwater plumes exist: one is referred to as the southern plume, whereas the other is referred to as the northern plume. Due to migration of the northern plume threatening the residential drinking water well located on the Rasmussen site, a new residential drinking water well was necessary and installed in 2008. The Five-Year Reviews (FYRs), including the most recent Fourth FYR completed in February 2015, recognized the outstanding site issues and included recommendations to address them.

A Declaration of Restrictive Covenant (RC) for the Rasmussen property which describes the land and groundwater use restrictions was completed in 2017.

Until 2019, using state funding, EGLE has annually collected drinking water samples from four residential wells in the vicinity of the Rasmussen's Dump site. This task is no longer performed by EGLE, as it is now the responsibility of the PRP.

Enforcement

None.

Operable Units for Rasmussen's Dump Site

OU1 RIFS Soil and Groundwater

OU2 Groundwater and Landfill Cap

Decision Documents

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 7/20/2001

Location Name: OU2 Groundwater and Landfill Cap

Comments:
The original extraction/treatment system was not effective. In-situ ozone/oxygen oxidation sparging replaces the P & T system from the original ROD. Additional monitor wells and sparge points were added in 2002/2003 to supplement the monitoring and treatment systems.

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 3/28/1991

Location Name: Rasmussen's Dump Site - OU Entire Site

Comments:
Michigan Act 64 clay cap. Deed restrictions. Soil costs: Capital $2,940,247. Annual Operation and Maintenance (O & M) for soil: $53,043. Capital expenditure for groundwater remedy is estimated at $2,740,000. The present worth for annual O & M for groundwater P & T system is $4,580,000.

Response Activities - In Progress

Activity: Remedial Action | **Start Date:** 7/15/2000 | **End Date:** 3/1/2022

Operable Unit:
Rasmussen's Dump Site - OU2 Groundwater and Landfill Cap

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The PRPs initiated installation of the in-situ ozone/oxygen oxidation treatment system in the summer of 2000. Two separate sparging zones were installed; one to address the northern plume and the second to address the southern groundwater contaminant plume. The first phase of the systems was operating in early 2001, then supplemented in 2003 based on analytical results of groundwater samples collected from monitor wells and vertical aquifer sampling at other locations. Migration of the southern contaminant plume continues; however, both sparge systems remain in operation and are expected to be required to operate for the foreseeable future.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 11/28/1996 | **End Date:** 11/28/2026

Operable Unit:
Rasmussen's Dump Site - OU2 Groundwater and Landfill Cap

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The O & M of the groundwater treatment system is being conducted by the PRPs. The ozone sparge lines have cracked repeatedly during the course of O & M, presumably because they were only buried 18 inches below grade, and are subject to freeze-thaw conditions. In the summer of 2012, the sparge lines were lined with Teflon tubing to alleviate this issue. Additional sparge lines were recognized as a potential need to adequately address contamination that is continuing to migrate off-site.

Activity: Operation and Maintenance | **Start Date:** 1/1/1995 | **End Date:** 1/1/2025

Operable Unit:
Rasmussen's Dump Site - OU2 Groundwater and Landfill Cap

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The O & M of the landfill cap is being conducted by the PRPs and maintenance will be needed in perpetuity.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/1/2014 | **End Date:** 2/3/2015

Operable Unit:
Rasmussen's Dump Site - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$0.00	TBD	$0.00

Comments:
The FYR completed in 2015 found the RA is protective in the short-term because no exposure to groundwater contamination is occurring. Long-term protectiveness will not be achieved until groundwater cleanup standards are met, the northern and southern groundwater contaminant plumes are fully characterized and delineated, and RCs are recorded for the Rasmussen's Dump site and a portion of the adjacent Spiegelberg property.

Activity: 5 Year Review | **Start Date:** 10/20/2009 | **End Date:** 3/18/2010

Operable Unit:
Rasmussen's Dump Site - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The RA is protective in the short-term, but long-term protectiveness will not be achieved until groundwater cleanup standards are met, the northern and southern plumes of contamination are fully characterized and delineated, and RCs are implemented for Rasmussen's Dump Site as well as a portion of the Spiegelberg property.

Activity: 5 Year Review | **Start Date:** 10/1/2004 | **End Date:** 8/28/2005

Operable Unit:
Rasmussen's Dump Site - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
A Second FYR report was completed on August 28, 2005. EGLE identified concerns with groundwater monitoring at the site, including concerns about plume migration onto the Spiegelberg Landfill Superfund Site.

Activity: 5 Year Review | **Start Date:** 1/1/2000 | **End Date:** 8/28/2000

Operable Unit:
Rasmussen's Dump Site - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
This FYR recommendations supported changing the remedy from groundwater P & T to in-situ ozone/oxygen oxidation.

Activity: Remedial Investigation | **Start Date:** 10/1/1999 | **End Date:** 1/14/2006

Operable Unit:
Rasmussen's Dump Site - OU2 Groundwater and Landfill Cap

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Results from the quarterly groundwater monitoring indicated that the southern plume on the Rasmussen property may be migrating onto the adjacent Spiegelberg Landfill property and, therefore, four borings were installed and monitor wells were subsequently installed in August 2004 at two of those locations to better delineate the western extent of impacted groundwater.

Activity: Remedial Action | **Start Date:** 3/16/1995 | **End Date:** 11/27/1996

Operable Unit:
Rasmussen's Dump Site - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$56,000.00	Federal

Comments:
The RA was conducted by the PRPs. The construction of the landfill cap began in April 1994 and was completed in September 1995. The final inspection for the site was conducted in February 1996.

Activity: Remedial Design | **Start Date:** 6/30/1992 | **End Date:** 6/30/1994

Operable Unit: Rasmussen's Dump Site - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$72,500.00	Private	$72,500.00	Federal

Comments:
The RD for soil remediation was conducted by the PRPs. The federal RD expenditures for the Operable Unit 1 (OU), RI/FS Soil and Groundwater, were estimated at one-half of the $145,000 expended.

Activity: Remedial Design | **Start Date:** 2/14/1992 | **End Date:** 3/31/1995

Operable Unit: Rasmussen's Dump Site - OU1 RIFS Soil and Groundwater
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$72,500.00	Federal

Comments:
The RD for groundwater P & T was conducted by the PRPs. The P & T phase was conducted following the OU, RI/FS Soil and Groundwater, for the soil. The federal expenditures for the OU2, Groundwater and Landfill Cap, RD were estimated to be one-half of the $145,000 expended by the EPA.

Activity: Interim Response | **Start Date:** 1/15/1985 | **End Date:** 6/15/1986

Operable Unit: Rasmussen's Dump Site - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$506,000.00	Federal	$52,150.00	State

Comments:
In January 1985, the EPA conducted a removal of approximately 3,000 drums of solid and liquid waste and 250 cubic yards of PCB-contaminated soils. A fence was erected by the state in 1986.

Activity: Remedial Investigation | **Start Date:** 5/30/1984 | **End Date:** 3/28/1991

Operable Unit: Rasmussen's Dump Site - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$866,000.00	Federal	$409,962.00	State

Comments:
An RI was initiated by the state in 1984, along with the risk assessment. The RI identified soil, buried drums, and surface and groundwater contamination. The RI was funded by both the EPA and EGLE, which provided $249,482 in advance match.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 3/8/2019 | **End Date:** 3/20/2020

Operable Unit: Rasmussen's Dump Site - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Fifth FYR, to be developed by the EPA, will be due in 2020.

Federal Grants

Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,473.04	**Exp for Year:** $95.22
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $1,122.27	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $15,608.27	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $5,574.23	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $9,736.15	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $1,544.54	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $7,555.10	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $41,738.38	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $121,427.72	**Exp for Year:** $0.00
Grant #: V005777-02-RI	**Activity:**	**End Date:**	**Status:**

Rasmussen's Dump Site

	Remedial Investigation	9/30/1992	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$884,365.00	$249,482.00	$1,100,132.00	$0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Shiawassee River

State Site ID:
47000027

Federal Site ID:
1D

Full Address:
2440 West Highland Road, Howell, MI, 48843

County:
Livingston

Location

The Shiawassee River Superfund site includes the former Cast Forge Company facility on M-59 west of the city of Howell, and extends in and along the South Branch of the Shiawassee River, downstream in a northerly direction approximately eight miles to the area of Steinacker Road. This stretch of river is also managed as part of the Livingston county drain system. The site includes the plant property, adjacent wetlands, contaminated groundwater, PCB contaminated riverbed sediments, as well as associated floodplain and wetland soils and sediments.

Status

The Shiawassee River site consists of PCB-contaminated soils and groundwater at the Hayes Lemmerz International (HLI) property (Later known as the Cast Forge Company (CFC) and currently operated as Lucy Industries) and PCB-impacted soils and sediments along an 8-mile stretch of the South Branch of the Shiawassee River downstream of Howell, Michigan. The ROD called for focused removal of soil and sediment and the use of natural attenuation to reduce overall PCB concentrations.

The Five Year Review (FYR), completed on August 22, 2019, states that the remedy was not functioning as intended by the decision documents and is not protective of the environment, and additional information is needed to determine whether the remedy is protective of human health. The former CFC property is zoned for industrial use, a restrictive covenant (RC) has been implemented, and fish consumption advisories are in place, however, the Site inspection identified apparent noncompliance with the requirements of the RC and the changes to the Site may have resulted in a redistribution of, and potentially new or different exposure routes to, PCB-contaminated wastes that had been left on-site. Additionally, there is not an Operation & Maintenance (O&M) plan in place and monitoring of the effectiveness of the Monitored Natural Recovery (MNR) remedy has not been occurring for more than 5 years. Ecological receptors may still be exposed to unacceptable risks posed by PCB contamination.

A ROD-required Long-Term Monitoring Plan (LTMP) still needs to be developed and implemented as a prerequisite for MNR evaluations. The Michigan Department of Health and Human Services (MDHHS) maintains a fish consumption advisory for the South Branch of the Shiawassee River. The advisory advises anglers not to consume any fish of any size or kind and will be maintained until fish tissue concentrations fall to a level acceptable for human consumption.

Implementation of a LTMP (sampling various media/receptors) is required to aid in identifying whether additional remedial actions (RAs) are warranted in order to meet remediation goals. Based on available data, EGLE staff believe there are likely hot spots and that additional RA may be necessary.

The agencies, the PRP, and all of the supporting groups made extensive cooperative efforts in 2019 to develop a Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) for 2020 implementation. The MDHHS has also been involved due to a recent increase in public interest.

The 2019 FYR also determined that the exposure assumptions at the time of the ROD are no longer valid. Additional information is needed to determine whether sediment PCB concentrations of 0.003-0.2 mg/kg are consistent with meeting Michigan's water quality criteria. Extensive changes in the surface of the Site property have raised concerns regarding the potential movement of restricted and contaminated surface soil and materials off-site. A previously submitted Baseline Environmental Assessment also indicates the presence of volatile organic compounds (VOCs) in soil and groundwater at concentrations that may present an unacceptable risk to human health or the environment.

The potential for per- and polyfluoroalkyl substances (PFAS) contamination to be found in association with the production of automotive components resulted in a recommendation for further PFAS evaluation at the site. EPA has secured a contractor to perform additional investigations of the groundwater, soils, and sediments on and around the facility. Historic groundwater data indicate a potential for vapor intrusion concerns and there is evidence of soil erosion and discharges to wetlands adjacent to the site. A concern that the eroding floodplain soils may represent an unacceptable source of PCBs to the river was also noted in the 2019 FYR.

History

Since 1969, the Cast Forge Company manufactured aluminum cast wheels at the facility. Until 1973, wastewater contaminated by hydraulic fluids containing PCBs was discharged by the Cast Forge Company into the South Branch of the Shiawassee River. From 1973 to 1977, wastewater was discharged into a large on-site lagoon. Discharges from this lagoon, as well as periodic overflows, contaminated nearby wetlands and subsequently, the South Branch of the Shiawassee River.

In 1978 and 1979, the state detected high levels of PCBs in soils and sediments on and near the site. In November 1979, the State filed suit against the Cast Forge Company for PCB contamination of the environment. The case was settled through a Consent Judgment in June 1981. Under that settlement, the company removed the lagoon, cleaned up the bulk of the PCB-contaminated soils and sediments on the facility property, and provided $750,000 to the state for removal of sediments from the river. The state began dredging the South Branch of the Shiawassee River in June 1982. The first mile downstream of the plant was hydraulically dredged, removing approximately 2,600 pounds of PCBs, prior to exhausting the available funds. Due to PCBs remaining on the Cast Forge Company property and in the river, the EPA listed the Shiawassee River site on the National Priorities List in September 1983.

In October 1987, a remedial investigation/feasibility study (RI/FS) was initiated. RI activities included: soil sampling to determine the nature and extent of contamination; surface water and sediment sampling; stream morphology studies to assess contamination patterns and movement; groundwater sampling; testing of fish and wildlife to determine if PCBs are concentrating in their tissues; and preparation of a site risk assessment. The initial RI report on the findings of the above studies was finalized in January 1992. An ecological risk assessment was completed in June 1995. It concluded that the primary health risk associated with this site is from the consumption of fish caught in the contaminated stretch of the river. Advisories issued by state health officials against the consumption of fish from the river remain in effect. These include all fish species in the river stretch from M-59 downstream to Byron Road and carp from M-59 downstream to Owosso, Michigan.

The initial FS was completed in December 1997. A proposed plan to address site contamination was released by the state for public comment in August 1998, and a public meeting was held near the site on September 10, 1998. While the state was in the process of drafting the Record of Decision (ROD) for the selected remedy, the EPA notified the state that additional studies would be needed before the ROD could be issued.

In order to expedite the new RI/FS, the EPA became the lead agency. Additional sampling was completed in 1999 by an EPA contractor. The analytical data were compiled into a draft RI/FS which was submitted to EGLE in May 2000. EGLE submitted comments to the document on June 10, 2000. In October 2000, the EPA proposed the Surface Weighted Average Concentration Method for evaluating the effectiveness of the cleanup. The method was reviewed by EGLE and was found to be adequate in concept but improperly applied. The most serious flaw was that the method, as applied, did not determine the presence of additional hot spots.

The EPA completed the RI/FS in March 2001 and prepared a proposed plan for public review and comment by early summer 2001. The EPA signed the ROD on September 28, 2001. The ROD called for the excavation and disposal of PCB-contaminated soil at the former Cast Forge Company facility, within the river, and within the floodplain.

EGLE submitted a ROD non-concurrence letter to the EPA in 2003. The main issues in disagreement were the target cleanup levels within the river and floodplain, and the portion of the river and floodplain to be remediated. The EPA levels were 5.0 parts per million (ppm) within the river and 10 ppm within the floodplain; whereas EGLE levels are 0.33 ppm and 5.0 ppm, respectively. Also, the entire site encompasses the facility and approximately eight miles downstream; however, the EPA proposed to address only the first mile and one transect point within the next half-mile.

During May 2003, the EPA, via the potentially responsible party's (PRP's) contractor, began identifying the hot spots within the first 1.5 miles north of the facility. The PRPs were issued a Unilateral Order to perform investigation and remediation. The PRPs refused to perform the necessary additional investigation and remediation based on the 1981 Consent Judgment which placed responsibility on the state for any further cleanup beyond the amount specified in the

Consent Judgment. The EPA through their counsel decided that the PRPs must commence and then file suit against the state for incurred costs. The initial results of the sampling indicated that the hot spot areas are more extensive than previously identified, and new hot spots have been found. The sampling event was considered to be invalid due to erratic sample results. Therefore, the EPA requested that the investigation be repeated. The repeat sampling event was conducted during the week of July 7-11, 2003.

During the same time period, EGLE completed sampling from the 1.5-mile point downstream to the Shiatown Dam. A total of 349 samples, including 37 duplicate samples were collected. Of the samples, 104 sediment samples were above the preliminary remediation goal of 0.33 ppm and 26 floodplain samples were detected above the preliminary remediation goal of 5.0 ppm. A total of 52 samples were collected and submitted for a dioxin screen. Eight of the 52 samples found dioxins in excess of method detection limits. Of those, three were above background levels, but below the MDEQ Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Residential and Commercial I Direct Contact Criteria. Additional sampling was completed and the results indicated that the PCBs are more widespread than previously identified.

The EPA and the PRPs agreed upon an amount for the remediation, and the PRPs gave that amount to the EPA to conduct the work. In October 2004, the EPA's contractor began the remediation of the PCBs at the site and 1.5 miles downstream. Excavation and removal of identified hot spots were completed within six floodplain areas before all work was discontinued due to snow/melt and flooding. The remainder of the work, which included the placement of three temporary coffer dams for sediment removal, was completed in August 2005. A total of 795 cubic yards of contaminated soil was excavated from the facility property; 1,590 cubic yards from sediment; and 1,755 cubic yards from the floodplain. The area covered included the first mile downstream and one hot spot at transect #25 within the next half-mile. Post remediation monitoring was, in theory, planned to monitor if natural recovery of the river is occurring; however, a formal plan has not been developed or implemented.

EGLE received $1 million in Clean Michigan Initiative funds to conduct additional sampling and remediation at the site. This included verification sampling at the facility after the EPA-conducted remediation. Results indicate that PCBs remain on-site within the area of the EPA removal. This state funding has been used to further delineate those spots around the facility, and the first mile downstream from the facility. Sampling began in early 2006 and by September, the sampling was completed in the first mile of the river. Samples have also been collected around the facility. A second set of samples was collected based on the previous analytical results, to help determine the extent of the contamination. A report of the findings was submitted for review in February 2007. Additional removal was determined necessary by EGLE.

The EPA concluded the site's First Five-Year Review (FYR) on August 27, 2009. In that report, the EPA concluded that while they consider the remedy currently protective in the short term, additional monitoring must be conducted to ascertain whether natural attenuation of the PCBs is occurring. EGLE has consistently taken the position that natural attenuation is not occurring, even after the additional removal activities that occurred in 2004 and 2005. The results from a 2011 caged catfish sample and analysis event and other sediment and surface water data collected in 2013 strongly indicate that monitored natural attenuation is not occurring.

The Second FYR was completed in August 2014. The conclusions of that report are that the remedy currently protects human health because exposure pathways that could result in an unacceptable risk to humans are being controlled; the remedy, however, is not protective of the environment.

The PRPs submitted an unapprovable technical memorandum in 2014, an unapprovable draft Long Term Monitoring Plan (LTMP) in 2015, and have failed to submit an accurate Conceptual Site Model as well. Collaborative discussions held at that time to ensure these documents were submitted did not result in meaningful progress. In December 2016, the PRP's and the agencies met to discuss plans moving forward. Subsequent to that, Adient, the current Site owner, submitted a draft Biologic Field Sampling Plan (April 2017) and later, a draft 2017 Supplemental Sampling Event Field Sampling Plan (August 2017). A natural recovery report was due in September 2016 that was to evaluate historic data as well as what should have been collected via a LTMP; however, no additional investigation or monitoring has occurred since the 2015 Five Year Review (FYR). EGLE submitted comments to the draft Biologic Field Sampling Plan and the Supplemental Sampling Event Field Sampling Plan.

The Third FYR was completed on August 22, 2019. Findings of that FYR included a determination that the remedy was not functioning as intended by the decision documents because monitoring has not taken place, a LTMP has not been developed, and the PRP has not collected data or submitted MNR reports to assess the status of remediation goals set forth in the ROD.

It was also determined that the exposure assumptions at the time of the ROD are no longer valid. Additional information is needed to determine whether sediment PCB concentrations of 0.003-0.2 mg/kg are consistent with meeting Michigan's water quality criteria. Extensive changes in the surface of the property have raised concerns regarding the potential movement of restricted and contaminated surface soil and materials off-site. A Baseline Environmental Assessment also indicates the presence of volatile organic compounds (VOCs) in soil and groundwater at concentrations that may present an unacceptable risk to human health or the environment.

The FYR also noted the potential for per- and polyfluoroalkyl substances (PFAS) contamination to be found in association with the production of automotive components. This resulted in a recommendation for further evaluation of PFAS at the site. Evidence of soil erosion and discharges to wetlands adjacent to the site, and a concern that the eroding floodplain soils may represent an unacceptable source of PCBs to the river were also noted in the 2019 FYR.

Enforcement

A Consent Judgment, between the State of Michigan and the Cast Forge Company, was signed in 1981. The EPA has sent notifications to the PRPs that have been identified as potentially liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA). The EPA is handling all CERCLA enforcement actions.

The EPA has issued a Unilateral Administrative Order to Cast Forge, Multifasteners, Hoover Ball Bearing, and Johnson Controls for cost recovery.

The PRPs declined to commence the RA because in the Consent Judgment issued in 1981, the state accepted responsibility for cleanup at the site after the initial cleanup at the site occurred. The PRPs have since paid for the state to conduct RA efforts. These efforts cost more than anticipated and efforts were only initiated on part of the first mile or two of the river. The EPA, through counsel, ordered the PRPs to complete the RA, then seek cost recovery from the state.

A petition for enforcement has been submitted against Vern Brockway for repeated wetlands and RC violations.

Decision Documents

Record of Decision | **Amendment:** 0 | **ESD:** 0 | **Effective:** 9/28/2001

Location Name: Shiawassee River - OU Entire Site

Comments:
The ROD calls for the excavation and disposal of PCB-contaminated soil within the floodplain and river sediments of the Shiawassee River. This includes the following: an estimated 795 cubic yards of contaminated soil from the Cast Forge Company facility within floodplains and river sediments; approximately 1,590 cubic yards of sediment within the first mile of the river; and approximately 1,755 cubic yards of soil within the floodplain, including transect #25. This excavation will be performed within the first 1.5 miles downstream of the Cast Forge Company facility. The MDEQ submitted a ROD non-concurrence letter to the EPA in 2003.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 8/22/2018 | **End Date:** 8/22/2019

Operable Unit:
Shiawassee River - OU Entire Site

Status:
Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	TBD	$0.00	

Comments:
The remedy is not functioning as intended. There are no recent data relevant to the Monitored Natural Recovery, nor any recent analysis of the degree to which MNR may be happening. Additional evaluation is necessary to determine whether additional response actions are necessary to protect human health and the environment. A comprehensive long-term monitoring plan needs to be developed and implemented. Additional information is needed to determine whether PCB concentrations of 0.003-0.2 mg/kg are consistent with achieving Michigan's water quality criteria. Changes in the use of the former CFC property and movement of materials around and off site may represent an

unacceptable risk and needs to be evaluated along with evaluation of the VOCs recently discovered to be in site groundwater. Erosion of restricted site property may be releasing PCB-contaminated sediments to the Shiawassee River, its floodplain , and/or associated wetlands. It is also noted that the floodplain remediation of PCBs to 10 mg/kg may represent a remaining source of PCBs to the river sediments with a protective concentration of PCBs of 0.003-0.2 mg/kg. Efforts are needed to address monitoring, O&M, Institutional controls and remedy performance.

Activity: 5 Year Review | **Start Date:** 3/27/2014 | **End Date:** 8/25/2014

Operable Unit:
Shiawassee River - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was completed on August 25, 2014. While the remedy currently is protective of human health because exposure pathways that could result in unacceptable risks to humans are currently being controlled, the remedy is not protective of the environment. Ecological receptors may still be exposed to unacceptable risks posed by PCB contamination. In order for the remedy to be protective, comprehensive monitoring data is needed to show that PCB concentrations in sediments are decreasing as intended by the ROD. A comprehensive LTMP needs to be developed and implemented which includes the requirement for natural recovery evaluations and submittal of natural recovery reports on a five-year basis. Continued compliance with and maintenance of existing institutional controls will need to be ensured, including restrictive covenants, current zoning, and fish advisories.

Activity: 5 Year Review | **Start Date:** 10/30/2008 | **End Date:** 8/27/2009

Operable Unit:
Shiawassee River - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
First FYR conducted wherein the EPA determined site was protective in the short term. The EPA required that monitoring needs to be evaluated as well as whether fish consumption advisories were working to make a long-term protectiveness determination.

Activity: Remedial Investigation | **Start Date:** 7/1/2003 | **End Date:** 1/31/2009

Operable Unit:
Shiawassee River - OU Entire Site

Status:
Completed

Primary Cost:
$906,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
State conducted further delineation of contaminated sediments to identify PCB hotspots around the facility and the first mile downstream. Tech Memo describing investigation finaled January 2009.

Activity: Remedial Action | **Start Date:** 9/1/2002 | **End Date:** 9/25/2005

Operable Unit:
Shiawassee River - OU Entire Site

Status:
Completed

Primary Cost:
$594,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigation and removal of contaminated soils and sediments from selected hotspots for 1.5 miles from plant site downstream. The PRPs provided funding to the EPA to conduct the removal.

Activity: Remedial Investigation | **Start Date:** 1/1/1999 | **End Date:** 9/28/2001

Operable Unit:

Status:

Shiawassee River - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,240.00	Federal	$0.00	

Comments:
EPA lead supplemental RI.

Activity: Remedial Investigation | **Start Date:** 1/1/1987 | **End Date:** 12/30/1997

Operable Unit: Shiawassee River - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,294,760.00	Federal	$0.00	

Comments:
State lead.

Activity: Interim Response | **Start Date:** 1/1/1982 | **End Date:** 12/30/1982

Operable Unit: Shiawassee River - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$750,000.00	Private	$0.00	

Comments:
Removal of lagoons, soils, and some contaminated sediments.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 8/22/2023 | **End Date:** 8/22/2024

Operable Unit: Shiawassee River - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	No Financial Source		

Comments:
A Five Year Review is required.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V04E00776	Management Assistance	3/31/2021	Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $18,376.66	**Exp for Year:** $4,263.28
V03E00776	Management Assistance	3/31/2019	Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,058.16	**Exp for Year:** $416.28
V03E00776	Management Assistance	3/31/2018	Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $10,070.54	**Exp for Year:** $0.00
V02E00776			

	Management Assistance	3/31/2017	Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $14,582.10	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $1,301.60	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $32,795.57	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $2,840.16	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $41,861.37	**Exp for Year:** $0.00
Grant #: V005933-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/1999	**Status:** Closed
Fed Total Award: $1,294,760.00	**State Total Award:** $0.00	**Exp to Date:** $1,294,759.56	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: G & H Landfill

State Site ID:
50000009

Federal Site ID:
70

Full Address:
3160 23 Mile Rd. and Ryan Rd., Utica, MI, 48087

County:
Macomb

Location

The G&H Industrial Landfill (G&H Landfill) site is located southwest of the intersection of Ryan Road and 23 Mile Road In Shelby Township, Macomb County, Michigan. The G&H Landfill site is approximately 3 miles northwest of Utica and approximately 20 miles north of Detroit. The 70-acre G&H Landfill is situated to the north and east of the nearby Clinton River. The river provides a habitat for several important fish species and other aquatic life. The surrounding area is generally suburban; residential neighborhoods are located to the north and to the east within several hundred feet of the landfill. A subdivision of about 80 homes is located in the eastern area, and a newer subdivision of about 25 homes is located in the northern area. Several light industrial facilities are located to the southeast directly adjacent to the landfill.

Status

The G&H Industrial Landfill site is a closed landfill located in Shelby Township, Macomb County, Michigan. It consists of a 60-acre landfill and about 10 acres of adjacent property. The landfill operated as a waste oil recovery facility from 1955 to 1967 and as an industrial and municipal landfill from 1955 to 1974. Disposal of waste solvents, waste oil, paint sludge, and municipal refuse has contaminated soil, surface water and groundwater with hazardous chemicals. Following remedial activities, operation and maintenance activities are ongoing.

The 2019 bi-annual groundwater monitoring events were completed including the following, as usual: 1) hydraulic monitoring was conducted at 122 monitoring wells and staff gauges (including the piezometers installed in 2014); 2) GHD Services Inc. personnel conducted the five-year comprehensive groundwater quality monitoring event in June 2019; 3) weekly methane gas probe monitoring; 4) quarterly Groundwater/Leachate Treatment Facility Maintenance monitoring activities and; 5) wetland monitoring. The Operational and Maintenance Semi-Annual Progress Report (January through June 2019) was submitted to EGLE and EPA. EGLE is still working with the PRP group and the EPA to determine the qualified data set for ongoing arsenic analysis. Both agencies are still discussing this issue internally as well.

On November 6, 2018, GHD completed a review of the current monitoring program conducted at the site. The evaluation was completed to propose changes in the current monitoring program for optimizing and ensuring that all data collected at the Site provides relevant and meaningful information regarding the current conditions at the Site. The monitoring program evaluation included a review of the Groundwater Monitoring Program, the Surface Water Monitoring Program, and the Landfill Gas Monitoring Program. Both EGLE and the EPA are still reviewing this document along with other past data to provide comments. It was anticipated that this will be resolved during the upcoming Five-Year Review (FYR).

Due to Covid-19, the agencies and the potentially responsible parties (PRPs) have not been able to schedule the FYR site visit the was scheduled for the summer of 2020 to review site conditions and review any outstanding issues.

History

Operations at the G & H Landfill began in the mid-1930s. The site accepted both municipal refuse and liquid and solid industrial wastes. From approximately 1955 to 1967, industrial wastes were disposed of in pits and lagoons and consisted of solvents, paints, oils, and process sludges. Disposal of industrial wastes in the landfill continued until 1967 when the state of Michigan prohibited acceptance of such wastes. The site operated as a refuse landfill from 1967 until it closed in 1974. The site was added to the National Priorities List in 1983.

Emergency actions were taken in 1982, 1983, 1986, and 1987 through 1991 by the EPA to contain, collect, and dispose of polychlorinated biphenyl (PCB) contaminated oil from seeps discharging from the landfill. The EPA also provided treatment for the seep liquids in wetlands south of the landfill prior to their discharge (via drains) to the Clinton River. The EPA fenced the property in 1988.

A remedial investigation was conducted by the EPA from 1983 to 1990 with results showing that the landfilling practices had caused contamination of surface soils, sub-surface soils, surface water, sediments, and groundwater. Approximately 108 different chemicals on the EPA Target Contaminant List were detected in groundwater, surface water, and soil samples at the site. Benzene, toluene, ethylbenzene, and xylene (BTEX) compounds showed the greatest areal extent of contamination with concentrations as high as 10,000 parts per million. Polynuclear aromatic hydrocarbons (PNAs) and PCBs were the other organic compounds most often detected and at the highest concentrations. Groundwater contamination on the property consists of BTEX, PNAs, and chlorinated VOCs. BTEX and chlorinated VOCs were also detected in residential and commercial well water in the vicinity of the site. Surface water and sediment contamination consisted of BTEX and PNA compounds.

A Record of Decision (ROD) was signed in December 1990. The selected remedy required the installation of a hazardous waste landfill cap and fully encompassing slurry wall system, collection and treatment of contaminated groundwater and leachate, connection of residential homes to the municipal water system, replacement of wetlands, and deed restrictions limiting the use of the land and groundwater. In 1992, the EPA issued an Explanation of Significant Differences (ESD) which: 1) reduced the thickness of the frost protection layer; 2) called for a reduction in slurry wall locations and lengths, and 3) revised some of the cleanup standards.

In 1996, the PRP steering group initiated construction activities at the site including the installation of a hazardous waste cap over the landfill area, construction of a groundwater treatment system, and restoration of wetlands. The remedy was completed by the fall of 1999. In 1999, the site tax-reverted to the state. The ongoing operation and maintenance (O & M) phase began in the fall of 1999.

The First Five-Year Review (FYR) was signed by the EPA on September 5, 2001. The report concluded that the remedy is currently protective of human health and the environment. The report identified several problems with the remedy, such as leachate discharge into an area of site mitigated wetlands, landfill cap drainage during high rain events resulting in orange-stained pooled water, groundwater capture along the west side of the water main may not be successful, and some invasive species have been identified in the mitigated wetlands.

The Second FYR was signed by the EPA on September 27, 2006. The report concluded that the remedy is currently protective of human health and the environment in the short-term, but long-term protectiveness of the remedy is dependent upon the continued effectiveness of the groundwater extraction and treatment system in maintaining an inward hydraulic gradient and removing contaminants from the site. Long-term protectiveness is also dependent upon the implementation of the institutional controls (ICs) listed in the Consent Decree and will be subject to an IC study and IC Plan to ensure they are adequately implemented, maintained, and monitored.

The Third FYR was signed by EPA on September 13, 2011. The protectiveness of the remedy at the site could not be determined until further evaluation of the groundwater/leachate extraction system was completed. Recommendations for follow-up action included: development of contingency plans to achieve physical and hydraulic containment at the south wall of Phase II of the landfill, at the southwest corner of Phase II of the landfill, along the Detroit Water and Sewerage Department water main, and at the toe of Phase III of the landfill; development and execution of a sampling and analysis plan for the orange-colored liquids discharging from the Phase III area of the landfill; evaluation of the monitoring network and the site-specific list of compounds currently being monitored to determine the adequacy of the monitoring program; and, development and execution of an IC study to determine whether ICs are in place and effective.

In response to the recommendation for follow-up action from the 2011 FYR, the PRPs have completed testing of the aquifer characteristics to improve groundwater and leachate extraction, for demonstrating hydraulic control, and achievement of remediation system performance requirements. The PRPs installed piezometers along the Phase III toe drain to evaluate the performance of the drain and verify that leachate is not migrating away from the Phase III landfill and to the Clinton River and the former Rochester Utica State Recreation Area.

The PRPs were required by the EPA to prepare corrective action work plans to address the failed physical and hydraulic containment of the remedy as well as the suspected inability to attain groundwater cleanup standards in the required 30-year time period. The EPA issued the enforcement letter in November 2013 and corrective action work

plans were submitted in December 2013. Final work plans were approved by the EPA and EGLE in January 2015. Corrective actions planned for the site include installation of an additional 1,500 linear feet of slurry wall to isolate the drinking water force main that runs through the site, installation of supplemental leachate collection at the existing slurry wall, improved maintenance of the collection system, and evaluation and optimization of the groundwater and leachate monitoring program.

During the time period between 2013 and the approval of the final corrective action plans (January 2015), the PRPs collected additional site data to facilitate the design of the corrective actions.

The design for the supplemental collection system for the existing barrier wall was approved in July 2016 and construction began in August 2016. As of January 2017, the supplemental collection system has been constructed and is in the startup period for operation. A 95% design of the additional 1,500 linear feet of slurry wall to isolate one side of the drinking water force main was submitted in April 2015. The agencies found the submittal deficient and did not approve the design. Supplemental investigation to identify the appropriate confining layer depth was completed in January 2016. In May 2016, an initial meeting with the Great Lakes Water Authority (owner of the water main) occurred and additional concerns were raised regarding the construction of a slurry wall in close proximity to the water main. The PRPs completed a structural, vibration, and dewatering analysis for construction near the water main.

The Fourth FYR report was signed by EPA on April 22, 2016. The review concluded that the site is currently protective of human health and the environment because all potentially affected properties surrounding the site have been connected to the municipal water supply, and the Regulations Governing Water Supplies in Macomb County (Article V, Section 5.1) prohibit construction of new water supplies (i.e., private wells) without first receiving a permit issued by the County Health Department. In order for the remedy to be protective in the long term, however, the following actions were recommended: complete implementation of the corrective action plans addressing improvements to the groundwater collection system performance and monitoring program, finalize and record appropriate restrictive covenants, develop a long-term stewardship plan or an amendment to the O & M plan that will outline procedures for inspecting and monitoring compliance with the ICs, and complete the methane gas investigation and propose corrective measures to reduce elevated methane concentrations at perimeter gas probes.

An investigation conducted in July and August 2016 confirmed the presence of methane along the northern property boundary of the Site at 23 Mile Road, toward the residential development and from the toe of the Phase I landfill that exceeded EGLE action levels. Therefore, the PRP Group prepared a voluntary corrective action plan to address the presence of landfill gas at the Site boundary to provide continued protection of the residents north of 23 Mile Road. The design consists of a passive ventilation trench or a passive ventilation barrier to prevent the potential risk of soil gas migrating beyond the Site boundary at concentrations that exceed 1.25 percent per volume for methane. The passive ventilation trench consists of a porous media trench and two perforated pipes situated along the northern toe of the Phase I Landfill, approximately 2,000 feet in length, and would be completed to a depth slightly below the water table elevation to intercept potential landfill gas migration pathways in the vadose zone. The objective of the soil gas passive ventilation trench is to prevent the future migration of methane beyond the Site boundary through the subsurface at concentrations that exceed 1.25 percent per volume. The final version of the passive ventilation trench design was approved for construction in January 2017. Passive ventilation trench construction activities were initiated in June 2017 and construction completion of the passive ventilation trench was achieved in November 2017. During the passive ventilation trench construction, unexpected and unmanaged waste was encountered in the passive ventilation trench alignment. As a result, samples were collected to characterize and to determine the extent of the waste. Sampling activities confirmed Toxic Substances Control Act, Resource Conservation and Recovery Act (RCRA), and municipal waste were present in the passive ventilation trench alignment and extended beyond the property line. The PRPs installed 15 additional soil gas monitoring probes to better evaluate the potential for methane migration through utility corridors from these waste materials. Recently submitted methane monitoring results suggest no methane migration north of 23 Mile Road. Biweekly monitoring continues to evaluate the effectiveness of the passive ventilation trench. Approximately, 11,850 cubic yards of total waste was excavated and stockpiled for appropriated disposal. Additional waste remains beyond the perimeter fence in the right-of-way of 23 Mile Road. Based on the review of historical aerial photographs, it does not appear that waste was placed under or north of 23 Mile Road.

The slurry wall analysis was presented in a January 2017 meeting with the EPA, EGLE, the Army Corps of Engineers, and the Great Lakes Water Authority. The PRPs attempted to demonstrate an unacceptable risk to the water main by construction of the new slurry wall. EGLE and the Army Corps of Engineers did not agree with the conclusions from the PRP's analysis and advocated that protection of the water main from the failed leachate collection system is of higher priority than potential damage to the water main from the proposed remedial action. The slurry wall design has not been resubmitted for review.

In April 2018, the PRP group performed a statistical evaluation of concentrations of arsenic found in groundwater samples collected from background locations upgradient from the G&H Landfill in Macomb County, Michigan. This evaluation aimed to establish a Facility-Specific Background Threshold Value (BTV) for naturally occurring arsenic in groundwater upgradient of the Site. An EPA contract Statistician for their Scientific Engineering Response Engineering Analytical Services conducted the review and prepared a technical memorandum that provided comments on the BTV calculations. EGLE reviewed these reports and concluded that the data used in both statistical analyses were not properly vetted to ensure the quality and appropriateness in determining the Facility-Specific BTV. Therefore, EGLE did not agree with the proposed 0.047 milligrams per liter calculated by GHD or the alternative values calculated by Leidos-SERAS. EGLE recommended adopting the maximum contaminant level (10 micrograms per liter) as the arsenic cleanup standard.

Vapor intrusion (VI)/soil gas investigation activities were conducted in order to characterize volatile organic compound (VOC) VI conditions along the northern extent of the Site along the north and south sides of 23 Mile Road. On April 24, 2018, GHD on behalf of the PRP group sampled 13 permanent Gas Probes for soil gas sample collection, 6 located north of 23 Mile Road, and 7 located south of 23 Mile Road. The G&H Landfill VI assessment report was submitted to EGLE on July 6, 2018. According to this report, soil gas analytical results indicate no screening level exceedances.

Restoration work of the Passive Ventilation Trench was initiated in October 2018. The clay and Geosynthetic Clay Liner (GCL) have been installed and an initial lift of common fill has been placed and compacted. However, due to the wet weather and cooler temperatures at that time, the construction crew had trouble achieving compaction requirements. The decision was made to backfill the trench alignment with the common fill and winterize the site to return in the spring to finish the final grading, topsoil placement, and seeding. This project was completed later in June 2019. Ongoing methane gas monitoring at the perimeter of the Passive Ventilation Trench is still ongoing to measure the performance of the system. Data suggest that a significant reduction in methane migration was achieved after installing the system. The PRPs agreed to continue monitoring the methane gas as part of the regular monitoring program.

Enforcement

The EPA signed a Decree with 48 separate companies that are PRPs. The companies known as the G & H PRP Steering Group are liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The G & H PRP Steering Group also signed a Decree with the state for reimbursement of past costs, future oversight costs, and natural resource damages.

In April 2001, the G & H PRP Steering Group completed a supplemental environmental project that included bollards around the mitigated wetlands and a picnic shelter with picnic tables in the former Rochester Utica State Recreation Area. This project was performed in compensation for not having the state land open to the public when required by the Decree.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 12/21/1990

Location Name: G & H Landfill - OU Entire Site

Comments:
The selected remedy required installation of a hazardous waste landfill cap and a fully encompassing slurry wall, collection and treatment of contaminated groundwater and leachate, connection of residential homes to the municipal water system, replacement of wetlands, and deed restrictions limiting use of the land and groundwater.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 3/13/1992

Location Name: G & H Landfill - OU Entire Site

Comments:
Components of the ROD remedy were changed as described below:
(1) Provision for a reduction in the thickness of the frost protection layer of the landfill cap.
(2) Provision to modify the source containment system, which was a physical barrier in the original ROD, to a hydraulic barrier with the removal of the slurry wall construction around the entire site. Instead, the ESD provided for a slurry wall partially along the east side, along the southern side (which gaps at the Detroit water and sewer line), and then partially along the west side of the landfill.
(3) Revision of cleanup standards for tetrachloroethene, vinyl chloride, and 1,1-dichloroethane.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 9/15/1999 | **End Date:** 9/30/2079

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$8,500,000.00	Private	$850,000.00	Federal

Comments:
O & M is expected to last 80 years or more. The primary and secondary costs are based on a yearly projection which will increase with the cost of inflation. The annual projection for a 15-year period is $720,000 for the PRPs and $50,000 for the EPA. The PRP estimated O & M costs are $500,000 per year.

Response Activities - Completed

Activity: Remedial Action | **Start Date:** 8/8/2016 | **End Date:** 1/20/2017

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,000,000.00	Private	$0.00	

Comments:
Construction of the corrective action supplemental collection system began in August 2016. The system has been constructed and is in the start up phase. Construction of the remaining correction action requirements (slurry wall) has not begun. Anticipated costs for the slurry wall are an additional $1,000,000. Construction of the landfill gas mitigation system began in March 2017 at an approximate cost of $1,000,000.

Activity: 5 Year Review | **Start Date:** 5/28/2015 | **End Date:** 4/22/2016

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Fourth FYR site inspection was completed on September 1, 2015, and attended by the EPA, EGLE, and the PRPs. The document was completed and signed on April 22, 2016.

Activity: Remedial Design | **Start Date:** 1/16/2015 | **End Date:** 4/24/2015

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$300,000.00	Private	$0.00	

Comments:
Remedial design of the supplemental collection system has been completed. Design of the landfill gas mitigation system has been completed. A partial design of the new slurry wall has been completed. Design of a new slurry wall has ceased due to concerns with damaging the 96-inch water main.

Activity: Remedial Investigation | **Start Date:** 1/1/2013 | **End Date:** 8/31/2016

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$200,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs developed a corrective action work plan to correct failed physical and hydraulic containment as well as suspected failure to achieve groundwater cleanup standards within 30 years. Landfill gas migration investigation was also completed in 2016.

Activity: 5 Year Review | **Start Date:** 5/26/2010 | **End Date:** 9/13/2011

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR site inspection was completed on May 26, 2010, and attended by the EPA, PRPs, and EGLE. The document was completed and signed on September 13, 2011.

Activity: 5 Year Review | **Start Date:** 1/15/2006 | **End Date:** 9/27/2006

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted a Second FYR in 2006. The FYR site inspections were completed on February, 14 and April 24, 2006, and attended by the EPA, PRPs, and EGLE. The document was completed and signed on September 27, 2006.

Activity: 5 Year Review | **Start Date:** 7/1/2001 | **End Date:** 9/5/2001

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$25,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA performed the First FYR in 2001. The FYR site inspection was completed on April 27, 2001 and attended by the EPA, PRPs, and EGLE. The document was completed and signed on September 5, 2001.

Activity: Remedial Action | **Start Date:** 8/19/1996 | **End Date:** 6/21/2000

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$29,000,000.00

Primary Source:
Private

Secondary Cost:
$378,000.00

Secondary Source:
Federal

Comments:
A hazardous waste landfill cap and partial slurry wall were installed. A collection and treatment system for the groundwater and leachate and a mitigation wetland were also constructed. Impacted residences were connected to the municipal water system, and deed restrictions were sought to prevent use of the contaminated groundwater.

Activity: Alternate Water | **Start Date:** 1/15/1996 | **End Date:** 12/30/1996

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Alternate water in the form of municipal water connections was provided by the PRPs to the remainder of homes within the surrounding area as required within the Decree. Actual costs are unknown.

Activity: Remedial Design | **Start Date:** 9/10/1992 | **End Date:** 6/20/1995

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$275,000.00

Secondary Source:
Federal

Comments:
Designs were prepared for the installation of a hazardous waste landfill cap, a partial slurry wall, a collection and treatment system for the groundwater and leachate, mitigation replacement of wetlands, connection of impacted residences to the municipal water system, and deed restrictions to prevent use of the contaminated groundwater.

Activity: Interim Response | **Start Date:** 3/18/1987 | **End Date:** 3/15/1991

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$764,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
A three-mile long chain link fence was installed around the perimeter of the site. A utility shed and aerator were installed at the discharge point of the oil seep area. Oils were periodically recovered and stored. Approximately 2,400 gallons of collected oil were transported to a thermal destruction facility in Chicago, Illinois.

Activity: Interim Response | **Start Date:** 5/12/1986 | **End Date:** 9/30/1986

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$231,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
A chain link fence was installed around the perimeter to prevent public access. On-property trails were blocked with earth berms; a gate was installed across the main site entrance along Ryan Road and warning signs were posted. Oil seepage areas were connected by collector trenches.

Activity: Remedial Investigation | **Start Date:** 7/27/1983 | **End Date:** 12/21/1990

Operable Unit:
G & H Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$2,908,000.00

Primary Source:
Federal

Secondary Cost:
$411,490.00

Secondary Source:
State

Comments:
RI/Feasibility Study.

Activity: Interim Response | **Start Date:** 6/20/1983 | **End Date:** 7/18/1983

Operable Unit:

Status:

G & H Landfill - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$40,000.00	Federal	$0.00	

Comments:
A temporary oil skimmer was installed to prevent the migration of floating oil. Clay barriers were constructed in the path of new oil seeps, and the fence was extended around the perimeter of the new oil seeps.

Activity: Interim Response | **Start Date:** 4/15/1982 | **End Date:** 6/30/1982

Operable Unit: G & H Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$7,000.00	Federal	$0.00	

Comments:
A chain link and snow fence was constructed around the oil seep area, and three overflow dams were installed to direct the flow of surface water around the oil seep area.

Activity: Bottled Water | **Start Date:** 1/30/1982 | **End Date:** 8/11/1982

Operable Unit: G & H Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	Private

Comments:
Provision of bottled water until municipal water extension was completed.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 9/1/2020 | **End Date:** 4/22/2021

Operable Unit: G & H Landfill - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Sixth Five Year Review for the Site as required by Section 121 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The purpose of the review is to evaluate the remedy implemented at the Site and determine if the remedy remains protective of human health and the environment.

State Superfund Contracts

Activity: Remedial Investigation | **Effective Date:** 9/11/1986 | **Most Recent Mod:** 5/27/2020

Location Name: G & H Landfill - OU Entire Site | **Status:** Final Close

Total Contract:	State Total:	State Share Balance:
$0.00	$0.00	-$700,000.00
Expenditures to Date:	**Expenditures in FY2019:**	**Contracted in FY2019:**
$0.00	$0.00	$0.00

Summary:

Federal Grants

Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $19,319.44	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $128,462.15	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $140,000.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Liquid Disposal, Inc.

State Site ID:
50000015

Federal Site ID:
62

Full Address:
3901 Hamlin Road, Utica, MI, 48087

County:
Macomb

Location

The Liquid Disposal, Inc. site is located at 3901 Hamlin Road in the city of Utica, Michigan. It is within a mixed residential and light industrial area. The site is bordered by the Clinton River and its floodplain to the north, the Shadbush Tract Nature Study Area to the east, an RV and vehicle storage yard and a automotive junkyard to the south and west. The RV storage area is directly west of the site and overlies an old unlined landfill.

Status

The site was owned by Ms. June Morgan of Morgan & McClarty, P.C., and was first used for sand and gravel excavation and then as a landfill from 1964 to 1967. Liquid Disposal, Inc., purchased the property in 1967 and began operating a liquid industrial waste incinerator in 1968. Industrial wastes burned in the incinerator included paint thinners, paint sludges, laboratory wastes, and industrial oils contaminated with polychlorinated biphenyls (PCBs). Incoming wastes received from waste generators were stored in above and below ground storage tanks, 55-gallon drums, and lagoons prior to being incinerated.

The potentially responsible parties (PRPs) continue to collect quarterly groundwater samples with no measurable change from previous sampling events. Operation and Maintenance (O & M) reports indicate that benzene, toluene, and total xylenes are migrating onto the site from an upgradient area of past Liquid Disposal, Inc., contamination not included in the original slurry wall containment area. An investigation is needed to evaluate the extent of contamination and take the corrective actions necessary.

EGLE (formerly known as MDEQ) staff completed reviewing the "Evaluation of Current Conditions Report" document submitted by the PRP consultant and provided written comments.

Currently, negotiations to determine Five-Year Review (FYR) corrective actions have started in earnest. Talks about Revised Target Analytes and planned survey activities will occur in 2020.

History

The contamination problem at the site first became apparent in 1969, when liquid from a sewer line discharged into a marshy area east of Ryan Road. From 1973 to 1981, several violation notices were sent to Liquid Disposal, Inc., because the company was not complying with terms of the Michigan Department of Natural Resources permits. In January 1982, the site was closed by the Macomb County Circuit Court after two workers were killed by hydrogen sulfide gas that formed when incompatible chemicals were mixed at the site.

The site was added to the National Priorities List in September 1983. The following contaminants at the site were listed as chemicals of concern (COC) exceeding federal and state standards for groundwater: chloroform, methylene chloride, trichloroethylene (TCE), 2-butanone, benzene, bis(2-ethylhexl)phthalate, toluene, phenol, napthalene, barium, cadmium, and lead; and for soils: chloroform, methylene chloride, tetrachloroethylene, TCE, 2-butanone, benzene, toluene, benzo(a)pyrene, bis(2-ethylhexy)phthalate, phenol, napthalene, fluoranthene, PCBs, barium, cadmium, and lead. Tetrahydrofuran is detected within the slurry wall as well as upgradient and downgradient of the site.

The EPA conducted four removal actions between 1982 and 1985. The first removal action was conducted to clean up a spill of PCB-contaminated oil in a tributary of the Clinton River. In the second removal action, the EPA removed and disposed of contaminated liquids at the site, secured the site, and posted warning signs to protect the public from direct

contact with chemicals at the site. During a third removal action, the EPA removed and disposed of all liquids and sludges from the lagoons, as well as waste containers and other solid wastes. In 1985, the fourth EPA removal action removed flammable liquids and underground tanks and repaired the leachate collection system of the landfill.

Results of the state-lead remedial investigation (RI) completed in 1987 indicated that contamination from Liquid Disposal, Inc.'s activities existed in on-property and off-property soils and in the shallow groundwater aquifer. The RI also determined that groundwater in the shallow aquifer migrates to the north and northeast of the property and that no drinking water wells exist in the potentially affected areas. Study results of the Clinton River at that time indicated that contamination exists in fish; but, overall, the chemicals had little impact on the aquatic life of the river. Air quality studies of ambient air detected contamination, but at relatively low levels. The major potential risks associated with the site would be posed by direct contact with contaminated on-property and off-property soils.

The Record of Decision (ROD), signed on September 30, 1987, outlined a cleanup remedy that included on-property land disposal of debris, on-property solidification/fixation of soil and waste, extraction and treatment of groundwater, installation of groundwater monitoring wells, wetland restoration, and landfill slurry wall and cap construction. The PRP steering group implemented the cleanup remedy from December 1993 through the spring of 1996. On August 28, 1995, an Explanation of Significant Difference (ESD) was signed to modify the remedy defined in the ROD. Those changes include the following: the original remedy called for the extraction and treatment of off-site groundwater. This will not be implemented unless the EPA finds that off-site groundwater quality has deteriorated as a result of site-related contamination. The remedy called for the solidification of all on-site soils down to the water table. After stabilizing a 10-foot perimeter, the EPA deemed that total source area solidification is not necessary because the site contamination will be adequately contained by means of a cap, slurry wall, perimeter stabilization, and on-site groundwater extraction. The target cleanup levels for barium and benzene were increased to meet the current maximum contaminant (MCL) levels in 1987. Barium changed from 1,000 parts per million (ppm) to 2,000 ppm and benzene was changed from 0.2 ppm to 5.0 ppm.

The slurry wall has been in place since 1996. The PRPs are unable to achieve a 2-foot inward hydraulic head around the slurry wall, and it appears that the slurry wall is failing on the northeast corner. The EPA and EGLE requested that an investigation be conducted to identify the location of the breach. The investigation was conducted placing vertical aquifer sampling wells along the northeast and north sides of the slurry wall. Barium, a contaminant of concern, was not detected in the downgradient wells, but benzene, another (COC), was detected in a downgradient well along with high concentrations of chloride.

In September 2002, the relationship between the groundwater plume and groundwater/surface water interface (GSI) contaminant migration was investigated. The investigation determined that there is a hydraulic connection between the inside of the slurry wall and outside groundwater at the north, south, and east faces of the wall.

In the spring of 2003, the PRPs conducted two additional studies. First, upgradient migration of contaminants at the southeast corner of the slurry wall was investigated where the slurry wall is leaking. The upgradient test determined that there are contaminants of concern (COCs) upgradient of the site with no conclusion as to the source. Second, a pump test was conducted at a downgradient well. The downgradient pump test determined that the rate of migration is extremely slow based on the soil compaction and type and that no contaminants can or will migrate off-site. EGLE did not agree with the PRP's conclusions.

The site is currently owned by the state through tax reversion and is capped and fenced. Periodic groundwater and landfill cap monitoring is performed by the PRP steering group. A groundwater extraction system is currently in place in an attempt to maintain an inward hydraulic gradient across the slurry wall to assure the integrity of the slurry wall surrounding the site source area. However, the specified hydraulic gradient has never been achieved. Attempts at wetland restoration have failed to take hold as required by the ROD.

The second FYR was completed on September 26, 2008. The review concluded that the protectiveness statement could not be made at this time. Further information will be obtained by evaluating the impacts of the lack of an inward gradient at the site, re-evaluate the current list of COCs, and evaluating the risks associated with a potential upgradient source identified at the site.

EGLE received a draft ESD for the site that required institutional controls (ICs) be added to the implemented remedy to restrict usage of on-site groundwater, prevent the installation of wells, and protect the existing site remedy infrastructure. EGLE issued a concurrence letter for the ESD in September 2010.

The Third FYR report was completed in September 2013. The undetermined protectiveness statement and

components of the remedy not meeting performance standards were addressed in the 2013 FYR. Additional information needs to be obtained by evaluating the impacts of the lack of an inward gradient at the site, re-evaluate the current list of COCs, and evaluating the risks associated with a potential upgradient source identified at the site.

The Declaration of Restrictive Covenant and Grant of Environmental Protection Easement was made on April 24, 2015, by Michigan Land Bank Authority.

EGLE staff sent a letter to the EPA on August 24, 2017 outlining issues to be evaluated during the next FYR. To date we have not received the 2018 FYR.

Enforcement

The EPA identified approximately 850 liable parties under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended. A liability determination has not been done under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. A group of settling parties, known as the Liquid Disposal, Inc., PRP steering group, was established and signed a Consent Decree with the EPA to implement the remedial design and remedial actions and to perform O & M activities at the site. The state signed a Consent Order with the steering group on September 18, 1994, for payment of natural resource damages, as well as past and future oversight costs.

The adjacent property owner has been using the access road to the site for storage of junk cars and scrap metal. A letter was sent to the owner requesting that he remove all debris from the road. The state referred the trespass issue to the Michigan Land Bank Authority and the property owner, to secure the site.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1987

Location Name: Liquid Disposal, Inc. - OU Entire Site

Comments:
The cleanup remedy consisted of on-property land disposal of debris, on-property perimeter solidification/fixation of soil and waste, treatment of groundwater, and slurry wall and cap containment.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 8/28/1995

Location Name: Liquid Disposal, Inc. - OU Entire Site

Comments:
The original remedy called for the extraction and treatment of off-site groundwater. This will not be implemented unless the EPA finds that off-site groundwater quality has deteriorated as a result of site-related contamination. The remedy called for the solidification of all on-site soils down to the water table. The EPA deemed that this degree of solidification is not necessary because the site contamination will be adequately contained by means of a cap, slurry wall, and on-site groundwater extraction. The target cleanup levels for barium and benzene were increased to meet the current MCLs in 1987.

Record of Decision **Amendment:** 0 **ESD:** 2 **Effective:** 9/10/2010

Location Name: Liquid Disposal, Inc. - OU Entire Site

Comments:
The EPA issued an ESD to add ICs to the remedy to restrict the use of site groundwater, prevent installation of wells other than for the monitoring or enhancement of the implemented remedy, and protect the remediation system infrastructure.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 1/1/1996 **End Date:** 1/1/2026

Operable Unit:
Liquid Disposal, Inc. - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Groundwater and landfill cap monitoring.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 10/7/2017 | **End Date:** 9/12/2019

Operable Unit: Liquid Disposal, Inc. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The FYR Report for this site was due in 2018. It was one year overdue at the time it was signed on September 12, 2019. The agencies conducted the site inspection on May 30, 2019. The remedy currently protects human health and the environment because ICs are in place and the landfill cap and site fence provide protection against direct contact with unacceptable levels of site contaminants. However, in order for the remedy to be protective in the long term the following actions need to be taken: develop an alternative to achieve remedial objectives despite the inability to create an inward gradient; develop a work pan to repair or replace the cap; revise the O&M Plan; and conduct a survey to locate the precise area of water accumulation in the North Ditch.

Activity: 5 Year Review | **Start Date:** 10/7/2012 | **End Date:** 9/23/2013

Operable Unit: Liquid Disposal, Inc. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Third FYR report was signed in September 2013. The site inspection for the FYR report was conducted in November 2012. The Review concluded that the remedy currently protects human health and the environment because there is no human exposure to site-related contamination. However, the Report recommended that steps need to be taken to achieve and then maintain the 2-foot inward hydraulic gradient required by the ROD.

Activity: 5 Year Review | **Start Date:** 1/11/2008 | **End Date:** 9/26/2008

Operable Unit: Liquid Disposal, Inc. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Second FYR found that the EPA was not able to make the protectiveness statement at this time.

Activity: 5 Year Review | **Start Date:** 5/1/2003 | **End Date:** 9/30/2003

Operable Unit: Liquid Disposal, Inc. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
No Comment entered

Activity: Remedial Action | **Start Date:** 1/1/1993 | **End Date:** 1/1/1996

Operable Unit:
Status:

Liquid Disposal, Inc. - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$22,000,000.00	Private	$435,000.00	Federal

Comments:
Landfill cap, slurry wall, and on-site groundwater extraction.

Activity: Remedial Design | **Start Date:** 1/1/1988 | **End Date:** 9/30/1992

Operable Unit: Liquid Disposal, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$212,000.00	Federal

Comments:
No Comment entered

Activity: Interim Response | **Start Date:** 7/8/1985 | **End Date:** 4/18/1986

Operable Unit: Liquid Disposal, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,675,000.00	Federal	$0.00	

Comments:
Flammable liquids and sludges in 22 above ground and 8 below ground tanks were incinerated off-site, and the leachate collection system installed during July 1982 was repaired.

Activity: Remedial Investigation | **Start Date:** 4/22/1983 | **End Date:** 9/30/1987

Operable Unit: Liquid Disposal, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$724,173.00	Federal	$0.00	

Comments:
State lead.

Activity: Interim Response | **Start Date:** 4/21/1983 | **End Date:** 4/25/1984

Operable Unit: Liquid Disposal, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,066,000.00	Federal	$0.00	

Comments:
An extensive surface cleanup was undertaken. The waste liquid lagoon was solidified and scrubber lagoons were drained, both were capped and seeded, and all drums were removed for off-site disposal. Approximately 1.3 million gallons of liquid, 15,000 cubic yards of solids, and 1,800 drums were removed from the site.

Activity: Interim Response | **Start Date:** 7/26/1982 | **End Date:** 9/10/1982

Operable Unit: Liquid Disposal, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$249,000.00	Federal	$0.00	

Comments:
Site stabilization for safety and security. A leachate collection system was constructed to prevent lagoon leachate

from migrating off-site.

Activity: Interim Response		**Start Date:** 5/1/1982	**End Date:** 6/1/1982
Operable Unit: Liquid Disposal, Inc. - OU Entire Site		**Status:** Completed	
Primary Cost: $64,000.00	**Primary Source:** Federal	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Removal of a PCB contaminated oil spill from the waste liquid lagoon. The spill traveled along a small creek which fed into the Clinton River. About 200 gallons of oil and 750 cubic yards of contaminated sediments were recovered.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 8/11/2023	**End Date:** 9/11/2024
Operable Unit: Liquid Disposal, Inc. - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**

Comments:
The next FYR report is required five years from the completion of this report .

Federal Grants

Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $21,443.29	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $436.38	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $67,116.62	**Exp for Year:** $0.00
Grant #: V005785-01-RD	**Activity:** Remedial Design	**End Date:** 12/30/1992	**Status:** Closed
Fed Total Award: $55,000.00	**State Total Award:** $0.00	**Exp to Date:** $27,298.00	**Exp for Year:** $0.00
Grant #: V005785-01-RI	**Activity:** Remedial Investigation	**End Date:** 12/30/1992	**Status:** Closed
Fed Total Award: $696,471.00	**State Total Award:** $0.00	**Exp to Date:** $724,173.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: South Macomb Disposal Authority Landfill 9 & 9A

State Site ID:
50000032

Federal Site ID:
S4

Full Address:
21290 24 Mile Road, Macomb, MI, 48042

County:
Macomb

Location

The South Macomb Disposal (Landfills 9 & 9A) site is located near the intersection of 24-Mile and Card Road in Macomb Township, Macomb County, Michigan. The site occupies approximately 150 acres located on the south side of 24-Mile Road.

Status

The South Macomb Disposal Authority (SMDA) Landfills 9 and 9A site is comprised of two adjacent municipal landfills, Landfill 9 and Landfill 9A, that were utilized for the disposal of municipal wastes from 1968 to 1975. The sites were not adequately covered, lined, or fenced. A laterally discontinuous water table aquifer and two partially confined aquifers are contaminated with landfill leachate.

The SMDA consultants continue to monitor and operate the leachate collection system the site. Leachate collection, using portions of the old leachate collection system and a more recently installed system, continues to collect leachate for the purpose of containing the leachate and work towards demonstrating an inward gradient of the groundwater surrounding the landfills. The operation of the collection systems will continue to be optimized based on ongoing data collection from the leachate within the landfills and the off-site groundwater. After the system optimization is complete, the operations and maintenance (O & M) manual will be revised to demonstrate understanding of the system and operation to induce the required leachate control. Groundwater samples continue to be collected on a semiannual basis to assess progress of chemical containment within the boundary of the landfill and chemical migration outside the boundary of the landfill.

The SMDA requested to implement an alternate remedial action (RA) to address contaminated groundwater away from the landfills. A determination of compliance and further evaluation of the request for an alternative RA will continue into 2020.

All site data continues to be evaluated to determine if an inward gradient at the landfill boundary has been achieved and is sustainable. In 2019, EGLE (formerly known as the MDEQ) requested that SMDA submit a report showing evidence to support SMDA's stance that the site is in compliance with the 2005 Consent Decree. This report is anticipated in 2020. Additionally, EGLE requested that SMDA provide an updated Sampling and Analysis Plan, Quality Assurance Project Plan (QAPP), and O & M manual for the leachate collection system. These three documents are anticipated to be finalized in 2020.

In 2019, the SMDA provided EGLE with data showing per- and polyfluoroalkyl substances (PFAS) were present in the influent and effluent of the leachate treatment plant onsite. As a result, EGLE requested that the SMDA prepare and submit a groundwater PFAS sampling plan and quality assurance project plan for review and approval to EGLE. PFAS sampling in groundwater is anticipated to begin in 2020.

In 2019, the SMDA submitted a work plan to EGLE for review and approval to investigate the potential for landfill leachate migration into residential basements. This work plan is anticipated to be finalized and implemented in 2020.

History

The SMDA Landfills 9 and 9A site is comprised of two adjacent municipal landfills, Landfill 9 and Landfill 9A, that were

utilized for the disposal of municipal wastes from 1968 to 1975. The sites were not adequately covered, lined, or fenced. A water table aquifer and two confined aquifers are contaminated with landfill leachate. Historically, frequent leachate outbreaks occurred along the perimeters of the landfills.

Historically, residential wells were contaminated; and low levels of organic vapors were detected in the air in neighborhood homes. The state provided bottled water from 1983 to 1988 to the 12 residences where health advisories had been issued. The township and state extended a municipal water system to residences with contaminated wells in 1988. Some residents in the area still rely on groundwater for their drinking water. These private wells are threatened by the continuing discharge of leachate into the groundwater.

Contaminants in the groundwater include ammonia; volatile organic compounds, such as methylene chloride, vinyl chloride and benzene; and metals, such as iron and manganese. These contaminants have been found at concentrations greatly exceeding unrestricted residential cleanup levels beneath the landfill and have been found at concentrations slightly above the unrestricted residential cleanup levels in areas beyond the landfill property. If left unabated, these concentrations may cause health problems for a person who consumes this water over time.

In late 1988, the SMDA extended Landfill 9A's existing leachate collection system. Additionally, under court order, the SMDA constructed a shallow leachate collection drain and slurry wall along the north boundary of Landfill 9 to prevent contaminated groundwater from moving north toward 24-Mile Road.

On April 4, 1991, after extensive litigation, the Macomb County Circuit Court issued an opinion and order for comprehensive RA for the site. The court-ordered remedy included: construction of a slurry wall completely around Landfills 9 and 9A; construction of a cap on both sites; expansion of the leachate collection system; delineation of groundwater contamination; and extraction, treatment, and disposal of contaminated groundwater and leachate. The SMDA appealed the court order and the appeals court remanded the case back to the Macomb County Circuit Court for retrial.

The site was added to the National Priorities List in June 1986. The EPA conducted a Remedial Investigation/Feasibility Study (RI/FS) at the site. On August 13, 1991, the EPA signed a Record of Decision (ROD) for the site. The ROD describes the EPA-selected groundwater cleanup plan, which was essentially a subset of the court-ordered remedy. The ROD made the landfill contents a separate phase of work and delayed a decision on the landfill cover until construction of the groundwater remedy was completed. The EPA's remedy included installation of groundwater extraction wells and leachate collection drains, installation of slurry walls, construction of an on-site water treatment system, connection of residents to a municipal water supply, and long-term monitoring. The EPA terminated negotiations in 1991 because the SMDA failed to provide a good-faith offer for implementation of the ROD cleanup plan. On December 9, 1991, in an effort to consolidate enforcement action, the EPA transferred the lead for site management to the state.

In December 1993, the Macomb County Circuit Court ordered the SMDA to perform a hydrogeological study and a bench scale study on recirculation of leachate, and prepare an array of remedial alternatives.

A final hydrogeological investigation report was submitted on February 28, 1995. A report on the evaluation of remedial alternatives was submitted on May 19, 1995. It was determined that recirculation of leachate would not be effective at this site. In the spring of 1996, EGLE performed sampling and other field activities to aid in the assessment of remedial alternatives. Per a directive of the court, the SMDA and EGLE held discussions in an attempt to develop an acceptable remedy for the site.

The SMDA and the state discussed options for a settlement with the EPA. However, in its January 1998 letter, the EPA declined a federal cost-share settlement at the South Macomb Disposal (Landfills 9 and 9A) site. In July 1998, the SMDA contracted with Conestoga-Rovers & Associates for development of a Remedial Action Plan (RAP), remedial design, and oversight of construction activities. In June 2000, Conestoga-Rovers & Associates submitted the supplemental plume delineation report, and in August 2000 they submitted the pre-design investigation report.

The state of Michigan and the SMDA entered into a preliminary agreement on July 9, 1999, regarding remediation of the South Macomb Disposal (Landfills 9 and 9A) site. This agreement was amended in August 2000 and again in October 2000. The amended agreement called for the state of Michigan and the SMDA to enter into a Consent Decree for implementation of a RAP.

The state of Michigan and the SMDA entered into a Consent Decree on June 26, 2002, which required implementation of an attached RAP, payment to the state of $1,000,000 for past state response activity costs and payment of future

state costs. The RAP required improvements to the landfill cover; the collection, treatment, and disposal of contaminated leachate and groundwater; management of landfill gas, long-term monitoring and achievement of specific performance standards. The performance standards include achieving capture of the groundwater plume within four years of the start of the leachate collection system.

On-site construction activities began with clearing and grubbing activities in February 2001. Construction of the landfill cap improvements began in May 2001 and was substantially complete by the end of 2003. Construction of the leachate collection system began in August 2001, was completed on September 4, 2002, and the system started full operation on November 19, 2002.

Implementation of the long-term groundwater monitoring program began in November 2002. Several new groundwater monitoring wells were installed in 2002 and 2003 to better determine the progress of the cleanup. The leachate collector on the east side of the landfill was determined to be too shallow to meet the objective of full capture in this area. Therefore, a deeper replacement leachate collection trench was installed on the east side of the landfill in October 2003 to improve leachate collection in this area. The intent of this portion of the trench is to remove the water from the waste and to stop contaminated groundwater from flowing beyond the eastern boundary of the site.

Landfill gas was also initially monitored on a quarterly basis via a series of gas monitoring probes. Gas was detected at close to half the lower explosive limit near the property boundary in one gas probe on the north side of Landfill 9 in February 2003. Six additional gas vents were installed in March 2003 and the levels of methane reaching this area rapidly decreased. In 2004, gas was again detected above the lower explosive limit in gas probes north of Landfills 9 and 9A. A gas venting trench was installed north of Landfill 9 and additional gas vents were installed north of Landfill 9A. Also, in 2004, additional subsurface gas probes were installed to define the extent of the subsurface gas that exceeds the lower explosive limit. No residences or other buildings are located in the immediate vicinity of the gas detections. In 2006, additional gas vents and gas probes were installed.

The RAP required a groundwater extraction well system be installed. Construction of an initial extraction well system was completed in May 2005. The extraction well system at that time consisted of two extraction wells northeast of the landfills. In 2006, significant modifications to the groundwater and leachate extraction system were completed. Seven leachate extraction wells were installed into the center of the two landfills. Two old pump test wells on the south side of Landfill 9A were converted to groundwater extraction wells. Also, water from the two groundwater extraction wells northeast of the site was rerouted to a new force main to allow for greater extraction rates. Overall extraction rates were greatly increased in 2006 in an attempt to increase capture of the contaminated leachate and groundwater.

Significant settlement of the landfill cap has occurred in several areas. Repairs were made in 2004, 2005, and 2006 which involved placing more soil and reseeding the areas that had settled to maintain grades and prevent ponding of water on the cap. Repairs to the cap have also been made to address cracks that have formed in the cap.

Per the Consent Decree, the SMDA had until November 19, 2006, to gain full capture of the contaminated groundwater plumes emanating from the site. In the areas east and northeast and south of the landfills, capture still has not been demonstrated for the full extent of the groundwater contaminant plume that exceeds health-based criteria. Petro, the consultant for SMDA, submitted a Corrective Action Plan on November 29, 2006, to address the lack of capture. The Corrective Action Plan did not contain the necessary actions to achieve the performance standards and not approved by EGLE. Petro submitted a revised Corrective Action Plan on November 29, 2007. The revised Corrective Action Plan again did not propose actions sufficient to achieve the site performance objectives and was disapproved by EGLE on May 28, 2008.

In 2011, the SMDA submitted a new draft Corrective Action Plan to address the issues at the site. EGLE approved the implementation of the actions in the plan in November 2011. The plan called for the installation of new leachate collection systems and new groundwater extraction wells.

Corrective action field work began in December 2011 and continued through 2014. New leachate collection trenches were installed in Landfill 9A and new leachate collection sumps and leachate and groundwater recovery wells were installed in both landfills. Many new piezometers were installed to gauge the effectiveness of the new systems. Improvements were also made to the landfill cover system to reduce infiltration and increase vegetation.

In 2013, based on historical analytical results, EGLE approved a request by the SMDA to reduce groundwater monitoring from quarterly to semiannually in the spring and fall.

Groundwater in-situ treatment pilot studies were completed in 2014 to determine if air sparging would effectively

remediate off-site groundwater contamination. Final results of the pilot studies indicated that in-situ treatment would not be successful.

In 2015, SMDA and EGLE collected data from an expanded list of monitoring wells to assist with optimizing the monitoring well program.

In 2016, SMDA investigation the potential for leachate and landfill gas migration into homes to the southeast of the landfill property. A methane gas monitoring system was installed in one home to assess the potential for methane intrusion into the home.

Enforcement

In April 1991, the Macomb County Circuit Court ordered the SMDA to perform the RA, which included construction of a slurry wall around the site, construction of a multi-media cap, leachate collection and treatment, and groundwater purging and treatment. The Court of Appeals remanded this case back to the circuit court. The state negotiated with the SMDA to reach agreement on a remedy to avoid a retrial. The parties signed a Consent Decree (File No. 85-3838-CZ) resolving this case on June 26, 2002. EGLE is currently monitoring the progress of the SMDA in demonstrating compliance with the Consent Decree. The SMDA has been in violation of the Consent Decree since November 29, 2006 for failure to achieve the specified performance standards. Stipulated penalties continue to accrue for failure to meet the requirements of the Consent Decree.

A federal court case was dismissed without prejudice in March 1996.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 8/13/1991

Location Name: South Macomb Disposal Authority Landfill 9 & 9A - OU Entire Site

Comments:
The EPA-specified remedy included groundwater extraction, installation of a slurry wall, leachate collection, on-site treatment of extracted water, long-term monitoring, and connection of all residents in the immediate vicinity to municipal water. The SMDA is not implementing the ROD remedy but is implementing the remedy outlined in the RAP attached to the June 26, 2002, Consent Decree.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 10/1/1988 **End Date:** 2/1/2031

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,590,000.00	Private	$0.00	

Comments:
This includes the operation of the leachate and groundwater collection, treatment, and disposal systems. It also includes maintenance of the landfill cap and gas venting system, and long-term monitoring. The SMDA spent approximately $1,013,000 for maintaining the leachate collection system and disposing of leachate from July 23, 1996, through September 30, 2001. The O & M costs from 2015 were approximately $1,340,000. These costs included repairs to the landfill cap and leachate collection systems as well as consultant time for analysis of monitoring data for attaining compliance and revision of the O & M documents. The 2015 O & M costs are not reflective of typical O & M costs, additional work was completed in 2015 and also 2016 to improve site conditions. Average O & M costs are likely near $250,000 per year.

Response Activities - Completed

Activity: Remedial Action **Start Date:** 2/1/2001 **End Date:** 1/31/2019

South Macomb Disposal Authority Landfill 9 & 9A

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU
Entire Site

Status:
Completed

Primary Cost:
$16,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The RA includes improvements to the landfill cap, installation and operation of a leachate collection system, installation and operation of a groundwater collection system, treatment and disposal of all collected water, installation of a passive landfill gas venting system and long-term monitoring. In 2002, the cost of the RA was estimated at $16,000,000 over 30 years (including O & M).

Activity: Remedial Design **Start Date:** 4/1/1992 **End Date:** 6/26/2002

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU
Entire Site

Status:
Completed

Primary Cost:
$4,000,000.00

Primary Source:
Private

Secondary Cost:
$290,000.00

Secondary Source:
State

Comments:
Bond funds in the amount of $200,000 were authorized for oversight of the court-ordered hydrogeologic investigation. An additional $90,000 of bond funds were authorized for additional fieldwork necessary to design a remedy. The potentially responsible parties (PRPs) have conducted an additional investigation to support design and prepared remediation plans.

Activity: Remedial Investigation **Start Date:** 9/1/1987 **End Date:** 8/13/1991

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU
Entire Site

Status:
Completed

Primary Cost:
$1,242,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The RI and FS were performed by the EPA.

Activity: Interim Response **Start Date:** 1/1/1987 **End Date:** 1/1/1988

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU
Entire Site

Status:
Completed

Primary Cost:
$93,722.00

Primary Source:
Private

Secondary Cost:
$500,000.00

Secondary Source:
State

Comments:
The PRP installed a leachate collection system and partial slurry wall, which was funded in part by a $500,000 grant from the state.

Activity: Alternate Water **Start Date:** 1/1/1983 **End Date:** 1/1/1988

Operable Unit:
South Macomb Disposal Authority Landfill 9 & 9A - OU
Entire Site

Status:
Completed

Primary Cost:
$552,893.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Michigan Environmental Response Act, 1982 PA 307, as amended, funds in the amount of $550,400 were authorized for an extension of the municipal water system.

Federal Grants

Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $640.00	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00

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Site Name: Ten Mile Drain

State Site ID:
50000736

Federal Site ID:
BP

Full Address:
10 Mile & Jefferson, Bon Brae Street & Harper Avenue, St. Clair Shores, MI, 48081

County:
Macomb

Location

The Ten Mile Drain (TMD) site is located near the intersection of Bon Brae Street and Harper Avenue in St. Clair Shores, Macomb County, Michigan, in an area of mixed commercial/residential development. It includes the Ten Mile Drain storm sewer system, which consists of concrete sewer pipes and soil surrounding the pipes in a utility corridor 15 feet underground. The site covers several blocks where polychlorinated biphenyls (PCBs) have been found in the storm sewer in significant quantities. The PCBs are moving within the storm sewer, which empties into the Lange and Revere Canals which are connected to Lake St. Clair. The canals are private property and used by residents for recreational boating, swimming, and fishing.

Status

This PCB site was identified in 2001 when the contaminant was found in canal sediments during the routine sampling of the Lange and Revere Street canals. Contamination was eventually found in the TMD storm sewer system up stream from its discharge into the canals. The contamination appears to be originating from a property at the intersection of Bon Brae Street and Harper Avenue. The TMD site is being addressed through a phased approach as a single operable unit.

The EPA contractors continue to mobilize to the site on a bi-monthly basis to monitor, and periodically remove PCB oil and contaminated sediment accumulating behind the weirs, as well as place absorbent snares in front of selected weirs to soak up new oil entering into the drain. The weir maintenance activities described in the interim action Record of Decision (ROD) are short-term measures to address risk while the EPA and EGLE (formerly known as the MDEQ) continue through the remedial process and until a final long-term cleanup plan is selected.

In 2017, the EPA submitted a final Remedial Investigation/Feasibility Study (RI/FS) to address near surface soils portion of the site, including properties located in mixed commercial and residential areas surrounding the commercial property at the corner of Harper Avenue and Lakeland Street, as well as properties along the Lange and Revere Street canals. A portion of the pre-design sampling took place in 2019. In Summer 2020, the Remedial Design (RD) sampling will be completed on remaining properties and EPA will continue to collect Remedial Action (RA) access agreements for those properties eligible for cleanup. The final RD will be completed in Fall 2020 and will contain all the properties above the cleanup levels that were sampled in 2019, along with estimated costs. The 2020 sampling results and design modifications will be included as an addendum to the final RD.

In 2017, the EPA submitted a FS for the site-wide remedy. This will address PCB contamination in the TMD system as well as in the Lange and Revere Canals. EGLE has reviewed and commented on the document and all comments have been addressed. The Site-wide FS will be finalized 2020. A ROD will be issued in 2021 to address the proposed $25.3 million RA for the storm sewer portion of the FS. The proposed $28.5 million RA for impacted sediment in the Lange and Revere Street canals will be addressed later.

As part of the 2019 RD work, 160 residential and commercial properties were sampled within two investigation areas. These results indicated elevated levels of PCBs at/near the surface at eight properties, including six public right-of-ways and two residential yards on Bon Brae Street and Lange Street. The EPA's Removal Branch will perform the time-critical removal action (TCRA) to address these eight properties in Summer 2020. For other properties exceeding the cleanup level of 1 part per million (ppm), the Agency will address those properties under the Superfund Remedial Program pending availability of federal funding.

History

In 2001, elevated levels of PCBs were discovered in sediment samples collected as a part of a permit application process for a proposed dredging project in the Lange and Revere Streets canals. The canals had not been dredged in years and at the time, Lake St. Clair water levels were 3 feet lower than normal and the sediment build-up was making it difficult for boating. In addition, the canals receive stormwater and sediment from the TMD storm sewer system. The discovery of PCBs in the canal sediments prompted an emergency response from the EPA's removal program. At the time, responders assumed PCBs had been illegally dumped in the TMD system, but the problem has proven to be persistent. Since then, the EPA and EGLE have been involved in several removal actions and associated investigations attempting to trace the source of the PCBs.

Between 2002 and 2004, the EPA Removal Branch conducted extensive sampling in and near the drain, the drain was dewatered, cleaned with a high pressure jet, and sediments removed. In addition, the Lange and Revere canals were sampled and dredged. Macomb County conducted a limited number of soil borings and sampled the backfill around the drain in 2004.

During 2005, the EPA's Removal Branch program and EGLE completed 64 soil borings and identified the area around Harper Avenue and Bon Brae Street as the main area of contamination. One contaminated surface area was identified and this area was excavated in 2006.

In 2006, the EPA's removal program installed 1,500 feet of pipe liner in the drain near the corner of Bon Brae Street and Harper Avenue. A large sediment trap was installed in the drain at the outfall to the canals to serve to collect contaminated sediment. In 2007, using grant funding from EGLE, the city of St. Clair Shores started periodic sampling to monitor the conditions in and around the drain. This work continued until 2011. During 2009, PCB oil was discovered inside the lined portion of the sewer system.

During 2008, EGLE conducted a Site Investigation to support listing the site on the National Priorities List. The site was listed in 2010.

In 2010, another EPA emergency removal was conducted. The drain near Harper Avenue and Bon Brae Street was dewatered and cleaned with a high pressure jet vacuum. A series of 15 weirs were installed inside the drain at manholes located along Bon Brae Street and Harper Avenue. The 15 joined 2 weirs previously mounted in the drain system. The weirs serve to trap oil and sediment and pinpoint what section of the drain the contamination is re-entering, and allow for removal of trapped sediments adjacent to the weir.
A geophysical survey of the Harper-Bon Brae area was conducted, and soil borings were conducted in suspected source areas.

In 2010, fish were collected from the Lange and Revere Streets canals to be analyzed for PCBs. Analytical results from fish in the canals revealed very high levels of PCBs. A "Do Not Eat the Fish" advisory was issued for all fish in the Lange and Revere Streets canals and for carp and catfish in Lake St.Clair in 2011. The advisory was revised in 2012 after additional fish collection conducted 5 miles north and 4 miles south of the canals revealed fish in Lake St Clair, within 2 miles of the canals contained PCBs as well.

The EPA removed sediment build-up from the weir traps during 2011, and absorbent snares were installed to allow new incoming oil to collect on them.

During 2011, the EPA selected the first interim ROD to address the high concentrations of PCB oil that continued to accumulate behind the weirs inside the drain. This interim action consists of monthly source control activities to monitor, sample, and dispose of the accumulation of PCB oil and sediment behind the weirs. A Superfund State Contract (SSC) was executed in 2012 that included a 10 percent contribution of costs for this activity by EGLE. This activity is ongoing.

In 2011, the EPA began their site-wide RI and conducted sediment sampling in the canals. Approximately 140 samples were collected from the canals. The EPA found the highest concentrations at the outfall of the drain into the canals. The concentration decreased with distance from the outfall and depth. Also, in 2011-2012, the EPA conducted a targeted source investigation field sampling event in an effort to identify the source of PCBs within the TMD system. The EPA's contractor collected samples from more than 90 soil boring locations within the underground utility corridors (sanitary sewer, water, and storm drain). The final summary report revealed PCB oil, which is heavier than water, had pooled beneath four manhole vaults within the storm sewer system. The vaults are the lowest points in the drain system. The investigation also identified PCBs at all depths adjacent to the storm sewer system at Bon Brae Street and Harper Avenue, and along Harper Avenue between Bon Brae and Lakeland Streets.

In 2013 and 2014, the EPA conducted additional RI work that included collecting soil samples from residential and commercial properties along the canals and near the intersection of Bon Brae Street and Harper Avenue. As a result of the investigation, a former machine shop, located at Harper Avenue and Lakeland, was identified as the original source of the PCBs. A potentially responsible party has not been identified. The high concentrations observed in the manhole vaults appear to be accumulations of dense oil in low spots within the drainage system. Based on the results, a time-critical removal action was conducted during 2014 to remove contaminated surface soil at ten properties, including eight public right-of-ways, one residential yard, and part of a commercial property.

In 2014, the EPA executed a second interim ROD that would remove high concentrations of PCBs from the drain system. Two manhole vaults, and the surrounding soil, were selected for removal and replacement.

Three years of post-vault removal monitoring inside the drain and sampling the monitoring and recovery wells, and removing PCB oil, if present, is also included in this interim RA. The SSC was amended to provide for a 10 percent contribution of costs from EGLE. This work was conducted during 2015. During the course of the excavation, PCB oil was discovered dripping from the 48-inch storm sewer pipe that connected these two vaults. A decision was made to also remove this 120-foot long section pipe and the soil below it. This required temporarily shutting down a section of Harper Avenue, a major five-lane through-street. A second amendment to the SSC was executed, securing additional funding from the EPA, to complete this work. EGLE added its 10 percent cost share for remedial activities under the existing amended SSC. The EPA and EGLEworked closely to expedite the review of the amendment to the SSC. This allowed this work to be completed concurrently with the replacement of the vaults. Harper Avenue was closed on November 2, and reopened to traffic on November 23, 2015.

As part of the site-wide RI, an investigation to evaluate PCB-contamination along the Old Martin Drain was conducted during the summer of 2015. Fifty soil borings were completed in three areas of the former drain to assess contamination.

Based on the results of an RI conducted from 2013 through 2015, it was determined that the PCB contamination associated with the TMD storm sewer system, associated backfill material, and the sediment in the Lange and Revere Street canals should be addressed under a separate FS (Sitewide FS) from the near-surface soils located adjacent to the TMD storm sewer, the former Martin Drain, and yards adjacent to the Lange and Revere Street canals (Near-Surface Soils FS).

Enforcement

No Potentially Responsible Parties identified.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/27/2011

Location Name: Ten Mile Drain - OU Entire Site

Comments:
Interim ROD executed to provide source control measures to mitigate the discharge of PCB contamination within the TMD to the Lange and Revere Streets canals, including: monitoring and sampling; removal of sediment and oil; disposal of saturated snares, and PCB oil and contaminated sediment.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 5/16/2014

Location Name: Ten Mile Drain - OU Entire Site

Comments:
This second Interim ROD was executed to remove two vaults and excavate the soils around those vaults that contain the highest levels of PCBs at the intersection of Bon Brae Street and Harper Avenue. The remedy also provides for reconstruction of the vaults and post-vault monitoring inside the drain, with removal of any PCB oils that might collect after the contaminated soil removal work.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/20/2016

Location Name: Ten Mile Drain - OU Entire Site

Comments:
This Explanation of Significant Difference (ESD) discusses the following four modifications to the selected remedy: 1) the excavation and replacement of the 120-foot length of reinforced concrete pipe and impacted bedding materials beneath Harper Avenue between manhole vaults M7179 and J01; 2) the use of an alternate manhole vault lining method; 3) installation of two anti-seep collars; and 4) a reduction in the number of extraction and monitoring wells.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/24/2018

Location Name: Ten Mile Drain - OU Entire Site

Comments:
This decision document presents the selected third remedy addressing near-surface soils at the TMD site until a final site-wide remedy can be implemented. The near-surface soils portion of the site addressed by this ROD includes residential and commercial properties located in a mixed commercial/residential area surrounding the commercial property at the corner of Harper Avenue and Lakeland Street, as well as properties along the Lange and Revere Street canals.

Response Activities - In Progress

Activity: Interim Response **Start Date:** 9/1/2019 **End Date:** 9/30/2023

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$142,707.00	Federal	$15,856.00	State

Comments:
An SSC was signed September 2019 to continue the interim response, which includes the monitoring and source control activities associated with both the first and second interim RA. This will continue while EPA works through the remedial process and until additional RA(s) are selected and implemented that no longer require monitoring. Approximately $39,641 per year.

Activity: Remedial Design **Start Date:** 10/1/2018 **End Date:** 10/1/2020

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Engineering design related the proposed $7.2 million near-surface soil remedy to address PCB-impacted near-surface soils located adjacent to the TMD storm sewer, the former Martin Drain, and yards adjacent to the Lange and Revere Street canals.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 1/1/2017 **End Date:** 4/6/2017

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The First FYR was triggered by the on-site construction start day of April 10, 2012, for the first interim RA. The FYR stated that the 2011 and 2014 interim RAs at the site currently protect human health and the environment because there are no current exposure pathways to the PCB contamination inside the TMD system and the removal of the

highly-impacted backfill and bedding materials at selected portions of the system in conjuction with the ongoing monthly source control activities serve as protective interim measures. In order for the remedies to be protective in the long-term, the institutional controls required by the 2014 interim ROD must be implemented.

Activity: Interim Response | **Start Date:** 5/16/2014 | **End Date:** 11/29/2019

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,414,036.00	Federal	$379,337.00	State

Comments:
The Interim Action SSC was amended August 4, 2014, to allow for the excavation and replacement of two of the highest contaminated vaults within the storm drain along with three years of monitoring inside the drain and sampling the monitoring and recovery wells, and removing PCB oil, if present. This SSC was amended again September 23, 2015, to also include removal of 120 feet of 48-inch storm sewer pipe between these two vaults. The construction work was completed in 2015. Monitoring of the contamination within this reconstructed area had continued into 2019.

Activity: Remedial Investigation | **Start Date:** 1/14/2013 | **End Date:** 1/14/2019

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,000,000.00	Federal	$0.00	

Comments:
Investigation to find the nature and extent of PCB-contamination. Based on the results the RI, it was determined that the PCB contamination associated with the TMD storm sewer system, backfill material, and the sediment in the Lange and Revere Street canals should be addressed under a separate FS (Sitewide FS) from the near-surface soils located adjacent to the TMD storm sewer, the former Martin Drain, and yards adjacent to the Lange and Revere Street canals (Near-Surface Soils FS).

Activity: Interim Response | **Start Date:** 2/1/2012 | **End Date:** 2/28/2018

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,132,000.00	Federal	$125,000.00	State

Comments:
Interim source control measures to mitigate the discharge of PCB-contamination within the TMD to the Lange and Revere Streets canals, including: monitoring and sampling, removal of sediment and oil, disposal of saturated snares and PCB oil and contaminated sediment. An SSC was signed February 1, 2012, between the EPA and the state for these interim actions.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 12/31/2021 | **End Date:** 4/29/2022

Operable Unit:
Ten Mile Drain - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The next FYR is due in April 2022.

Activity: Remedial Action | **Start Date:** 10/1/2021 | **End Date:** 9/30/2023

Operable Unit:

Status:

Ten Mile Drain - OU Entire Site | Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$25,650,000.00	Federal	$2,850,000.00	State

Comments:
To implement the proposed $28.5 million site-wide remedy to address PCB-impacted sediment in the Lange and Revere Street canals.

Activity: Remedial Design | **Start Date:** 10/1/2021 | **End Date:** 10/1/2022

Operable Unit: Ten Mile Drain - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
Engineering design related to the proposed $28.5 million site-wide remedy to address PCB-impacted sediment in the Lange and Revere Street canals.

Activity: Remedial Action | **Start Date:** 10/1/2020 | **End Date:** 9/30/2022

Operable Unit: Ten Mile Drain - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$6,480,000.00	Federal	$720,000.00	State

Comments:
To implement the proposed $7.2 million near-surface soils remedy to address PCB-impacted near-surface soils located adjacent to the TMD storm sewer, the former Martin Drain, and yards adjacent to the Lange and Revere Street canals. An SSC was signed September 2019, between the EPA and the state for this RA.

Activity: Remedial Action | **Start Date:** 10/1/2020 | **End Date:** 9/30/2022

Operable Unit: Ten Mile Drain - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$22,770,000.00	Federal	$2,530,000.00	State

Comments:
To implement the proposed site-wide $25.3 million remedy to address PCB impacted portion of the TMD sewer and adjacent backfill material.

Activity: Remedial Design | **Start Date:** 10/1/2020 | **End Date:** 9/30/2022

Operable Unit: Ten Mile Drain - OU Entire Site | **Status:** Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
Design for the proposed site-wide $25.3 million remedy to address PCB impacted portion of the TMD sewer and adjacent backfill material.

State Superfund Contracts

Activity: Interim Response | **Effective Date:** 2/1/2012 | **Most Recent Mod:** 8/28/2020

Location Name: Ten Mile Drain - OU Entire Site | **Status:** Open - Active

Ten Mile Drain

Total Contract: $6,819.00	**State Total:** $1,209,943.00	**State Share Balance:** $1,203,124.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $6,819.00	**Contracted in FY2019:** $717,472.00

Summary:
This contract mitigates the risk associated with the PCB contamination in the Ten Mile Drain system by conducting source control measures, excavation of source material in drain, and remediating the near-surface soil contamination.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $2,615.85	**Exp for Year:** $2,237.74
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $4,586.28	**Exp for Year:** $1,206.76
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $520.43	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $13,563.39	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $13,939.65	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $18,985.87	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Packaging Corp. of America (PCA)

State Site ID:
51000058

Federal Site ID:
90

Full Address:
East Lake Road, Manistee, MI, 49660

County:
Manistee

Location

The Packaging Corporation of America (PCA) site is located in Stronach Township, Manistee County, Michigan. The site consists of approximately 700 acres of land in and adjoining Section 17 of Stronach Township (T21N, R16W). The site is bordered by the village of Eastlake to the north, the village of Stronach to the south, Manistee Lake to the west, and Manistee National Forest to the east.

Status

The PCA site includes eight former seepage lagoons and four former seepage areas and encompasses approximately 700 acres of land. PCA was permitted to discharge approximately seven billion gallons of black pulping liquor to the lagoons and seepage areas between 1951 and 1974. The EPA has determined that conditions at the site pose no current or potential unacceptable risk to human health or the environment. Annual groundwater monitoring is being conducted. As the decision is for "No Action", the requirements of Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510. as amended Section 121 for remedial action are not applicable and no statutory five year review is planned.

History

PCA owns the pulp mill in Manistee, which over the years released contaminated wastewater that resulted in the PCA Superfund site. The pulp mill is still operating, producing primarily corrugated cardboard and boxboard. Prior to 1949 the pulp mill, then owned by American Boxboard Co., used the Kraft process. The Kraft process produced very little wastewater. In 1949, the company switched to the neutral sulfite semichemical cooking process, which produced much more contaminated wastewater. From 1949 to 1950, this wastewater was discharged directly to Manistee Lake. The neutral sulfite semichemical cooking process discharge during this period depleted oxygen in the lake and resulted in a massive fish kill. As a result, the discharge was diverted to on-land seepage lagoons with approval from the Michigan Water Resources Commission. From 1951 to 1976, the plant pumped seven billion gallons of wastewater into eight unlined seepage lagoons on 105 acres of land, resulting in an extensive plume of groundwater contamination.

The wastewater, which seeped into the groundwater, consisted of black liquor from the neutral sulfite semichemical cooking process, as well as primary clarifier sludge, evaporator condensate, and some biocides, fungicides, surfactants, and oils. The black liquor portion consists of lignins, tannins, other wood compounds, sodium, sulfate, and carbonate. Due to aggressive oxidative/reductive properties of the black liquor, it dissolves and entrains heavy metals from native soils as it migrates through, resulting in significant metal concentrations in the groundwater.

The plume initially flows under 1.5 square miles of industrially zoned land east of Manistee Lake. Pactiv Corporation is the current owner of this land, including the lagoons and land to the west up to the lake, excluding the Martin Marietta plant site. They are the current potentially responsible party (PRP) for the Superfund site. Hydrogeological investigations have indicated that the shallow, more diffuse portion of the contaminated groundwater from the lagoons discharges into Manistee Lake, but the transport and fate of the plume, especially the dense, deep plume, beyond the east shoreline wells remains uncertain. The high density of the contaminants drives the most contaminated portion of the plume to the base of the aquifer, at depths below the bottom of Manistee Lake, making the fate of the plume that much more uncertain. Monitoring wells along the eastern shoreline exhibit concentrations of heavy metals which exceed the EPA and Michigan drinking water standards. Residential wells have not been impacted, but the plume comes within 200 feet of several such wells.

Packaging Corp. of America (PCA)

The site was placed on the National Priorities List on September 8, 1983. PCA performed a Remedial Investigation/Feasibility Study (RI/FS) under an April 1984 Administrative Order by Consent (AOC) with the EPA. Due to questions about the environmental fate and toxicological impacts of the groundwater plume, another phase of the investigation, including well installation in Manistee Lake, took place in October to December 1988.

The RI Report and Baseline Risk Assessment were finalized on September 30, 1991. Since the EPA was considering accepting the risk assessment conclusion that the discharge of the plume into the lake has no detrimental effect, EGLE (formerly known as MDEQ) undertook its own studies. These studies confirmed a discharge of at least a portion of the plume to the lake. It also documented exceedances of groundwater/surface water interface criteria and a high level of aquatic toxicity in the venting groundwater and sediment pore water. The EPA completed the FS in July 1993, and the Record of Decision (ROD) was signed in September 1993, requiring no-action with monitoring. The state did not concur with the ROD, primarily due to deficiencies in the RI in the areas of plume characterization and fate determination and associated risks. Lagoon sediments were addressed under an agreement directly with EGLE, wherein the PRP consolidated them into a single, lined lagoon and capped them.

A groundwater and surface water monitoring work plan was approved by the EPA in 1995, and Pactiv has conducted annual rounds of groundwater and surface water monitoring since then. The results of these sampling events show a continued presence of concentrated black wastewater moving toward the lake at the bottom of the aquifer, and a release of contaminants in concentrations consistent with past monitoring results into Manistee Lake of lesser concentrated black water.

EGLE had previously set aside funds to conduct investigative work to evaluate the conclusions of the EPA's ROD. EGLE also had planned an investigation at and around the PCA property to determine if the basis by which a no-action ROD was selected was accurate. EGLE's investigative work was designed to only determine whether further plume definition work is needed (by the PRP), rather than conduct complete definition work. The investigation project was bid out, and a contractor selected, but with the decision by EGLE not to pursue new long-term funding, this project was suspended in July 2008.

EGLE's involvement with this site since that time has only been to accept and file the annual groundwater and surface water monitoring reports from Pactiv.

Enforcement

In January 2002 and December 2003, the state sent notice/demand letters to Pactiv Corporation (formerly Packaging Corporation of America, and Tenneco) requesting recovery of state-incurred response activity costs as well as performance of additional response activities to adequately characterize the nature, extent, transport, and fate of all hazardous substances in the groundwater at the PCA Superfund site and assess the risk associated with those hazardous substances for all relevant groundwater exposure pathways.

Negotiations with Pactiv followed; however, Pactiv expressed an unwillingness to track the extent of the deep, toxic groundwater plume to determine its transport, fate, and impacts as it moves under Manistee Lake and possibly to Lake Michigan.

In April 2005, Pactiv's attorneys filed suit against the director of EGLE and the Attorney General in an attempt to bar the state from demanding additional response activities at the PCA site. Pactiv claimed the state's independent authority under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, was preempted by federal law (Comprehensive Environmental Response, Compensation, and Liability Act) and, therefore, the state could not require Pactiv to perform additional response activities at the PCA site because an EPA selected remedy was already in place through the 1993 ROD. Pactiv also claimed that the state's demands violated their due process rights. In addition, Pactiv sought reimbursement of their attorney's fees and any additional relief the court deemed appropriate.

In February 2007, a settlement was reached in which the state agreed to forever waive the past cost demand for those costs incurred to date and not to take further enforcement action against Pactiv until EGLE has collected additional data at the PCA site to support its position that the assumptions and conclusions in the ROD are not supported and the current remedy is not protective of human health and the environment. In return, Pactiv agreed to dismiss its claims without prejudice and forever waive their attorney's fees incurred to date.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/24/1993

Location Name: Packaging Corp. of America (PCA) - OU Entire Site

Comments:
This is a "No-Action" ROD with monitoring.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 6/30/1995 **End Date:** 12/31/2060

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Monitoring.

Response Activities - Completed

Activity: Remedial Investigation **Start Date:** 5/1/2007 **End Date:** 9/15/2008

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Cancelled

Primary Cost:
$0.00

Primary Source:
No Financial Source

Secondary Cost:
$0.00

Secondary Source:
No Financial Source

Comments:
EGLE had set aside funds to conduct investigative work to evaluate the basis of the EPA's no-action ROD. However, the department was not able to secure new long-term funding and remaining funds were allocated to existing projects.

Activity: Negotiations **Start Date:** 12/31/1993 **End Date:** 10/1/1994

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
O & M negotiations.

Activity: Interim Response **Start Date:** 3/23/1993 **End Date:** 12/31/1999

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:
State

Comments:
The PRP paid for and conducted this interim response of construction of a landfill and placement of lagoon sediments therein. This work was done under a March 23, 1993, Consent Decree between Tenneco Packaging (now known as Pactiv Corporation) and EGLE.

Activity: Remedial Investigation **Start Date:** 5/2/1985 **End Date:** 9/24/1993

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Completed

Packaging Corp. of America (PCA)

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,000,000.00	Private	$540,000.00	State

Comments:
Secondary costs include supplemental investigative work done by EGLE.

Activity: Negotiations | **Start Date:** 2/15/1984 | **End Date:** 2/15/1985

Operable Unit:
Packaging Corp. of America (PCA) - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
RI/FS negotiations.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V975853-01	Management Assistance	3/30/2007	Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $5,917.40	**Exp for Year:** $0.00
V995258-01	PRP Oversight	9/30/2003	Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $50,884.65	**Exp for Year:** $0.00
V995260-01	Negotiations	9/30/2003	Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $369.00	**Exp for Year:** $0.00
V005851-01	Management Assistance	3/31/1993	Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $95,706.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Mason County Landfill

State Site ID:
53000013

Federal Site ID:
E3

Full Address:
Inman Road, Ludington, MI, 49431

County:
Mason

Location

The Mason County Landfill is located 3 miles south of the city of Ludington and 1 mile east of Lake Michigan. It is in the northeast quadrant of the intersections of Bradshaw and Inman Roads in Pere Marquette Township, Mason County, Michigan. Iris Creek begins in a marsh about 400 feet to the north of the landfill and flows to the northeast towards the Pere Marquette River, about 1 mile away. The area is rural and agricultural, with scattered houses along both roads and a cluster of several houses less than 1/4 mile to the north. All residences use private wells for their drinking water supply with the nearest municipal water supply being at least a few miles away. The Ludington pump storage facility is located 1/2 mile to the south.

Status

The Mason County Landfill began operation in late 1971 and was operated for the Mason County Department of Public Works by Acme Disposal Company of Ludington. Approximately 10 acres of the 18 acre site was landfill. During its operation, the landfill received residential, commercial, and industrial refuse, liquids, and sludge. Acme Disposal Company closed the landfill in August 1978, but did not follow the closure plan.

Mason County still owns the landfill site and monitors and maintains it on a regular basis.

EGLE (formerly known as MDEQ) reiterated the following concerns to Mason County: 1) the site has not been adequately characterized for off-site migration, using residential drinking water wells instead of monitoring wells, and therefore, the remedy cannot be considered protective, 2) sentinel wells should be installed and monitored upgradient of the residential wells to provide protection, 3) there are known exceedances of aesthetic criteria in downgradient residential wells, 4) Babbin Pond needs to be dredged to minimize the release of iron sediment to Iris Creek. EGLE requested Mason County evaluate groundwater and residential wells for per- and polyfluoroalkyl substances (PFAS), an emerging contaminant. In August 2018, Mason County sampled five on-site monitoring wells for PFAS with only one monitoring well having a reported detection below EGLE's criteria levels. In 2019, EGLE requested Mason County sample several site monitoring wells and nearby residential wells for PFAS. As of the end of this reporting period , discussions with Mason County regarding this request are ongoing.

History

During the Mason County Landfills operation, the landfill received residential, commercial, and industrial refuse, liquids, and sludge. Acme Disposal Company closed the landfill in August 1978, but did not follow the closure plan. Since closure, the site and adjacent properties were impacted by erosion and groundwater contamination with site-related contaminants. Groundwater and surface-water (Iris Creek) contamination was confirmed. Contaminants included ethylbenzene, trichloroethylene, 1,1-dichloroethylene, and toluene. Two residential wells were contaminated above state drinking water standards. They were replaced with deeper wells by the Michigan Department of Public Health through the Michigan Environmental Response Act, 1982 PA 307, as amended.

The site was placed on the National Priorities List (NPL) on September 8, 1983, the same year that the Mason County Department of Public Works received a $92,000 grant for improvements to the landfill. The clay cap was improved and a sedimentation basin was constructed downstream from an existing pond. Two adjacent properties were purchased by the county. Sixteen methane vents were placed in the top of the fill to vent off-gases.

Superfund dollars were authorized to conduct a remedial investigation/feasibility study (RI/FS) to determine the nature

and extent of contamination and to evaluate cleanup alternatives. A Record of Decision (ROD) identifying the selected cleanup remedy was issued in September 1988. The site was split into two operable units (OUs): the landfill contents (OU1) and the site groundwater (OU2). These were acted upon separately in order to properly cap the landfill prior to completion of the groundwater portion of the RI.

Work on the landfill cap began in November 1990. It was constructed to comply with hazardous waste landfill closure requirements, was completed in October 1991, and included new fencing and monitoring well installation. Minor repairs to the cap and drainage swales were made in the spring of 1992. Mason County Department of Public Works, the potentially responsible party (PRP) responsible for implementing the remedy, submitted the construction verification report for the landfill closure cap in July 1992. The EPA sent an acceptance letter to the county in September 1992. Mason County continues to monitor the groundwater, surface water, and residential well water on an annual basis.

The ROD for the groundwater OU was signed by the EPA in June 1993. The EPA determined that the levels and extent of groundwater contamination did not cause a significant health risk to the surrounding public or the environment. As a result, the EPA selected "No-Action with Monitoring" as the groundwater remedy.

In 1997, the EPA proposed that this site be deleted from the NPL as all remedial actions (RAs) had been implemented. EGLE reviewed monitoring data from the last several years to determine whether it would concur with the EPA's deletion proposal. In the summer of 1999, EGLE concurred with the proposed deletion of the site from the NPL, and the site was officially deleted from the NPL on September 9, 1999.

County staff and EGLE staff met in August 2005 to discuss various concerns. Mason County agreed to complete several actions at the site. These include: 1) evaluation of planned development near the site, 2) filling some data gaps with respect to residential water wells, 3) evaluate potential methane migration in the subsurface (complete), 4) changing the groundwater sampling method to low-flow and non-filtering for metals (done), 5) add pH and hardness parameters to the surface water sampling analysis and determine whether sediment sampling needs to continue due to the lack of sediment criteria, 6) send a recent aerial photograph to EGLE, and 7) change some formatting and content in the annual reports (complete).

Mason County began monitoring the site for methane in 2006. Initial results for dissolved methane in groundwater ranged from less than 1.0 micrograms per liter (µg/L) to 41 µg/L. According to an August 14, 2008, e-mail from Mason County, landfill gas monitoring at the Pere Marquette facility began in "August of 2007 and took readings in August and October of fiscal year (FY) 2007 and January of FY 2008 and quarterly since then."

Five-Year Reviews (FYR) were conducted by the EPA in 1997 and 2001. The Third FYR by the EPA was signed on February 13, 2006, and concluded that the current remedy is protective. The review also stated "The primary concern for future monitoring is to ensure Michigan drinking water criteria at all groundwater wells are met for inorganic compounds and to ensure future residential development does not lead to elevated risks from Site groundwater. EGLE and Mason County are continuing to discuss the monitoring program and are working toward resolving these issues through modification of the Site monitoring program."

In FY 2007, state funds were approved to replace two residential water wells contaminated with manganese and iron at concentrations exceeding aesthetic residential drinking water standards and background levels. These wells consistently have concentrations above the aesthetic criteria but below the risk-based residential criteria for iron and/or manganese.

The Fourth FYR was signed by the EPA on January 24, 2011, and concluded that the current remedy is protective. The review also stated "Long-term protectiveness requires continued O & M of Site property, ICs, and monitoring systems." EGLE disagrees with the EPA's statement that there has not been migration of contaminated groundwater off-site and provided the EPA with a written response.

At the request of EGLE, Water Resource Division's, additional monitoring was performed on two residential wells impacted by contaminant(s) above aesthetic criteria but below health based criteria. Upon review of the additional sample results, Water Resource Division staff agreed to install two deeper replacement residential wells and test them prior to abandoning the two existing residential wells. The first replacement residential well was installed in November 2012 approximately 90 feet deeper than the existing well. Sample results indicated that the concentrations were higher than the average original residential well concentrations. Based on this, the unlikelihood of having better water quality at a deeper interval at the second residential well replacement location, and the desire to make optimal use of state resources, it was decided to not replace either residential well and abandon the new, deeper residential well that had higher concentrations. This was completed in December 2012 with the invoice being paid in February 2013. Closeout

letters were sent to the residents in February 2013.

On December 15, 2014, EGLE sent the EPA a FYR issues identification letter that stated: "Based on existing site data, it does not appear there are issues that need to be raised in the upcoming Mason County Landfill Five-Year Review. It should be noted that the existing monitoring well program (wells and parameters) is not sufficient to adequately monitor downgradient migration of site-related contaminants. Additionally, while the ROD may require compliance with Maximum Contaminant Levels, there are known exceedances of Michigan Part 201 generic residential criteria (aesthetic based) for iron and manganese in downgradient residential wells. It is unclear whether or not these are from naturally occurring environment or from site-related contamination."

The EPA issued the Fifth FYR on January 15, 2016. The review concluded the remedy is protective of human health and the environment in the short-term. To address EGLE's concerns, the EPA agreed to incorporate the following into the final report: 1) EGLE continues to have concerns regarding exceedances of EGLE's groundwater aesthetic criteria, 2) EGLE recommends development and implementation of a downgradient monitoring program (including new monitoring wells) to evaluate protection of downgradient residential wells (currently there are no monitoring wells between the landfill and residential drinking water wells), 3) EGLE recommends Babbin Pond be dredged to minimize the release of iron sediment to Iris Creek.

Enforcement

In April 1989, the EPA was unable to achieve a settlement with the PRPs to implement the selected 1988 ROD landfill remedy, issued a Unilateral Administrative Order. It was issued under Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, for completion of the landfill contents OU. As a result of the EPA order, Mason County agreed to implement the remedy to cap the landfill. After the landfill cap was completed and the ROD for the on-site groundwater was issued, the EPA again entered negotiations with the PRPs. A Consent Decree agreement was reached obligating the PRPs to perform long-term groundwater and surface water monitoring, residential well monitoring, and maintenance of the site.

Operable Units for Mason County Landfill

OU1 Landfill

OU2 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/28/1988

Location Name: OU1 Landfill

Comments:
Selected remedy is a soil/clay Resource Conservation and Recovery Act, 1976 PL 94-580, as amended Subtitle C, compliant hazardous waste landfill cap, property use restrictions to prohibit use of the shallow aquifer, site fence, and groundwater monitoring (to evaluate cap effectiveness).

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/15/1993

Location Name: OU2 Groundwater

Comments:
The selected remedy is "No-Action" with monitoring of groundwater, surface water, and residential wells.

Response Activities - In Progress

Activity: 5 Year Review **Start Date:** 1/10/2020 **End Date:** 1/15/2021

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Estimated end date based on five years from the date of the last FYR.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 12/16/1989 | **End Date:** 12/16/2029

Operable Unit:
Mason County Landfill - OU1 Landfill

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,541,872.00	Private	$0.00	

Comments:
Monitoring and maintenance: The PRPs are responsible for monitoring groundwater, surface water and sediment, residential wells, and maintaining the landfill cap for 30 years, or until it has been demonstrated that site contamination is no longer a threat to the local drinking-water aquifer. The cost was estimated at $40,000 per year and includes other additional actual costs incurred by the county in the early/mid 2000's.

2017 costs: Mason County reported $13,300 for groundwater monitoring and $2,531 for landfill maintenance (mowing, removing downed trees along fence lines, and gas monitoring).

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 12/15/2014 | **End Date:** 1/15/2016

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The review concluded the remedy is protective of human health and the environment in the short-term. To address EGLE's concerns, the EPA agreed to incorporate the following into the final report: 1) EGLE continues to have concerns regarding exceedances of EGLE's groundwater aesthetic criteria, 2) EGLE recommends development and implementation of a downgradient monitoring program (including new monitoring wells) to evaluate protection of downgradient residential wells (currently there are no monitoring wells between the landfill and residential drinking water wells), 3) EGLE recommends Babbin Pond be dredged to minimize the release of iron sediment to Iris Creek.

Activity: 5 Year Review | **Start Date:** 11/8/2010 | **End Date:** 1/24/2011

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Fourth FYR was prepared by the EPA and concluded that long-term protectiveness requires continued operation and maintenance (O & M) of site property institutional controls (ICs) and monitoring systems.

Activity: 5 Year Review | **Start Date:** 10/5/2005 | **End Date:** 2/13/2006

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR by the EPA was signed on February 13, 2006, and concluded that the current remedy is protective. The primary concern for future monitoring is to ensure Michigan drinking water criteria at all groundwater wells are met for inorganic compounds and to ensure future residential development does not lead to elevated risks from Site

groundwater.

Activity: 5 Year Review | **Start Date:** 1/15/2001 | **End Date:** 2/27/2001

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$3,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was prepared by the EPA.

Activity: 5 Year Review | **Start Date:** 6/15/1997 | **End Date:** 11/13/1997

Operable Unit:
Mason County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR was prepared by the EPA.

Activity: Remedial Action | **Start Date:** 1/15/1990 | **End Date:** 9/1/1992

Operable Unit:
Mason County Landfill - OU1 Landfill

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$600,000.00

Secondary Source:
State

Comments:
An upgraded landfill cap was constructed using PRP and state grant funds.

Activity: Remedial Design | **Start Date:** 1/15/1989 | **End Date:** 6/29/1990

Operable Unit:
Mason County Landfill - OU1 Landfill

Status:
Completed

Primary Cost:
$179,384.00

Primary Source:
Private

Secondary Cost:
$150,000.00

Secondary Source:
Federal

Comments:
Design of hazardous waste landfill cap. Private costs reflect Mason County costs per January 29, 2004, information from Mason County.

Activity: Remedial Investigation | **Start Date:** 9/28/1988 | **End Date:** 9/27/1993

Operable Unit:
Mason County Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$275,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 9/30/1985 | **End Date:** 9/28/1988

Operable Unit:
Mason County Landfill - OU1 Landfill

Status:
Completed

Primary Cost:
$882,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
No Comment entered

Activity: Interim Response		**Start Date:** 1/15/1984	**End Date:** 12/15/1984
Operable Unit: Mason County Landfill - OU2 Groundwater		**Status:** Completed	
Primary Cost: $16,000.00	**Primary Source:** State	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Two residential drinking-water wells were replaced.

Activity: Interim Response		**Start Date:** 6/15/1983	**End Date:** 12/15/1986
Operable Unit: Mason County Landfill - OU1 Landfill		**Status:** Completed	
Primary Cost: $92,000.00	**Primary Source:** State	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
The Mason County Department of Public Works received a $92,000 grant for improvements to the landfill.

Activity: Alternate Water		**Start Date:** 1/15/1983	**End Date:** 12/15/1984
Operable Unit: Mason County Landfill - OU2 Groundwater		**Status:** Completed	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Alternate Water: Residents were placed on bottled water until their wells were replaced.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $949.58	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $2,227.58	**Exp for Year:** $986.01
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $1,577.06	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $228.44	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:**	**End Date:**	**Status:**

	Management Assistance	3/31/2009	Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $312.40	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $23,910.11	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $7,316.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $11,828.00	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $690.00	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $21,962.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Bofors Nobel, Inc.

State Site ID:
61000005

Federal Site ID:
34

Full Address:
5025 Evanston Avenue, Muskegon, MI, 49443

County:
Muskegon

Location

The Bofors Nobel, Inc., site is located six miles east of downtown Muskegon on Evanston Avenue, 1/4 mile west of Wolf Lake Road in Egelston Township, Muskegon County, Michigan. The 85-acre site includes a former specialty chemical production facility, an unused landfill, an operating groundwater pumping and treatment system, and ten abandoned sludge lagoons. The southern portion of the site is bounded by Big Black Creek. There are wetlands on either side of Big Black Creek within the creek's floodplain. Approximately 1,800 people live within a 1.25-mile radius of this site.

Status

This site was historically utilized to produce industrial chemicals and currently consists of two Operable Units (OUs). The northern portion of the site is the former Lomac plant site and is identified as OU2. South and east of the former plant site is OU1 which includes the former sludge lagoons, the unused landfill, and the operating groundwater pump and treat system.

The Agencies and the Potentially Responsible Parties (PRPs), who are responsible for actions taken at OU1, continue to have discussions with regards to this OU. These discussions are about the Conceptual Site Model, effectiveness of the barrier wall in containing the contaminants (put in place in 2010), areas of contamination that remain outside the barrier wall, the Meander Bend Area (MBA) and shallow groundwater issues, and deep groundwater migration investigation across the Big Black Creek area.

The PRPs continue to operate and maintain the treatment wetland, lagoon area cover, groundwater extraction wells, and treatment system. In November 2018 the PRPs installed six new shallow extraction wells in the MBA to specifically target the shallow groundwater contamination in that area. These wells are expected to be operational in early 2020. As a result of the installations of the new extraction wells, it is expected that the Agencies and the PRPs will discuss the location of compliance monitoring wells in the vicinity of Big Black Creek along with the details of the Performance Standards Verification Plan that is needed for OU1 in 2020 and 2021.

Demolition of dilapidated buildings at OU2 occurred in 2015 and 2016. Currently, further investigative work in the footprint of the former structures is needed and is being discussed to determine potential contamination source areas that have yet to be characterized post buildings demolition. EGLE staff have requested additional sampling to characterize soils in these areas, however EPA has not been willing to conduct the sampling. EGLE has requested state funds to proceed with the sampling. The agencies are also working to put together Remedial Action Objectives (RAOs) for OU2, along with assessing potential remedial options for this portion of the site.

History

Lakeway Chemicals began producing industrial chemicals at the site in 1960. The facility changed ownership on several occasions throughout its history and eventually became Bofors Nobel, Inc. Throughout the 1960s and early 1970s, ten on-site lagoons were used for disposal of chemical sludge, wastewater, and various waste liquids. This practice resulted in contamination of the groundwater underneath the site and subsequently, Big Black Creek. Because of this contamination, the Michigan Department of Natural Resources placed various restrictions on wastewater disposal from the site. In 1976, wastewater from the plant was accepted at the Muskegon County wastewater

treatment plant (WWTP) and purge wells were installed at the site to extract contaminated groundwater.

In December 1985, the owners of the Bofors Nobel, Inc., plant filed for protection under Chapter 11 of the bankruptcy laws for a variety of reasons, including purported expenditures for environmental measures in excess of $60 million. In consideration of the liabilities and claims filed by creditors, the owners petitioned the court to evaluate the possibility of selling the facility in order to maximize assets for distribution to creditors. In June 1986, the bankruptcy court granted permission to engage the services of a broker to pursue potential buyers for the existing manufacturing facility.

The sale of the Bofors Nobel, Inc., assets to Lomac, Incorporated (Lomac) was completed on March 25, 1987. As part of the sales agreement, an "Agreement and Covenant Not to Sue" was entered between Lomac, the State of Michigan, and the EPA that would allow the Lomac Plant to continue operations independent of previous site activities. As part of the bankruptcy agreement, an environmental escrow account was set up to help pay for response activities at the site. As part of the escrow agreement, the state received access to $10 million for performance of Remedial Actions (RAs). Additionally, a Water Services Treatment Agreement was entered between the state and Lomac to allow continued treatment of water purged from the contaminated aquifer at the operating plant's treatment facility.

The site was placed on the National Priorities List in March 1989 and all subsequent response activities have been carried out under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 1980 PL 6-510, as amended by the Superfund Amendments and Reauthorization Act (SARA), 1986 PL 99-499.

The site contaminants include pigment manufacturing intermediates benzidene and 3,3'-dichlorobenzene. Concentrations of benzidene and 3,3'-dichlorobenzene in soils and sludge range up to 2,300,000 micrograms per kilogram (µg/kg) and 4,400,000 µg/kg, respectively. These values are up to 500,000 times the allowable human direct contact criteria. Soil cleanup criteria for protection of the surface water is 0.11 µg/kg for benzidene and 1.26 µg/kg for 3,3'-dichlorobenzene. The relevant soils criteria are also exceeded for a number of other volatile and semi-volatile compounds (SVOC). Concentrations of benzidene and 3,3'-dichlorobenzene in groundwater range up to 1,200 micrograms per liter (µg/l) and 900 µg/l, respectively. Groundwater cleanup criteria for protection of the surface water is 0.0054 µg/l for benzidene and 0.063 µg/l for 3,3'-dichlorobenzene. There are also a number of volatile organic compounds and SVOCs that exceed unrestricted residential groundwater cleanup criteria.

In the 1970s, contaminated groundwater discharging to Big Black Creek caused fish kills and severely impacted aquatic life in the creek. A groundwater extraction system began operating in the early 1980s, which stopped the discharge to the creek. The creek has recovered to a point where some native fish populations exist once again in the previously affected portion of the creek.

A chain link fence surrounds the covered lagoon area to prohibit entrance by trespassers and prevent the human direct contact health threat.

Construction of a Superfund financed groundwater treatment plant (plant) was completed in September 1994 and has been successfully operating since that time. The required state match for the RA was provided to the EPA through a Superfund State Contract (SSC). The groundwater from the extraction wells installed in the 1980s, previously directed to Lomac's pre-treatment facility prior to discharge to the Muskegon County WWTP, was redirected to the plant when it was completed. Design for an on-site landfill to contain the lagoon area soils and sludge was completed in 1995; however, construction of the landfill was not implemented due to the initiation of settlement negotiations with a PRP group.

The EPA, the United States Department of Justice, EGLE, and the Michigan Department of Attorney General began negotiations with the PRP group (Group) in 1996 in an attempt to have the Group assume the RA. At the Group's request, the EPA conducted a re-evaluation of the Agency selected remedy of constructing an on-site landfill for contaminated soils and sludge and compared it to a Group proposed containment remedy using a slurry wall. The EPA determined that the original selected remedy was still the best remedy for remediation of soils and sludge, unless the Group made some modifications to their proposal. Discussions continued on the possibility of implementing the slurry wall remedy if the Group assumed responsibility for meeting the performance objectives of protecting Big Black Creek and eliminating the human direct contact health threat posed by the contaminated soil. Concurrently, EGLE was also negotiating with Lomac on the development of an interim RA plan, under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, for the operating plant portion of the site.

Verbal agreements on the Consent Decree (Decree) and Statement of Work language were reached between the government Agencies, the Group, and Lomac late in fiscal year (FY) 1998. In July 1999, the EPA, with concurrence by

EGLE, issued an amendment to the Record of Decision (ROD) changing the landfill remedy to the total in-situ containment remedy. Under this agreement, the Group would implement the remedy for the contaminated soils and sludge in the former lagoon area and assume operation of the groundwater extraction and treatment system. Lomac would implement an interim response at the plant site, which would isolate contaminated soils from human direct contact. The funding source for the RA comes in part from the Group's internal allotments and in part from an EPA escrow account set up from bankruptcy funds when the Bofors Nobel, Inc.'s plant closed in 1986. The total initial settlement value is $16 million. Parties to the settlement spent most of FY 1999 working out the final settlement documents language. The settlement includes payment of $500,000 to EGLE for natural resource damages.

In September 1998, the First FYR Report was completed by the EPA with input from EGLE staff. The report concluded that the completed portion of the remedy for the groundwater/lagoon, soil, and sludge OU1 is protective of human health and the environment by removing a significant amount of contaminated groundwater and restricting access to contaminated areas.

A Decree for implementation of the containment remedy was signed by the Group, Lomac, and the EPA in December 1999. A separate Decree for implementation of the interim response at the plant site was signed by Lomac and the state on December 13, 1999. The Group and Lomac have assumed the responsibility for the site cleanup and control of the plant as of February 2000.

In September 2000, EGLE staff reviewed the "Remedial Design Work Plan" and the "Pre-Design Data Acquisition and Treatability Study Work Plan" and provided written comments to the EPA. The remedial design (RD) Work Plan was subsequently approved by the EPA. The review of the "Groundwater Model and Preliminary Design Simulation Report" was completed in July 2003. The PRP Group evaluated alternate treatment methods for long-term ammonia treatment and submitted a recommended approach to EGLE. In January 2003, the PRPs completed conducting vertical aquifer sampling activities to define the screen depth and constructed 11 new monitoring wells for purposes of plume delineation.

In August 2003, a Second FYR Report was completed by the EPA with input from EGLE staff. The report concluded that the remedy currently protects human health and the environment but, in order for the remedy to be protective in the long-term, the following actions need to be taken: confirmation of the effectiveness of extraction wells currently on-site, better maintenance of those wells to improve pumping efficiency, completion of the total in-situ containment remedy design, construction of the designed total in-situ containment remedy, issuance of an OU2 Plant site ROD, continued short and long-term monitoring of the total in-situ containment remedy, and operation and maintenance (O & M) of the total in-situ containment remedy to achieve and maintain remedy cleanup goals.

Implementation of the containment remedy was broken down into two phases. Phase I primarily involves construction of the barrier wall and Phase II includes covering the lagoon area and construction of the treatment wetland. Construction of the barrier wall started in October 2004 and was completed in December 2005. The treatment wetland construction started in the spring of 2006 and was completed in the fall of 2007.

The final inspection for the barrier wall was completed by the Agencies and the parties involved on December 8, 2005. The contractor prepared and submitted a "Barrier Wall Construction Documentation Report" in March 2006. Implementation of the Phase II design for covering the lagoon area began in the spring of 2006. Placement of the top soil cover within the lagoon areas and seeding and planting of the lagoon areas was completed in the spring of 2007. The old buildings housing the pumps were replaced with new durable steel structures with new electrical wiring. The removal and off-site disposal of phorate sludge in the above ground storage tanks was carried out in December 2006.

The Phase II (wetland construction) final inspection was conducted by the EPA, EGLE, and the PRPs in November 2007. The final inspection consisted of: the final completed cap over the lagoon areas, the wetland restoration area outside the fence, and the weir structure. The "Phase II Construction Documentation Report" was completed by Parsons, the PRPs contractor, and submitted to the Agencies in April 2008.

The Third FYR was signed on August 7, 2008. The site inspection was carried out on November 14, 2007, and February 27, 2008. This FYR concluded that the current groundwater containment and extraction system may be capturing contaminated groundwater before reaching Big Black Creek. The FYR recommended to: implement the Restrictive Covenant (RC) drafted in 2006, complete near-term monitoring to confirm the Site's hydraulic characteristics, develop the Performance Standard Verification Plan and Contingent RA Plan, and implement Contingent Actions if extraction well's capture was ineffective.

In early 2009, the PRPs submitted a request to the EPA for the Agencies to consider a possible shut-off of the

Ultraviolet/Oxidation stage of the treatment train at the Bofors Nobel Groundwater Treatment Plant. This request was evaluated and approved by the Agencies.

In May 2011, EGLE staff installed 17 multi-level wells using state funds to help determine if the slurry wall is effectively preventing or stopping contaminants from entering Big Black Creek. This effort became necessary after the PRPs refused to fill in the data gap necessary to make such determination. Evaluation of the analytical data we received from the lab indicates that the remedy is not capturing all contaminated groundwater south of the barrier wall; the constructed wetlands component of the remedy is not working as intended and as a result could constitute an exposure pathway to environmental receptors; groundwater contamination exists outside the western edge of the barrier wall and is not being captured and contained; and groundwater contamination exists in the southwest area of the barrier wall suggesting potential barrier breach in that area.

In late 2011, SulTRAC, the EPA RA contractor, completed the Supplemental Remedial Investigation/Focused Feasibility Study (RI/FFS) workplan for the Lomac Plant OU area. EGLE staff completed reviewing the document and provided written feedback to the EPA. In July 2012, SulTRAC implemented the RI workplan.

The RC for this site was completed and signed on May 4, 2012.

In 2013/2014, EGLW staff, the EPA, and the PRPs conducted a series of meetings and conference calls regarding Amendments to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Public Act 190 of 2012) in general and groundwater surface water interface, Conceptual Site Model, Deminimis Determinations in particular as they relate to the Bofors site.

In 2013/2014 EGLE staff developed a Work Plan and a Scope of Work in connection with deep monitoring wells anticipated to be installed in the Meander Bend Area in Spring/Summer of 2016. These wells are needed to help us understand the extent of groundwater contamination at depth. The PRPs have refused to install such wells.

The Fourth FYR was signed on August 2, 2013. The site inspection was carried out on May 16, 2013. This FYR concluded that the current groundwater containment and extraction system generally provides capture of contaminated groundwater between the barrier wall and Big Black Creek. The FYR recommended to: continue sampling monitoring wells at and around the barrier wall and between the barrier wall and Big Black Creek, implement Contingent RAs proposed if capture of the extraction wells continues to fluctuate, review Act 190 and provide site specific determination on its requirements for the remedy at the site, effectively implement Contingent RAs to satisfy performance standards and RAOs, and develop an institutional control Implementation and Assurance Plan or incorporate equivalent procedures and protections into a site O & M plan.

The OU2 Phase II Investigation of the Supplemental RI was completed in the Summer of 2014. This investigation consisted of abandoning old wells and replacing them with new groundwater monitoring wells where previous investigation indicated the presence of impacted groundwater. In addition, the EPA contractor conducted a geoprobe/soil sampling program including the tank farm area and outside process buildings where chemicals of concern were used/stored. There is a plan to advance a second set of borings within the footprint of the buildings since the buildings have been demolished.

In response to the EPA's request in July 2016, EGLE staff in consultation with the Attorney General's Office, identified Michigan statutes and their promulgated regulations that may represent Applicable or Relevant and Appropriate Requirements (ARARs) for the proposed EPA preliminary response actions at the Lomac site. EGLE staff in consultation with the Attorney General's office, revised the ARARs table based on comments received from the EPA staff.

EGLE staff completed a Work Plan and Scope of Work for performing a deep aquifer investigation in 2016 to properly evaluate the effectiveness of the barrier wall in preventing contamination from migrating below the wall and towards the creek. A contractor was retained to install the deep wells at five locations. This task was completed in November 2016. The final "Remedial Investigation Technical Memorandum" documenting the findings of vertical aquifer sampling and groundwater monitoring was submitted to MDEQ in October 2017.

The Fifth FYR was signed on July 23, 2018. This FYR concluded that the current groundwater containment and extraction system is currently protective of human health and the environment. Recommendations made in the FYR included: confirming that the containment effectiveness of the groundwater extraction wells outside the barrier wall is made consistent and the development of a long-term Site monitoring plan.

Enforcement

Enforcement action was performed under the CERCLA/SARA with the EPA as the lead Agency for enforcement. A Decree for implementation of the containment remedy was signed by the Group, Lomac, and the EPA in December 1999. A separate Decree for implementation of the interim response at the plant site was signed by Lomac and the state on December 13, 1999.

Operable Units for Bofors Nobel, Inc.

OU1 Groundwater Soils Sludges

OU2 Bofors Lomac Plant

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/17/1990

Location Name: OU1 Groundwater Soils Sludges

Comments:
The original ROD selected on-site incineration of contaminated soil and sludge and construction of a new groundwater treatment plant. Estimated annual O & M for the selected remedy is $313,000 for five years. The present worth is estimated at $70,874,000.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 7/22/1992

Location Name: OU1 Groundwater Soils Sludges

Comments:
Due to increases in costs and the volume of soil needing treatment, the incineration option proved to be cost prohibitive. The ROD was amended to select on-site landfilling for soil and sludge.

Record of Decision **Amendment:** 2 **ESD:** 0 **Effective:** 7/16/1999

Location Name: OU1 Groundwater Soils Sludges

Comments:
The ROD was amended for a second time in 1999 to change the remedy to the PRP proposed total in-situ containment remedy.

Response Activities - In Progress

Activity: Remedial Investigation **Start Date:** 6/10/2012 **End Date:** 1/1/2021

Operable Unit:
Bofors Nobel, Inc. - OU2 Bofors Lomac Plant

Status:
In Progress

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$0.00	Federal	$0.00	

Comments:
SulTRAC, the EPA RA contractor for the Plant Site OU, completed the work plan for the Supplemental RI/FFS. We reviewed the document and provided written feedback to the EPA and its contractor. The first and second phases of the RI have been completed. However, the RA contractor is still working on the report detailing the supplemental remedial investigation work along with the remedial alternatives screening memo. Dilapidated buildings on site were demolished in the Summer of 2015. Further investigative work in the footprint of the former structures may be

necessary to determine possible contamination source areas. Costs for this future need are unknown until a remedy is selected.

Activity: Interim Response | **Start Date:** 12/31/1999 | **End Date:** 1/1/2021

Operable Unit:
Bofors Nobel, Inc. - OU2 Bofors Lomac Plant

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Lomac is implementing the interim RA Plant soil remedy which includes covering of some soils and implementation of deed restrictions. The Hygienic Groundwater Wells" and "Hot Spot 1 Asphalt Cover Maintenance" Reports are being submitted to EGLE annually. The ROD for the final RA is yet to be developed. "

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 3/1/2000 | **End Date:** 9/30/2051

Operable Unit:
Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,639,990.00	Private	$0.00	

Comments:
The PRPs will maintain this total in-situ containment remedy under the federal Decree. The barrier wall construction was completed in December 2005 and construction of the wetland was completed in December 2007. Also, the groundwater extraction and treatment system continues to operate.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 8/2/2017 | **End Date:** 8/2/2018

Operable Unit:
Bofors Nobel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Since hazardous substances remain on site, another FYR was completed in 2018. In October 2017, EGLE staff sent a letter to the EPA identifying issues recommended for inclusion in the FYR Report for this Site.

Activity: 5 Year Review | **Start Date:** 1/2/2013 | **End Date:** 8/2/2013

Operable Unit:
Bofors Nobel, Inc. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Fourth FYR was signed on August 2, 2013. The Review concluded that "the remedy for this site is protective of human health and the environment in the short term. To ensure long-term protectiveness, the following actions need to be taken: continued monitoring of groundwater at and around the Barrier Wall and Big Black Creek; implementation of Contingent Remedial Actions to address lack of complete groundwater capture; provide a site-specific determination on Act 190 as to its requirements; and, effectively implement Contingent Remedial Actions to satisfy Performance Standards and Remedial Action Objectives."

Activity: 5 Year Review | **Start Date:** 1/2/2008 | **End Date:** 8/7/2008

Operable Unit:

Status:

Bofors Nobel, Inc. - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR was signed on August 7, 2008. The site inspection was carried out on November 14, 2007, and February 27, 2008. This FYR concluded that the current groundwater containment and extraction system may be capturing contaminated groundwater before reaching Big Black Creek. The FYR recommended to: implement the Restrictive Covenant drafted in 2006, complete near-term monitoring to confirm the site's hydraulic characteristics, develop the Performance Standard Verification Plan and Contingent RA Plan, and implement Contingent Actions if extraction well's capture is ineffective.

Activity: Remedial Action | **Start Date:** 10/1/2004 | **End Date:** 12/15/2007

Operable Unit: Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$14,784,530.00	Private	$348,000.00	Federal

Comments:
The 1999 amended ROD changed the landfill remedy to the total in-situ containment remedy. The Group has implemented this remedy for the contaminated soils and sludge in the former lagoon area and the groundwater. The barrier wall construction was completed in December 2005. The wetland construction (Phase ll) was completed in December 2007. The O & M of the plant and groundwater pumping and treatment system still continues. The funding source for the RA comes in part from the Group's internal allotments and in part from an escrow account set up from bankruptcy funds when the Bofors Nobel, Inc.'s plant closed in 1986. The total initial settlement value is $16 million.

Activity: 5 Year Review | **Start Date:** 4/7/2003 | **End Date:** 8/7/2003

Operable Unit: Bofors Nobel, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The assessment of the Second FYR report found that the completed Plant Phase OU remedy has been constructed in accordance with the requirements of the ROD, and that O & M of the groundwater treatment plant and extraction wells is controlling groundwater that discharges to Big Black Creek.

Activity: Interim Response | **Start Date:** 1/30/1999 | **End Date:** 10/30/1999

Operable Unit: Bofors Nobel, Inc. - OU2 Bofors Lomac Plant | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$500,000.00	Private	$0.00	

Comments:
Lomac took several steps to reduce existing contamination on the plant property and covered contaminated soils to reduce direct contact threats.

Activity: 5 Year Review | **Start Date:** 5/5/1998 | **End Date:** 9/30/1998

Operable Unit: Bofors Nobel, Inc. - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The First FYR was completed by the EPA on September 30, 1998. The report concluded that the completed portion of the groundwater/lagoon, soil and sludge OU remedy is protective of human health and the environment by

removing a significant amount of contaminated groundwater and restricting access to the contaminated areas.

Activity: Long Term Remedial Action | **Start Date:** 9/30/1997 | **End Date:** 2/28/2000

Operable Unit:
Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,547,501.00	Federal	$174,943.00	State

Comments:
The state oversaw the Plant operation until the PRPs took over in February 2000. This is the long-term RA of the Plant performed by the MDEQ.

Activity: Remedial Action | **Start Date:** 7/30/1993 | **End Date:** 9/30/1997

Operable Unit:
Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$14,672,700.00	Federal	$1,630,300.00	State

Comments:
The Plant has been operational since 1994. The system continues to prevent contaminated groundwater from discharging to the creek. This RA was performed under a SSC between the state and the EPA.

Activity: Remedial Design | **Start Date:** 9/30/1991 | **End Date:** 9/30/1993

Operable Unit:
Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Federal	$0.00	

Comments:
The RD consisted of the Plant and Landfill. Both designs were completed in 1993. No state funds were used.

Activity: Remedial Investigation | **Start Date:** 9/30/1988 | **End Date:** 9/30/1990

Operable Unit:
Bofors Nobel, Inc. - OU2 Bofors Lomac Plant

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$5,100,000.00	Private	$0.00	

Comments:
Note: the Primary Estimated Cost indicated consists of state and escrow funding sources.
To facilitate investigation, the site was divided into the Lagoon Area OU and the Plant Site OU.

Activity: Interim Response | **Start Date:** 9/30/1987 | **End Date:** 9/30/1988

Operable Unit:
Bofors Nobel, Inc. - OU1 Groundwater Soils Sludges

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$7,000,000.00	Private	$1,620,000.00	State

Comments:
Interim Response included fencing the site, installation of monitoring and purge wells, complete upgrade of the purge well electrical system, road construction, construction of a decontamination facility, an office trailer, an equipment storage area, and a treatability study on the groundwater.

Response Activities - Future Need

Activity: Remedial Action | **Start Date:** 10/1/2022 | **End Date:** 9/30/2023

Operable Unit:
Bofors Nobel, Inc. - OU2 Bofors Lomac Plant

Status:
Future Need

Primary Cost:
$30,000,000.00

Primary Source:
Federal

Secondary Cost:
$3,000,000.00

Secondary Source:
State

Comments:
The potential RA at the former Lomac Site. Cost estimates are unknown at this point, but the assumed cost is $30,000,000 with a $3,000,000 State match on the remedy.

Activity: 5 Year Review | **Start Date:** 8/1/2022 | **End Date:** 8/1/2023

Operable Unit:
Bofors Nobel, Inc. - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
The next FYR is due in August 2023.

Activity: Remedial Design | **Start Date:** 10/1/2021 | **End Date:** 9/30/2022

Operable Unit:
Bofors Nobel, Inc. - OU2 Bofors Lomac Plant

Status:
Future Need

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
Design of OU2 Lomac Plant Site remedy which has not yet been selected.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 9/22/1992 | **Most Recent Mod:** 5/27/2020

Location Name: Bofors Nobel, Inc. - OU Entire Site | **Status:** Final Close

Total Contract:
$0.00

State Total:
$1,502,087.00

State Share Balance:
$0.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:

Federal Grants

Grant #: V03E00776 | **Activity:** Management Assistance | **End Date:** 3/31/2019 | **Status:** Closed

Budget Amount:
$0.00

State Total Award:
$0.00

Exp to Date:
$21,177.09

Exp for Year:
$9,180.65

Grant #: V03E00776 | **Activity:** Management Assistance | **End Date:** 3/31/2018 | **Status:** Closed

Fed Total Award:
$279,328.61

State Total Award:
$0.00

Exp to Date:
$12,513.14

Exp for Year:
$0.00

Grant #: V02E00776 | **Activity:** | **End Date:** | **Status:**

	Management Assistance	3/31/2017	Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $60,208.43	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $48,722.43	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $68,975.05	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $68,975.05	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $44,479.75	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $59,060.40	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $121,987.43	**Exp for Year:** $0.00
Grant #: V985232-01-LT	**Activity:** Long Term Remedial Action	**End Date:** 9/30/2006	**Status:** Closed
Fed Total Award: $1,664,483.00	**State Total Award:** $184,943.00	**Exp to Date:** $1,749,443.95	**Exp for Year:** $0.00
Grant #: V985232-01-MA	**Activity:** Management Assistance	**End Date:** 9/30/2006	**Status:** Closed
Fed Total Award: $0.00	**State Total Award:** $0.00	**Exp to Date:** $99,982.05	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $66,626.43	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $64,946.60	**Exp for Year:** $0.00

Bofors Nobel, Inc.

Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $67,159.23	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $48,696.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Duell & Gardner Landfill

State Site ID:
61000016

Federal Site ID:
C3

Full Address:
1285 East Bard Road, Muskegon, MI, 49445

County:
Muskegon

Location

The Duell & Gardner Landfill site is located at 1285 East Bard Road in Dalton Township, approximately 5 miles north of the city of Muskegon. The site is comprised of an 80-acre parcel; however, the landfill itself covers an area of about four acres. Land use in the area is primarily residential and agricultural. Approximately 140 people live within a 1-mile radius and 1,200 people live within a 2-mile radius of the site. The landfill is located on the southern half of the property. Two residences and an agricultural field are located on the northern half of the property. Regional surface water drainage is to the south and east of the site toward Bear Creek approximately 1/2 mile from the site. Some drainage may flow to an agricultural drainage ditch located 400 feet south of the property.

Status

The Duell and Gardner Landfill operated between 1940 and 1973. The site was placed on the NPL in 1983 and it was determined during the Remedial Investigation (RI) that local chemical companies had dumped waste there through the late 1960s. The cleanup of the site was focused on containing the exposed waste and treating the contamination in the groundwater. The hazardous waste containers and some other contaminated materials were removed from the site and disposed of off-site. The remaining contaminated material and soils were consolidated into a 4-acre on-site landfill. A groundwater pump and treat system with an upgradient infiltration gallery for the treated groundwater was also operated at the site.

In the fall of 2018 sampling for per- and polyfluoroalkyl substances (PFAS) chemicals was conducted by EGLE to determine whether these compounds were present in the groundwater at the site and whether their potential presence would impact the site being delisted from the National Priorities List (NPL) and the proposed plan to abandon the on-site monitoring wells. EGLE sampled all 23 monitoring wells on-site and all but one well was non-detect for PFAS. The detection in this one well (20 ng/l) was below the drinking water criteria of 70 ng/L set at that time. EGLE then identified residential wells in close proximity and downgradient of the above mentioned monitoring well. One residential well was identified and sampled by EGLE contractors. The analytical results from this well were non-detect for any PFAS chemicals. EGLE resampled a subset of on-site monitoring wells in May 2019 as follow up to the PFAS sampling conducted in the fall of 2018. A subset of eleven wells were sampled with the same monitoring well as previous registering a detection of 10 ng/L.

This sampling indicated that there was only a low potential for PFAS contamination at this site. As a result, the site was deleted from the NPL in September 2019. Abandonment of the monitoring wells is scheduled for the future.

History

The Duell & Gardner Landfill is a closed landfill that was operated from the 1940s through 1973. It is believed that local chemical companies dumped waste at the landfill until the late 1960s. Materials on-site included approximately 500 drums in various stages of deterioration scattered in the woods adjacent to the landfill, as well as hundreds of lab bottles, areas of refuse/debris, and piles of unidentified sludge-like material. The landfill ceased operating in December 1973 and is no longer used. There is no fence, but warning signs have been placed on the periphery of the site.

The site was placed on the National Priority List (NPL) on September 8, 1983. In September 1985, as part of an EPA removal action, about 500 drums, some associated soil and debris, and sludge-like material were collected from various locations on-site, placed in a staging area, and sampled. All staged materials were disposed of at appropriate off-site

facilities in early 1986.

A Remedial Investigation (RI) and Feasibility Study (FS) began in late 1986 to determine the nature and extent of contamination, and to evaluate cleanup alternatives. The RI was completed in April 1992 and determined that both groundwater and soil contamination were present at the site. Soil contaminants include gentian violet, aniline, dimethylaniline, and pesticides. Groundwater contaminants include carbon tetrachloride, chloroform, and dimethylaniline. These contaminants were found at concentrations above unrestricted residential cleanup standards. Groundwater flows to the south/southeast. There are several residential wells in use about 3/4 of a mile south of the site.

A treatability study was performed to determine which cleanup technologies may be effective in treating the unusual contaminants found at the Duell & Gardner Landfill site. The FS used the information from the RI and the treatability study to evaluate a variety of cleanup alternatives. The FS was completed in March 1993. The state sampled residential wells near the site in February 1993. The data from this sampling indicated that the residential wells had not been impacted by the contaminated groundwater.

EGLE and the EPA signed a Record of Decision (ROD) for the site on September 7, 1993. The ROD called for the treatment of contaminated soil on-site using low-temperature thermal desorption, installation of a landfill cover, and extraction and carbon adsorption treatment of contaminated groundwater.

The EPA sent a Unilateral Administrative Order to CPC International, Inc. in June 1994, requiring them to conduct the design and cleanup. The work plan for the design and implementation of the selected remedy was approved by the EPA on October 19, 1995. The company began fieldwork on the pre-design investigation on November 20, 1995. This fieldwork involved the collection of soil and groundwater samples and the installation of new groundwater monitoring wells. The final pre-design investigation report was submitted on November 15, 1996. The data in this report provided a full definition of the groundwater contaminant plume and indicated that there was no immediate threat to residential wells in the area. Based upon the pre-design investigation report, the EPA and EGLE made changes to the previously selected cleanup plan.

The EPA took over the remedial action (RA) lead for this project beginning in September 2000. A State Superfund Contract (SSC) for RA at the site was signed by both the state and the EPA in September 2000. The cost of the RA was $2,500,000. The state's cost for the RA under this SSC was $250,000.

The final design of the remedy was completed in 2000 using federal funds. The ROD was amended on June 29, 2001. The amended ROD calls for excavation and appropriate disposal of contaminated soils and eliminates low-temperature thermal desorption from the remedy; requires construction of a landfill cap; retains the requirement of construction of a groundwater pump and treat (P & T) system, and requires long-term groundwater monitoring to ensure that contaminated groundwater does not pose a threat to any potential receptors.

Construction of the final remedy at the site was completed in August 2001. The RA consisted of the construction of a landfill cap and a groundwater treatment system. The landfill cap was constructed between October 2000 and April 2001. During the completion of these activities, the eight-acre kidney-shaped waste area was consolidated into a four-acre rectangular landfill area. Hot spot soil areas identified during the RI were excavated and consolidated onto the four-acre rectangular landfill. Approximately 2,000 cubic yards of gentian violet impacted soils that were identified inside the northern and southern boundary of the four-acre landfill were excavated, sampled, analyzed, and consolidated on-site within an approved special waste cell under the cap. The groundwater treatment system construction consisting of four recovery wells, an infiltration gallery, and a treatment building was completed in August 2001. The Landfill Monitoring Plan and the Operation and Maintenance (O & M) Manual were completed by the United States Army Corps of Engineers (USACE) contractors in 2002.

The First Five-Year Review (FYR) for this site was signed by the EPA in September 2005. The FYR Report concluded that the site remedy is protective of human health and the environment because impacted soils have been removed, wastes have been consolidated into a four-acre landfill and covered with an impermeable cover, and impacted groundwater is currently being recovered and treated on-site. However, in order for the remedy to be protective in the long term, institutional controls (ICs) need to be put in place to prevent exposure to contaminated groundwater and soils. In comments on the FYR, EGLE expressed a concern that there has been no monitoring of landfill gas around the perimeter of the landfill.

The Final Draft Long-Term Monitoring Plan for the site was approved by the EPA in 2006. EGLE did not approve of the plan as it did not include metals as part of the monitoring plan. Consequently, EGLE proceeded to split samples for

groundwater during the annual groundwater monitoring event in September 2006.

In 2006, EGLE staff identified 21 private wells for sampling in the vicinity of the landfill that have the potential of being impacted by the landfill plume. The actual sampling of the private wells was conducted by the Muskegon County Health Department under contract with EGLE. The samples thus collected were submitted to the EGLE Drinking Water Laboratory in Lansing for analysis. Lead, arsenic, chloroform, dichloromethane, and total trihalomethanes were detected in two private wells at levels below the Federal Maximum Contaminant Level.

In September 2006, EGLE installed multi-level temporary wells in suspect areas for contaminant screening purposes. These wells were sampled in December 2007. The sampling results from one of the temporary multi-level wells indicated the presence of vinyl chloride and 1,2-dichloroethane at depths of 20 feet and 50 feet. These two chemicals are not listed as contaminants of concern in the ROD. In 2008, EGLE took confirmatory samples from the previously installed temporary wells and installed three additional multi-level wells downgradient of the well where the two new contaminants were found. EGLE made recommendations to the EPA to install permanent monitoring well(s) in the area based on data obtained from the temporary wells. Consequently, the EPA installed three monitoring wells at the recommended locations.

The site was surveyed and restrictive covenants (RCs) put in place as of 2007.

The Second FYR was signed on March 8, 2010. The FYR concluded that the remedy in place is protective of human health and the environment because impacted soils have been removed; wastes have been consolidated into a four-acre landfill and covered with an impermeable cover; impacted groundwater is currently being recovered and treated on-site, and ICs to restrict current and future use of the site have been implemented. The remedy will continue to ensure protectiveness at the site until cleanup goals are met.

In May 2010, the EPA temporarily shut down the groundwater extraction and treatment system because the cleanup standards were achieved in the affected monitoring wells. The March 2012 groundwater analytical results indicate that chemical constituents in the groundwater have remained below Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, cleanup criteria since the system shutdown in May 2010. As per the agreement between the agencies, the March 2012 annual monitoring event represents the last monitoring event before system decommissioning.

EGLE took over O & M at the site in August 2012. The system has been decommissioned and the treatment building demolished and disposed of off-site per the Work Plan. The Final RA Report and Operation, Maintenance and Monitoring Plan were prepared by Shaw Environmental, Inc. on behalf of the USACE and submitted to EGLE in October and November 2012. The Final Close-Out Report was completed by the EPA and received in February 2013.

Groundwater analytical results from the April 2013 round of sampling indicate that chemical constituents in the groundwater have remained below the Part 201 cleanup criteria since the system shutdown in May 2010. This was the first monitoring event since EGLE took over O & M at the site in August 2012.

The state has continued to maintain the landfill cap since taking over O & M and the permanent marker was placed on-site in October 2013. Groundwater sampling was completed in April 2014. This was the second monitoring event since the EGLE took over O & M at the site in August 2012.

Groundwater analytical results from the April 2015 round of sampling indicate that chemical constituents in the groundwater have remained below the Part 201 cleanup criteria since the system shutdown in May 2010. This was the third monitoring event since the EGLE took over O & M at the site in August 2012.

The Third FYR was executed by the EPA on March 8, 2015. The results of the FYR show that the remedy at the site is protective of human health and the environment because impacted soils have been removed; wastes have been consolidated into a four-acre landfill and covered with an impermeable cover; groundwater is currently meeting Michigan Part 201 and Part 22 water standards and no longer needs treatment; and ICs to restrict current and future use of the site and to ensure long-term stewardship have been implemented. ICs in the form of an environmental covenant are in place for the site. The IC Plan ensures long-term stewardship because it establishes a process to ensure that ICs are in place, maintained, and effective. The state continues to maintain the landfill cap (mowing and site inspections) as part of continuing O & M requirements. There were no new issues or follow-up actions cited in this review.

After reviewing data from groundwater sampling events in 2010-2015, EGLE determined that there was not a need for

groundwater sampling in 2016. Sampling over this time period showed that chemical constituents in the groundwater have remained below the Part 201 cleanup criteria since the P & T system shutdown in May 2010. The EPA was in agreement in the decision to not sample in 2016.

In the fall of 2018 sampling for emerging chemicals was conducted at the site. EGLE sampled all 23 monitoring wells on-site and all but one well was non-detect for per- and polyfluoroalkyl substances (PFAS) chemicals. The detection in this one well was 20 nanograms per liter (ng/L) of Perfluorooctanoic (PFOS), which was below the drinking water criteria of 70 ng/L set at that time. EGLE assessed the situation and identified residential wells in close proximity and downgradient of the above mentioned monitoring well. One residential well was identified and sampled by EGLE contractors. The analytical results from this well were non-detect for any PFAS chemicals. EGLE resampled a subset of on-site monitoring wells in May 2019 as follow up to the PFAS sampling conducted in the fall of 2018. A subset of eleven wells were sampled in May 2019 with the same monitoring well as previous registering a detection of 10 ng/L of PFOS, which was below the drinking water criteria of 70 ng/L. This well had a previous detection of 20 PFOS ng/L.

The EPA issued a Notice of Intent to delete the Duell & Gardner Landfill Site from the NPL on July 31, 2019. After the public comment period ended on August 30, 2019, the Duell & Gardner Landfill Site was officially deleted from the NPL on September 30, 2019. EGLE concurred with the decision to delete the site from the NPL.

Enforcement

The EPA issued a Unilateral Administrative Order (Order) for the design and construction of the remedy to CPC International, Inc., in June 1994. CPC International, Inc., performed the pre-design investigation. In September 1997, CPC International, Inc., notified the EPA and the state that they would not be completing any other work under the Order because of a favorable federal court ruling at a related site.

In September 1999, a Consent Decree was entered that required Best Foods (formerly known as CPC International, Inc.) to pay the state $10,000 in reimbursement of past response activity costs. The settlement was influenced by the United States Supreme Court decision on derivative liability in the United States vs. Best Foods case regarding the Ott/Story/Cordova facility. This settlement absolved Best Foods of any and all liabilities they may have on both Duell & Gardner and Ott/Story/Cordova sites (some of the waste disposed of at the Duell & Gardner Landfill originated at the Ott/Story/Cordova site).

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/7/1993

Location Name: Duell & Gardner Landfill - OU Entire Site

Comments:
The original ROD called for on-site treatment of soils, construction of a landfill cap, and extraction and carbon treatment of groundwater.

Total present worth cost was estimated at $5,902,000 for 30 years.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 6/29/2001

Location Name: Duell & Gardner Landfill - OU Entire Site

Comments:
The amended ROD calls for excavation and appropriate disposal of contaminated soils and eliminates low temperature thermal desorption from the remedy; requires construction of a landfill cap; retains the requirement of construction of a groundwater pump and treat system; and requires long-term groundwater monitoring to ensure that contaminated groundwater does not pose a threat to any potential receptors.

The total estimated cost indicated above consists of total capital cost and annual capital cost for off-site soil disposal and groundwater monitoring. The total present worth cost for 30 years is estimated at $2,436,698.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 8/10/2012 **End Date:** 8/11/2042

Operable Unit:
Duell & Gardner Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:
$58,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
As of August 2012, the site had transitioned to the state. The state has assumed responsibility for landfill cap maintenance and groundwater monitoring since the ten-year LTRA has officially ended. The state will maintain the site at an estimated cost of $58,000 per year for 30 years. This initial cost estimate of $58,000 per year for O & M has been changed to $10,000 per year due to the reduced activities on-site. The $10,000 per year is adequate for cap maintenance and the reduced frequency of groundwater sampling.

Authorization balance to be used to conduct groundwater sampling and analysis for PFAS and for landfill O&M, and well abandonment.

Response Activities - Completed

Activity: 5 Year Review
Start Date: 3/8/2019
End Date: 3/3/2020

Operable Unit:
Duell & Gardner Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The fourth Five-Year Review has been completed. The remedy at the site is protective of human health and the environment because impacted soils have been removed; wastes have been consolidated into a four-acre landfill.

Activity: 5 Year Review
Start Date: 3/8/2014
End Date: 3/8/2015

Operable Unit:
Duell & Gardner Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
This FYR was executed on March 8, 2015. The remedy at the site is protective of human health and the environment because impacted soils have been removed; wastes have been consolidated into a four-acre landfill and covered with an impermeable cover; groundwater is currently meeting Michigan Part 201 and Part 22 water standards and no longer needs treatment; and ICs to restrict current and future use of the site and to ensure long-term stewardship have been implemented. ICs in the form of an environmental covenant are in place for the site. The IC Plan ensures Long-Term Stewardship because it establishes a process to ensure that ICs are in place, maintained, and effective.

Activity: 5 Year Review
Start Date: 11/2/2009
End Date: 3/8/2010

Operable Unit:
Duell & Gardner Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
This FYR was signed on March 8, 2010. The FYR concluded that the remedy in place is protective of human health and the environment because impacted soils have been removed; wastes have been consolidated into a four-acre landfill and covered with an impermeable cover; impacted groundwater is currently being recovered and treated on-site; and ICs to restrict current and future use of the site have been implemented. The remedy will continue to ensure protectiveness at the site until cleanup goals are met.

Activity: Operation and Maintenance
Start Date: 7/21/2006
End Date: 8/10/2012

Operable Unit:

Status:

Duell & Gardner Landfill - OU Entire Site | Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$200,000.00	State	$0.00	

Comments:
The state conducted analysis of split samples for metals during the annual groundwater monitoring event in 2006. The state installed additional temporary multi-level monitoring wells where data gaps existed in 2006. A RC was put in place in 2007. A permanent marker was installed at the site in October 2013.

Activity: 5 Year Review | **Start Date:** 6/23/2005 | **End Date:** 9/2/2005

Operable Unit: Duell & Gardner Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The EPA signed the FYR Report on September 2, 2005. The FYR Report concluded that the site remedy is protective of human health and the environment because impacted soils have been removed, wastes have been consolidated into a four-acre landfill and covered with an impermeable cover, and impacted groundwater is currently being covered and treated on-site. In order for the remedy to be protective in the long term, ICs have been put in place since 2007 to prevent exposure to contaminated groundwater and soils.

Activity: Long Term Remedial Action | **Start Date:** 7/21/2001 | **End Date:** 8/10/2012

Operable Unit: Duell & Gardner Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$558,000.00	Federal	$0.00	

Comments:
Consists of operation of the groundwater extraction and treatment system and associated monitoring of the groundwater. Costs are a rough estimate. State advance match from RI covered any state funding match necessary for this activity being conducted under a SSC.

On April 18, 2012, the EPA, USACE, MDEQ, and Shaw Environmental, Inc. conducted a site visit to ensure that all agencies were in agreement with the decommissioning process as well as the items that would be addressed and the procedures that would be followed.

The ten-year long term remedial action (LTRA) time period ended in August 2012 and the site officially transitioned to the state at that time.

Activity: Remedial Action | **Start Date:** 10/12/2000 | **End Date:** 7/20/2001

Operable Unit: Duell & Gardner Landfill - OU Entire Site | **Status:** Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,500,000.00	Federal	$0.00	State

Comments:
The RA at this site has two components: the landfill capping and installation of the groundwater extraction and treatment system. The landfill capping construction started in October 2000 and was completed on April 20, 2001. The groundwater treatment and extraction system construction started in April 2001 and was completed on August 20, 2001. The state's 10 percent match of $250,000 is covered by the advance match the state paid during the RI.

Activity: Remedial Design | **Start Date:** 9/1/2000 | **End Date:** 10/12/2000

Operable Unit: Duell & Gardner Landfill - OU Entire Site | **Status:** Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$291,000.00	Federal	$0.00	

Comments:
The Remedial Design (RD) was completed by the USACE Rapid Response Team. The design consisted of the landfill cap and extraction and treatment system for the contaminated groundwater.

Activity: Remedial Design | **Start Date:** 7/1/1994 | **End Date:** 7/30/1996

Operable Unit: Duell & Gardner Landfill - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The bulk of the Remedial Design (RD) expenditures were incurred by private parties and are not included, as they only report to the state on a voluntary basis.

Activity: Remedial Investigation | **Start Date:** 4/1/1987 | **End Date:** 3/30/1993

Operable Unit: Duell & Gardner Landfill - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$874,120.00	Federal	$465,461.00	State

Comments:
The state performed the RI/FS using a mix of state and federal funding through a cooperative agreement (V005922-01) with the EPA. The state funding was designated as Advance Match, and intended to be used to meet RA and LTRA match requirements.

Activity: Interim Response | **Start Date:** 9/30/1985 | **End Date:** 3/30/1986

Operable Unit: Duell & Gardner Landfill - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$129,000.00	Federal	$0.00	

Comments:
Removal of drums, laboratory bottles, and soil by the EPA.

Response Activities - Future Need

Activity: Emergency | **Start Date:** 8/10/2020 | **End Date:** 8/24/2020

Operable Unit: Duell & Gardner Landfill - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$15,000.00	State		

Comments:
Landfill repairs as a result of unauthorized activities conducted by the property owner.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 9/25/2000 | **Most Recent Mod:** 5/27/2020

Location Name: Duell & Gardner Landfill - OU Entire Site | **Status:** Open - Active

Total Contract:	State Total:	State Share Balance:
$0.00	$250,000.00	$250,000.00

Duell & Gardner Landfill

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:
453102

Federal Grants

Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $953.17	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $36,846.14	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $23,100.84	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $29,843.37	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $44,431.95	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $40,535.48	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $38,803.01	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $10,919.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $28,758.00	**Exp for Year:** $0.00
Grant #: V985568-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/2001	**Status:** Closed

Duell & Gardner Landfill

Fed Total Award: $56,359.00	**State Total Award:** $0.00	**Exp to Date:** $56,072.17	**Exp for Year:** $0.00
Grant #: V005922-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/1994	**Status:** Closed
Fed Total Award: $874,407.00	**State Total Award:** $528,450.00	**Exp to Date:** $1,283,509.33	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Kaydon Corp.

State Site ID:
61000023

Federal Site ID:
AD

Full Address:
2860 McCracken Street, Norton Shores, MI, 49443

County:
Muskegon

Location

The Kaydon Corporation (Kaydon) facility is located on 26.2-acres at 2860 McCracken Street in the city of Norton Shores, Muskegon County, Michigan. Land use around the facility is a mixture of industrial and residential. The property is bounded to the north by a Grand Trunk Railroad right-of-way and residential homes, to the east by Estes Street and small industrial facilities, and to the south and west by residential properties. The property is approximately 600 feet from Ruddiman Creek, which discharges into Muskegon Lake, which in turn discharges into Lake Michigan.

Status

Kaydon corporation is an active manufacturing company that has been producing various types of bearings since they purchased the property from White Motors Company in 1941. Kaydon discharged processing water containing volatile organic compounds (VOCs), metals, cyanide, and polynuclear aromatic hydrocarbons into unlined lagoons and directly into Ruddiman Creek until 1968. These contaminants impacted on-property soils, the groundwater on and off the property, and surface water and sediment in Ruddiman Creek.

Semi-annual groundwater sampling for the off-property groundwater operable unit (OU)2 continued through 2019. Nineteen new groundwater monitoring wells were installed in early 2018.

Throughout 2018, EGLE (formerly known as MDEQ) and Department of Health and Human Services worked with Kaydon and their consultant to develop a Vapor Intrusion (VI) Work Plan to address VI concerns associated in the VOC plume under OU2. The VI Work Plan was completed and implemented in April 2019. Soil gas information is being collected from residential properties within the VOC plume under OU2.

Discussions between EGLE, Kaydon, and their consultant continued through 2018 regarding the April 2017 draft Human Health Risk Assessment report and the development of a groundwater use ordinance to restrict the use of groundwater from non-potable irrigation wells. This work was put on hold in 2019 and is expected to pick up again in 2020.
When completed, a report detailing these Response Activity Work Plan activities is expected, as well as a Monitoring Plan for OU2, and development of a groundwater use restriction ordinance for OU2.

History

White Motors Company originally owned the property and manufactured engine blocks. Kaydon purchased the property in 1941 and began manufacturing roller bearings, ball bearings, and various bearing assemblies, and continues to manufacture products on the site. Kaydon discharged process wastewater into unlined lagoons and directly into Ruddiman Creek until 1968. The wastewater contained VOCs, metals, cyanide, and polynuclear aromatic hydrocarbons. These contaminants impacted the on-property soils, the groundwater on and off the property, and the surface water and sediments of Ruddiman Creek at concentrations exceeding both the generic residential and the industrial criteria of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

Investigation at Kaydon began in October 1982, with a request by the Michigan Department of Natural Resources for a hydrological investigation of the area. The investigation results released in 1985 identified the presence of chlorinated

organic solvents (1,1-dichloroethane and 1,2-dichloroethylene) in groundwater migrating from the Kaydon facility.

In 1986, Kaydon excavated the lagoon area, removing 1,500 cubic yards of contaminated soil and sludges, which were taken off-property for disposal in an approved landfill.
In 1987, Kaydon installed and began operation of two groundwater purge wells to capture contaminants leaving the property. Kaydon was added to the National Priorities List (NPL) in February 1990.

In November 1992, the EPA published a Site Analysis Report to assess and document past activities that may have contributed to the groundwater, surface water, and soil contamination associated with the property. The report identified potential areas of concern based on aerial photographs and known past hazardous waste storage and disposal practices. In 1993, Kaydon began conducting an investigation of these identified areas of concern. The analytical results from soil samples taken in the former lagoon area (excavated in 1986) confirmed that the remaining contaminant concentrations in the soils of this area were below the NREPA criteria for limited industrial use.

In 1997, Kaydon submitted a Remedial Action Plan (RAP) for the remaining on-property soil and groundwater contamination to EGLE for review. However, after the submittal and partial review of this RAP, an additional area of significant contamination was identified. This area, identified as the Dumpster and Sludge area, was investigated and both the soils and the groundwater were contaminated at concentrations above the NREPA cleanup criteria. The RAP for the remaining on-property contamination was withdrawn pending response actions for the Dumpster and Sludge area.

An interim response was conducted in the Dumpster and Sludge area in July 1998. The interim response consisted of removal and disposal of contaminated soils, as well as extraction of visually impacted, due to oil sheen, groundwater. Kaydon submitted an interim response activities report to EGLE on January 21, 1999, and identified another area of known contamination, the Used Oil Vault area.

The Used Oil Vault area, located east of the Kaydon manufacturing plant building, included a 20,000-gallon concrete vault originally used as a settling basin for process waters. In July 1998, the vault housed a 10,000-gallon steel oil tank used to store machine coolant oils. Kaydon conducted an investigation and removal action without notification to EGLE prior to reporting their findings in January 21, 1999.

Kaydon performed further investigatory work in both the Dumpster and Sludge and Used Oil Vault area on-property. Based on the results of this work, Kaydon submitted a work plan in December 2000. The work plan proposed a change in the design of the on-property groundwater extraction system to install an additional groundwater purge well near the location of the former dumpster area.

All on-property investigation work was believed to be completed, and a draft revised RAP for the on-property soil and groundwater contamination was submitted in November 2001 and was commented on by EGLE. Based upon EGLE comments, the revised RAP, now denoted as an Interim RAP, was submitted in October 2002 and was reviewed in early 2003 under the new Administrative Rules of Part 201. Based upon this review, EGLE requested that Kaydon conduct an indoor air investigation to complete requirements included in the new Administrative Rules of Part 201. Kaydon submitted a work plan for this investigation which was reviewed and approved by EGLE. The indoor air investigation was conducted in July 2003. The report of this investigation was submitted and approved by EGLE in 2004.

Kaydon submitted a work plan in December 2000 for investigation of the off-property OU groundwater contamination. EGLE provided comments on the work plan, and the off-property investigation was conducted from 2001 through 2003. A report on this groundwater investigation, which included both the on-property and the off-property groundwater contamination plume, was submitted to EGLE in 2004.

Discussions between Kaydon and EGLE in 2005 determined that an additional extraction well was not needed as part of the on-property groundwater extraction system.
EGLE proposed installation of one additional monitoring well and several piezometers on-property to complete the on-property monitoring network which was accomplished in late 2006.

The EPA developed and finalized a Preliminary Close-Out Report, which stated that all of the on-property construction for the remedy had been completed. The Preliminary Close-Out Report, a requirement in the Superfund process, was signed in June 2006.

In June 2008, both EGLE and Kaydon agreed to perform a Two-Year Pilot Test Shutdown of the on-property

groundwater extraction system. If during the Pilot Test, groundwater monitoring determined that contamination in the on-property OU remained at or below Part 201 criteria, the on-property groundwater extraction system could be shut down permanently and the Operation and Maintenance (O & M) of both the on-property and off-property OU groundwater contamination would continue under a Monitored Natural Attenuation (MNA) remedy with on-going quarterly groundwater sampling.

The Two-Year Pilot Test Shutdown ended in June 2010. Based on the groundwater data collected during the Pilot Test, only one on-property monitoring well detected contamination exceeding criteria. It was agreed by EGLE and Kaydon, to continue the Pilot Test for one additional year (to June 2011) with continued quarterly groundwater monitoring of this well. During this extended Pilot Test period, groundwater monitoring determined that groundwater contamination in the on-property OU monitoring wells remained at or below Part 201 criteria. O & M of the off-property groundwater contamination plume continued under a MNA remedy with on-going semi-annual groundwater sampling.

Based upon discussions held between EGLE and Kaydon throughout 2010, a list of documents to be submitted for the off-property groundwater OU was developed. In 2011, Kaydon was expected to submit the following documents: a Remedial Investigation/Feasibility Study; document groundwater uses within the area of the groundwater plume and determine receptors; document migration and exposure pathways; and, identify any Groundwater to Surface Water Interface (GSI) issues for Ruddiman Creek. When these plans were finalized, Kaydon was to submit a RAP encompassing all the remedial work that was completed for both the on and off-property OUs. The final RAP would also include a groundwater ordinance, Financial Assurance Mechanism, and a Consent Decree.

With the implementation of the Part 201 Amendments in December 2010, Kaydon was no longer required to submit a RAP. Instead, Kaydon opted to develop an off-property groundwater OU Monitoring Plan and implement an area-wide Groundwater Ordinance. To accomplish this, Kaydon would develop and submit a Response Activity Work Plan for the off-property groundwater OU2 to EGLE for review. The Response Activity Work Plan was approved by EGLE on May 21, 2013. The tasks included in the Response Activity Work Plan included the following: complete groundwater plume definition, specifically north of Sherman Boulevard; groundwater program monitoring development; assessment of risk for VI into residences and commercial/industrial properties; assessment of risk for infiltration of groundwater into storm sewers; assessment of risk associated with non-potable groundwater uses; and final remedy evaluation and implementation including development of a groundwater ordinance and a monitoring plan.

By the end of 2014, Kaydon had completed all of the additional field investigation tasks in the off-property groundwater OU2 Response Activity Work Plan except for the VI, the assessment of any risk associated with non-potable groundwater use of the private wells located within the groundwater plume area, and the development of a groundwater ordinance and monitoring plan.

In March 2015, Kaydon submited a No Further Action Report documenting completion of all of the remedial actions (RAs) undertaken for on-property soils and groundwater OU. All of the on-property soils and groundwater OU monitoring wells and extraction wells were properly plugged and abandoned in late December 2015. EGLE accepted the No Further Action Report in a letter dated February 17, 2016.

Semi-annual groundwater sampling for the off-property groundwater (OU2) continued through 2017 and included a vertical aquifer profile investigation to further delineate the off-property groundwater VOC plume.

Kaydon conducted a VI assessment and developed a draft Human Health Risk Assessment report related to any risks that may be associated with the non-potable use of the groundwater in 2017.

Semi-annual groundwater sampling for the off-property groundwater OU2 continued through 2018. Nineteen new groundwater monitoring wells were installed in early 2018.

Enforcement

Kaydon is the only party identified as liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510.

Operable Units for Kaydon Corp.

OU1 Onsite Soils and Groundwater

Response Activities - In Progress

Activity: Remedial Investigation | **Start Date:** 6/1/2014 | **End Date:** 12/31/2021

Operable Unit:
Kaydon Corp. - OU2 Offsite Groundwater

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Review and discussion of the information between EGLE and Kaydon determined all of the tasks had been completed with the exception of the volatilization to indoor air pathway investigation, the survey of the non-potable use of the private wells, development of the groundwater ordinance and the monitoring plan.

A groundwater investigation was conducted in October 2017 to assess whether concentrations of VOCs in groundwater could affect the volatilization to indoor air pathway. To further assess the volatilization to indoor air pathway, sub-slab vapor/soil gas investigation was conducted in 2019. A draft human health risk assessment was submitted to EGLE in April 2017. The human health risk assessment is still being finalized and expected to be completed in 2020.

VI investigation cost information for this action was requested by the PRP, but was not made available.

Response Activities - Completed

Activity: Project Closeout | **Start Date:** 12/1/2014 | **End Date:** 2/17/2016

Operable Unit:
Kaydon Corp. - OU1 Onsite Soils and Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Both EGLE and Kaydon have agreed that all identified source areas in the on-property OU have been successfully remediated and no longer contributes contamination to the off-property groundwater contamination plume. Under the Part 201 Amendments of 2010, Kaydon developed and submitted a No Further Action Report for the on-property OU to document the completion of the RAs. The No Further Action Report was completed and EGLE provided the No Further Action acceptance letter, dated February 17, 2016. The EPA has agreed to consider deletion from the NPL for the Kaydon on-site property OU1.

Activity: Monitoring | **Start Date:** 6/7/2009 | **End Date:** 5/21/2013

Operable Unit:
Kaydon Corp. - OU2 Offsite Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The off-property groundwater OU2 monitoring plan has yet to be developed but it was included as a task in the Response Activity Work Plan for the off-property OU2. On-going semi-annual sampling of the off-property groundwater OU2 monitoring wells will continue until the off-property monitoring plan is developed. The final Kaydon Response Activity Plan was approved by EGLE with the agreement to:

- Complete groundwater plume definition, specifically north of Sherman Boulevard
- Groundwater Monitoring Program Development
- Assessment of risk for VI into residences and commercial/industrial properties
- Assessment of risk for infiltration of groundwater into storm sewers
- Assessment of risk associated with non-potable groundwater uses
- Final remedy evaluation and implementation including development of groundwater ordinance

Activity: Negotiations | **Start Date:** 3/17/2008 | **End Date:** 12/31/2018

Operable Unit:
Kaydon Corp. - OU2 Offsite Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
In December 2012, Kaydon submitted a Response Activity Work Plan for the off-property groundwater OU2 for EGLE review. The Response Activity Work Plan included the following: determine the Kaydon facility boundary; establish the off-property groundwater plume boundary; determine groundwater uses within the plume boundary; determine if a VI migration exposure pathway exists; determine if there are GSI issues for Ruddiman Creek; investigate the storm water lines to determine if this is a pathway for the contaminated groundwater plume; conduct a non-potable use survey for all of the private wells located within the off-site groundwater plume; and development of a groundwater ordinance and monitoring plan. The Response Activity Work Plan was approved by EGLE on May 21, 2014. Kaydon completed all of the Response Activity Work Plan task field activities in 2014, with the exception of the air vapor investigation, the non-potable use of the private wells, development of a groundwater ordinance and monitoring plan. A groundwater investigation was conducted in October 2017 to assess whether concentrations of VOCs in groundwater could affect the volatilization to indoor air pathway. To further assess the volatilization to indoor air pathway, sub-slab vapor/soil gas investigation is planned for 2019. A draft human health risk assessment was submitted to EGLE in April 2017. The two remaining tasks to be addressed are development of a groundwater ordinance and monitoring plan and are expected to be completed in 2020.

Activity: Interim Response | **Start Date:** 7/1/2003 | **End Date:** 12/30/2003

Operable Unit:
Kaydon Corp. - OU1 Onsite Soils and Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Indoor air investigation. The sampling was completed in 2003 and the report was submitted in 2004.

Activity: Remedial Investigation | **Start Date:** 1/1/2001 | **End Date:** 12/30/2004

Operable Unit:
Kaydon Corp. - OU2 Offsite Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigate off-property groundwater contamination. Report of the three years of monitoring was submitted in 2004.

Activity: Interim Response | **Start Date:** 7/1/1997 | **End Date:** 9/30/1997

Operable Unit:
Kaydon Corp. - OU1 Onsite Soils and Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Soil excavation and disposal from Dumpster and Sludge and Used Oil Vault areas.

Activity: Remedial Investigation | **Start Date:** 5/30/1997 | **End Date:** 4/1/1998

Operable Unit:
Kaydon Corp. - OU1 Onsite Soils and Groundwater

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Investigation of Dumpster and Sludge disposal area and Used Oil Vault area.

Activity: Operation and Maintenance | **Start Date:** 8/17/1987 | **End Date:** 12/31/2012

Operable Unit: Kaydon Corp. - OU1 Onsite Soils and Groundwater
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Operation of on-property groundwater extraction system, sending effluent to the city sanitary sewer for treatment and quarterly groundwater sampling was required under the 2008 O & M plan. In June 2008, both EGLE and Kaydon agreed to perform a Two-Year Pilot Test Shutdown of the Pump and Treat System. The Two-Year Pilot Test ended in June 2010, and was extended for one year to June 2011. Based on the groundwater data collected during the Pilot Test, only one on-property monitoring well detected contamination exceeding criteria. Since contamination in the on-property groundwater OU1 remained at or below Part 201 criteria, in 2013 EGLE gave approval for Kaydon to permanently shut down the inactive Pump and Treat System.

Activity: Interim Response | **Start Date:** 8/17/1987 | **End Date:** 12/30/2006

Operable Unit: Kaydon Corp. - OU1 Onsite Soils and Groundwater
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Install and begin operation of on-property groundwater capture system. Completed the on-property monitoring network by the end of 2006.

Activity: Interim Response | **Start Date:** 7/1/1986 | **End Date:** 12/1/1986

Operable Unit: Kaydon Corp. - OU1 Onsite Soils and Groundwater
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
1,500 cubic yards of contaminated soil from the lagoon areas were excavated and disposed of off the property.

Activity: Remedial Investigation | **Start Date:** 4/1/1986 | **End Date:** 12/1/1986

Operable Unit: Kaydon Corp. - OU1 Onsite Soils and Groundwater
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Investigations of lagoon areas.

Superfund Legislative Report
Fiscal Year 2019

Site Name: Muskegon Chemical

State Site ID:
61000029

Federal Site ID:
DL

Full Address:
1725 Warner Street, Whitehall, MI, 49461

County:
Muskegon

Location

The Muskegon Chemical Company site includes the 19.6 acres of the Koch Chemical Company production facility located at 1725 Warner Street and associated groundwater contamination. The area of groundwater contamination originated from the facility and has moved off-site. The contamination associated with the site is known to have migrated 1/2 mile southwest of the facility to Mill Pond Creek. Part of the off-site contamination exists under properties not owned by Koch Chemical Company.

Status

The Muskegon Chemical Company began production of specialty chemicals at the Whitehall facility in 1975. Groundwater contamination was initially discovered in 1977 during testing for the installation of an industrial water supply well at the facility.

The EPA, EGLE, Koch Industries, and their consultants met in October 2018 for the annual site walk and discussed vapor intrusion (VI) issues and site reuse. The EPA, EGLE, and Koch Industries have continued discussions about the VI pathway and per- and polyfluoroalkyl substances (PFAS) sampling on the site since the last site walkover in April 2019.

History

The Muskegon Chemical Company began production of specialty chemicals at the Whitehall facility in 1975. Groundwater contamination was initially discovered in 1977 during testing for installation of an industrial water supply well at the facility.

A hydrogeologic investigation conducted in 1980 identified three primary organic contaminants of concern in the groundwater: 1,2-dichloroethane, bis(2-chlorophyll)ether (Chlorex), and triglycol dichloride. The contaminant plume was estimated to be 1,150 feet in length, flowing in a southwest direction from the facility. Muskegon Chemical Company installed one purge well centrally in the path of the plume. The probable source of contamination was identified as a leak in the drainage system inside the Muskegon Chemical Company manufacturing facility, which was subsequently repaired.

In 1981, it was discovered that the groundwater contamination plume from the Whitehall facility was discharging to Mill Pond Creek. As a result of this discharge, EGLE and the Muskegon Chemical Company entered into a consent agreement and a plea agreement in 1981 and 1983, respectively. These agreements required the Muskegon Chemical Company to conduct two hydrogeologic investigations and to install several groundwater purge wells and a groundwater treatment system.

On December 31, 1985, Koch Chemical Company (Koch) purchased the Whitehall facility from Muskegon Chemical Company. On January 7, 1986, Muskegon Chemical Company, Koch, and EGLE entered a consent agreement, which approved the existing purge well system and established a seven-year period of operation. A March 1989 report by EGLE documented continued impact to Mill Pond Creek by the Whitehall facility groundwater contamination plume. On February 21, 1990, the site was placed on the National Priorities List.

On February 25, 1991, Koch and EGLE signed an Administrative Order by Consent, that required Koch to conduct an interim response action and a remedial investigation/feasibility study (RI/FS) under the direction of EGLE. As a result of

this order, Koch retained the firm of CH2M Hill to perform the interim response action and the RI/FS. During the summer of 1991, Koch conducted field activities, which included groundwater, surface water, soil, and sediment sampling, as part of the interim response action and RI at the site. On March 10, 1993, EGLE signed a Record of Decision (ROD) for the interim response action, which consisted of 1) removal or extraction of contaminated groundwater in the vicinity of Mill Pond Creek; and 2) treatment of the contaminated groundwater prior to disposal or discharge.

The interim response action was implemented by Koch in early 1993. The RI/FS was conducted in late 1993. The draft reports were submitted in February 1996. Both documents were finalized in February 1996. A draft Remedial Action Plan (RAP) was submitted for review in October 1995 and was approved in June 1996. The RAP was revised in 2000 to incorporate a Muskegon County ordinance in place of the deed restrictions not able to be attained from Howmet Corporation (the neighboring property).

In 2002, Koch Chemical Company requested a mixing zone determination from EGLE. Subsequent to the request, EGLE's Water Bureau calculated site-specific discharge criteria for groundwater discharging to Mill Pond Creek. It was determined that current groundwater contamination is far below that which would pose a threat to Mill Pond Creek. After the mixing zone determination was conducted, Koch requested that EGLE allow Koch to shut down the groundwater extraction system while Koch and EGLE negotiated an amendment to the RAP. The amended RAP incorporated the mixing zone-based groundwater discharge criteria as the cleanup criteria for groundwater at the site. EGLE approved an interim shutdown of the groundwater extraction system in April 2002.

Koch proposed a conceptual RAP revision to EGLE in 2003. An internal review of the document resulted in the identification of certain items that required resolution before EGLE could approve a RAP modification. Chief among those items was the discovery that the site was within the city of Whitehall's wellhead protection area. As a resolution to this issue, Koch agreed to partially fund the abandonment of the city of Whitehall's well Number Four and install a new, higher capacity municipal well located further away from the site. This gave the city a greater capacity to pump municipal water, removed the possibility of drawing site-related contaminated groundwater to a city well, and changed the city's wellhead protection area such that the site is no longer within it. In 2005, the city completed the abandonment of well Number Four and the installation of the new municipal well.

Active soil remediation was concluded in 1999. There was a small area of groundwater that remained contaminated with elevated levels of tetrachloroethylene (PCE) that, while still protective of Mill Pond Creek, needed to be addressed. Koch decided to remediate this contamination through air sparging (AS). The AS system was installed on the plant property in the summer of 2003 and was operated until 2006.

In 2006, Koch petitioned EGLE to cease, on an interim basis, operation of the AS system. The purpose of the shutdown was to evaluate whether or not the PCE contamination might rebound after shutting down the treatment system. Subsequent rounds of quarterly groundwater monitoring have been conducted since system shutdown, and no appreciable rebound of PCE has been observed.

While Koch worked on submitting modifications to its RAP, one of the existing objectives required Koch to either cap the soils beneath the former processing plant, or utilize the existing structure as a barrier to infiltration and exposure to the contaminated soils. Because the building had fallen into disrepair, Koch decided to demolish the plant and construct a new cap over the contaminated soils beneath the building. In 2006, Koch conducted this work. Components of the cap include the concrete floor from the former processing plant, a layer of soil to create the appropriate slope, a flexible membrane liner, a drainage layer, and topsoil.

In May 2005, Koch submitted a draft RAP to EGLE. Agency comments were returned to Koch in October 2005. Subsequently, Koch decided to abandon the idea of a totally new RAP, and instead focused on administrative modifications to the existing RAP. A formal submittal was made to EGLE in October 2006. This submittal, and the subsequent discussions with Koch, resolved nearly all of the issues raised earlier by EGLE. One outstanding issue was determining and establishing appropriate permanent shutdown criteria for the AS system. Through discussion, this issue was resolved to the satisfaction of each party involved. Revised draft RAP amendments were submitted to EGLE in December 2008 and May 2009 for agency review.

On April 4, 2008, the EPA signed the Third Fifth Year Review (FYR) for the site. The Third FYR concluded that the remedy is protective of human health and the environment in the short term since there is no present exposure pathway to site-related contaminants under existing conditions. Long-term protectiveness requires compliance with effective Institutional Controls (ICs). Effective ICs must be monitored and maintained. Some additional follow-up actions were recommended to help ensure that long-term protectiveness is maintained. These actions are to evaluate the VI

pathway, review and potentially modify use restrictions, along with long-term stewardship procedures, potential modification of cleanup criteria, and define shutdown criteria for the AS system. Each of these items were brought to resolution in the months following the release of the FYR document.

The RAP Amendment was approved by EGLE in January 2010.

The Fourth FYR was completed in April 2013. The Muskegon Chemical Company remedy has significantly reduced site-related contaminants. The remedy is protective of human health and the environment in the short term since there is no present exposure pathway to Muskegon Chemical Company-related contaminants under existing conditions. The remedy is expected to be protective in the long term since ICs are in place.

The consultant for the responsible party completed their evaluation of the VI pathway in the spring of 2017. Groundwater sampling was completed in October 2017 per the biennial sampling plan. The EPA and EGLE met with site consultants and a representative from Flint Hills Resources in November 2017 to complete the Fifth FYR site walk and discuss site issues.

The Fifth FYR was signed and completed in April 2018 by the EPA. EGLE sent the responsible party (Koch Industries) a request to sample groundwater for PFAS on the site in August 2018. EGLE and the EPA also provided draft comments on the VI pathway report submitted by Koch.

Enforcement

In 1997, Koch signed a Decree with EGLE to implement the remedy and reimburse state costs. The Decree required Koch to have restrictive covenants (RCs) placed on off-site properties that are affected by the groundwater plume to prevent groundwater usage. An RC has been placed on all affected parcels except one. Since this RC could not be negotiated, EGLE and Koch negotiated changes to the RAP that allow the Muskegon County well permitting ordinance to serve as an IC for this parcel of property.

A RAP Amendment was approved by EGLE in January 2010. Among other things, the RAP Amendment incorporates mixing zone-based groundwater surface water interface criteria as the groundwater cleanup standards for the site.

Decision Documents

Record of Decision | **Amendment:** 0 | **ESD:** 0 | **Effective:** 3/10/1993

Location Name: Muskegon Chemical - OU Entire Site

Comments:
This was an interim action remedy that included the extraction of contaminated groundwater in the vicinity of Mill Pond Creek and the treatment of the contaminated groundwater prior to disposal or discharge.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 6/15/1983 | **End Date:** 9/1/2030

Operable Unit:
Muskegon Chemical - OU Entire Site

Status:
Ongoing

Primary Cost:
$1,500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Operation and maintenance activities at this site are conducted by Koch, and consist of groundwater monitoring and landfill cap maintenance. Costs shown are estimated.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 4/4/2017 | **End Date:** 4/4/2018

Operable Unit:
Muskegon Chemical - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
EGLE and the EPA completed the Fifth FYR of the site on April 4, 2018.

Activity: 5 Year Review | **Start Date:** 10/1/2012 | **End Date:** 4/4/2013

Operable Unit: Muskegon Chemical - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
EGLE and the EPA completed the Fourth FYR of the site on April 4, 2013. The Muskegon Chemical Company remedy has significantly reduced site-related contaminants. The remedy is protective of human health and the environment in the short term since there is no present exposure pathway to Muskegon Chemical Company-related contaminants under existing conditions. The remedy is expected to be protective in the long term since ICs are in place.

Activity: 5 Year Review | **Start Date:** 10/1/2007 | **End Date:** 4/4/2008

Operable Unit: Muskegon Chemical - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000.00	Private	$0.00	

Comments:
The Third FYR was signed on April 4, 2008. The document concluded that the remedy is protective of human health and the environment in the short term since there is no present exposure pathway to site-related contaminants under existing conditions. Long-term protectiveness requires compliance with effective ICs.

Activity: 5 Year Review | **Start Date:** 1/1/2003 | **End Date:** 4/4/2003

Operable Unit: Muskegon Chemical - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The Second FYR identified a number of follow-up actions, including the resolution of drinking water issues with the city of Whitehall, resolution of IC issues, and resolution of a proposed modification to the RAP to allow for new groundwater cleanup criteria.

Activity: 5 Year Review | **Start Date:** 1/1/1998 | **End Date:** 3/13/1998

Operable Unit: Muskegon Chemical - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
The First FYR reaffirmed the cleanup goals from the RAP and identified no new issues that required resolution.

Activity: Remedial Action | **Start Date:** 6/1/1996 | **End Date:** 6/1/1999

Operable Unit: Muskegon Chemical - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$2,000,000.00	Private	$0.00

Comments:
The remedial action was conducted under a RAP, which was approved in June 1996. Contaminated soil was treated by way of hot-air soil vapor extraction. The groundwater treatment system included an air stripper and carbon treatment prior to the strategic reinjection of the treated effluent. Costs for these activities shown are estimated.

Activity: Interim Response | **Start Date:** 6/15/1983 | **End Date:** 6/1/1996

Operable Unit:
Muskegon Chemical - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$750,000.00	Private	$0.00	

Comments:
Koch, under a Consent Agreement with EGLE, installed purge wells at the bluff of Mill Pond Creek to prevent the contaminated plume from entering the creek. As part of an approved interim shutdown, purge wells were turned off in April 2002 in response to a mixing zone determination for groundwater discharging to Mill Pond Creek. Costs shown are estimated.

Activity: Remedial Investigation | **Start Date:** 6/15/1981 | **End Date:** 6/15/1996

Operable Unit:
Muskegon Chemical - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$750,000.00	Private	$0.00	

Comments:
Under several different orders, Koch completed several studies on the condition of the area surrounding the Muskegon Chemical Company facility. These studies included both soil and groundwater investigations. Costs shown are estimated.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 4/1/2022 | **End Date:** 4/3/2023

Operable Unit:
Muskegon Chemical - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
	Federal		

Comments:
Sixth 5 Year Review.

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Ott/Story/Cordova Chemical Co.

State Site ID:
61000051

Federal Site ID:
02

Full Address:
500 Agard Road, North Muskegon, MI, 49445

County:
Muskegon

Location

The Ott/Story/Cordova Superfund site is located on Agard Road in Dalton Township, Muskegon County, approximately three miles north of the city of Muskegon. The surrounding area is rural/residential with a small trailer park located just northwest of the property. A small stream, known as Little Bear Creek, and an unnamed tributary are located about 1/2 mile southeast of the former chemical plant.

Status

The Ott/Story/Cordova Superfund site is a site of soil and groundwater contamination resulting from waste disposal and chemical manufacturing practices in the 1950s through the 1980s. Shallow soil extensively contaminated with organic chemicals and buried drums were removed from the site in 2002. Groundwater beneath the former chemical manufacturing area is extensively contaminated with organic chemicals and resulted in a contaminated groundwater plume extending from the site to a nearby surface water body. The contaminated groundwater plume is currently contained from discharge to the surface water body by a pumping system. The extracted groundwater is treated at the site and discharged to the North Muskegon River under a National Pollution Discharge Elimination System Permit.

The groundwater extraction and treatment system at Ott/Story/Cordova site continues to control the spread of contaminated groundwater to the Little Bear Creek and its unnamed tributary and also progresses the restoration of the contaminated aquifers that may be a future drinking water source. Operation and maintenance of the remediation system is ongoing under contract, by the state, to Fishbeck to operate the unconfined aquifer contaminated groundwater extraction and treatment systems. In 2018 Fishbeck completed a condition assessment of the current groundwater treatment system. This assessment resulted in a prioritized list of improvements that need to be made at the treatment plant in order to ensure proper operations. EGLE (formerly known as MDEQ) is currently working to address the top priorities.

The site continues to be investigated to define the chemical contamination in the groundwater under the former chemical manufacturing area and the additional site aquifers (semi-confined aquifer and bedrock aquifer). Since 2019, EGLE and EPA have been evaluating the investigation data collected from 2014 through 2018 to determine a path forward to address the numerous high concentration source areas identified in the former chemical manufacturing areas and the contamination in the semi-confined and bedrock aquifers.

The existing groundwater extraction and treatment system was completed in 1996. Although the system is currently operating sufficiently, numerous components of the system are reaching their end of operational life. The groundwater extraction system was evaluated for rehabilitation and replacement. Recommendations for repair or replacement of the high volume extraction well network and conveyance piping were finalized in 2017. Capture network modeling was completed in 2017 and repair and replacement components are currently being designed. The design work is anticipated to be completed in 2020 with construction of the new components anticipated in 2021, pending available federal funding.

A non-motorized recreational trail was constructed through a portion of the site in 2018. The placement of the trail on the site parcels allowed Muskegon County to streamline construction of the trail by eliminating easements through numerous private properties. The trail through the site is a section of the Berry Junction Connector Recreational Trail.

History

Ott/Story/Cordova Chemical Co.

Several chemical companies, producing pharmaceutical and veterinary medicine precursors and pesticide and herbicide chemical constituents, operated at the site between 1957 and 1985. Chemical waste was stored on-site in deteriorating 55-gallon drums and production wastewater and sludge were discharged into on-site seepage lagoons. The site was abandoned by the Story Chemical Company in 1977. In 1978 EGLE, in conjunction with an agreement with the new owner, the Cordova Chemical Company of Michigan, performed a drum removal and excavated the waste lagoons. Several remedial investigations (RIs) revealed that poor waste handling practices between 1957 and 1977 resulted in extensive groundwater and soils contamination. Contaminated shallow soils were excavated and disposed of off-site during remedial action (RA) completed in 2002.

The groundwater, contaminated with over 90 organic chemicals, including priority pollutants such as benzene, toluene, vinyl chloride, 1,2-dichloroethane, and tetrachloroethene, flows to the southeast and began discharging into Little Bear Creek and the unnamed tributary in the early 1970s. Contamination levels in the groundwater exceeded over 10,000 times the residential drinking water criteria for several chemicals and initially caused a drinking water health threat. Many residents were provided with bottled drinking water in the 1970s, and in 1982 a municipal water supply line was installed. This construction alleviated the acute drinking water threat.

The groundwater discharge to Little Bear Creek caused serious degradation of approximately 3/4 of a mile of the stream and created an environmental and human health direct contact hazard. Control of this discharge was one of the main objectives of site remediation. The discharge of contaminated groundwater to the creek area is being controlled by a groundwater extraction system that began operation in 1996. The southern extent and final fate of the deepest portion of the groundwater contaminant plume is still unknown.

The decision to construct the groundwater capture system and the water treatment plant were stipulated in two Records of Decision (ROD) known as Operable Units (OUs)1, Groundwater Containment, and 2, Groundwater Contain/Restore. Operation of the plant began in February 1996, with plant effluent discharged to the North Branch of the Muskegon River under the provisions of a National Pollutant Discharge Elimination System Permit. The extraction and treatment system was designated operational and functional on August 9, 2000. The state has been responsible for 100 percent of the operation and maintenance (O & M) costs since 2011. The treatment plant is designed for 30 years of operation. Groundwater modeling estimates the time to clean up the groundwater at up to 80 years.

Muskegon County acquired the former Ott/Story/Cordova land through a land transfer in September 2002 from the Cordova Chemical Company of Michigan, which purchased the site in 1977, after Story Chemical Company went bankrupt. The Cordova Chemical Company entered into a stipulation and consent agreement with the MDEQ when it purchased the site. The Cordova Chemical Company of Michigan ceased chemical production operations in 1985 and has since salvaged most of the production equipment.

Five-Year Reviews (FYR) were completed in 1997 as a streamlined review for response actions still ongoing and in 2002 as a statutory review. There were not any issues for follow-up actions identified in the 1997 or the 2002 FYRs. The Third FYR was written in 2007 and identified several issues remaining to be addressed: conduct an "extent-of-contamination" investigation of the semi-confined (confined) aquifer; conduct a capture zone analysis that includes hydraulic and chemical evaluations; and conduct a deep (bedrock) well evaluation in the former production area. Once the semi-confined aquifer and capture analysis work is completed, a determination can be made regarding what, if any, institutional controls (ICs) need to be implemented to prevent exposure to site contaminants.

Two phases of vertical aquifer sampling were completed during 2009 and 2010; however, the horizontal and vertical extent of contamination in the semi-confined aquifer has yet to be defined. Other tasks yet to be performed include installation of permanent monitoring wells in key locations to monitor the contaminant plume in the semi-confined aquifer and evaluation of the extent of impact from a deep (bedrock) well that remains at the former plant.

The EPA completed the Fourth FYR on September 12, 2012. The recommendations for follow-up action include investigation and remediation of the semi-confined and bedrock aquifers, additional groundwater source area remediation, and implementation of off-site ICs.

Investigation field work to address the semi-confined and bedrock aquifers contamination as well as identify and remediate additional sources of groundwater contamination in the former chemical production plant area began in the summer of 2014, continued throughout the summer of 2015, and the spring of 2016. This RD work includes pre-design investigations to complete delineation of the horizontal and vertical extent of the contamination in both aquifers and the former plant area and installation of permanent monitoring wells. RA work is anticipated to follow the completion of the RD, likely in 2020.

The EPA has continued work to determine the effectiveness of the extraction wells and conveyance piping to determine if any of the components need to be rehabilitated or replaced. Assessment work (field work and reporting) begun in 2014 continued throughout 2015, and concluded in 2016.

The Fifth FYR Report was completed in September 2017. The remedy was determined to be protective of human health and the environment. Recommendations for follow up actions included continued evaluation and future replacement of extraction components of the extraction system to ensure long term capture of contaminated groundwater, additional investigation of the semi-confined and bedrock aquifers, and the identification of 1,4-dioxane as a new contaminant.

Enforcement

In 1989, litigation was initiated in federal district court against Bestfoods, Inc., formerly known as CPC International, Inc., and three related entities: Aerojet General Corporation, Cordova Chemical Company (a California Corporation), and Cordova Chemical Company of Michigan (a Michigan Corporation) (collectively "the Aerojet Defendants") for liability under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA), at the Ott/Story/Cordova site. The trial court determined that all four parties were liable under the CERCLA. That liability determination was appealed to the Court of Appeals for the Sixth Circuit and the United States Supreme Court. In 1998, the United States Supreme Court issued an opinion in the case that set a new standard for determining when a parent corporation could be held liable for a facility owned by its subsidiary. The United States Supreme Court reversed the district court's liability determination as to Bestfoods, Aerojet, and Cordova Chemical Company and the case was remanded to the district court for further consideration based upon the standard articulated by the United States Supreme Court. In addition, Cordova Chemical Company of Michigan, who is liable as the current owner of the site, may continue to raise defenses to liability. The case was decided in 2001 by Judge Hillman in the district court with a ruling that the parent company, CPC International, Inc., was not liable.

In 1999, a settlement agreement was reached with the federal and state governments and the Aerojet Defendants. The settlement agreement was set forth in a proposed Consent Decree (Decree) that was subject to public comment. The proposed Decree resolves the liability of the Aerojet Defendants under CERCLA. The Decree was entered in district court on December 18, 1989.

A separate state court action was initiated by the Aerojet Defendants in the Michigan Court of Claims. In the Court of Claims action, the Aerojet Defendants alleged that the state had agreed to indemnify them for all environmental liability pursuant to the Stipulation and Consent Order that was entered with the State of Michigan in 1977 when Cordova Chemical Company purchased the property. The Court of Claims determined that the agreement was in fact an indemnification agreement, and that it required the state to indemnify the Aerojet Defendants for any environmental liability it has at the site. This includes the claims asserted against the Aerojet Defendants by both the federal government and Bestfoods, Inc., under CERCLA. The Michigan Court of Appeals affirmed this decision and the Michigan Supreme Court denied the state's Application for Leave to Appeal.

A settlement agreement was entered in federal court on August 24, 2000, with the Aerojet Defendants concerning the state's liability for indemnification. The settlement required EGLE to perform or fund the remedy for the OU, Soils/Sediment. The state paid the Aerojet Defendants $1.5 million to resolve all claims for indemnification.

The groundwater capture and treatment RA continues to move forward utilizing federal and state funding. Enforcement action pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, has not been taken due to the above liability determination and because an enforcement action was already pending under CERCLA. The EGLE implemented the soils remedy and additional work to facilitate redevelopment. The remedy and additional work to facilitate redevelopment was completed by June 2002.

Operable Units for Ott/Story/Cordova Chemical Co.

OU1 Groundwater Containment

OU2 Groundwater Containment and Restoration

OU3 Soils and Sediment

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1989

Location Name: OU1 Groundwater Containment

Comments:
Groundwater extraction and treatment. The RI/feasibility study (FS), Design, and RA for this OU were combined with the OU, Groundwater Contain/Restore.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1990

Location Name: OU2 Groundwater Containment and Restoration

Comments:
Groundwater extraction and treatment.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/27/1993

Location Name: OU3 Soils and Sediment

Comments:
Excavation and treatment on-site with low-temperature thermal desorption.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 2/26/1998

Location Name: OU3 Soils and Sediment

Comments:
ROD Amendment for excavation of site soils with off-site disposal.

Response Activities - In Progress

Activity: Remedial Action **Start Date:** 6/27/2019 **End Date:** 6/1/2021

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
In Progress

Primary Cost:
$60,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Funds needed to procure a contractor for engineering design review and limited construction oversight for the new and replacement extraction wells.

Activity: Remedial Investigation **Start Date:** 1/1/2012 **End Date:** 10/1/2020

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
In Progress

Primary Cost:
$2,600,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigate the source areas and semi-confined aquifer as stipulated in the second ROD for the site. Two phases of vertical aquifer profiling have been completed. Additional investigation work has been completed in 2014 through 2018, under EPA oversight, to define the horizontal and vertical extent of contamination in the semi-confined aquifer and also remaining source areas contributing to the groundwater contamination. Field work has been completed. A summary of the work was received in 2019 with recommendations for remediation of the source areas and the semi-confined aquifer. A Focused Feasibility Study, proposed plan, and ROD are anticipated.

Activity: Remedial Action **Start Date:** 1/1/2011 **End Date:** 12/31/2020

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$8,425,726.00	Federal	$936,192.00	State

Comments:
Evaluation of the extraction well collection system and conveyance piping to determine wells and piping needing to be repaired and/or replaced as a condition of the transfer of the site from Long-Term Response Action (LTRA) to O & M was completed in 2017. Components recommended for repair and replacement are currently being designed with an anticipated construction in 2020, pending availability of federal funds. State match for this work is provided in an amendment dated November 6, 2018, to the LTRA State Superfund Contract (SSC). This is a stand alone RA as it is for post LTRA federally funded work.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 2/1/2011 | **End Date:** 1/31/2081

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,000,000.00	State	$0.00	

Comments:
Estimated O & M cost of $2,000,000 per year in 2007 dollars, over 70 years, for an aggregate cost of $140,000,000. EGLE has completed seven years of O & M and currently has an executed contract with Fishbeck, Thompson, Carr, & Huber Inc. for O & M. The existing contract year will expire on September 30, 2019.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 5/8/2017 | **End Date:** 9/8/2017

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
A FYR Report was completed in September 2017. The site was determined to be protective. Recommendations for follow up actions included continued evaluation and future replacement of extraction components of the extraction system to ensure long term capture of contaminated groundwater, additional investigation of the semi-confined and bedrock aquifers, and the identification of 1,4-dioxane as a new contaminant.

Activity: 5 Year Review | **Start Date:** 1/3/2012 | **End Date:** 9/12/2012

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$25,000.00	Federal	$0.00	

Comments:
Several issues were identified including delineation of the semi-confined and bedrock aquifers, investigation of the source area, and implementation of off-site ICs. The site was determined to be protective.

Activity: Operation and Maintenance | **Start Date:** 10/2/2008 | **End Date:** 3/30/2011

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$188,888.00	State	$0.00	

Comments:
Engineering review of the existing Ott/Story/Cordova wastewater treatment plant (WWTP) prior to state assumption of 100 percent O & M. The evaluation of the existing Ott/Story/Cordova WWTP has been completed and the EPA is addressing the recommendations from that study by making repairs to the Ott/Story/Cordova WWTP.

Activity: 5 Year Review | **Start Date:** 5/1/2007 | **End Date:** 9/19/2007

Operable Unit: Ott/Story/Cordova Chemical Co. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$25,000.00	Federal	$0.00	

Comments:
Several issues were identified including delineation of the extent of contamination in the semi-confined and bedrock aquifers and the need to evaluate system capture. The site was determined to be protective.

Activity: 5 Year Review | **Start Date:** 7/15/2002 | **End Date:** 9/19/2002

Operable Unit: Ott/Story/Cordova Chemical Co. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
No issues for follow-up action were reported. The site was determined to be protective.

Activity: Remedial Action | **Start Date:** 10/1/2001 | **End Date:** 6/15/2002

Operable Unit: Ott/Story/Cordova Chemical Co. - OU3 Soils and Sediment
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,843,852.00	State	$0.00	

Comments:
State implementation of the OU, Soils/Sediment, design of building demolition, and soil excavation with off-site disposal.

Activity: Long Term Remedial Action | **Start Date:** 8/9/2000 | **End Date:** 1/31/2011

Operable Unit: Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$22,500,000.00	Federal	$2,500,000.00	State

Comments:
The EPA operated the groundwater extraction and treatment system for 10 years. The state entered into an SSC with the EPA, signed July 2, 1999, and amended June 6, 2007, which committed the state's 10 percent match funding of $2.5 million for the 10 years and $25 million project cost of the LTRA.

Activity: 5 Year Review | **Start Date:** 1/13/1997 | **End Date:** 8/13/1997

Operable Unit: Ott/Story/Cordova Chemical Co. - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Type 1a streamlined review since the response is ongoing. No follow up issues reported. The portions of the completed remedy at the site was determined to be protective.

Activity: Remedial Action | **Start Date:** 3/27/1995 | **End Date:** 12/30/2002

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU3 Soils and Sediment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,971,002.00	Federal	$3,330,111.00	State

Comments:
The state entered into an SSC with EPA to conduct an RA for soils and sediments.

Activity: Remedial Design | **Start Date:** 1/12/1994 | **End Date:** 3/6/1995

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU3 Soils and Sediment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$699,000.00	Federal	$0.00	

Comments:
The original remedy called for low-temperature thermal desorption treatment of contaminated soils. The state completed the design for the soils remedy and building demolition.

Activity: Remedial Action | **Start Date:** 9/22/1992 | **End Date:** 8/9/2000

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Construction Complete

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$33,055,200.00	Federal	$3,672,800.00	State

Comments:
Construction of the groundwater extraction and treatment system. The purpose of the system is to stop the venting of contaminated groundwater into Little Bear Creek and to remediate the aquifer. The state provided its 10 percent match to the EPA through an SSC.

Activity: Remedial Action | **Start Date:** 9/25/1991 | **End Date:** 9/28/1992

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU1 Groundwater Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$471,600.00	Federal	$52,400.00	State

Comments:
This RA was later combined with the OU2, Groundwater Containment and Restoration, RA.

Activity: Remedial Investigation | **Start Date:** 9/19/1990 | **End Date:** 9/27/1993

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU3 Soils and Sediment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$269,000.00	Federal	$0.00	

Comments:

OU, Soils/Sediment, includes plant site soils and Little Bear Creek sediments. A supplemental RI/FS was conducted by the EPA for site soils and sediments to further define areas requiring RA due to unacceptable human and environmental risks.

Activity: Remedial Design | **Start Date:** 6/5/1990 | **End Date:** 9/25/1991

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU1 Groundwater Containment

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$500,000.00	Federal	$0.00	

Comments:
This RD was combined with OU2, Groundwater Containment and Restoration, after determining that it was more cost-effective to address the entire site groundwater remediation with one overall action.

Activity: Remedial Design | **Start Date:** 1/31/1990 | **End Date:** 9/27/1993

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,526,000.00	Federal	$0.00	

Comments:
The United States Army Corps of Engineers, through an interagency agreement with the EPA, contracted out the groundwater-system design work to a private design firm (OU1, Groundwater Containment, objectives were incorporated into this design.).

Activity: Remedial Investigation | **Start Date:** 8/19/1983 | **End Date:** 9/29/1990

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,136,000.00	Federal	$0.00	

Comments:
The EPA conducted the RI/FS.

Activity: Alternate Water | **Start Date:** 1/15/1981 | **End Date:** 12/15/1982

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,000,000.00	Federal	$130,000.00	State

Comments:
A lawsuit filed by affected residents resulted in an out-of-court settlement leading to replacement of private water wells with municipal water for approximately 90 homes. The potentially responsible parties group also contributed $100,000.

Activity: Interim Response | **Start Date:** 1/15/1977 | **End Date:** 12/15/1978

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$670,000.00	State	$600,000.00	Private

Comments:

Removal of 8,700 55-gallon drums of chemical waste and excavation of lagoon sludge was performed as a joint action between EGLE and the Cordova Chemical Company as part of the agreement for the Cordova Chemical Company to assume ownership of the site.

Activity: Remedial Investigation | **Start Date:** 1/15/1977 | **End Date:** 12/15/1978

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:
$500,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted a preliminary site investigation to assess the nature of the pollutants and extent of contamination at the site.

Activity: Bottled Water | **Start Date:** 1/15/1975 | **End Date:** 12/15/1982

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Residents whose private water wells were contaminated by the migrating plume were placed on bottled water.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 1/1/2022 | **End Date:** 9/12/2022

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Five Year Review scheduled.

Activity: Remedial Action | **Start Date:** 6/1/2021 | **End Date:** 5/30/2022

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Future Need

Primary Cost:
$9,000,000.00

Primary Source:
Federal

Secondary Cost:
$1,000,000.00

Secondary Source:
State

Comments:
RA to construct the remedy for the bedrock aquifer. Ten percent state match is required.

Activity: Remedial Action | **Start Date:** 1/1/2021 | **End Date:** 12/31/2022

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Future Need

Primary Cost:
$18,000,000.00

Primary Source:
Federal

Secondary Cost:
$2,000,000.00

Secondary Source:
State

Comments:
RA to construct the semi-confined aquifer and groundwater source area removal remedy. Ten percent state match is required.

Activity: Remedial Design | **Start Date:** 6/1/2020 | **End Date:** 12/31/2020

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Future Need

Primary Cost:
$750,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
RD will be necessary to design the remediation system for the bedrock aquifer.

Activity: Remedial Design | **Start Date:** 1/1/2020 | **End Date:** 12/31/2020

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Future Need

Primary Cost:
$100,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
RD for the treatment system for the semi-confined aquifer and groundwater source area removal.

Activity: Remedial Investigation | **Start Date:** 9/24/2012 | **End Date:** 12/31/2021

Operable Unit:
Ott/Story/Cordova Chemical Co. - OU2 Groundwater Containment and Restoration

Status:
Future Need

Primary Cost:
$400,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigation is necessary to understand the nature and extent of contamination in the bedrock aquifer. After the investigation is completed, it will be necessary to complete an feasibility study (FS) to determine the appropriate RA for the bedrock aquifer. This investigation split off from the RI of the semi-confined aquifer and source areas, and will be completed later.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 9/10/1991 | **Most Recent Mod:** 5/27/2020

Location Name: Ott/Story/Cordova Chemical Co. - OU Entire Site | **Status:** Final Close

Total Contract:
$0.00

State Total:
$52,400.00

State Share Balance:
$0.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:

Activity: Remedial Action | **Effective Date:** 9/22/1992 | **Most Recent Mod:** 5/27/2020

Location Name: Ott/Story/Cordova Chemical Co. - OU Entire Site | **Status:** Final Close

Total Contract:
$0.00

State Total:
$3,672,800.00

State Share Balance:
$3,672,121.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:
453108

Activity: Remedial Action	**Effective Date:** 3/27/1995	**Most Recent Mod:** 5/27/2020
Location Name: Ott/Story/Cordova Chemical Co. - OU Entire Site		**Status:** Final Close
Total Contract: $0.00	**State Total:** $330,111.00	**State Share Balance:** $272,036.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $0.00	**Contracted in FY2019:** $0.00

Summary:
453107

Activity: Long Term Remedial Action	**Effective Date:** 7/2/1999	**Most Recent Mod:** 8/28/2020
Location Name: Ott/Story/Cordova Chemical Co. - OU Entire Site		**Status:** Open - Active
Total Contract: $596,232.00	**State Total:** $3,436,191.00	**State Share Balance:** $3,392,470.00
Expenditures to Date: $0.00	**Expenditures in FY2019:** $43,721.00	**Contracted in FY2019:** $272,995.00

Summary:
This contract provides for assessment, repair, and possible replacement of inoperable or otherwise depleted components of the contructed and operating Operable Unit 2 Groundwater remedy at the Ott/Story Superfund site.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $33,116.14	**Exp for Year:** $15,357.96
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $38,365.74	**Exp for Year:** $7,382.35
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $13,791.91	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $37,683.09	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $26,381.25	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed

Ott/Story/Cordova Chemical Co.

Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $55,131.18	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $33,337.17	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $55,555.00	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $32,907.35	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $200,295.75	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $11,060.00	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $49.23	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $53,538.58	**Exp for Year:** $0.00
Grant #: V005851-01	**Activity:** Management Assistance	**End Date:** 3/31/1993	**Status:** Closed
Fed Total Award: $1,511,792.00	**State Total Award:** $0.00	**Exp to Date:** $163,889.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Peerless Plating

State Site ID:
61000039

Federal Site ID:
G2

Full Address:
2554 Getty Avenue, Muskegon, MI, 49442

County:
Muskegon

Location

The Peerless Plating Company site is located on the east side of the city of Muskegon at 2554 Getty Avenue, Muskegon County, Michigan. The property is approximately one acre in size and located within a mix of light industrial and residential land uses. The property is bounded by Getty Avenue to the west and industrial and commercial properties to the north and south. Little Black Creek, which forms the southeast property boundary of the site, empties into Mona Lake to the south. The area is supplied with municipal drinking water and the buildings around the site are still using septic systems.

Status

The Peerless site is approximately one-acre in size adjacent to Little Black Creek in Muskegon, in an area of mixed light industrial and commercial properties. The site is a former electroplating facility that conducted polishing, pickling, burnishing, stress relieving, and other plating activities from 1937 through 1983.

EGLE sampled for per- and polyflouroalkyl substances (PFAS) on a subset of monitoring wells onsite in October of 2018. Of the seven wells that were sampled, five had detections of PFAS that were above the drinking water or Ground Surface Water Interface (GSI) criteria. EGLE completed another round of PFAS sampling in May 2019. The May results showed 11 of the 45 wells sampled had concentrations of PFAS above drinking water or GSI criteria.

EGLE is continuing to work with the EPA to determine the future actions to take with regards to evaluating the effectiveness of the permeable reactive barrier (PRB), future groundwater monitoring needs, and sampling of PFAS on the site.

History

The plant was constructed in 1937 and was operated by three separate owners before its closure in 1983. Electroplating operations and processes conducted at the facility included copper, nickel, chromium, cadmium, and zinc plating, as well as associated activities. These processes required the use of toxic, reactive, corrosive, and flammable chemicals. From 1937 to 1978, electroplating wastes including high levels of heavy metals were discharged into three unlined seepage lagoons at the rear of the facility. In 1979, a hydrogeological study was conducted to define the extent of groundwater and surface water contamination. Cadmium and cyanide were detected in the groundwater. In 1980, the seepage lagoon sludges were removed and disposed of and the excavated lagoon area was backfilled and capped.

Beginning in 1972, numerous regulatory attempts were made to bring the facility into compliance with water quality discharge limitations and to require the construction of proper treatment facilities. These repeated regulatory efforts culminated in 1983 when EGLE conducted an investigation into operating failures at the Peerless Plating Company. This investigation found the firm had yet to adequately upgrade the treatment facilities and was still exceeding discharge limitations for chromium, cyanide, cadmium, and zinc. Further, the investigation found that portions of the plant's treatment system discharged directly to the groundwater rather than to the sanitary sewer. The investigation also revealed that drummed wastes had not been removed from the plant since 1980. In June 1983, Peerless Plating Company closed as a result of regulatory actions, labor problems, and financial difficulties, and they declared bankruptcy. The company abandoned the plant in its former operational condition with plating solutions, raw materials, and drummed wastes stored throughout the facility. The building was not well maintained and access was generally unrestricted.

Subsequently, personnel from Muskegon County Civil Defense and the Michigan Department of Public Health detected hydrocyanic acid gas in the facility atmosphere. EGLE requested the EPA Region 5 Spill Response Section to perform an emergency removal action. The EPA determined the facility to be an immediate threat to human health and the environment and implemented the emergency removal action in September 1983. This action resulted in the removal of 37,000 gallons of hazardous liquids including many acids, plating solutions, and trichloroethylene. Lagoons were drained; soil was removed from lagoon areas; soils and sludges were removed from the building interior; vats, lines, tanks, sumps, debris, floorboards, and walls were decontaminated; sewer lines were sealed; virgin and proprietary chemicals were removed, and on-site neutralization of cyanides and nitric acid occurred.

In March 1991, the EPA again conducted an emergency response action to remove and dispose of liquids and sludges contained in an enclosed aboveground tank. A portion of this response action, consisting of encapsulating an asbestos oven and installing a new security fence, was performed by Peerless Plating Company. The site was placed on the National Priorities List in August 1990 to address long-term remediation. The EPA began the remedial investigation/feasibility study (RI/FS) using federal funds in 1989 after negotiations with one of the potentially responsible parties (PRPs) failed. The final RI report was completed in September 1991, the FS was completed in June 1992, and the Record of Decision (ROD) was signed by the EPA on September 21, 1992.

The major components of the selected remedy include: 1) demolition and disposal of the Peerless Plating Company building with additional soil sampling beneath the building during the remedial design (RD); 2) groundwater extraction and treatment of volatile organic compounds by air stripping, followed by chemical precipitation of inorganic compounds (heavy metals), the discharge of which was regulated by a 1991 Substantive Requirements Document (SRD); and 3) treatment of organic compounds in the soils with in-situ vapor extraction, and excavation and stabilization of the inorganic compounds prior to disposal at a licensed hazardous waste disposal facility. EGLE concurred with the ROD.

The building was demolished in April 1993. The sampling of the soils beneath the building was completed in August 1993. The preliminary RD report was submitted to the EPA in August 1994. Although the RD was approved in early 1996, work was delayed until the EPA funding for the soil phase of the RAs became available late in 1996.

An Explanation of Significant Difference (ESD) was signed by the EPA on July 24, 1997. The ESD changed the soil cleanup criteria to current Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201) criteria; identified two conditions to allow contaminated soils to remain on-site above the cleanup criteria (1 - soils immediately adjacent to and underneath Hardware Distributors Incorporated, a hardware building to the south, and 2 - contaminated soils below the water table to be addressed by the groundwater remedy), and required deed restrictions to protect on-site workers against exposure to contaminated groundwater until it was remediated. EGLE concurred with this ESD.

The soil removal began under a State Superfund Contract (SSC) in 1997 and was completed in late fall 1998. An 8,000-gallon underground storage tank, which contained less than 500 gallons of residual liquid plating waste was discovered during the removal of the contaminated soils. It was emptied, excavated, cleaned, and disposed of by mid-January 1999.

The start of the groundwater phase of the remedy was first delayed due to specification changes to the design. Work began in late fall 1999 but was again delayed when a significant amount of highly contaminated soils were discovered while excavating the foundation area for the treatment building. Further soil investigation, excavation, and disposal was conducted from 1999 to the summer of 2000.

A second ESD was developed for the site in April 2001. This second ESD amended the ROD as follows. Saturated soil at the site contained cadmium at concentrations exceeding the cleanup standard. Because of the difficulties and expense of excavating soil below the water table, contaminated soils which contain constituent concentrations greater than the cleanup levels specified in the 1997 ESD would be excavated approximately to the depth of the water table. Soils southeast of the site and immediately adjacent to Little Black Creek contained cadmium and lead concentrations exceeding the cleanup standards. Excavation of the contaminated soils was completed in this area to within two feet of the stream channel in order to maintain the integrity of the stream bank. The remaining soils were covered with a geotextile membrane and six-inch diameter rock.

All soil remediation activities and construction of the groundwater treatment system were completed in March 2001. The groundwater extraction and treatment system went into operation during the summer of 2001 but was unable to meet its discharge limits for cadmium. The system was shut down in October 2001 and an application for a new SRD was submitted. The system became operational and functional in September 2002 and was projected to operate for

ten years under the Long-Term Remedial Action (LTRA). The SSC was amended to cover the state's 10 percent match funding for the LTRA ten-year period.

The First Five-Year Review (FYR) was written and completed by the EPA in July 2002. The report concluded that the remedy was protective of human health and the environment in the short term. Long-term protectiveness, however, could not be determined until the groundwater cleanup goals were achieved.

The city of Muskegon contacted EGLE to request that the site waste water be discharged into their newly constructed Publicly Owned Treatment Works (POTW). The EPA and the state reviewed the requirements and determined that the maintenance of the Peerless Plating Company treatment facility would be greatly reduced by the change in discharge destination. The EPA's contractor designed a lift station and piping for the discharge. The lift was constructed approximately one block from the groundwater treatment facility. The EPA was responsible for the hook-up cost, which was estimated at $1.5 million. The state was responsible for a 10 percent cost-share, which was provided through the SSC. In January 2005, after reviewing the construction plans, the city of Muskegon requested that the lift station be upgraded so that all of the residences in the area could hook up to the system. A draft amendment to the SSC was received from the EPA for the connection to the POTW, and the remaining years of the LTRA (operation of the groundwater treatment system). The SSC Amendment was signed by both Agencies and the connection to the POTW was completed in September 2005. The National Pollution Discharge Elimination System permit was discontinued. An amended ESD was received to reflect the changes in the discharge.

A report from Grand Valley State University concluded that the cadmium within Mona Lake was directly attributable to the Peerless Plating Company site. As a follow-up to that report, EGLE, in June 2005, performed additional studies of Little Black Creek to determine the source and extent of any cadmium in the Creek. EGLE collected sediment samples all along Little Black Creek from the headwaters downstream to Mona Lake. Sediment toxicity studies were performed on selected Little Black Creek sediments. Based on these studies, sediments immediately downstream of the Peerless Plating Company site were demonstrated to be harmful to aquatic life. A recommendation for the removal of sediments from the facility to Sherman Road was made to the EPA. This area included approximately 20 feet upstream of the abandoned discharge pipe to Sherman Boulevard, which is approximately 150 feet downstream.

After connection to the POTW in 2005, six months of effluent testing was performed to make sure that the existing treatment system could be shut down and dismantled. The process of demobilization began, which mandated a modification to the current extraction system and the enhancement of the monitoring point, now located in the existing building. Work orders and construction plans were reviewed in February 2007, construction began in late March 2007, and was completed in early April 2007.

A third ESD was developed for the site in March 2006. This ESD was developed to change the need for the use of some or all of the treatment requirements established in the SRD and to switch the discharge point of the treated groundwater from Little Black Creek to the Muskegon Waste Water Treatment Plant.

A Second FYR was initiated by the EPA on October 25, 2006, and was completed on July 12, 2007. The Review concluded that the remedy remained protective of human health and the environment in the short term. Long-term protectiveness would not be fully achieved until effective Institutional Controls (ICs) have been implemented and maintained.

In 2008, the analytical data for the sediment samples collected from Little Black Creek were provided to the EPA for review. After the data review was completed, both agencies decided in late 2008 that the EPA would develop a Risk Assessment to determine if a sediment Remedial Action (RA) would be required for Little Black Creek. The Ecological Risk Assessment was completed in March 2010 and accepted as final by the EPA in June 2011. The two agencies agreed that a RA to address any sediment contamination will be conducted if there is a notable increase of cadmium contamination or as part of an area-wide Little Black Creek remediation and that the EPA would be responsible for addressing the Peerless Plating Company site portion of the creek.

The Third FYR was initiated by the EPA on October 25, 2011, and was completed on July 12, 2012. The review concluded that the remedy remained protective of human health and the environment in the short term. Long-term protectiveness would not be fully achieved until effective ICs have been implemented and maintained.

Throughout 2012, the EPA and EGLE conducted monthly discussions on how to address the remaining cadmium contamination on both the Peerless Plating Company and Hardware Distributors Incorporated properties. The EPA agreed to undertake, with EGLE approval, a separate RA to include in-situ soil treatment and installation of a Permeable Reactive Barrier (PRB) along Little Black Creek to address the remaining cadmium source area

contaminated soils.

The ten-year LTRA process under EPA supervision ended on September 30, 2013. On October 1, 2013, Operation and Maintenance (O & M) of the site Pump and Treat (P & T) remedy became the responsibility of EGLE.

Throughout 2013, both agencies cooperated in development of Restrictive Covenants (RCs) for the site to meet the ICs required in the 2012 FYR. RCs were completed and filed with the Muskegon County Register of Deeds for the Peerless property on February 28, 2013, and the Hardware Distributors Incorporated property on October 18, 2013. Development of RCs for the remaining three properties containing the monitoring well network and the pump house which overlies the groundwater contamination plume continued into 2014.

The ROD Amendment to undertake a focused in-situ soil injection remedy and installation of a PRB along Little Black Creek for the remaining cadmium source soil contamination on both the Peerless and Hardware Distributors Incorporated properties, was signed on August 30, 2013. EGLE concurred with the ROD Amendment.

Both agencies reviewed and approved the Pilot Test Work Plan for the In-Situ Chemical Reduction and PRB for the Peerless Plating site on March 7, 2014. The Basis of Design Report for the In-Situ Chemical Reduction and PRB was completed on March 24, 2014. The Pilot Test was conducted on the Peerless Plating site from July through September 2014. The test results were very positive and included in the Final In-Situ Chemical Reduction and PRB Pilot Study Report, dated December 12, 2014. Both agencies agreed to implement the full-scale In-Situ Chemical Reduction remedy in July 2015.

The development of additional site RCs continued in 2015. The RC for the Bill's Used Cars property was filed with the Muskegon County Register of Deeds on June 25, 2014. The RC for the Asphalt Paving property was filed on February 12, 2015. Development of the final RC, for the CAPCO property, continues.

RAs at this site are intended to address risks associated with contaminated groundwater discharges to Little Black Creek and to return the aquifer to its beneficial use (i.e., suitable for drinking water use).

The final Basis of Design Report for the In-Situ Chemical Reduction and PRB was approved by both the EPA and EGLE on March 31, 2015. The Basis of Design report included shutting down the P & T system, performing the actual injections, and collecting at least four years of quarterly groundwater sampling to evaluate the effectiveness of the remedy. Site preparations for the in-situ remedy began in July 2015. The P & T system was shut down on August 4, 2015, and the injections occurred from mid-August to early October. The initial quarterly groundwater sampling event occurred in late October 2015. EGLE continued maintenance of the P & T system during this time since the contingency plan for possible failure of the in-situ remedy will be to re-activate the P & T system.

The groundwater quality analytical results indicated the PRB, where present, has contained off-site migration; and, that inorganic contamination has decreased at many locations. The data also suggested that additional RA may be needed to fully address the extent of contamination. The fourth FYR report was completed on July 12, 2017.

In 2017, both the EPA and EGLE agreed that a second focused injection is needed to address the localized high cadmium concentrations under the HDI building; however, that was not specified in the SSC, which expired on September 30, 2018. The regeneration of the PRB along Little Black Creek occurred in August 2018. Also, one ROD-required RC still needed to be completed, for the CAPCO property south of Sherman Road, and that RC was in development.

In the summer of 2018, EGLE assessed the site for the potential presence of PFAS. Given the historical plating operations that were conducted at the site, it was determined that PFAS sampling should be conducted. This sampling work was planned in the fall of 2019.

Enforcement

The responsible party declared bankruptcy in 1983 and there are no other PRPs. Therefore, no enforcement action is planned.

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/21/1992

Location Name: Peerless Plating - OU Entire Site

Comments:
The ROD required demolition of the building, removal and off-site disposal of contaminated soils, construction and operation of a groundwater P & T System. The system was designated as operational and functional on September 10, 2003, and will be operated by the EPA until September 10, 2013, at which time EGLE will acquire responsibility for the system O & M.

Record of Decision	**Amendment:** 0	**ESD:** 1	**Effective:** 7/24/1997

Location Name: Peerless Plating - OU Entire Site

Comments:
An ESD to allow contaminated soils above cleanup criteria to remain on-site underneath a hardware building to the south and to require deed restrictions to protect on-site workers against exposure to contaminated groundwater until it is remediated.

Record of Decision	**Amendment:** 0	**ESD:** 2	**Effective:** 4/5/2001

Location Name: Peerless Plating - OU Entire Site

Comments:
A second ESD was developed for the site in April 2001. This second ESD amended the ROD as follows. Saturated soil at the site contained cadmium at concentrations exceeding the cleanup standard. Because of the difficulties and expense of excavating soil below the water table, contaminated soils which contain constituent concentrations greater than the cleanup levels specified in the 1997 ESD will be excavated approximately to the depth of the water table. Soils southeast of the site and immediately adjacent to Little Black Creek contain cadmium and lead concentrations exceeding the cleanup standards.

Record of Decision	**Amendment:** 0	**ESD:** 3	**Effective:** 3/15/2006

Location Name: Peerless Plating - OU Entire Site

Comments:
This ESD was developed to denote a partial change in the method being used to clean up the groundwater contaminants associated with the site. The 1992 ROD called for the use of a groundwater P & T System to address contaminated groundwater. An air stripper was selected to reduce the VOCs detected in the groundwater, followed by the precipitation of organic compounds. The treated groundwater was then discharged into Little Black Creek in compliance with the substantive National Pollution Discharge Elimination System requirements. These limits are contained in an SRD. This ESD changes the potential need for the use of some or all of the treatment requirements and also changes the discharge point from Little Black Creek to the Muskegon Waste Water Treatment Plant.

Record of Decision	**Amendment:** 1	**ESD:** 0	**Effective:** 8/30/2013

Location Name: Peerless Plating - OU Entire Site

Comments:
The ROD Amendment includes a focused in-situ injection remedy for the remaining cadmium source soils contamination located on both the Peerless and Hardware Distributors Incorporated properties along with installation of a permeable reactive barrier along Little Black Creek.

Response Activities - Ongoing

Activity: Operation and Maintenance		**Start Date:** 10/1/2013	**End Date:** 9/30/2033
Operable Unit: Peerless Plating - OU Entire Site		**Status:** Ongoing	
Primary Cost: $2,700,000.00	**Primary Source:** State	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
EGLE took over the O & M of the site P & T System remedy from the EPA on October 1, 2013. It is estimated that at

least $2.7 to $15 million will be needed by the state to perform the O & M for 20 years depending on the need to operate the P & T System in the future. EGLE operated the P & T system from October 1, 2013 until it was shut down on August 4, 2015, prior to the in-situ injections. The operation of this system cost approximately $750,000 per year to operate. Since shutdown of the system, EGLE has been performing maintenance and monitoring of the system at an approximate cost of $60,000 per year. EGLE will continue maintenance of the P & T system during this time since the contingency plan for possible failure of the in-situ remedy will be to re-activate the P & T system.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 7/12/2016 | **End Date:** 7/12/2017

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$20,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Development of the Fourth FYR report, was written by EGLE with EPA support and began development in August 2016. The report was completed, approved by the EPA and was signed on July 12, 2017. The fourth FYR concluded the current remedy was protective of human health and the environment in the short term; however, long-term protectiveness could not be determined at this time.

Activity: Remedial Action | **Start Date:** 12/15/2014 | **End Date:** 9/30/2018

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$1,400,000.00

Primary Source:
Federal

Secondary Cost:
$140,000.00

Secondary Source:
State

Comments:
A source area remedy consisting of in-situ injection into the contaminated soil with installation of a Permeable Reactive Barrier along Little Black Creek began in July 2015 and will operate for up to five years. The Pilot Test of this remedy was conducted between July and September 2014. The state is providing a ten percent funding match for the remedy, pursuant to the SSC dated March 19, 2015. In 2017, both the EPA and EGLE agreed that a second focused injection is needed to address the localized high cadmium concentrations under the HDI building; however, that is not specified in the SSC, which expired September 30, 2018. Regeneration of the Permeable Reactive Barrier along Little Black Creek occurred in August 2018.

Activity: Remedial Investigation | **Start Date:** 1/1/2012 | **End Date:** 6/1/2012

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Investigate and delineate the remaining cadmium source area contaminated soils on both the Peerless Plating Company and Hardware Distributors Incorporated properties. In March 2012, the EPA conducted a soil RI on the Peerless Plating property to identify residual cadmium and cyanide contamination. Additional soil investigation along the Hardware Distributors Incorporated building north facing and east facing walls was also conducted. Anaytiacal results indicated that high concentrations of cadmium exist up to the building foundation and continues under the building.

Activity: 5 Year Review | **Start Date:** 10/25/2011 | **End Date:** 7/12/2012

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$20,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The third FYR was initiated by the EPA on October 25, 2011, and was completed on July 12, 2012. The review concluded that the remedy remained protective of human health and the environment in the short term. Long-term protectiveness would not be fully achieved until effective ICs have been implemented and maintained and the groundwater criteria goals are achieved.

Activity: 5 Year Review | **Start Date:** 10/25/2006 | **End Date:** 7/12/2007

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
The second FYR concluded the current remedy was protective of human health and the environment in the short term; however, long-term protectiveness could not be determined at that time.

Activity: Remedial Investigation | **Start Date:** 2/2/2005 | **End Date:** 10/1/2005

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	State	$0.00	

Comments:
Funding was provided by the state to perform investigation of contaminated sediments in Little Black Creek. EGLE gathered all of the sediment analytical data and forwarded it to the EPA for review and inclusion in a Risk Assessment report.

Activity: Long Term Remedial Action | **Start Date:** 9/11/2002 | **End Date:** 9/30/2013

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$7,596,624.00	Federal	$844,069.00	State

Comments:
O & M of the treatment system for ten years. The SSC was amended September 15, 2005, to provide funding for all ten years of LTRA, and again September 6, 2012, to cover increases in costs. Quarterly groundwater sampling was on-going during the ten-year LTRA.

Activity: 5 Year Review | **Start Date:** 10/1/2001 | **End Date:** 9/25/2002

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$20,000.00	Federal	$0.00	

Comments:
The First FYR determined the remedy was protective of human health and the environment in the short term. Long-term protectiveness, however, could not be determined until the groundwater cleanup goals were achieved.

Activity: Remedial Action | **Start Date:** 7/31/1996 | **End Date:** 9/10/2002

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$5,864,400.00	Federal	$651,600.00	State

Comments:

Peerless Plating

Soil excavation in lagoons and the Peerless Plating Company building areas. Construction of groundwater P & T System. Initial start-up and operation of groundwater treatment system. System determined to be operational and functional on September 10, 2002. Initial SSC between the EPA and the state to provide match was signed July 31, 1996. It was amended September 17, 1996, and again September 28, 2000 to cover cost increases.

Activity: Remedial Design | **Start Date:** 7/1/1992 | **End Date:** 9/30/1996

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$893,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA-conducted design activities included the demolition and disposal of the Peerless Plating Company building with additional soil sampling beneath the building.

Activity: Interim Response | **Start Date:** 1/15/1991 | **End Date:** 3/13/1991

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$49,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA removal and disposal of liquids and sludges contained in an enclosed aboveground tank.

Activity: Remedial Investigation | **Start Date:** 6/1/1989 | **End Date:** 9/21/1992

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$514,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The RI/FS was conducted to determine the extent of heavy metals contamination on the site.

Activity: Emergency | **Start Date:** 9/1/1983 | **End Date:** 10/31/1983

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Completed

Primary Cost:
$131,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Removal of cyanide and plating wastes in building.

Response Activities - Future Need

Activity: Operation and Maintenance | **Start Date:** 10/1/2021 | **End Date:** 9/30/2024

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Future Need

Primary Cost:
$2,250,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Operation and Maintenance of groundwater pump and treat system for O&M at $750,000 per year over a three year period. This will be for discharge fees to WWTP ($50,000-$75,000 per month), if needed.

Activity: 5 Year Review | **Start Date:** 7/12/2021 | **End Date:** 7/12/2022

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Fifth Five Year Review to be completed by EPA with assistance from EGLE.

Activity: Operation and Maintenance | **Start Date:** 10/1/2020 | **End Date:** 9/30/2023

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Future Need

Primary Cost:
$200,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Operation and Maintenance for running the pump and treat system including start up costs, analytical, additional contractor costs, and evaluation of pre-treatment costs for PFAS.

Activity: Remedial Investigation | **Start Date:** 10/1/2020 | **End Date:** 9/30/2021

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Future Need

Primary Cost:
$200,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Investigation of remaining source areas to the north and under the HDI building and delineation points down gradient of the PRB to determine effectiveness of the barrier and concentrations of contaminants that may be entering Little Black Creek. Estimated cost of work is $200,000.

Activity: Operation and Maintenance | **Start Date:** 10/1/2020 | **End Date:** 9/30/2021

Operable Unit:
Peerless Plating - OU Entire Site

Status:
Future Need

Primary Cost:
$750,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
Operation and Maintenance of groundwater pump and treat system for O&M at $750,000 per year. This will be for discharge fees to WWTP ($50,000-$75,000 per month), if needed.

State Superfund Contracts

Activity: Remedial Action | **Effective Date:** 7/31/1996 | **Most Recent Mod:** 9/22/2009

Location Name: Peerless Plating - OU Entire Site | **Status:** Open - Active

Total Contract:
$9,275.00

State Total:
$1,635,669.00

State Share Balance:
$1,632,489.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$3,180.00

Contracted in FY2019:
$0.00

Summary:
453103

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,454.00	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,429.73	**Exp for Year:** $0.00
Grant #: V00E01982	**Activity:** 5 Year Review	**End Date:** 9/30/2017	**Status:** Closed
Budget Amount: $20,000.00	**State Total Award:** $0.00	**Exp to Date:** $18,742.92	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $435.26	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $6,795.23	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $7,471.16	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $12,621.26	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $19,809.77	**Exp for Year:** $0.00
Grant #: V995261-02	**Activity:** Remedial Action	**End Date:** 9/30/2008	**Status:** Closed
Fed Total Award: $330,523.00	**State Total Award:** $36,724.00	**Exp to Date:** $11,088.59	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $18,281.54	**Exp for Year:** $0.00
Grant #: V995261-01	**Activity:** Remedial Action	**End Date:** 9/30/2004	**Status:** Closed

Peerless Plating

Fed Total Award: $873,967.00	**State Total Award:** $97,107.00	**Exp to Date:** $133,198.00	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $4,275.33	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $25,000.00	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: SCA Independent Landfill

State Site ID:
61000047

Federal Site ID:
4A

Full Address:
4010 East Broadway, Muskegon, MI, 49444

County:
Muskegon

Location

The SCA Independent Landfill (the Site) is located in Section 6, Township 9 North, Range 15 West, Sullivan Township, Muskegon County, Michigan. The landfill is located east of Brooks Road between Summit Road and Black Creek. Landfilling was done at the edge of and in the wetlands on the south side of Black Creek. Private homes border the site to the south and west, and wetlands border the landfill to the east and north.

Status

The Site operated from 1968 to 1987. The landfill accepted municipal solid waste, comprised of residential, commercial, and industrial refuse. Cleanup actions have included the construction of a landfill cap and a leachate collection system.

The potentially responsible parties (PRPs) have continued voluntary operation and maintenance (O & M) of the site. O & M activities include collection, storage, and disposal of leachate from the landfill, annual landfill cap and storm water conveyance structure inspection, and long-term groundwater and surface water monitoring with state oversight.

At the request of SC Holdings Inc., an agreement to terminate the 1993 Administrative Order by Consent (AOC) was entered between the state and SC Holdings Inc., in August 2013. SC Holdings has since been providing to EGLE written Annual Progress Reports including description of the O & M work performed at the Site during the previous twelve months. EGLE has received and reviewed four such Reports since the termination of the 1993 AOC.

EGLE continues to receive and review the "Annual Groundwater Monitoring Report" for this site.

History

The Site was first licensed in 1968 as a sanitary landfill under the Garbage and Refuse Disposal Act, 1965 PA 87, as amended. The landfill accepted municipal solid waste, comprised of residential, commercial, and industrial refuse from Muskegon and Ottawa Counties, as well as foundry sand and fly ash. Waste deposition at the site occurred in three distinct disposal areas, one of which is lined with 3 feet of clay, and another with a sealant material. The landfill was officially closed in June 1987. The entire waste disposal area has been closed and capped and is being maintained and monitored in accordance with the closure plan.

Groundwater at the site flows northward and discharges to the wetland and to Black Creek. Groundwater contamination was discovered during a 1976 hydrogeologic study. A biological study of the wetlands, conducted by the Michigan Department of Natural Resources (MDNR) in May 1980, documented elevated levels of anaerobic organisms in the immediate area of leachate outbreaks.

The site was placed on the National Priorities List on September 8, 1983, and designated a state-lead site. Waste Management, Inc., the current owner and PRP for the site, executed an Administrative AOC with the MDNR in September 1993. In this AOC the PRP agreed to conduct the Remedial Investigation/Feasibility Study (RI/FS) and reimburse the MDNR for past costs associated with this site and for future costs associated with overseeing the RI/FS.

The PRP discovered three underground storage tanks on the site in September 1993, one of which had leaked waste oil. The tanks were removed and disposed of in November 1993, along with 725 cubic yards of contaminated soil. Groundwater was sampled downgradient from the tanks and found to be uncontaminated.

The RI was conducted from November 1993 to December 1995. The RI groundwater monitoring results indicated the presence of ammonia, aluminum, arsenic, iron, manganese, nickel, and benzene in concentrations up to 100 times greater than industrial drinking water criteria on the landfill property. Off-property, no residential wells are impacted; but manganese concentrations exceed the residential criterion by 25 times in monitoring wells between the landfill.

Groundwater/surface water interface (GSI) criteria for cadmium, unionized ammonia, and manganese have been exceeded in the adjacent wetlands, but not in the downgradient Black Creek. Site concentrations of manganese exceeded the GSI criterion, but accompanying toxicological testing indicated that the metal was not having a significant adverse effect on surface water endpoints. Very high concentrations of total ammonia were found originating from the landfill. The regulated chemical form of ammonia, unionized ammonia, exceeded the GSI criterion at downgradient monitoring points.

In the fall of 2001, the PRPs implemented a work plan to determine which downgradient parcels have manganese exceedances. Manganese and arsenic impacts were identified from the investigation. Additional work is needed farther downgradient to determine the extent of the manganese and arsenic impact and determine if institutional controls (ICs) and/or deed restrictions could be put in place to control exposures.

The PRP has pursued interim source control measures to address leachate which has accumulated inside the landfill. These measures were constructed in the summer of 2000 and included improved leachate extraction, landfill cap repairs, and improved stormwater drainage. These improvements are consistent with any foreseeable final remedy for the site. The EPA designated the site as achieving completion of remedial action Construction on September 26, 2001.

EGLE completed the First Five-Year Review (FYR) in May 2005. The Review concluded that the remedy is expected to be protective of human health and the environment upon completion of all remedial components.

In October 2009, the PRPs voluntarily completed a portion of a proposed supplemental investigation to determine the extent of volatile organic compound (VOC) and metals contamination in the groundwater migrating toward private properties northwest of the landfill. The investigation included five direct push borings to sample the shallow, intermediate, and deep groundwater. Investigation results indicated that manganese and arsenic were present at concentrations greater than residential drinking water criteria at two of the boring locations. One permanent monitoring well was installed to continue monitoring groundwater contamination toward the adjacent private properties.

At the request of SC Holdings Inc., an agreement to terminate the 1993 AOC was entered between the state and SC Holdings Inc., in August 2013.

In June 2014, EGLE along with wetland experts from Central Michigan University conducted wetland assessment at the SCA Site and issued a preliminary assessment that nutrient concentrations are not abnormally high in the wetlands and that the wetlands are a strongly groundwater fed system.

Enforcement

The site is a state-lead enforcement site. The PRPs will continue O & M activities at this site. O & M activities include collection, storage, and disposal of leachate from the landfill, annual landfill cap and storm water conveyance structure inspection, and long-term groundwater and surface water monitoring with state oversight.

At the request of SC Holdings Inc., an agreement to terminate the 1993 AOC was entered between the state and SC Holdings Inc., in August 2013.

The EPA is kept apprised of site activities and schedule.

Response Activities - Ongoing

Activity: Operation and Maintenance		**Start Date:** 12/1/2001	**End Date:** 12/1/2031
Operable Unit: SCA Independent Landfill - OU Entire Site		**Status:** Ongoing	
Primary Cost: $1,500,000.00	**Primary Source:** Private	**Secondary Cost:** $100,000.00	**Secondary Source:** State

Comments:
O & M activities include collection, storage, and disposal of leachate from the landfill, annual landfill cap and storm water conveyance structure inspection, and long-term groundwater and surface water monitoring with state oversight.

Response Activities - Completed

Activity: Remedial Investigation | **Start Date:** 10/19/2009 | **End Date:** 5/26/2010

Operable Unit:
SCA Independent Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
In October 2009, the PRPs voluntarily completed a portion of a proposed supplemental investigation to determine the extent of VOC and metals contamination in the groundwater migrating toward private properties northwest of the landfill. The investigation included five direct push borings to sample the shallow, intermediate, and deep groundwater. Preliminary investigation results indicated that manganese and arsenic were present at concentrations greater than residential drinking water criteria at up to two of the boring locations.

Activity: 5 Year Review | **Start Date:** 10/1/2004 | **End Date:** 5/13/2005

Operable Unit:
SCA Independent Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	State	$0.00	

Comments:
EGLE conducted the First FYR, concluding that the remedy is expected to be protective of human health and the environment upon completion of all remedial components. No more FYRs are expected for this Site.

Activity: Interim Response | **Start Date:** 5/1/2000 | **End Date:** 6/1/2001

Operable Unit:
SCA Independent Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,000,000.00	Private	$0.00	

Comments:
The interim response consisted of landfill cap repairs, leachate extraction, and runoff water control.

Activity: Remedial Investigation | **Start Date:** 10/20/1993 | **End Date:** 12/31/2001

Operable Unit:
SCA Independent Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,000,000.00	Private	$0.00	

Comments:
No Comment entered

Activity: Negotiations | **Start Date:** 3/25/1993 | **End Date:** 10/20/1993

Operable Unit:
SCA Independent Landfill - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	TBD	$0.00	

Comments:
RI/FS negotiations.

Federal Grants

Grant #: V995340-01-NE	**Activity:** Negotiations	**End Date:** 12/31/1993	**Status:** Closed
Fed Total Award: $33,244.00	**State Total Award:** $0.00	**Exp to Date:** $33,150.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: Thermo-Chem, Inc

State Site ID:
61000056

Federal Site ID:
W1

Full Address:
4331 Evanston Road, Muskegon, MI, 49442

County:
Muskegon

Location

The Thermo-Chem, Inc., property covers approximately 8 acres in Egelston Township on the south side of Evanston Road. The area surrounding the site is semi-rural and includes residential areas, light manufacturing and commercial buildings, and undeveloped woodlands. Black Creek, which flows into Mona Lake, is located about 1,200 feet south of the site. There are two other Superfund sites within 2 miles of Thermo-Chem, Inc. (Bofors Nobel, Inc., to the east, and SCA Independent Landfill to the south). The Sun Chemical Company is located approximately 3/4 of a mile east of the site. A portion of the site has reverted to state ownership due to non-payment of taxes.

Status

Thermo-Chem, Inc., was involved in solvent reprocessing and liquid waste disposal. The Thomas Solvent Company was located adjacent to Thermo-Chem, Inc., and is the parent company of Thermo-Chem, Inc. The Thermo-Chem, Inc., solvent reclaiming operation was closed in 1980. The facility had received paint wastes, antifreeze liquids, and solvents such as trichloroethylene (TCE) and methylene chloride for reclaiming.

The groundwater extraction and treatment system continues to operate. Site-wide groundwater monitoring is conducted annually.

In 2019, EGLE staff received a notification letter from EPA concerning the start of the FYR. EGLE staff provided "Issues" letter to EPA identifying concerns that needed to be included in the FYR. A draft FYR was received from EPA and EGLE staff provided written comments on the draft FYR. The site inspection and the Final FYR are still pending.

The Annual Summary, Deep Well and Residential Well Sampling Reports were submitted by the potentially Responsible Parties (PRPs) in May 2019 and EGLE staff provided written comments.

History

Thermo-Chem, Inc., was involved in solvent reprocessing and liquid waste disposal. The Thermo-Chem, Inc., solvent reclaiming operation was closed in 1980. The facility had received paint wastes, antifreeze liquids, and solvents such as TCE and methylene chloride for reclaiming. Waste sludges and residues were incinerated on-site, and wastewater was discharged to a clay-lined lagoon and two seepage lagoons.

Groundwater and soil contamination has resulted from discharges of process wastes to the seepage lagoons and from poor waste and solvent handling practices. Groundwater and on-property soil are contaminated with volatile organic compounds including TCE, tetrachloroethylene, toluene, and benzene. Contaminated groundwater flows south from the property toward Black Creek. No residential wells have been impacted by the site. There is a potential that contamination could reach Black Creek and Mona Lake. Contaminants in the groundwater have been detected at levels up to 30,000 times the unrestricted residential criteria. The contaminated groundwater poses unacceptable risks to potential future residents if used for drinking water. Also, the contaminated groundwater poses a potentially severe environmental threat to Black Creek.

The site was placed on the National Priorities List in June 1986. The EPA removed chemicals in the laboratory building and sampled surface soils as an emergency response in August 1988.

The Remedial Investigation/Feasibility Study (RI/FS) was privately financed by a group of 72 private parties. The EPA

issued a Record of Decision (ROD) on September 30, 1991. The ROD specifies extraction and treatment of contaminated groundwater with discharge of treated groundwater to Black Creek; excavation and off-site incineration of "hotspot" soil; and in-place treatment of the rest of the soil by soil vapor extraction (SVE). The remedy specified in the ROD only deals with on-property soil and contaminated groundwater up to its discharge point to Black Creek. The EPA delayed selecting a remedy for Black Creek, and groundwater south of Black Creek until more information was collected.

A settlement was not initially reached between the EPA and the private parties for implementation of the Remedial Design (RD). The EPA then proceeded with a Federally-Funded RD. The Phase I soil removal design was completed by the EPA. Subsequently, the PRPs agreed to comply with a Unilateral Administrative Order (Order) and the PRPs finished the design for Phase II, groundwater extraction and treatment, and Phase III, soil treatment by SVE.

The PRPs began work on the Phase I Remedial Action (RA) in September 1995. Building demolition was completed in the spring of 1996. The soil removal portion of the remedy was completed in 1998. Construction of the groundwater treatment system and the soil treatment system began in September 1997 and was completed in 1998. The soil treatment system became operational in 1998. The groundwater treatment system has been operational since March 1999.

In September 2002, the EPA issued an Explanation of Significant Differences (ESD) to modify the original ROD which identified two Operable Units (OUs). This ESD combines the requirements for Black Creek and areas south of Black Creek with the requirements for areas north of Black Creek into one. It was deemed unnecessary by the EPA to maintain two OU designations at the Thermo-Chem Site. The ESD essentially concluded that the specified actions in the original ROD should be protective of the creek; however, it specified that an expanded monitoring program was necessary and upgrades to the groundwater pump and treat (P & T) system may be necessary if complete capture of the contaminant plume is not demonstrated.

Pursuant to the 2002 ESD, a modeling evaluation was conducted by the EPA and EGLE staff in 2003 to determine whether the existing extraction well system at the site is sufficient to hydraulically capture the contaminant plume going towards Black Creek. The evaluation concluded that plume capture is not being attained at the extraction well-line. The pumping rate was subsequently increased to better achieve capture. An extraction well maintenance program has been put in place to maintain higher pumping rates.

A natural attenuation enhancement pilot study was conducted at the Thermo-Chem site. The pilot study was initiated in August 2003 and began operating in September 2003. Bi-weekly sulfate and nitrate injections began in early September and were completed by mid-December 2004. The pilot study achieved increases in the decay rates for toluene, ethylbenzene, and Xylene, but not benzene. The relatively short treatment time for benzene, as a function of groundwater travel time within the pilot study, was likely a factor. Consequently, the pilot study was concluded.

The First Five-Year Review (FYR) for the Thermo-Chem site was completed and signed on May 10, 2005. The review concluded that the remedy currently in place is protective of human health and the environment, and in order for the remedy to be protective in the long-term, groundwater must be restored to cleanup standards.

In August 2010, the PRPs submitted to the Agencies an "Enhanced Reductive Dechlorination Work Plan" for review and approval. The hope is to implement actions to enhance the natural degradation of contamination to expedite the cleanup of contaminated groundwater. The Work Plan was reviewed by EGLE internal review team and approved in September 2010 with certain conditions.

The PRP contractors finalized the combined Phase lll enhanced reductive dechlorination activities at the Thermo-Chem site in 2012. Testing of air sparge (AS) lines and all underground service and piping is completed. The building slab, expansion joints, building structure, and system control panels are in place. The tank was installed by February 2012. The first injection of 2 percent molasses to the system occurred in 2012. Four injection events (including Phases I and II of the Second Injection Event) were completed at the Site between August 2012 and December 2013. The fifth and sixth injection events were completed in 2014. The seventh injection event started in December 2014. Reports of the enhanced reductive chlorination process are being provided to the Agencies on an on going basis. Decreasing concentrations of TCE and dichloroethylene along with increasing concentrations of vinyl chloride and ethene at the performance monitoring wells indicate that enhanced reductive dechlorination is occurring.

The Third FYR Report was signed on May 8, 2015. The report concluded that the remedy currently in place is protective of human health and the environment but in order for the remedy to be protective in the long-term, groundwater must be restored to cleanup levels.

On September 3, 2016, EGLE Office of Waste Management and Radiological Protection performed an inspection and found the Site to be in compliance with the requirements of Part 111, Hazardous Waste Management, and Part 121, Liquid Industrial Waste, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended and Subtitle D of Resource Conservation and Recovery Act, 1976 PL 94-580, as amended.
In November 2017, the PRP consultants conducted annual air sampling, enhanced reductive dechlorination (ERD) sampling, annual groundwater sampling and granular activated carbon change out. The tenth enhanced reductive dechlorination injection took place from February 1, to February 6, 2017. The PRP consultant has been monitoring the ERD System quarterly since the June 2017 injection event.

During the six-month reporting period (October 2017 to March 2018) Stearns Drilling was on-site eight times to perform well maintenance including the chemical rehabilitation of two extraction wells and replacement of one extraction well. Approximately 18,000 pounds of granular activated carbon was exchanged on March 27, 2018.

The Annual Summary, Deep Well and Residential Well Sampling Reports were submitted by the PRPs in July 2018 and EGLE staff provided written comments.

EGLE staff has reviewed the Draft Declaration of Restrictive Covenant for this Site prepared by the EPA and the PRP in 2018.

Enforcement

The Thermo-Chem, Inc., PRP group is conducting the RA under an Order issued by the EPA.

Operable Units for Thermo-Chem, Inc

OU1 Soil and Groundwater North of Black Creek

OU2 Groundwater South of Black Creek

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1991

Location Name: OU1 Soil and Groundwater North of Black Creek

Comments:
The 1991 ROD called for extraction and treatment of groundwater and off-site incineration of "hot spot" soils and in-place treatment of remaining contaminated soils. This ROD does not prescribe a remedy for the OU area south of the Black Creek and the floodplain.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 9/17/2002

Location Name: OU1 Soil and Groundwater North of Black Creek

Comments:
On September 17, 2002, the EPA issued an ESD to modify the original 1991 ROD which identified two OUs. This ESD combines the requirements of soil and groundwater north of Black Creek and groundwater south of Black Creek into one. It was deemed unnecessary by the EPA to maintain two OU designations at the site. The ESD specified that an expanded monitoring program was necessary and upgrades to the groundwater pump and treat system may be necessary if complete capture of the contaminant plume is not demonstrated.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1991

Location Name: Thermo-Chem, Inc - OU Entire Site

Comments:
Cleanup goals for the site remedy were updated in the 2002 ESD

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 6/30/1999 | **End Date:** 6/30/2029

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Ongoing

Primary Cost:
$1,091,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Treatment and extraction of the groundwater at this site will perhaps continue for 30 years from the start of the P & T system (June, 1999). The cost estimate is based on the ROD annual Operation and Maintenance (O & M) of $1,091,000 with a total expected cost of $32,730,000. This cost estimate does not include the SVE/AS operations.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 10/28/2014 | **End Date:** 5/8/2015

Operable Unit:
Thermo-Chem, Inc - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The third FYR was completed in April 2015. EGLE staff identified several issues that needed to be included in the FYR in a letter written to the EPA in June 2014. The FYR Report was signed on May 8, 2015.

Activity: 5 Year Review | **Start Date:** 10/1/2009 | **End Date:** 5/5/2010

Operable Unit:
Thermo-Chem, Inc - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was completed and signed on May 5, 2010. The report concluded that the remedy currently in place is protective of human health and the environment but in order for the remedy to be protective in the long-term, groundwater must be restored to cleanup levels.

Activity: 5 Year Review | **Start Date:** 11/17/2004 | **End Date:** 5/10/2005

Operable Unit:
Thermo-Chem, Inc - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA signed the First FYR report in May 2005. The report concluded that the remedy currently in place is protective of human health and the environment but in order for the remedy to be protective in the long-term, groundwater must be restored to cleanup standards.

Activity: Remedial Investigation | **Start Date:** 6/30/1999 | **End Date:** 12/30/2002

Operable Unit:
Thermo-Chem, Inc - OU2 Groundwater South of Black Creek

Status:
Completed

Primary Cost:
$700,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The western extent of the plume has been delineated. An ESD to modify the original ROD was signed in September

2002. This ESD combined the soil and groundwater north of Black Creek with the groundwater south of Black Creek into one OU.

Activity: Remedial Action | **Start Date:** 9/30/1995 | **End Date:** 12/30/1999

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$8,020,000.00	Private	$435,000.00	Federal

Comments:
The primary estimated cost indicated is for implementation of Phases II and III of the design (groundwater extraction and treatment and SVE system installation, respectively) per the ROD.

Activity: Remedial Design | **Start Date:** 10/30/1994 | **End Date:** 7/30/1997

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,517,000.00	Federal	$0.00	Private

Comments:
The RD was initiated by the EPA after the PRP group refused to comply with the Order. The EPA finished the Phase I design and started the Phase ll design. The PRP group then agreed to comply with the Order and subsequently finished the Phase II design and completed the Phase lll design.

Activity: Interim Response | **Start Date:** 4/30/1991 | **End Date:** 9/30/1991

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	Federal	$0.00	

Comments:
The EPA removed buried tanks at the Thomas Solvent property.

Activity: Interim Response | **Start Date:** 9/30/1988 | **End Date:** 12/30/1988

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$50,000.00	Federal	$0.00	

Comments:
The EPA removed laboratory chemicals.

Activity: Remedial Investigation | **Start Date:** 9/30/1987 | **End Date:** 9/30/1991

Operable Unit:
Thermo-Chem, Inc - OU1 Soil and Groundwater North of Black Creek

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,200,000.00	Private	$0.00	

Comments:
The RI/FS was conducted by a group of PRPs.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 10/1/2019	**End Date:** 9/25/2020
Operable Unit: Thermo-Chem, Inc - OU Entire Site		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** TBD	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
The next FYR is projected to be completed by September, 2020. On January 15, 2020 EGLE staff provided "Issues" letter identifying concerns that need to be included in the upcoming FYR. In May, 2020 EGLE staff provided written comments on the Draft FYR. The Final FYR is still pending.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $5,226.26	**Exp for Year:** $1,726.59
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $3,533.66	**Exp for Year:** $554.24
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $3,355.50	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $19,622.66	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $30,484.35	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $30,817.96	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $31,093.84	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $58,628.37	**Exp for Year:** $0.00

Thermo-Chem, Inc

Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $17,662.00	**Exp for Year:** $0.00
Grant #: V995259-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $39,449.00	**State Total Award:** $0.00	**Exp to Date:** $1,984.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $174,760.58	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $11,109.71	**Exp for Year:** $0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $80,107.55	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $22,338.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Hi-Mill Manufacturing Co.

State Site ID:
63000025

Federal Site ID:
9Q

Full Address:
1704 Highland Road, Highland, MI, 48031

County:
Oakland

Location

The Hi-Mill Manufacturing Company occupies approximately 4.5 acres and is located on the south side of M-59 in Oakland County, 15 miles west of the city of Pontiac, and 1.5 miles east of the town of Highland. The Highland State Recreation Area, except for the M-59 boundary, surrounds the facility. The recreation area immediately adjacent to the Hi-Mill Manufacturing Company contains a 10-acre wetland. No municipal water supply is available in the area.

Status

Beginning in 1945, the Hi-Mill Manufacturing Company fabricated copper, aluminum, and brass tubing parts and fittings. Operations included cutting, machining, forming, shaping, and soldering raw tubing and fabricated tubing components. Trichloroethylene (TCE) was used in the degreasing process for many years.

In September 2019, the EPA reinitiated groundwater monitoring at the Site. Groundwater sample results indicated the continued presence of volatile organic compounds (VOCs), particularly TCE, above applicable criteria. In addition, samples for Per- and Polyfluoroalkyl Substances (PFAS) were collected in September 2019. Results indicate that all but two locations sampled were below laboratory detection limits, however these two locations exceed the current State of Michigan maximum contaminant level (MCL) for Perfluorooctanic Acid (PFOA). Further evaluation will be required as a result. During the September 2019 groundwater monitoring, the EPA determined that wells IW-10, SW-03, SW-21 and IJ-4 (injection well) were damaged.

History

Beginning in 1945, the Hi-Mill Manufacturing Company fabricated copper, aluminum, and brass tubing parts and fittings. Operations included cutting, machining, forming, shaping, and soldering raw tubing and fabricated tubing components. Former activities also included associated activities of nitric and sulfuric acid cleaning and pickling, chromic acid washing, and degreasing. TCE was used in the degreasing process for many years.

Until 1981, the process wastewater from these operations was discharged to two, unlined lagoons. In 1981, a wastewater recycling system became operational and the company discontinued discharging to the lagoons. For a brief period of time afterwards, in an effort to dewater the lagoons, the Hi-Mill Manufacturing Company spray evaporated the water remaining in the lagoons into the air via roof-mounted sprayers. The lagoons were excavated, the sludge was disposed of, and the lagoons backfilled in November and December 1983. During the time they were in use, the lagoons often overflowed directly into the adjacent wetland in the Highland State Recreation Area and contaminated the wetland water and sediments.

Sometime in the late 1970s, an underground delivery pipe from a former TCE storage tank ruptured and an estimated 250 gallons of TCE were lost to the environment. The contamination of groundwater by TCE and its breakdown products was first discovered in 1988, when water samples collected by the Oakland County Health Department from the Hi-Mill Manufacturing Company's production water wells revealed the presence of TCE and cis-1,2-dichloroethene.

The remedial investigation (RI) and feasibility study (FS) reports were finalized in 1993. The Record of Decision (ROD) was signed in September 1993 and called for no-action with monitoring. The State of Michigan did not concur with the ROD because the risk assessment did not consider significant analytical data collected during the RI which revealed contamination had migrated off the plant property at concentrations in excess of cleanup criteria under Part 201,

Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. In addition, the EPA relied upon deed restrictions at the Hi-Mill Manufacturing Company property as a demonstration of protectiveness in spite of the fact that contamination was detected off the Hi-Mill Manufacturing Company's property, and no similar off-site restrictions were pursued.

The first statutory Five-Year Review (FYR) for this site was completed August 25, 2000.

During the period from August 2000 through March 2001, Conestoga-Rovers & Associates conducted four groundwater-source oxidation treatment events. Each event consisted of injecting potassium permanganate solution, as the oxidizer, into the subsurface environment at various locations. A detailed report on the treatment program's results was received August 19, 2003. Unfortunately, the report concluded that no change in concentration was observed for TCE before, during, or after the treatment period.

During 2005, the EPA authored the Second FYR with EGLE's review, to evaluate the implementation and performance of the remedy in order to determine if the remedy is or will be protective of human health and the environment. The FYR report concluded: the lack of institutional controls (ICs) off-site allows potential direct contact for workers that might be excavating soil in the median of M-59 where Hi-Mill's plume has migrated; that due to the installation of community drinking water wells close to the Hi-Mill site, an assessment of whether these wells could be impacted by contaminated groundwater from the Hi-Mill property needs to be conducted; and, an evaluation of the no-action remedy, as selected by the ROD, needs to be evaluated and amended, if appropriate.

The EPA and EGLE began following up on the 2005 FYR issues in 2006. First, the EPA required that two municipal water sources be tested that are in close proximity to assure that Hi-Mill contaminants had not extended into the water supply. In a letter dated August 7, 2006, the EPA advised the Oakland County Drain Commissioner that the sampling conducted had not found concentrations that exceeded the reporting limits or anything as a cause for concern. In late November 2006, the EPA advised Hi-Mill of response actions that are being requested, including the replacement of some existing monitor wells and the installation of additional monitor wells. Monitor well installations began February 2008 and were completed between June 9 to June 12. Since installation, monitoring at the three newly installed wells, in addition to the installation of one replacement well, has not found evidence of contaminant concentrations at levels of concern in the M-59 median.

EGLE and EPA staff conducted an annual inspection of the site in 2010. The Third FYR was completed in 2010. The conclusions of the FYR were that the no-action remedy is currently protective of human health and the environment in the short term. It also concluded: TCE concentrations, both on-site and off-site, have increased since the time of the RI. In addition, the presence of a dense non-aqueous phase liquid in an on-site monitoring well has been confirmed. The combination of these two factors could impact the assumptions in the site's original risk assessment; potential dermal contact by off-site construction workers who may be involved in excavation work along Highway M-59 was not considered during the original risk assessment and is not being addressed by current ICs; two additional community water supply wells have been put into use near the site since the time the ROD was written. The addition of these wells, which have the potential to draw groundwater contaminated by the Hi-Mill site toward them, indicates that the ingestion of site groundwater is more likely than it was at the time the ROD was signed. Additional groundwater monitoring is being conducted to provide continued assurance that the Hi-Mill groundwater contamination plume has had no impact to the wellhead protection area estimated for two of the new community wells; and lastly, a third exposure pathway that was not evaluated in the original risk assessment is the VI pathway. In May 2005, Conestoga-Rovers & Associates conducted air sampling at the Hi-Mill Manufacturing facility to assess potential employee exposures to TCE and vinyl chloride, and to determine the facility's compliance with permissible exposure limits for TCE and vinyl chloride established by the Michigan Occupational Safety and Health Administration. Results indicated vinyl chloride was below the detection limit at all of the sampling locations, but there were detections of TCE at 7 of the 11 indoor sampling locations. None of the air samples collected for TCE and vinyl chloride were above their respective permissible exposure limits. The Agencies need to determine whether any additional follow-up activities are needed to address the VI pathway.

In 2012, EGLE was advised that the facility owner passed away. Site inspections in 2012 suggested operations had ceased.

As a result of the death of the remaining site property owner and subsequent unpaid taxes, the property was sold at a county tax foreclosure sale in October 2013. The new property owner completed a baseline environmental assessment to document current site conditions which was submitted to EGLE's Southeast Michigan District Office for review.

The EPA completed the Fourth FYR in September 2015. The EPA is evaluating whether any remaining assets exist to

address remaining obligations at the site. Since required environmental groundwater sampling at the site is not occurring, the EPA is evaluating a sampling regimen and source removal while working with the new property owner to assess future remedial options at the site.

The EPA did not complete any site actions during the past two fiscal year reporting periods (October 2016-September 2018). The EPA and EGLE discussed future evaluation of the vapor intrusion (VI) pathway and the status of the groundwater monitoring network.

Enforcement

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/28/1993

Location Name: Hi-Mill Manufacturing Co. - OU Entire Site

Comments:
This is a no-action ROD with long-term groundwater monitoring. EGLE did not concur with the ROD.

Response Activities - In Progress

Activity: 5 Year Review **Start Date:** 9/14/2019 **End Date:** 9/14/2020

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
In Progress

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
The EPA and EGLE are currently working on the 5th FYR for the Site

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 10/1/1995 **End Date:** 1/1/2025

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$62,000.00

Secondary Source:
Federal

Comments:
Years ago, six shallow wells and two intermediate wells were installed to augment the RI monitoring wells for the long-term monitoring. Vertical aquifer sampling was employed to aid in well screen placement. In addition, the property owners placed a deed restriction on the plant property to restrict groundwater use. Long-term monitoring of groundwater is ongoing. The potentially responsible parties (PRPs) voluntary treatment did not alter the TCE contamination at the site. In response to the EPA requesting more investigation, the PRPs initiated that work in February 2008. Results of this investigation were used to adjust the current monitoring program for the site. The current monitoring well network is continuing to be evaluated as to its effectiveness in monitoring contaminates emanating from the Site. Additionally, EPA and EGLE are evaluating the on-site sub-slab depressurization system as to its ability to protect workers from vapor intrusion.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 7/26/2014 **End Date:** 9/14/2015

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:

Primary Source:

Secondary Cost:

Secondary Source:

$0.00	TBD	$0.00

Comments:
The Fourth FYR was completed in September 2015 and was determined protective of human health and the environment in the short term.

Activity: 5 Year Review | **Start Date:** 1/25/2010 | **End Date:** 9/27/2010

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The conclusions of the FYR were that the no-action remedy is currently protective of human health and the environment in the short term.

Activity: Remedial Investigation | **Start Date:** 2/18/2008 | **End Date:** 6/12/2008

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
The EPA sent correspondence dated November 29, 2006, requesting a work plan to accomplish additional investigatory goals, in large part, to confirm whether the no-action with monitoring ROD is appropriate given increasing concentrations in well SW-1. New wells were added to the site's overall monitoring program.

Activity: 5 Year Review | **Start Date:** 1/31/2005 | **End Date:** 8/25/2005

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
Findings: lack of ICs off-site raises potential direct contact issue for workers that might be excavating soil in the median of M-59 where Hi-Mill's plume has migrated; assess community wells close enough to Hi-Mill on whether these wells could be impacted by contaminated groundwater from the Hi-Mill property; ascertain if free product on Hi-Mill property requires that the no-action remedy, as selected by the ROD, be re-evaluated.

Activity: Remedial Action | **Start Date:** 8/15/2000 | **End Date:** 1/31/2001

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	Federal

Comments:
The PRP is voluntarily implemented a groundwater treatment effort of oxidation of chlorinated solvents using potassium permanganate injection.

Activity: 5 Year Review | **Start Date:** 1/1/2000 | **End Date:** 8/25/2000

Operable Unit:
Hi-Mill Manufacturing Co. - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The EPA determined that the No-Action With Monitoring and Deed Restriction remedy was protective. The State did not concur with this determination.

Activity: Remedial Design		**Start Date:** 3/15/1994	**End Date:** 9/30/1995
Operable Unit: Hi-Mill Manufacturing Co. - OU Entire Site		**Status:** Completed	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $71,000.00	**Secondary Source:** Federal

Comments:
No Comment entered

Activity: Remedial Investigation		**Start Date:** 10/15/1988	**End Date:** 6/15/1993
Operable Unit: Hi-Mill Manufacturing Co. - OU Entire Site		**Status:** Completed	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $234,000.00	**Secondary Source:** Federal

Comments:
The PRP funded the RI/FS with federal lead and state support. The EPA retained services of an oversight contractor who also reviewed the Human Health Risk Assessment and the Ecological Risk Assessment.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 9/15/2024	**End Date:** 9/15/2025
Operable Unit: Hi-Mill Manufacturing Co. - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**

Comments:
6th FYR

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $2,539.29	**Exp for Year:** $0.00
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $1,545.64	**Exp for Year:** $721.37
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $6,243.94	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$651,876.00	$0.00	$2,997.56	$0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $43.98	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $9,172.26	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $404.33	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $5,369.98	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $93.00	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $36,780.81	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $95,000.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: J & L Landfill

State Site ID:
63000007

Federal Site ID:
2P

Full Address:
Hamlin Road, Rochester Hills, MI, 48063

County:
Oakland

Location

The Jones & Laughlin (J & L) Landfill is a 16.7-acre landfill located near the northwest corner of Hamlin and Dequindre Roads in Rochester Hills, Michigan. It is surrounded on three sides by landfills and has at least seven other landfills within a one-mile radius. A large residential area exist just south of the site across Hamlin Road within 200 feet of the site. There are drainage ditches in close proximity to the site that drain into the Clinton River, which is located approximately one half mile downgradient.

Status

It is believed that the site was operated as a landfill as early as 1951. Starting in 1957, slag from the Jones & Laughlin Steel Company's steel manufacturing facility in Warren was disposed of at this landfill. During 1967 or 1968, baghouse dust filters were installed for the electric arc furnace dust and this dust was disposed of along with the slag. The EPA completed a remedial investigation (RI) in 1991 of the site and the installation of a hazardous waste landfill cap on the site was completed in 1997.

Ongoing maintenance and monitoring of the site continued in 2019. Frequent sampling of the methane vents was completed as scheduled throughout the year. The annual monitoring report for Fiscal Year (FY) 18 was completed and submitted in January 2019. The annual groundwater sampling event for FY19 was completed in September 2019. The results from this sampling will be included in the annual report that will be completed and submitted in early FY20. There were no issues to report during inspection site visits of the cap and fencing surrounding the site.

History

After being mined for sand and gravel, it is believed that the site was operated as a landfill as early as 1951. Starting in 1957, slag from the Jones & Laughlin Steel Company's steel manufacturing facility in Warren was disposed of at this landfill. During 1967 or 1968, baghouse dust filters were installed for the electric arc furnace dust at the steel facility in Warren. The dust collected in these air pollution control devices was disposed of along with the slag. This dust is a listed waste under the Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA).

Few records exist for waste disposal at the site prior to 1972. A rough estimate has been made that, between 1968 and 1980, 25,140 cubic yards of electric arc furnace dust and 224,590 cubic yards of slag were disposed of at the site. The buried waste is believed to be up to 25 feet deep with some of the waste located in the groundwater. Metals contained in the electric arc furnace dust include chromium oxide, manganese oxide, nickel oxide, and zinc. These metals potentially pose an environmental and public health hazard.

The EPA completed a remedial investigation (RI) in 1991. Based on these findings, the EPA issued a Record of Decision (ROD) in 1994 requiring the installation of the technical equivalent of a hazardous waste landfill cap on the site. The intent of the cap is to minimize infiltration of precipitation into the landfill and to eliminate risks associated with direct contact with landfill materials.

The findings of the RI and additional 1994 and 1995 groundwater sampling events indicated that the following compounds were leaving the property in groundwater at concentrations exceeding Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), generic residential drinking water standards: benzene, methylene chloride, pentachlorophenol, aluminum, arsenic, iron, manganese, lead, sodium, and barium. Because approximately 1,500 people within three miles of the site depend on

shallow private wells as a source of drinking water, there is a public health threat.

LTV Steel, the owner of the property, in response to a Unilateral Administrative Order issued by the EPA, completed construction of the technical equivalent of a hazardous waste landfill cap by the end of 1997. LTV Steel monitored the landfill cap and performed groundwater monitoring as part of the landfill cap operation and maintenance (O & M).

The EPA issued a Focused Feasibility Study and ROD on September 30, 1997, to address the groundwater portion of the site. The ROD for groundwater calls for limited groundwater and residential well monitoring as well as a contingency for an alternate water supply if the EPA determines that downgradient wells indicate that there is an unacceptable risk due to contamination from the J & L Landfill site. EGLE did not concur with the remedy because it did not meet state environmental laws and cleanup standards and lacked adequate action levels and contingencies. Contrary to the state's position, the EPA determined that the Michigan Hazardous Waste Management Act (Act 64; now known as Part 111, Hazardous Waste Management, of the NREPA) was not an Applicable or Relevant and Appropriate Requirement.

LTV Steel developed a groundwater monitoring plan. In lieu of implementing the groundwater monitoring plan, LTV Steel elected to develop an alternate water supply plan to identify and connect nearby residential wells located downgradient of the site to municipal water to eliminate potential exposure to contaminated groundwater. LTV Steel also conducted a survey to identify the location of private water wells downgradient of the site. This information was used to offer replacement of private water wells with a connection to the municipal water supply and to properly abandon nearby unused residential wells in August 2002.

In September 2001, the EPA completed a Five-Year Review (FYR) of the landfill cap remedy. The EPA determined that the remedy is protective, and required the following actions: continued monitoring of the landfill cap, institutional controls (ICs), completion of the alternate water supply plan, and implementation of a deed restriction for site land use and associated contaminated groundwater.

A deed restriction was drafted for the adjacent downgradient properties in early 2003. LTV Steel declared bankruptcy at some point during this time. The execution of the documents became the EPA's responsibility due to the bankruptcy. Because surrounding residents had been connected to a municipal water supply, and because the old residential wells had been properly abandoned, the EPA determined that deed restrictions on properties impacted by the landfill's plume were no longer necessary.

The EPA and LTV Steel reached a settlement based on the bankruptcy filing wherein funding was established to continue monitoring at the site. The state and the EPA agreed to enter into a cooperative agreement that obligates EGLE to conduct yearly monitoring and maintenance of the site.

In 2010, due to the ongoing shifting of the landfill gas vents, EGLE conducted a limited methane investigation at the southern/residential boundary of the site to determine whether or not the landfill is venting properly. The investigation found methane in the soils in excess of recommendations found in RCRA and above standards cited in Michigan’s Part 115, Solid Waste Management, of the NREPA. EGLE recommended that the extent of the off-site methane be evaluated and monitored, and steps taken to make sure that no receptors were impacted.

Another FYR was signed on June 1, 2011. It determined that the remedy remained protective for both the groundwater and landfill cap operable units. The FYR also noted the need for updated ICs and the need for gas vent and monitoring well system maintenance.

EGLE staff used site funding to purchase turbine tops for the vents and replaced most of the snorkel-type tops in December 2011 and early 2012. A proposal with anticipated cost ramifications for repairing well casings, repairing and replacing wells, additional methane investigation, and to continue routine annual O & M activities, was addressed through a grant application for the EPA’s review and approval. This proposal was submitted to the EPA in early 2013.

A new cooperative agreement was finalized and signed in May 2013, which continued through 2016. Improvements to the landfill cap included a new access road that was constructed in September 2013. Also in 2013, EGLE staff initiated talks with the EPA to complete required Restrictive Covenant (RC) documents for the site. A site survey that was necessary for the RC was completed in December 2013.

A well replacement for monitor well MW-3D was completed in August 2014 by EGLE field services. Annual groundwater sampling was completed in September 2014 and an annual report that included the results of this sampling event was sent to the EPA in December 2014.

A well abandonment for monitoring well GW-01S was completed in July 2015 by EGLE field services. Annual groundwater sampling was completed in September 2015 and an annual report that included the results of this sampling event was sent to the EPA in early 2016. The RC was completed in late spring of 2015 and the permanent marker was set near the entrance of the site.

The annual groundwater sampling was completed in August 2016 and an annual report that included the results of this sampling event was sent to the EPA in January 2017. Sampling ports for methane sampling were installed on all landfill vents and maintenance on groundwater wells GW-06 and MW-07 was completed in September 2016 by EGLE field services. The Fourth FYR was completed and signed by the EPA on May 20, 2016. The protectiveness statement determined that the remedy is still protective in both the landfill cap and groundwater OUs in the short-term. To ensure long-term protectiveness, additional methane monitoring, and evaluation of off-site source contamination migration at the western site boundary need to be completed. Continued maintenance and monitoring of the site remedy components, ICs, and groundwater are also needed to ensure protectiveness of human health and the environment.

Ongoing maintenance and monitoring of the site continued in 2017-2018. Upgrades on the methane vents were completed and frequent sampling of these vents was scheduled during this time frame. The annual groundwater sampling events were completed in August of 2017 and September of 2018. The results were included in the annual reports completed in December 2017 and January 2018. In both 2017 and 2018, there were no issues to report during frequent site visits to inspect the cap and fencing surrounding the site.

Enforcement

The potentially responsible party (PRP), LTV Steel, performed work for the landfill cap and groundwater pursuant to an Order issued by the EPA. LTV Steel is liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, and may also be liable under the NREPA. On January 9, 2001, LTV Steel filed Chapter 11 under the bankruptcy code, but settled with the EPA to assure funding for continued maintenance activities and groundwater monitoring.

The J & L Landfill property reverted to Oakland County ownership through the tax reversion process. The State of Michigan requested, and Oakland County did transfer the parcels to the Michigan Land Bank Fast-Track Authority. The property is not available for sale given the contamination conditions.

Operable Units for J & L Landfill

OU1 Landfill Cap

OU2 Groundwater

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 6/30/1994

Location Name: OU1 Landfill Cap

Comments:
The ROD called for the technical equivalent of a hazardous waste cap consisting of: 1 foot clay, geosynthetic clay liner 60 milliliter flexible membrane liner, geonet with geotextile filter fabric drainage layer, 36 inches clean fill layer, and 6 inches topsoil. During construction, the cap was modified as follows: 12 inches of sand was used for the drainage layer instead of the geonet and the clean fill layer was reduced to 24 inches (the sand drainage layer became part of the 42 inches of frost protection). Additional remedy components include: abandonment of existing culvert, installing a passive gas management system, vegetative cover placement, and site fencing. These additional components have been implemented.

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1997

Location Name: OU2 Groundwater

Comments:
Remedy includes groundwater use deed restrictions, installation of additional on-site groundwater monitoring wells, and conducting routine groundwater monitoring of residential wells and on- and off-site monitoring wells. The ROD provided for a contingency of providing residences with an alternate water supply in the event that there is an unacceptable risk due to contamination from the J & L Landfill site. The PRP, LTV Steel, is to implement an alternate water supply in lieu of long-term off-site and residential well monitoring.

LTV Steel connected downgradient property owners into the municipal water system. Many of the property owners refused to allow LTV Steel to connect them.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 10/1/2005 | **End Date:** 9/30/2031

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:
$534,542.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Through grants with the EPA, the state conducts yearly groundwater sampling and cap maintenance inspections and reports the findings to the EPA.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 7/15/2015 | **End Date:** 6/1/2016

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR was completed and signed by EPA in May 2016. The protectiveness statement determined that the remedy is still protective in both the landfill cap and groundwater OUs in the short-term. To ensure long-term protectiveness, additional methane monitoring and evaluation of off-site source contamination migration at the western site boundary need to be completed. Continued maintenance and monitoring of the site remedy components, ICs and groundwater are also needed to ensure protectiveness of human health and the environment.

Activity: 5 Year Review | **Start Date:** 11/1/2010 | **End Date:** 6/1/2011

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR protectiveness statement determined that the remedy is still protective in both the landfill cap and groundwater OUs. Implementation of ICs is necessary. Also, the landfill gas vents and some ballards and monitoring wells are in need of maintenance work.

Activity: 5 Year Review | **Start Date:** 1/1/2005 | **End Date:** 8/23/2006

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
No Financial Source

Secondary Cost:
$0.00

Secondary Source:

Comments:
Second FYR conducted by the EPA concluded that the remedy was still protective.

Activity: Operation and Maintenance | **Start Date:** 1/1/2002 | **End Date:** 1/25/2003

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$460,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Conduct long-term monitoring of on-site groundwater and O & M of the landfill. The PRP filed for bankruptcy and will not continue these activities. They settled with the EPA monetarily to cover costs of O & M and long-term monitoring of groundwater.

Activity: 5 Year Review | **Start Date:** 9/1/2001 | **End Date:** 9/28/2001

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA completed the First FYR of the landfill cap remedy wherein they determined the remedy to still be protective and recommended the following actions: continued O & M and monitoring of the landfill cap, continued ICs and completion of the alternate water supply plan, implementing a deed restriction for site land use and associated contaminated groundwater.

Activity: Remedial Design | **Start Date:** 1/1/1999 | **End Date:** 2/1/2003

Operable Unit:
J & L Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRP, LTV Steel, elected to develop an alternate water supply plan in lieu of long-term monitoring of downgradient residential wells and monitoring wells.

Activity: Remedial Action | **Start Date:** 5/19/1996 | **End Date:** 12/16/1997

Operable Unit:
J & L Landfill - OU1 Landfill Cap

Status:
Construction Complete

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$112,000.00

Secondary Source:
Federal

Comments:
Landfill cap construction.

Activity: Remedial Design | **Start Date:** 6/27/1995 | **End Date:** 5/19/1996

Operable Unit:
J & L Landfill - OU1 Landfill Cap

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Private

Secondary Cost:
$83,000.00

Secondary Source:
Federal

Comments:
No Comment entered

Activity: Remedial Investigation | **Start Date:** 7/12/1994 | **End Date:** 9/30/1997

Operable Unit:
J & L Landfill - OU2 Groundwater

Status:
Completed

Primary Cost:
$28,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Supplemental groundwater investigation (in addition to the December 30, 1990, RI Report) to evaluate conditions and how to address the groundwater contamination. Results of additional investigation led to September 30, 1997, ROD.

Activity: Remedial Investigation

Start Date: 4/5/1989

End Date: 6/30/1994

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$803,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Site-wide sampling including: waste borings and soil, sediment, surface water, and groundwater samples. The RI Report was completed December 31, 1990. A Feasibility Study and proposed Remedial Action Plan followed.

Response Activities - Future Need

Activity: 5 Year Review

Start Date: 6/27/2020

End Date: 6/27/2021

Operable Unit:
J & L Landfill - OU Entire Site

Status:
Future Need

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
Fifth FYR needed.

Federal Grants

Grant #: V96585303	**Activity:** Remedial Action	**End Date:** 3/31/2020	**Status:** Open
Fed Total Award: $73,522.06	**State Total Award:** $0.00	**Exp to Date:** $45,579.59	**Exp for Year:** $25,658.51
Grant #: V96585303-OM	**Activity:** Operation and Maintenance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $210,519.94	**State Total Award:** $0.00	**Exp to Date:** $210,519.94	**Exp for Year:** $0.00
Grant #: V965853-02-OM	**Activity:** Operation and Maintenance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $152,000.00	**State Total Award:** $0.00	**Exp to Date:** $149,898.77	**Exp for Year:** $0.00
Grant #: V965853-01-MA	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $98,500.00	**State Total Award:** $0.00	**Exp to Date:** $98,500.00	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed

J & L Landfill

Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $678.01	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $11,832.80	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $32,924.74	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $50,031.08	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $3,407.03	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $43,970.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Rose Township Dump

State Site ID:
63000057

Federal Site ID:
82

Full Address:
1065 Demode Road, Rose Township, MI, 48654

County:
Oakland

Location

The Rose Township Dump site is located off Demode Road between Fish Lake Road and Buckhorn Lake Road near Rose Center in rural northwestern Oakland County.

Status

Dumping of industrial waste at this 110-acre site took place between 1966 and 1968. Barrels containing liquid wastes were left on the surface, buried, or drained onto the ground and into pits on the property. The contents of a number of tank trucks were also reportedly emptied at the site. Surface waters, soils, and groundwater at the site became contaminated with polychlorinated biphenyls (PCBs), chlorinated solvents, other organic contaminants, and heavy metals. Ongoing remedies at this site include groundwater extraction and treatment and groundwater monitoring.

The potentially responsible party (PRP) group replaced two more residential wells in 2017 and vinyl chloride concentrations in converted residential wells continue to increase. The PRP Group continues to perform monitoring and groundwater treatment. Additional characterization and optimization efforts are being discussed. Options to address the most contaminated part of the site are needed and the agencies do not agree with the PRP Group regarding plume capture status.

History

In 1979, approximately 5,000 barrels were removed from the site under a special state funding appropriation to address the emergency. In January 1983, about 1,500 tons of the most heavily PCB-contaminated surface soils were removed from the site using funds remaining from the 1979 special state appropriation.

With the state as the lead agency, a remedial investigation and feasibility study (RI/FS) was completed in July 1987. The initial Record of Decision (ROD) for the site was signed in September 1987. The ROD called for extraction of groundwater by extraction wells and treatment by air stripping, as well as thermal destruction of contaminants in approximately 50,000 cubic yards of soil. This included 25,000 cubic yards of PCB-contaminated surface soils, and 25,000 cubic yards of deeper soils contaminated with volatile organic compounds (VOCs). The PRPs began incineration of the PCB-contaminated soil in September 1992, using an on-site infrared system. Incineration was completed by November 1992. However, only the surface PCB-contaminated soils were incinerated; the deeper soils impacted with VOCs were left untreated.

The ROD Amendment #1, issued by the EPA in January 1989, selected soil flushing as the method for treating the deeper VOC-contaminated soils. The state did not concur with the ROD because it did not believe this method would be effective at the site. Later treatability tests of the soil flushing method demonstrated that it would not work well on the type of soils at this site. As a result, ROD Amendment #2 was issued in September 1995 and selected soil vapor extraction (SVE) as the method to treat the remaining deeper soils. The State concurred with this amendment.

In 1995, the EPA, the PRPs, and EGLE determined that enhancements to the groundwater treatment system were needed in order to more effectively address the contaminated groundwater. The design of these modifications was completed in 1995. Construction of the new groundwater extraction and air stripping treatment system took place in late 1995 and early 1996. The modified groundwater treatment system became fully operational in February 1996.

The EPA completed a Five-Year Review (FYR) on July 18, 1997. The only recommendation of the review was

continued operation of the SVE and groundwater extraction and treatment systems until final soil and groundwater cleanup levels, as set forth in the ROD and Consent Decree (Decree), were achieved. The review concluded that with the continued operation of the systems, the remedy selected for the site remained protective of human health and the environment.

The EPA completed a Second FYR on June 28, 2002. This Second FYR found that a protectiveness determination of the remedy could not be made at that time and further information was needed. This review stated that additional information would be obtained by completing the installation and sampling of wells near the northern boundary of the site to determine if the plume had migrated off-site. Also, it suggested that additional monitoring wells may need to be installed to fully delineate the northwest margin of the plume. Off-site migration of contaminated groundwater had been verified.

Additional monitoring wells were installed in late 2003 through 2006 to better characterize the extent of the groundwater contamination. Modifications to the groundwater extraction operations were made as prescribed by a treatment system optimization plan in 2007 and 2008 in an attempt to fully capture the groundwater contaminant plume. The SVE system attained cleanup goals and was shut down on January 12, 2006. The PRP group also performed a significant amount of work on the groundwater treatment system optimization.

The PRPs agreed to take over area residential well sampling from the Oakland County Health Department in 2005. Residential wells near the site have been tested, and the water was deemed safe for continued human consumption, with the exception of two nearby residences. Concentrations of vinyl chloride (VC) in one residential drinking water well gradually increased then exceeded the regulatory limit of 2.0 micrograms per liter (µg/L). The residence was supplied with a temporary mini groundwater treatment system in the basement; then, in November 2008, received a replacement drinking water well. The new well did not perform adequately and was subsequently replaced. The PRPs promptly replaced another residential well when the detections reached 2.0 µg/L VC in March 2009. Due to nearby homeowner concerns, the Oakland County Health Department performed a one-time sampling event in 2009 to confirm that four selected upgradient residential wells in the immediate area were not contaminated.

In June 2009, Chrysler Corporation, the lead PRP, filed for bankruptcy and abandoned the project. The EPA retained Weston as an interim contractor for the site until the other PRPs could be notified and become part of the PRP group. Due to the previous inadequate system in place for well maintenance, damage, wear and tear, and biofouling of wells occurred. At the request of the EPA, necessary treatments and replacements to the groundwater treatment system were implemented by Weston.

The EPA completed the Third FYR of the protectiveness of the remedy at the site in 2007. This FYR concluded that a protectiveness determination of the remedy could not be made until further information of plume capture was obtained. A capture zone evaluation for the recently increased extraction pumping rates at the easternmost edge of the VOC plume was performed to determine if the entire VOC plume was being captured with the new pumping configuration and the new extraction rates. However, due to the Chrysler bankruptcy, the evaluation efforts were terminated until the system was again operational and necessary repairs were made. The FYR Addendum for protectiveness was completed in 2009. The long-term protectiveness determination stated that the system was functioning as designed and cited several studies that had been done prior to Chrysler shutting the system down.

The new PRP group took control of the site in late 2010. They have taken over site responsibilities and now collect samples from the monitoring wells and the residential wells. Site repairs requested by the EPA were completed.

The Fourth FYR was signed on June 11, 2012. It stated that the remedy was functioning as intended and was protective of human health and the environment. An Explanation of Significant Difference (ESD) was completed in 2013 to add the need for institutional controls (ICs) for restrictive covenants (RC) on-site property to prevent exposure from contaminated soils and groundwater. RCs recommended in the FYR, were filed by the PRPs on all site property parcels in 2014. In 2015, the PRP group proposed an optimization concept to accelerate groundwater remediation to the EPA and EGLE however, efforts on the optimization process have been placed on hold due to the PRP group's concerns about cost. The Fifth FYR was signed on May 24, 2017, recommendations included instituting an IC plan and updating the operation and maintenance (O & M) plan. The Fifth FYR also recommended increased residential monitoring, as needed, and reevaluation of the site sentinel wells to be sure that any contaminated groundwater from the site is detected before residential wells are impacted. In 2017, two residential wells impacted by VOC below drinking water criteria were replaced by the PRP group.

Enforcement

Chrysler Corporation (now Chrysler LLC) filed for bankruptcy in 2009 and terminated all site activities. The EPA notified other signatories and formed a new group of PRPs. The EPA also hired a contractor (Weston) to take over on an interim basis until the PRPs again resume site activities under an EPA Decree. Other PRPs are Akzo Coatings, Detrex Corporation, Fabricon Automotive, Federal Screw Works, Ford Motor Company, General Motors Company, Michigan Industrial Finishes, Hoechst Celanese Corporation, RPM, Inc., TRW, Inc., and Uniroyal. The property owner (Dorsey) at the time of the dumping was determined to be a non-viable party. Ford Motor Company is now the primary PRP entity for site communications and management.

Operable Units for Rose Township Dump

OU1 State Emergency Source Control

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1987

Location Name: Rose Township Dump - OU Entire Site

Comments:
The selected remedy called for groundwater extraction and treatment via air strippers. Surficial soils were incinerated.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 1/18/1989

Location Name: Rose Township Dump - OU Entire Site

Comments:
The EPA selected, without state concurrence, treatment of remaining soils via soil flushing. However, treatability studies showed the soils were not amenable to this treatment so did not proceed to remedial design or remedial action (RA). 1989 ROD Amendment

Record of Decision **Amendment:** 2 **ESD:** 0 **Effective:** 8/25/1995

Location Name: Rose Township Dump - OU Entire Site

Comments:
The remedy of SVE of remaining soils on-site was selected. This amendment received state concurrence.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 4/5/2013

Location Name: Rose Township Dump - OU Entire Site

Comments:
The purpose of the April 5,2013, ESD was to add the IC of RCs as a requirement of the 1987 ROD.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 10/15/1995 **End Date:** 10/15/2028

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Ongoing

Primary Cost:
$1,737,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
The PRPs conduct O & M of the groundwater extraction and treatment system. Estimated costs have been taken from the ROD Amendment. The actual O & M costs for 2018 were $410,000.

Response Activities - Completed

Activity: 5 Year Review **Start Date:** 1/12/2017 **End Date:** 5/24/2017

Rose Township Dump

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fifth FYR was finalized on May 24, 2017. Recommendations were to conduct IC monitoring, increase O & M actvities on extraction and monitoring wells, continue monitoring or replace impacted residential wells and evaluate sentinal wells for early detection of contaminants that could threaten residential wells.

Activity: 5 Year Review **Start Date:** 10/11/2011 **End Date:** 6/11/2012

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR was completed on June 11, 2012, less than five years from the final date of the previous FYR. The review indicated that the remedy was functioning as intended and protective of human health and the environment.

Activity: 5 Year Review **Start Date:** 11/6/2006 **End Date:** 6/21/2007

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR was completed in June 2007 and concluded that a protectiveness determination could not be made without additional information. The addendum with that determination was completed in 2009.

Activity: 5 Year Review **Start Date:** 3/7/2002 **End Date:** 6/28/2002

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA completed a second FYR.

Activity: 5 Year Review **Start Date:** 6/15/1997 **End Date:** 7/18/1997

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA conducted a FYR.

Activity: Remedial Action **Start Date:** 3/1/1992 **End Date:** 11/30/1996

Operable Unit:
Rose Township Dump - OU Entire Site

Status:
Completed

Primary Cost:
$32,547,000.00

Primary Source:
Private

Secondary Cost:
$260,000.00

Secondary Source:
Federal

Comments:
The PRPs installed a groundwater extraction system with air stripper treatment. The remedial action (RA) also included incineration of surface PCB-contaminated soils and the installation of an on-site SVE soil treatment system. PRP costs were estimated from the ROD Amendment.

Activity: Remedial Design		**Start Date:** 4/1/1988	**End Date:** 9/30/1995
Operable Unit: Rose Township Dump - OU Entire Site		**Status:** Completed	
Primary Cost: $0.00	**Primary Source:** Private	**Secondary Cost:** $279,000.00	**Secondary Source:** Federal

Comments:
The PRPs designed a groundwater extraction and treatment system and on-site incinerator for contaminated surficial soils. An SVE soils treatment system was designed. PRP costs are unknown, EPA costs are for oversight.

Activity: Remedial Investigation		**Start Date:** 9/1/1985	**End Date:** 7/31/1987
Operable Unit: Rose Township Dump - OU Entire Site		**Status:** Completed	
Primary Cost: $963,475.00	**Primary Source:** Federal	**Secondary Cost:** $94,860.00	**Secondary Source:** State

Comments:
An EPA funded, state-lead RI/FS took place. State funds are advance match to be credited against future RA match requirements.

Activity: Interim Response		**Start Date:** 6/30/1979	**End Date:** 6/30/1983
Operable Unit: Rose Township Dump - OU1 State Emergency Source Control		**Status:** Completed	
Primary Cost: $416,487.00	**Primary Source:** State	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Removal of 5,000 barrels of liquid waste and 1,500 tons of contaminated soils.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 9/29/2021	**End Date:** 9/29/2022
Operable Unit: Rose Township Dump - OU Entire Site		**Status:** Future Need	
Primary Cost: $0.00	**Primary Source:** Federal	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
A sixth FYR will be needed in 2022.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $22,150.63	**Exp for Year:** $13,369.82
Grant #: V03E00776	**Activity:**	**End Date:**	**Status:**

	Management Assistance	3/31/2019	Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $4,217.19	**Exp for Year:** $3,025.46
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $4,633.37	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $23,654.85	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $28,684.77	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $34,155.75	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award: $620,843.00	**State Total Award:** $0.00	**Exp to Date:** $27,792.34	**Exp for Year:** $0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $51,961.78	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $94,744.43	**Exp for Year:** $0.00
Grant #: V995258-03	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $158,230.00	**State Total Award:** $0.00	**Exp to Date:** $20,790.82	**Exp for Year:** $0.00
Grant #: V995260-02	**Activity:** Management Assistance	**End Date:** 9/30/2004	**Status:** Closed
Fed Total Award: $114,213.00	**State Total Award:** $0.00	**Exp to Date:** $8,587.53	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $147,690.33	**Exp for Year:** $0.00

Rose Township Dump

Grant #: V005787-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/1989	**Status:** Closed
Fed Total Award: $963,479.00	**State Total Award:** $94,860.00	**Exp to Date:** $1,043,816.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Springfield Twp. Dump

State Site ID:
63000061

Federal Site ID:
A7

Full Address:
12995 Woodland Trail, Davisburg, MI, 48350

County:
Oakland

Location

The Springfield Township Dump site is located in Springfield Township, Michigan, about three miles south of Davisburg. The site covers approximately four acres and is surrounded by dense woods. There are 25 residences located within one-mile of the site with the nearest being about 800 feet from the site.

Status

The Springfield Township Dump site was used for the illegal disposal of liquid industrial wastes between 1966 and 1968. Approximately 1,500 drums containing paint sludges, solvents, polychlorinated biphenyls (PCBs), oils, and grease were left on-site. Soils were found to be contaminated with PCBs, organic chemicals, and metals. The groundwater aquifer beneath the site is contaminated with both organic and inorganic contaminants. There are residential wells in the path of contaminated groundwater and the Oakland County Health Department routinely samples a group of nearby residential wells as part of the monitoring for the site. Samples have shown low levels of site contaminants and the health department has restricted groundwater well installations on several properties around the site. Some residents have replaced their own wells as a result of the contamination, but none of the concentrations in residential wells have exceeded applicable criteria to date.

In 2018, the potentially responsible party (PRP) group monitored groundwater for 1,4-dioxane and the contaminant was determined by the EPA to not be a concern in groundwater at the Springfield Township Dump site, however, EGLE staff question the quality of the data and have requested additional sampling for 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). The P & T portion of the groundwater remedy was intended to run for 18 to 24 months but has been operating for over 22 years. The PRP group is evaluating other potential treatment options to treat the Site contaminated soils and groundwater more effectively.

A Fifth Five Year Review was completed by an interim EPA Remedial Project Manager in August 2019 with significant input from the PRP Group. Agencies continue to work together to address site contamination issues.

History

The Springfield Township Dump site was used for the illegal disposal of liquid industrial wastes between 1966 and 1968. Soils were found to be contaminated with PCBs, organic chemicals, and metals. The groundwater aquifer beneath the site is contaminated with both organic and inorganic contaminants. Sampling of nearby residential wells has shown no obvious migration of off-site contaminants to date.

In 1979 and 1980, 1,500 barrels and some of the contaminated soils were removed with state funds. In January 1983, an additional 711 tons of PCB-contaminated soils were removed. The total cost of these actions was $500,000.

A remedial investigation (RI) was conducted during the spring and summer of 1985 and 1986. RI/feasibility study (FS) reports were prepared by EGLE in 1987. The site lead was turned back to the EPA in February 1988. The RI report was finalized and released in July 1989 and the FS report was finalized in July 1990. The Record of Decision (ROD) was issued in September 1990. It called for removal and incineration of highly contaminated soils; solidification of soils and ash containing metals above cleanup levels, in-situ soil vapor extraction (SVE) of remaining contaminated soils down to the water table and the purging, treatment, and on-site discharge of contaminated groundwater.

The EPA deemed the PRPs proposal for the remedial design inadequate and began design work in April 1991. Pre-

design fieldwork in June, July, and August 1991 revealed a much larger volume of contaminated soil on the site than indicated by the RI work and the ROD. The EPA decided to move ahead at the site with an Administrative Order by Consent for implementation of the portion of the remedy involving the groundwater pump and treat (P & T) system and the SVE system. In March 1992, the PRPs agreed to implement the design for the groundwater P & T system and the SVE system. In August 1992, the PRPs began fieldwork on the pre-design for the groundwater and soil cleanup systems. In 1993, the EPA issued an Explanation of Significant Difference (ESD) changing the groundwater treatment system and modifying the background concentrations for arsenic and lead in groundwater. EGLE staff have suggested revisiting this because the site-specific background concentrations exceed MCLs and federal drinking water action levels.

In December 1993, EGLE through discussions with the PRPs, the EPA, and the Michigan Legislature, removed itself for the time from involvement with the site. The ROD was amended in June 1998 and the EPA and the PRPs completed a remedial action (RA) consisting of groundwater treatment, soil washing with SVE polishing, and installation of a cap.

The groundwater extraction and treatment system began operation in 1994. It consists of extracting water at a rate of approximately 8 to 10 gallons per minute, treating it with granular activated carbon, and reinjection into the aquifer upgradient of the contamination.

The EPA signed a ROD Amendment in 1998 to change the way the PCB-laden soils would be cleaned up from on-site and the PRPs began the PCB-cleanup in 1999. The PRPs excavated the PCB-laden surface soils and treated them using a soil washing system located on-site. Most of the treated soil batches achieved the treatment goals and were replaced back into the ground. The PRPs treated and/or disposed of an estimated total of 12,000 cubic yards of PCB-laden soils. The soil washing work was completed in early 2000. A soil cover was then placed over the treated area and grass was planted.

The PRPs began the installation of the SVE equipment in May 2000. In addition, the PRPs decided to construct and operate an air sparging (AS) system to augment the groundwater P & T system in an effort to speed up the restoration of the groundwater quality at the site. The SVE and AS equipment installation was completed in early August 2000 and the PRPs began operating the systems shortly thereafter. The RA began on May 10, 1999, and was completed by June 13, 2001. The Operation and Maintenance (O & M) began in June 2001. The sparge system has been operated intermittently as concentrations rebound in the groundwater. The vapor extraction portion of the SVE was deemed no longer necessary as volatile organic compound concentrations dropped and post-treatment was no longer needed. The sparge system was being operated on an intermittent basis until Chrysler filed for bankruptcy in 2009. EGLE staff have suggested revisiting and completion of this portion of the remedy.

The state was not involved in this site from approximately 1995 until the spring of 2005. In 2005, the PRP consultants proposed a potassium permanganate injection pilot study and the EPA solicited state involvement at that time. EGLE staff provided technical input into the design and oversight of the pilot study and have been working cooperatively with the EPA since that time. The results of the study were mixed and the proposal was not pursued.

The PRP group prepared and submitted work plans for fieldwork between 2005 and 2009, but a final useable draft was never completed before Chrysler filed for bankruptcy. Other signatories to the ROD have now taken over response activities at the site.

The First Five-Year Review (FYR) was completed in September 2004. The Second FYR concluded that the remedy was protective of human health and the environment in the short-term and that long-term protectiveness of the remedy is dependent on the effectiveness of the treatment systems. EGLE expressed concerns regarding the incomplete plume characterization and the resulting uncertainty of short-term protectiveness. The FYR also identified a number of issues with the O & M of the remedy. The Third FYR was completed on September 14, 2009, and noted that long-term protectiveness was unknown based on lack of activity of responsible parties on-site.

In 2009, through the adjudication of the bankruptcy, Chrysler was relieved of all environmental liabilities. As a result, the P & T and SVE systems were shut down. The EPA negotiated with the other signatories to the Consent Decree and a new PRP group was formed and agreed to perform site activities.

The new PRPs began implementation of site response activities in 2010 and performed the previously agreed upon enhanced characterization work plan. The evaluation and data review revealed that the system was not effectively removing the contaminants during the treatment period, even prior to the shutdown. The new PRP group also completed the overdue residential well sampling. Based upon the results from the late 2011 fieldwork, planning for an

additional phase of investigation of the source area contamination began in 2012. Source investigation work began in late 2013 with the installation of soil borings and groundwater monitoring wells.

The Fourth FYR was completed on September 8, 2014. That FYR found the remedy to be protective in the short-term with long-term protectiveness dependent upon confirmation of the adequacy of the soils and groundwater treatment with further remediation if needed, filing deed restrictions to prevent exposures to contaminated soils and groundwater and updating the long-term O & M plans to ensure that sampling protocols reflect current technical standards.

On December 8, 2015, a restrictive covenant (RC) was placed on the Nickson property, a residence located on the site to prevent exposures to potentially contaminated groundwater. The house was torn down and the well was removed in May 2018. An RC for groundwater use on the property adjacent to the site was recorded at the Oakland County Register of Deeds on August 8, 2016. EGLE Drinking Water and Municipal Assistance Division monitored residential wells in 2018 for 1,4-dioxane as a precautionary measure.

The PRP group has more recently performed a targeted hot spot groundwater investigation on the property adjacent to the site. To date, they completed both Phase 1 of their investigation and Phase 2 of the source area investigation. The source area information will be used to evaluate treatment options for source area soils and impacted groundwater.

Enforcement

The PRPs were identified at this site; they installed the RA and performed O & M efforts pursuant to legal agreements with the EPA. The lead PRP (Chrysler) filed for bankruptcy and was relieved from environmental liabilities in 2009. Ford Motor Company is now the lead PRP under the original Consent Decree and has taken a leadership role for response actions at the site.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/29/1990

Location Name: Springfield Twp. Dump - OU Entire Site

Comments:
Major components of the remedy include: Excavation and thermal destruction of soils with solidification and on-site disposal of the incinerator ash, installation of an in-situ SVE system, and installation and operation of a groundwater P & T system.

Record of Decision **Amendment:** 0 **ESD:** 1 **Effective:** 11/18/1993

Location Name: Springfield Twp. Dump - OU Entire Site

Comments:
The EPA issued an ESD to change the groundwater treatment system (to not treat for lead or arsenic) due to use of calculated rather than established background concentrations being utilized for arsenic and lead criteria in groundwater. Costs remained unchanged from the 1990 ROD.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 6/10/1998

Location Name: Springfield Twp. Dump - OU Entire Site

Comments:
The 1998 ROD Amendment allows for soil washing, solvent extraction, or low temperature thermal desorption rather than incineration. It also allows PCB treatment residuals below 5 parts per million (ppm) to be backfilled on-site with a one-foot cover of clean soil and limits excavation to 6 feet unless PCB concentrations exceed 50 ppm. Soil and groundwater cleanup standards were also modified.

Response Activities - Ongoing

Activity: Operation and Maintenance **Start Date:** 6/13/2001 **End Date:** 12/31/2025

Operable Unit:
Springfield Twp. Dump - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,615,000.00	Private	$0.00	

Comments:
Effectiveness of the soils and groundwater treatment is currently being evaluated. O & M will continue to be needed for the maintenance of the SVE system, groundwater treatment system, and the cap. Deed restrictions will remain indefinitely to prevent future contact with residual soil contamination that will remain on-site and will need to be monitored to ensure protectiveness. In 2018, approximately $380,000 were spent on O & M activities.

Response Activities - Completed

Activity: 5 Year Review | **Start Date:** 9/3/2018 | **End Date:** 8/13/2019

Operable Unit: Springfield Twp. Dump - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The 2019 FYR was prepared by an interim EPA RPM with minimal involvement from EGLE staff. The agencies are not in agreement regarding plume capture, functionality, or exposure assessments. The document indicates that the remedy is functioning as intended, but the groundwater pump and treat system has now been running for 22 years when it was originally only intended to run for 12 to 18 months. Statements in the document regarding containment of the groundwater plume and that no issues have come to light that could affect the protectiveness of the remedy have been questioned by EGLE. These issues are being discussed with the RPM and PRP Group. The document indicates that the site is lacking a long term stewardship plan and the off-site migration of the contaminated groundwater needs to be evaluated.

Activity: 5 Year Review | **Start Date:** 1/6/2014 | **End Date:** 9/8/2014

Operable Unit: Springfield Twp. Dump - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Fourth FYR was completed on September 8, 2014. The FYR found the remedy to be protective in the short-term with long-term protectiveness dependent upon confirmation of the adequacy of the soils and groundwater treatment with further remediation if needed, filing deed restrictions to prevent exposures to contaminated soils and groundwater and updating the long-term O & M plans to ensure that sampling protocols reflect current technical standards.

Activity: 5 Year Review | **Start Date:** 8/25/2008 | **End Date:** 9/14/2009

Operable Unit: Springfield Twp. Dump - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The Third FYR was completed on September 14, 2009. The EPA determined that short-term protectiveness was acceptable because there were no known receptors. The long-term protectiveness was uncertain because Chrysler, the primary PRP, filed bankruptcy and was relieved of their environmental liabilities. The P & T system had been shut down since June 2009. The other signatories to the Consent Decree were contacted and have taken over response activities at the site.

Activity: 5 Year Review | **Start Date:** 3/1/2004 | **End Date:** 9/29/2004

Operable Unit: Springfield Twp. Dump - OU Entire Site
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:

$0.00	Federal	$0.00

Comments:
The Second FYR was completed in 2004, and determined that the remedy was protective in the short-term. Long-term protectiveness is dependent on effectiveness of the remedy. The MDEQ expressed concerns regarding the incomplete plume characterization and resulting uncertainty of short-term protectiveness. The FYR also identified a number of issues with the O & M of the remedy.

Activity: Remedial Action | **Start Date:** 5/10/1999 | **End Date:** 6/13/2001

Operable Unit:
Springfield Twp. Dump - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$3,300,000.00	Private	$304,000.00	Federal

Comments:
The PRPs initiated the RA for groundwater in 1994, the RA for PCB in 1999, and the SVE system in 2000. The estimated costs are from the 1998 ROD amendment and include the O & M costs. The system was operational June 13, 2001.

Activity: 5 Year Review | **Start Date:** 4/1/1999 | **End Date:** 7/2/1999

Operable Unit:
Springfield Twp. Dump - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Federal	$0.00	

Comments:
The 1999 FYR outlined the Remedial Objectives, Quality Assurance/Quality Control, and Monitoring Program. It stated the need for groundwater extraction, treatment, and monitoring; and recommended that the treatment system continue to be operated until the groundwater cleanup levels, as set forth in the ROD, are achieved. It also stated that the PCB-laden soil and SVE remedial actions would be implemented August 1999 through Sept 2000 (it lasted until June 13, 2001).

Activity: Remedial Design | **Start Date:** 4/1/1991 | **End Date:** 1/1/1999

Operable Unit:
Springfield Twp. Dump - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$1,261,000.00	Federal

Comments:
The EPA initiated design work in April 1991. Pre-design fieldwork was conducted in June, July, and August 1991. In March 1992, the PRPs agreed to design the groundwater pump and treat and the SVE systems.

Activity: Remedial Investigation | **Start Date:** 1/1/1985 | **End Date:** 9/1/1985

Operable Unit:
Springfield Twp. Dump - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$670,000.00	Federal	$0.00	

Comments:
Fieldwork for the RI was conducted in the spring and summer of 1985 with follow-up work in 1986. An RI/FS report was prepared by the MDNR in 1987. The project lead was transferred to the EPA in February 1988. The EPA issued a revised RI report in July 1989 and a revised FS report in July 1990.

Activity: Interim Response | **Start Date:** 1/1/1979 | **End Date:** 3/1/1983

Operable Unit:

Status:

Springfield Twp. Dump - OU Entire Site | Completed

Primary Cost:	**Primary Source:**	**Secondary Cost:**	**Secondary Source:**
$500,000.00	State	$0.00	

Comments:
In 1979, 1,500 barrels and some contaminated soil were removed using state funds; and in January 1983, an additional 711 tons of PCB-contaminated soil was removed from the site using state funds.

Response Activities - Future Need

Activity: 5 Year Review		**Start Date:** 8/11/2023	**End Date:** 8/13/2024
Operable Unit: Springfield Twp. Dump - OU Entire Site		**Status:** Future Need	
Primary Cost:	**Primary Source:** No Financial Source	**Secondary Cost:**	**Secondary Source:**

Comments:
6th Five Year Review

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $24,805.35	**Exp for Year:** $11,919.10
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $5,929.47	**Exp for Year:** $4,051.53
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $6,236.30	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $19,138.64	**Exp for Year:** $0.00
Grant #: V01E007761	**Activity:** Management Assistance	**End Date:** 3/31/2015	**Status:** Closed
Fed Total Award: $651,876.00	**State Total Award:** $0.00	**Exp to Date:** $44,703.73	**Exp for Year:** $0.00
Grant #: V00E00776-0	**Activity:** Management Assistance	**End Date:** 3/31/2013	**Status:** Closed
Fed Total Award: $680,046.04	**State Total Award:** $0.00	**Exp to Date:** $10,340.27	**Exp for Year:** $0.00
Grant #: V00E183-02	**Activity:** Management Assistance	**End Date:** 9/30/2010	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$620,843.00	$0.00	$7,880.02	$0.00
Grant #: V00E183-01	**Activity:** Management Assistance	**End Date:** 3/31/2009	**Status:** Closed
Fed Total Award: $754,286.00	**State Total Award:** $0.00	**Exp to Date:** $3,834.74	**Exp for Year:** $0.00
Grant #: V975853-01	**Activity:** Management Assistance	**End Date:** 3/30/2007	**Status:** Closed
Fed Total Award: $2,493,607.00	**State Total Award:** $0.00	**Exp to Date:** $36,788.05	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $30,000.00	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $585,100.00	**State Total Award:** $0.00	**Exp to Date:** $11,401.75	**Exp for Year:** $0.00
Grant #: V005843-01	**Activity:** Management Assistance	**End Date:** 9/30/1993	**Status:** Closed
Fed Total Award: $1,737,502.00	**State Total Award:** $0.00	**Exp to Date:** $108,019.48	**Exp for Year:** $0.00
Grant #: V005776-01-RI	**Activity:** Remedial Investigation	**End Date:** 9/30/1988	**Status:** Closed
Fed Total Award: $547,373.00	**State Total Award:** $0.00	**Exp to Date:** $547,373.00	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Southwest Ottawa County Landfill

State Site ID:
70000024

Federal Site ID:
EH

Full Address:
2901 N. 160th Ave, Holland, MI, 49423

County:
Ottawa

Location

The Southwest Ottawa County Landfill is located on 160th Avenue between James and Riley Streets in a mixed residential and agricultural area. Lake Michigan is approximately 1 1/2 half miles to the west, and Lake Macatawa is located approximately 1 1/2 miles to the south.

Status

The Southwest Ottawa County Landfill is a 43-acre landfill that ceased operations in 1981. Chemicals leaking from the landfill have contaminated the nearby groundwater. Ottawa County has been operating a groundwater treatment system since 1987. The response actions conducted to date have not remediated the contaminated groundwater.

In 2019 Ottawa County continued to operate the groundwater extraction system. Groundwater monitoring and methane gas monitoring continued to document the conditions of groundwater and methane gas down gradient and around the landfill property.

A soil boring investigation was initiated in 2019 to determine the depth to a confining clay layer around the landfill to support the construction of a slurry wall around the landfill. After drilling several soil borings to a depth of greater than 100 feet below ground surface and not encountering clay, as well as performing additional geophysical studies, Ottawa County and their consulting firm determined that construction of a slurry wall was not a feasible option for the Southwest Ottawa County Landfill Site.

EGLE continued their discussions regarding potential vapor intrusion pathways at the site with county representatives.

History

The 43-acre Southwest Ottawa County Landfill operated as a state licensed landfill, until its closure in 1981. The landfill was constructed and began operation by Ottawa County in 1968 and received solvents, heavy metals, sludge, oils, municipal refuse, and drums containing unspecified wastes. Major contaminants in the groundwater from a mixture of municipal and industrial waste in the landfill included: benzene, chlorobenzene, lead, antimony, aluminum, sodium, zinc, aldrin, manganese, cadmium, vanadium, beryllium, heptachlor, dieldrin, endrin, and arochlor 1254. All of the above contaminants were present at levels above the state's generic residential criteria. The site was added to the National Priorities List in September 1983.

A groundwater investigation conducted in 1979 by the Ottawa County Road Commission, under the direction of the Michigan Department of Natural Resources (MDNR), indicated that the groundwater was contaminated with benzene, ethyl benzene, xylene, trichloroethylene, chlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, methylene chloride, and iron. Groundwater data received from an investigation of the adjacent downgradient Waste Management-Holland Lagoons located within the groundwater contaminant plume from the Southwest Ottawa County Landfill indicated that the groundwater was also contaminated with inorganics above generic residential criteria of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201). These contaminants were: aluminum, antimony, beryllium, cadmium, lead, manganese, vanadium, and zinc. An isolated area of pesticides above Part 201 criteria was also discovered. A preliminary feasibility study for treating the groundwater was completed in 1980.

Southwest Ottawa County Landfill

In 1981, a private drinking water well evaluation indicated some area residential wells were contaminated, although the source of contamination was never completely identified. The state issued a Consent Order that required the county to close and cap the landfill and required potentially affected residential wells to be replaced by connection to the municipal water system.

In 1985, the MDNR signed a Groundwater Restoration Agreement with the Ottawa County Board of Commissioners. That agreement included installation of a multi-well groundwater extraction system to minimize risks to public health and the environment from use of, and contact with, contaminated groundwater, and to prevent migration of contaminants to other residential wells and Lake Michigan. The treatment system began operation in August 1987. In 1994, a water main was extended in order to provide municipal water to residences affected, or potentially affected, by groundwater contamination migrating from the site.

The First Five-Year Review (FYR) was written by the EPA in 1995. The EPA recommended that the groundwater monitoring data be reviewed to ascertain if the site was progressing toward the cleanup standards and whether the entire contamination plume was being captured.

The Second FYR was also written by the EPA in 1997. This FYR was accelerated because the previous review was written more than five years after the construction completion date of August 3, 1987. The recommendations in this review were similar to those listed in the 1995 review.

In April 2000, EGLE (formerly known as MDEQ) filed a lawsuit against Ottawa County. The state's litigation with Ottawa County was filed when negotiations with Ottawa County to enforce and update the 1985 Groundwater Restoration Agreement to meet current state standards and to address the questionable effectiveness of the extraction and treatment system failed.

In 2003, EGLE wrote the Third FYR to evaluate the success of the selected remedy. EGLE provided funding to conduct a remedial investigation (RI) of the site in 2003. The data indicated contaminant concentrations exceeding criteria were bypassing the treatment system in two locations. EGLE concluded that the current remedy was not protective of human health or the environment. The EPA, however, revised the protectiveness statement to indicate that the evaluation of long-term protectiveness would be deferred to a later date. The EPA signed the final report in September 2003. EGLE's investigation report was final in October 2004.

Ottawa County completed the installation of the municipal water supply line throughout the downgradient area within the groundwater plume boundary. The 2003 EGLE investigation confirmed that the contaminants which were detected in downgradient residential wells since the late 1980's were migrating from the landfill.

The out-of-court settlement of the April 2000 lawsuit between the state and Ottawa County was resolved on March 14, 2005, with the signing of the Stipulation and Order of Dismissal (Order). Per terms of the Order, Ottawa County was to implement the expansion and enhancement of the current treatment system, connect all residences within the groundwater plume into the expanded municipal water supply, replace the landfill cap, develop land use restrictions and a groundwater ordinance for the area downgradient from the landfill which overlies the contamination plume, and continue operation of the current downgradient treatment system. After these tasks were completed, the county was required to provide information to EGLE which supported that the new enhanced remedy was functional and capturing and treating the groundwater contamination plume before it migrated from the landfill.

Ottawa County completed the construction of the landfill cap in late 2006 and submitted supporting documentation. In 2008, the county completed hookup of all residences, except for four residents who refused hookup, within the groundwater plume into the expanded municipal water supply. Per the Order, the county installed new extraction wells around the landfill in 2008.

With funding provided by the EPA, EGLE developed and wrote the Fourth FYR report for the site in 2008. The protectiveness statement in the report consisted of the following: construction of the revised remedy is underway and is expected to be protective of human health and the environment upon completion. In the interim, exposure pathways that could result in unacceptable risks were controlled.

In 2009, Ottawa County implemented land use restrictions and a groundwater ordinance. The county also completed the installation of the new extraction wells system around the landfill as well as expansion to the treatment building. The new system has been operating since mid-2009. The final monitoring plan was reviewed and accepted by EGLE in August 2012. Ottawa County continues to operate both the new extraction well system around the landfill as well as the older downgradient treatment system. Annual groundwater sampling began under the 2012 Monitoring Plan. EGLE

conducted split sampling in September 2013 for metals analysis, oversight, and verification of sampling and analysis methods in conjunction with the annual sampling conducted by Ottawa County. In 2015, elevated levels of dissolved methane were detected in groundwater monitoring wells. EGLE requested that Ottawa County include additional groundwater monitoring wells for sampling, perform an evaluation of the vapor intrusion (VI) pathway and identify potential receptors.

Annual groundwater sampling was conducted in the fall of 2015 and the results were submitted to EGLE on January 26, 2016. Representatives from Ottawa County provided data from their investigation for dissolved methane in groundwater and the potential VI pathway to EGLE Technical and Program Support Team in December 2016. Discussions between the EPA, EGLE, and Ottawa County continue to assess appropriate future reuse for the landfill, compliance with groundwater surface water interface criteria, optimization of the extraction well system around the landfill and downgradient system. Some data has been collected to assess potential VI pathways, but EGLE has requested a more robust investigation.

The county has proposed installation of a slurry wall with hydraulic control to prevent migration of groundwater contamination from the landfill. Pre-design investigation was conducted to assess if the geology at the landfill is appropriate for installation of a slurry wall.

Enforcement

Ottawa County is the liable party both under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL96-510, as amended and Part 201, and is operating and maintaining the groundwater pump and treat system established under the 1985 Groundwater Restoration Agreement.

The state's April 2000 litigation with Ottawa County was settled with the signing of the Order on March 14, 2005. The Order required Ottawa County to implement improvements to the treatment system with installation of the new extraction well system along the west and south boundary of the landfill, connection of all residences within the groundwater plume into the expanded municipal water supply, development of land use restrictions and a groundwater ordinance, replacement of the landfill cap, and continuing to operate the current downgradient treatment system.

Operable Units for Southwest Ottawa County Landfill

OU1 Groundwater Plume

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 3/31/2009 | **End Date:** 3/1/2039

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Ongoing

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,900,000.00	Private	$0.00	

Comments:
All of the remedial actions (RAs) required under the Order were completed in 2012. The county developed a monitoring and operation and maintenance (O & M) plan for the new extraction system that was approved by EGLE in August 2012. The county continues to perform annual groundwater monitoring. The county has included limited VI sampling for volatile organics and methane from the groundwater contamination as requested by EGLE. Approximately $300K per year is spent on O & M.

Response Activities - Completed

Activity: Remedial Design | **Start Date:** 12/1/2018 | **End Date:** 6/1/2019

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Cancelled PRP

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$83,000.00	Private		

Comments:

The PRP proposed the installation of a slurry wall around the landfill to better control leachate from impacting groundwater beyond the landfill property. The results of a preliminary design investigation showed that a slurry wall was not a feasible remedial option for this site and the design was discontinued by the PRP.

Activity: 5 Year Review | **Start Date:** 10/1/2007 | **End Date:** 9/30/2008

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$20,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
With funding provided by the EPA, EGLE developed and wrote the Fourth FYR report for the site in 2008. The protectiveness statement in the report stated that the construction of the revised remedy was underway and was expected to be protective of human health and the environment upon completion. In the interim, exposure pathways that could result in unacceptable risks were being controlled.

A FYR is not required for this site because it is designated as a state lead enforcement site and sites in this category currently do not require a FYR. However, if the EPA approves deleting of any OU of the site proposed by the potentially responsible parties (PRPs), a FYR will be required.

Activity: Remedial Action | **Start Date:** 4/1/2005 | **End Date:** 3/31/2009

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$4,500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Ottawa County completed the RAs required under the Order. This included replacement of the landfill cap, expansion and enhancement of the current treatment network, hookup of all residences within the groundwater plume into the expanded municipal water supply, and development of land use restrictions and a groundwater ordinance. These RAs were completed in 2009.

Activity: Remedial Design | **Start Date:** 3/31/2005 | **End Date:** 3/31/2009

Operable Unit:
Southwest Ottawa County Landfill - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$4,500,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Under the Order, the county provided design information on four new extraction wells to be placed along the west and south borders of the landfill. These new extraction wells are to capture and treat the groundwater plume at the landfill and prevent migration of the groundwater contamination from the landfill.

Activity: Remedial Design | **Start Date:** 1/1/2005 | **End Date:** 12/31/2008

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
As part of the Order, Ottawa County developed and submitted a remedial design for re-capping the landfill and installation of up to four new extraction wells around the landfill. Capping of the landfill was completed in 2006, and installation of the new extraction wells system was completed in late 2008.

Activity: 5 Year Review | **Start Date:** 1/1/2003 | **End Date:** 9/29/2003

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Third FYR report was finalized by the EPA in September 2003. The Agencies, however, did not agree on what the protectiveness statement should say. Eventually, it was agreed that protectiveness would be deferred until the remedy under the Order was implemented.

Activity: Remedial Investigation **Start Date:** 6/1/2002 **End Date:** 10/30/2004

Operable Unit:
Southwest Ottawa County Landfill - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$280,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
The state provided funding to conduct a RI at the site to meet the requirements of the FYR. The sampling was performed in April and May 2003. The RI report was finalized in October 2004.

Activity: 5 Year Review **Start Date:** 1/1/1997 **End Date:** 10/27/1997

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$10,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Second FYR was also written by the EPA in 1997. This FYR was accelerated because the previous review was written more than five years after the construction completion date of August 3, 1987. The recommendations in this review were similar to those listed in the 1995 review.

Activity: 5 Year Review **Start Date:** 1/1/1995 **End Date:** 9/25/1995

Operable Unit:
Southwest Ottawa County Landfill - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR recommended improvements needed for the pump and treat system in order to adequately capture and treat the groundwater contamination plume.

Activity: Alternate Water **Start Date:** 1/1/1993 **End Date:** 4/20/1993

Operable Unit:
Southwest Ottawa County Landfill - OU1 Groundwater Plume

Status:
Completed

Primary Cost:
$170,000.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:
Bottled water was provided to residents affected by groundwater contamination coming from the site.

Activity: Remedial Action **Start Date:** 1/1/1986 **End Date:** 9/22/1994

Operable Unit:
Southwest Ottawa County Landfill - OU1 Groundwater

Status:
Completed

Plume

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Groundwater extraction and treatment system and a permeable cover were installed. Extend water main to provide municipal water to residences affected, or potentially affected, by the groundwater contamination.

Activity: Operation and Maintenance | **Start Date:** 10/17/1984 | **End Date:** 8/1/2012

Operable Unit: Southwest Ottawa County Landfill - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$274,000.00	Private	$0.00	

Comments:
According to the 1985 Groundwater Restoration Agreement, the downgradient treatment system is to remain active until the groundwater plume contaminants are below the listed criteria. The system began operating before the final Groundwater Restoration Agreement was signed. Annual groundwater sampling of the site monitoring well network continued under the Groundwater Restoration Agreement until the new August 2012 monitoring plan, required by the Order, was developed and approved by EGLE.

Activity: Remedial Design | **Start Date:** 8/30/1980 | **End Date:** 7/30/1986

Operable Unit: Southwest Ottawa County Landfill - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
Design of groundwater treatment system.

Activity: Remedial Investigation | **Start Date:** 1/1/1979 | **End Date:** 12/31/1981

Operable Unit: Southwest Ottawa County Landfill - OU1 Groundwater Plume
Status: Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
A groundwater investigation was conducted by the Ottawa County Road Commission under the direction of the MDNR.

Federal Grants

Grant #:	Activity:	End Date:	Status:
V00E192-01	5 Year Review	9/30/2011	Closed
Budget Amount:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$20,000.00	$0.00	$19,826.46	$0.00
Grant #:	**Activity:**	**End Date:**	**Status:**
V975853-01	Management Assistance	3/30/2007	Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**
$2,493,607.00	$0.00	$35,647.12	$0.00

Southwest Ottawa County Landfill

Grant #: V985560-01	**Activity:** 5 Year Review	**End Date:** 12/31/2003	**Status:** Closed
Budget Amount: $19,283.00	**State Total Award:** $0.00	**Exp to Date:** $19,244.75	**Exp for Year:** $0.00
Grant #: V995339-01	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $472,000.00	**State Total Award:** $0.00	**Exp to Date:** $2,798.10	**Exp for Year:** $0.00

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Superfund Legislative Report
Fiscal Year 2019

Site Name: Sturgis Municipal Wells

State Site ID:
75000016

Federal Site ID:
J1

Full Address:
309 N. Prospect, Sturgis, MI, 49091

County:
St. Joseph

Location

The Sturgis Municipal Wells site is located in the city of Sturgis, St. Joseph County, Michigan, approximately two miles north of the Indiana state line.

Status

This site was discovered in 1982 when trichloroethyene (TCE) and tetrachloroethylene (PCE) were identified in the municipal drinking water wells during routine sampling by the local health department.

The potentially responsible party (PRP), Newell Rubbermaid, Inc., is currently operating two groundwater extraction and treatment systems in accordance with the 1996 Consent Decree (Decree).

An expanded soil and groundwater pre-design investigation is needed at the Wade Electric source area. Newell Rubbermaid, Inc., claims no liability for this part of the site. EGLE (formerly known as MDEQ) has secured federal dollars from the EPA to undertake the expanded investigation and acquired a contractor to complete the work. To date, the soil and groundwater portions of the investigation have been completed. EGLE has finalize the locations of where the sampling locations should be placed on the property for the vapor intrusion (VI) portion of the investigation and sampling will take place in late July 2020. The results from on-site will then determine next steps for off site VI sampling.

A VI investigation began in 2016 in the residential neighborhood to the south of the site and also at the commercial building on the eastern parcel of the site. This investigation resulted in the installation of 16 vapor mitigation systems (15 residential and 1 commercial). The installation of these mitigation systems was completed in December 2017 and the PRP continues to monitor homes in the area of the vapor plume.

Excavation of the soils on the western parcel began in the fall of 2018 and will be completed by the end of March 2019. The excavation will include the removal of soils to depths ranging from 2 to 5 feet. A soil vapor extraction/air sparge (SVE/AS) system was installed on the west parcel in 2019.

Soil excavation on the parcel of property to the east of Prospect is anticipated to take place in 2020 and the installation of an SVE/AS system projected to take place in 2021.

During the VI investigation there were high concentrations of TCE in soil gas samples collected in the parking lot located south of Hatch Street and west of Prospect Street. The PRP collected soil samples from the parking lot and found concentrations of TCE in the soil above allowable concentrations. The PRP developed a plan to remove contaminated soils to a depth of 5 feet and then install a SVE system to address soils from 5 to 60 feet. Soil excavation in the parking lot was completed in December 2018.

History

Routine sampling by the Michigan Department of Public Health (MDPH) in 1982 revealed two of the four municipal water supply wells serving the city of Sturgis were contaminated with the industrial solvents TCE and PCE. In 1983, the city asked approximately 10,000 residents in its service area to limit their water usage. In 1984, the city began utilizing a new well (the Oaklawn), bringing the total to three usable wells (the Broadus, Lakeview, and Oaklawn) and two contaminated wells (the Layne and Jackson). In 1985, the Broadus well was found to be contaminated. In 1989,

the MDPH advised the city not to rely on the Layne, Jackson, and Broadus wells. The city is now relying on the Thurston Woods wells, the Oaklawn, and Lakeview wells, to serve their needs.

The site was placed on the National Priorities List in October 1984. The State of Michigan served as the lead agency for site investigations. EGLE undertook a remedial investigation (RI)/feasibility study from September 1987 through May 1991. Results of the RI documented large plumes of TCE and PCE contaminated groundwater in at least two aquifers, as well as in soils of two source areas (referred to as the Kirsch Company and Wade Electric source areas). Levels of TCE and PCE exceed state and federal standards in both the groundwater and soil. It is unclear how the releases occurred at the two source areas; however, both were former industrial sites where solvent degreasing was known to have been practiced.

A Record of Decision (ROD) outlining the chosen remedial action (RA) was issued in September 1991. The selected remedy included extraction and treatment of the contaminated groundwater until the former Michigan Environmental Response Act, 1982 PA 307, as amended, Type B levels are met, SVE of the contaminated on-site soils, and excavation of contaminated soil.

In 1992, the EPA designed an interim groundwater extraction and treatment system. The goal of the interim response was to halt the migration of contaminants toward uncontaminated city municipal wells. The EPA issued a Unilateral Administrative Order (Order) to the PRP for completion of the interim response. The PRP completed the design and began construction of the groundwater extraction and treatment system in the late summer/early fall of 1993. Construction of the interim extraction and treatment system, designated as Extraction Well 1 (EW-1), was completed in May 1994.

In early 1993, the EPA and EGLE entered into settlement negotiations with the PRP for the remedial design (RD)/RA of the ROD remedies. Because these negotiations were not successful, the EPA decided to fund the RD/RA. EGLE was chosen as the lead Agency and began the design in 1994.

During the fall of 1994, EGLE's consultants conducted a pre-design investigation at the site to determine the exact nature and extent of soil contamination at the Kirsch Company and Wade Electric source areas for the purpose of designing soil remediation systems. A deep aquifer hydrogeological investigation was also conducted to determine whether contamination exists further downgradient than the Agencies had believed. Results of the deep aquifer investigation revealed that there is indeed groundwater contamination further downgradient and that additional investigation was warranted. After the pre-design investigation was complete, the state's consultant began the engineering design for the SVE systems.

During much of 1996, the state negotiated a settlement with the PRP for their takeover of all activities at the site under the direction of EGLE. In late summer, an agreement was reached and a Decree and Statement of Work were lodged in federal court under the authority of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Decree was entered by the court on October 25, 1996.

During 1996, the EPA issued a ROD Amendment that altered the 1991 remedy for the site. The ROD Amendment changed groundwater and soil cleanup standards to comply with current state law, eliminated the Wade Electric source area from requiring SVE remediation, and eliminated the requirement of excavation of soils contaminated with polynuclear aromatic hydrocarbons due to changes in the state cleanup criteria.

In late 1997 and early 1998, the PRP conducted an investigation to determine if the interim extraction and treatment system was capturing and removing the entire groundwater contaminant plume and whether or not it could be designated as the final groundwater remedy for the site. In early fall of 1998, a report was submitted to EGLE detailing the results of the investigation. In early 1999, EGLE determined that an additional groundwater extraction and treatment system was needed to fully capture the lower aquifer contaminant plume and protect a series of industrial pumping wells in the northwest part of Sturgis. The design for the new system called for the installation of an extraction well that would pump 2,000 gallons of contaminated water per minute. The water would be treated by a new 70-foot-tall, 10-foot-diameter air stripper. Contaminant laden off-gasses would be treated with two 13,000 pound vapor phase granular activated carbon units. The project was delayed due to difficulties between the city of Sturgis and Newell Rubbermaid, Inc. (the successor to Kirsch Company) regarding permitting of the discharge of treated effluent into the city's storm and retention pond. These difficulties were resolved and the RD/RA continued under a revised schedule. Construction of the new groundwater extraction and treatment system, designated as Extraction Well 2 (EW-2), was completed in early 2002, with full-time operation commencing on May 13, 2002.

Construction of the SVE system at the Kirsch source area began in December 1996, was completed in March 1997,

and became operational at that time. The SVE work was completed in the spring of 2000. Cleanup verification sampling conducted immediately following system shutdown shows an area of contamination above cleanup criteria. The PRPs conducted additional cleanup verification sampling in the summer of 2001 and submitted a report to EGLE. The report advocated no further RA in the Kirsch Company source area. Subsequent discussions with Newell Rubbermaid, Inc., resulted in an agreement to install a groundwater extraction well immediately downgradient of the Kirsch Company source area to remove highly contaminated water in the shallow aquifer beneath the source area. Construction of the shallow aquifer extraction well, designated Extraction Well 3 (EW-3), began in August 2003. Construction was completed in November 2003.

During 2006, EGLE was approached by the PRP with a proposal to shut down EW-1. The state entered into discussions with the PRP and ultimately agreed to a modified shutdown proposal, in return for intense verification sampling, increased pumping at EW-2 and potentially additional soil and groundwater remediation at the Wade Electric source area. EW-1 was shut down in January 2007. EGLE later required it to be turned back on, due to groundwater chemical and hydraulic data that appeared to indicate a loss of capture of the plume when EW-1 is turned off. In the fall of 2008, Newell Rubbermaid, Inc., undertook a drilling program to determine the northern and southern extent of plume migration and plume capture. The report on this field effort was submitted to EGLE in late 2008. Results of the investigation appear to support the theory that capture of the deep aquifer contaminant plume can be maintained with the pumping of EW-2 only. However, in order to prove this theory, EGLE required Newell Rubbermaid, Inc., to undertake a year-long study of water levels in targeted monitoring wells, while EW-1 is turned off, in order to demonstrate plume capture even with seasonal fluctuations in aquifer characteristics. This study was completed in April 2010. Based upon the results of the study, permanent shutdown of EW-1 was approved by EGLE.

In the summer of 2007, Newell Rubbermaid, Inc., conducted a limited soil and groundwater investigation at the Wade Electric source area. Results of this investigation demonstrated the existence of TCE contamination in both soil and groundwater at the Wade Electric source area, in concentrations above Part 201 generic residential criteria.

A major redevelopment project, aimed at turning the former Kirsch Company Plant #1 into retail and residential space was initiated in 2009. EGLE was involved in reviewing work plans and overseeing the work to ensure that it complies with all applicable environmental regulations. The project was to be completed in phases. As a result of sampling conducted by the developer as part of work done in support of a Baseline Environmental Assessment, high levels of TCE were discovered. EGLE requested that Newell Rubbermaid, Inc., conduct an expanded drilling and sampling program to determine the extent of TCE contamination under and around the former Kirsch Company Plant #1, as well as a reassessment of the soils on the east side of Prospect Street, where SVE had previously been conducted. Results of these studies indicate that widespread TCE contamination still exists on both properties.

EGLE completed the Third Five-Year Review (FYR) for the site in June 2010. The FYR concluded that the remedy is protective in the short-term because actions to date prevent current exposures. In the long-term, the site and its remedies are expected to be protective of human health and the environment upon attainment of groundwater cleanup goals, which is expected to require 20 to 30 years to achieve.

In 2011/2012, Newell Rubbermaid, Inc., constructed a new plant to treat contaminated groundwater from EW-3, which is fully operational. Demolition of the old EW-1/EW-3 treatment plant took place in late 2013.

Most of 2013 was spent negotiating and implementing a work plan with Newell Rubbermaid, Inc., to conduct a soil leach testing study for the purpose of potentially setting site-specific cleanup standards for TCE and PCE in soil.

Most of 2014 was spent evaluating results of the leach testing study conducted by Newell Rubbermaid, Inc. EGLE hired an outside statistical expert to assist in evaluating the Rubbermaid leach testing study and subsequent statistical analysis.

In 2015 EGLE completed the Fourth FYR for the site. The FYR stated that the remedy is protective in the short-term because actions to date prevent current exposures. However, in order for the remedy to be protective in the long-term, soil and groundwater remedial actions will need to be completed, which are expected to require 20 to 30 years. The FYR made several recommendations, including the placement of deed restrictions, continuing to work with EPA to address the Wade Electric property, continuing to work with the PRP to implement adequate remedial actions at the Kirsch source area, working with the PRP to take action to reduce TCE concentrations in the area of monitoring well W-44 and address the VI exposure pathway at the site.

In 2015 the leach testing study and statistical evaluation was completed. The final revised report was submitted to EGLE in November 2015. It was originally anticipated that site-specific criteria would be developed using the leach

testing study and statistical evaluation, however, in 2017 it was determined that because of the discovery of a VI issue at the site, that EGLE would not be approving the use of a site-specific criteria that would have been less protective than what was identified in the ROD.

Late in 2015 the PRP submitted a draft VI investigation workplan. The VI investigation began in the spring of 2016. The first phase of the investigation included the installation of passive and active soil gas sampling points throughout the property and the installation of sub-slab vapor pins in the buildings located on the property. This phase also included the installation of passive soil gas sampling points throughout the neighborhood surrounding the property. Sub-slab results in the Industrial Pipe And Maintenance building resulted in the installation of a sub-slab depressurization system in the building to mitigate vapors. The second phase of the investigation included the installation of active soil gas samplers throughout the neighborhood. The third phase of the investigation involved the collection of indoor air samples from all of the houses along Hatch Street between Fourth and Prospect and all the homes on Fourth and Prospect, north of West Street. Newell has gained access to 38 homes, with nine remaining. Of the 38 homes that had indoor air samples collected, five had vapor mitigation systems installed and three required evacuation. In 2017, EGLE and the PRP worked together to identify the likely vapor plume. All homes within this area, that did not already have a mitigation system installed, had sub-slab vapor pins installed to collect a sample from underneath the slab of the home to identify the potential for vapors to enter into the home. This included the installation of sub-slab monitoring points in 17 homes. Of the 17 homes sampled, ten of them identified concentrations of vapors that could potentially result in concentrations inside the homes that would pose a risk. The PRP decided to presumptively install mitigation systems at these ten homes. The installation of these mitigation systems was completed in December 2017 and the PRP continues to monitor all homes in the area of the vapor plume.

The PRP purchased the portion of the property west of Prospect (west parcel) in 2017. The originally planned redevelopment project is no longer taking place and the buildings were demolished between November 2017 and January 2018 and during demolition the building materials were recycled by the demolition contractor. Additional soil samples were collected in the area of the former building on the northern portion of the west parcel in early 2018 to adequately characterize soil contamination. Excavation of the soils on the western parcel began in the fall of 2018 and will be completed by the end of March 2019. The excavation will include the removal of soils to depths ranging from 2 to 5 feet. A soil vapor extraction/air sparge (SVE/AS) system was installed on the west parcel in 2019.

Enforcement

All work at the site is being conducted by the PRP, who is liable under both the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, and Part 201 in accordance with the 1996 Decree.

Decision Documents

Record of Decision **Amendment:** 0 **ESD:** 0 **Effective:** 9/30/1991

Location Name: Sturgis Municipal Wells - OU Entire Site

Comments:
The soil remedy consists of SVE and PNA excavation at the Wade Electric and Kirsch Company source areas. Groundwater is to be remedied via pump and treat methods. Operation and maintenance (O & M) costs include $46,600 per year to run the SVE systems and $565,000 per year to run the pump and treat system. Groundwater pump and treat was estimated to take place for a period of 20 years.

Record of Decision **Amendment:** 1 **ESD:** 0 **Effective:** 9/10/1996

Location Name: Sturgis Municipal Wells - OU Entire Site

Comments:
The amended ROD changes cleanup standards to be consistent with current standards. This change eliminates the need for any soil remediation at the Wade Electric source area as well as the need for excavation of PNA contaminated soil at the Kirsch Company source area. The amendment also changes the cleanup standards for the volatile organic compound cleanup in both soils at the Kirsch Company source area as well as groundwater throughout the site.

Response Activities - In Progress

Activity: 5 Year Review | **Start Date:** 8/1/2019 | **End Date:** 7/1/2020

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
In Progress

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The FYR is expected to be completed in June 2020.

Activity: Remedial Action | **Start Date:** 11/26/2018 | **End Date:** 9/30/2022

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
In Progress

Primary Cost:
$2,000,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Implement RA to address soil contamination at the Kirsch Company Plant #1 on both the east and west sides of Prospect Street along with the Industrial Pipe and Maintenance Parking lot to the south of the site. This RA will include soil excavation and installation of SVE/AS systems at all three properties.

Activity: Remedial Investigation | **Start Date:** 10/1/2018 | **End Date:** 9/30/2021

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
In Progress

Primary Cost:
$600,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Conduct pre-design soil and groundwater at the Wade Electric source area. Design remediation system to address this contamination. Costs shown are estimates.

Response Activities - Ongoing

Activity: Operation and Maintenance | **Start Date:** 12/1/2016 | **End Date:** 1/1/2046

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Ongoing

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
This O & M is associated with the routine indoor air sampling that will be conducted in the neighborhood surrounding the site. Costs associated with this portion of the project were incurred entirely by the PRP and are unknown to the state.

Activity: Operation and Maintenance | **Start Date:** 5/13/2002 | **End Date:** 1/1/2032

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Ongoing

Primary Cost:
$600,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
This includes the operation of the pump and treat systems until cleanup standards are reached. This is expected to take an estimated 20 to 30 years. Costs associated with O & M are based on an estimated $600,000 per year for an estimated 20 years for a total of $12,000,000.

Response Activities - Completed

Activity: Remedial Design | **Start Date:** 6/1/2017 | **End Date:** 8/12/2018

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:
$200,000.00

Primary Source:
Private

Secondary Cost:
$0.00

Secondary Source:

Comments:
Engineering design and pilot studies related to addressing TCE contaminated soils at the Kirsch Company Plant #1 on both the east and west sides of Prospect Street. This also includes work at the Industrial Pipe and Maintenance parking lot directly south of the site given the potential source area identified during the VI investigation.

Activity: Remedial Action | **Start Date:** 8/19/2016 | **End Date:** 9/30/2018

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
This RA involves the installation of vapor mitigation systems in a commercial building on the property and at 15 homes in the neighborhood to the south of the site. Costs associated with this portion of the project were incurred entirely by the PRP and are unknown to the state.

Activity: Remedial Investigation | **Start Date:** 6/6/2016 | **End Date:** 12/31/2018

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
This RI involved the completion of a VI investigation on the site and also in the surrounding neighborhood. Costs associated with this portion of the project were incurred entirely by the PRP and are unknown by the State.

Activity: 5 Year Review | **Start Date:** 6/1/2014 | **End Date:** 6/25/2015

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
TBD

Secondary Cost:
$0.00

Secondary Source:

Comments:
The Fourth FYR stated that the remedy is protective in the short-term because actions to date prevent current exposures. However, in order for the remedy to be protective in the long-term, soil and groundwater RAs will need to be completed, which are expected to require 20 to 30 years. The FYR made several recommendations, including the placement of deed restrictions, continuing to work with EPA to address the Wade Electric property, continuing to work with the PRP to implement adequate RAs at the Kirsch source area, working with the PRP to take action to reduce TCE concentrations in the area of monitoring well W-44 and address the VI exposure pathway at the site.

Activity: 5 Year Review | **Start Date:** 6/1/2009 | **End Date:** 6/30/2010

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:
$0.00

Primary Source:
State

Secondary Cost:
$0.00

Secondary Source:

Comments:

The Third FYR started on June 1, 2009. The document was signed by the EPA on June 30, 2010. The FYR concluded that the remedy is protective in the short-term because actions to date prevent current exposures. In the long-term, the site and its remedies are expected to be protective of human health and the environment upon attainment of groundwater cleanup goals, which is expected to require 20 to 30 years to achieve.

Activity: 5 Year Review | **Start Date:** 9/1/2004 | **End Date:** 6/30/2005

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	No Financial Source	$0.00	

Comments:
The Second FYR started on September 1, 2004. The document was signed by the EPA on June 30, 2005. The FYR concluded that the remedy is protective in the short-term. All expenditures of state funds have been recovered from the PRP, in accordance with the Decree.

Activity: Remedial Action | **Start Date:** 8/28/2003 | **End Date:** 11/1/2003

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$250,000.00	Private	$0.00	

Comments:
This subsequent RA was for the installation of a shallow groundwater extraction well near the Kirsch source area. This well, designated EW-3, is piped to the existing air stripper for EW-1.

Activity: Remedial Action | **Start Date:** 6/18/2001 | **End Date:** 5/13/2002

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$4,000,000.00	Private	$0.00	

Comments:
This subsequent RA was for the construction and operation of the second groundwater extraction and treatment system. EW-2 pumps at a rate of 2,000 gallons per minute. Treatment of the groundwater is accomplished via air stripping. Off-gasses are treated with vapor phase carbon. Costs shown are estimated.

Activity: Remedial Design | **Start Date:** 1/20/1999 | **End Date:** 4/1/2001

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$100,000.00	Private	$0.00	

Comments:
This subsequent RD was for the engineering work associated with a second groundwater extraction and treatment system. This system, in conjunction with the interim response system, constitutes the final remedy for the deep aquifer at the site. Costs shown are estimated.

Activity: 5 Year Review | **Start Date:** 1/1/1999 | **End Date:** 10/15/1999

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	No Financial Source	$0.00	

Comments:

The First FYR for the site was conducted in 1999 and reaffirmed the remedial decisions made in the amended ROD.

Activity: Remedial Action | **Start Date:** 12/1/1996 | **End Date:** 3/1/1997

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	Private	$0.00	

Comments:
This RA consisted of the construction and operation of the Kirsch Company SVE system. Costs associated with this portion of the project were incurred entirely by the PRP and are unknown to the state.

Activity: Remedial Design | **Start Date:** 10/1/1994 | **End Date:** 1/1/1996

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$840,970.00	Federal	$120,000.00	Private

Comments:
This design was for an SVE system at the Kirsch Company source area and supplemental groundwater investigation. It was originally conducted by state consultants but was subsequently taken over by the PRP pursuant to a Decree between the state and the Kirsch Company. Design costs incurred by the PRP are estimated at approximately $120,000.

Activity: Interim Response | **Start Date:** 10/1/1993 | **End Date:** 12/31/2001

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$10,000,000.00	Private	$0.00	No Financial Source

Comments:
Interim groundwater extraction and treatment was conducted by a PRP pursuant to an the EPA Order and later pursuant to a Decree with EGLE. The estimated private party costs shown include capital and annual operating costs of the interim response.

Activity: Remedial Investigation | **Start Date:** 9/1/1987 | **End Date:** 5/1/1991

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$2,264,087.00	Federal	$0.00	

Comments:
State-lead, fund-financed RI was conducted to identify and delineate source areas and determine the nature and extent of the groundwater contaminant plume in shallow and deep aquifers. This was accomplished primarily through the use of soil gas surveys, soil borings, and the installation and sampling of vertically profiled groundwater monitoring wells.

Response Activities - Future Need

Activity: 5 Year Review | **Start Date:** 8/1/2024 | **End Date:** 6/24/2025

Operable Unit:
Sturgis Municipal Wells - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$0.00	State		

Comments:
The next FYR is due June 2025.

Activity: Remedial Action		**Start Date:** 9/30/2023	**End Date:** 12/31/2024
Operable Unit: Sturgis Municipal Wells - OU Entire Site		**Status:** Future Need	
Primary Cost: $1,500,000.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Construction and one year of operation of an expansion to the deep aquifer pump and treat system (P & T) to address far downgradient TCE impacts.

Activity: Remedial Action		**Start Date:** 10/1/2021	**End Date:** 9/30/2037
Operable Unit: Sturgis Municipal Wells - OU Entire Site		**Status:** Future Need	
Primary Cost: $1,500,000.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Implement RA to address soil and groundwater contamination at the Wade Electric source area. Costs shown below are estimates.

Activity: Remedial Design		**Start Date:** 9/28/2021	**End Date:** 9/30/2023
Operable Unit: Sturgis Municipal Wells - OU Entire Site		**Status:** Future Need	
Primary Cost: $250,000.00	**Primary Source:** Private	**Secondary Cost:** $0.00	**Secondary Source:**

Comments:
Engineering design of an expansion of the existing deep aquifer pump and treat system to address far downgradient TCE impacts.

Federal Grants

Grant #: V00E02435	**Activity:** Remedial Investigation Feasibility Study	**End Date:** 12/31/2021	**Status:** Open
Fed Total Award: $629,558.00	**State Total Award:** $0.00	**Exp to Date:** $610.56	**Exp for Year:** $0.00
Grant #: V985560-01	**Activity:** 5 Year Review	**End Date:** 12/31/2003	**Status:** Closed
Budget Amount: $1,146.00	**State Total Award:** $0.00	**Exp to Date:** $1,145.68	**Exp for Year:** $0.00
Grant #: V995258-01	**Activity:** PRP Oversight	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award: $4,535,600.00	**State Total Award:** $0.00	**Exp to Date:** $50,432.40	**Exp for Year:** $0.00
Grant #: V995260-01	**Activity:** Negotiations	**End Date:** 9/30/2003	**Status:** Closed
Fed Total Award:	**State Total Award:**	**Exp to Date:**	**Exp for Year:**

$585,100.00	$0.00	$42,790.31	$0.00
Grant #: V995259-01	**Activity:** Remedial Design	**End Date:** 9/30/2001	**Status:** Closed
Fed Total Award: $351,300.00	**State Total Award:** $0.00	**Exp to Date:** $1,175.00	**Exp for Year:** $0.00
Grant #: V005932-01-RI	**Activity:** Remedial Investigation	**End Date:** 6/30/1997	**Status:** Closed
Fed Total Award: $2,614,462.00	**State Total Award:** $0.00	**Exp to Date:** $2,264,087.00	**Exp for Year:** $0.00
Grant #: V005932-01-RD	**Activity:** Remedial Design	**End Date:** 6/30/1997	**Status:** Closed
Fed Total Award: $829,232.00	**State Total Award:** $0.00	**Exp to Date:** $840,970.00	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: DSC McLouth Steel-Gibraltar Plant

State Site ID:
82001496

Federal Site ID:
QW

Full Address:
28000 West Jefferson, Gibraltar, MI, 48173

County:
Wayne

Location

DSC McLouth Steel-Gibraltar Plant site was the former McLouth Steel Company Holdings comprised of approximately 350 acres total. The inactive Countywide Landfill, located at 15701 Vreeland Road is in the western portion of the site. The Countywide Landfill historically accepted steel production waste from McLouth Steel Products Plant in Trenton as well as the Gibraltar plant, and later operated as a demolition debris landfill. A former quarry with an adjacent pond, is located south of the landfill.

Countywide Landfill OU1: Countywide Landfill is located directly west of the Frank and Poet Drain, the Penn Central Railroad Track and the former McLouth Gibraltar Plant. The landfill is approximately 244-acres in size and was historically used for steel production waste disposal associated with both the McLouth Trenton and Gibraltar plants.

The Frank and Poet Drain, which flows into Brownstown Creek in the southern area of the site, and the Penn Central Railroad tracks bisect the site generally from north to south. Both are located between Countywide Landfill and the Landfills 1A and 1B. Brownstown Creek intersects the Frank and Poet Drain in the southern portion of the site and then connects to the Detroit River to the southeast. The site is bounded by West Jefferson Avenue to the east, Vreeland Road to the north, Fort Street and open land to the west, and Gibraltar Road to the south. Land use around the site include industrial to the north, small industrial and commercial to the east and south, and residential to the southeast. The Humbug Marsh Unit of the Detroit River International Wildlife Refuge and the Detroit River is located adjacent and east of the site.

Status

The McLouth Steel Products Company Gibraltar Plant was developed in the early 1950's. Operations at the plant included steel finishing, annealing, pickling, and cold rolling processes as well as associated storage and shipping operations. The eastern half of the site consists of the former Landfills 1A and 1B, their associated leachate collection and treatment lagoons, and the Tandem Mill Pond. The leachate lagoons historically discharged fluids through an outfall into the Frank and Poet Drain.

OU-Entire Site: In 2019, EGLE (formerly known as the MDEQ) and the EPA finalized the Remedial Investigation (RI) work plan, Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP) for the sitewide RI. The EPA and their contractors will perform a geophysical survey in the first quarter of 2020 at Countywide Landfill, Landfill A and Landfill B to determine the extent of waste at each landfill.

OU-1 Countywide Landfill: EGLE and its leachate hauling contractor continued to pump and haul leachate offsite in 2019. EGLE procured a new leachate hauling contractor to reduce the increasing costs of leachate hauling at the site. EGLE and its contractor completed the leachate treatment feasibility study (FS) and planned for bench testing and a pilot test in Fiscal Year 2020. EGLE and the EPA observed that a new lined surface water retention pond was installed in 2018. The lined surface water retention basin was installed in violation of Countywide Landfill’s 1999 Declaration of Restrictive Covenant. EGLE issued a compliance communication to Gibraltar Land Company (GLC) in July 2019 requiring the removal of the lined surface water retention basin and restoration of the grading in the site to allow for proper storm water management. EGLE will issue a Notice of Violation in the first quarter of 2020 to GLC for noncompliance with the July 2019 compliance communication.

In January 2019, EGLE's leachate hauling contractor discharged 150 gallons of leachate into a lined surface water retention basin at Countywide Landfill. Subsequently, EGLE staff sampled the lined surface water retention basin,

several onsite ponds, and the Frank and Poet Drain for per- and polyfluoroalkyl substances (PFAS). EGLE detected PFAS in surface water above applicable Rule 51 Surface Water criteria at each pond sampled. Results were referred to the EPA and the EGLE Water Resources Division. The EPA will add PFAS sampling in leachate and surface water to the sitewide RI/FS in 2020.

OU-2: Tandem Mill Ponds, Leachate Lagoons, and Landfills 1A and 1B: In 2019, EPA and their contractors pumped and disposed of leachate and water from the Tandem Mill Ponds and Leachate Lagoons as required under the Interim Record Of Decision (ROD).

History

The DSC McLouth Steel-Gibraltar Plant site was operated by McLouth Steel Products Corporation (McLouth Steel) from the early 1950's through 1996. Operations at the plant included steel finishing, annealing, pickling, and cold rolling processes as well as associated storage and shipping operations. McLouth Steel filed for Chapter 11 Bankruptcy on September 29, 1995. Plant operations ceased in July 1996. On July 11, 1996, the sale of McLouth's assets to Hamlin Holdings, Incorporated, was approved by the Bankruptcy Court. On August 14, 1996, title for the McLouth Steel-Gibraltar Plant and other assets were by contemporaneous assignment transferred to Detroit Steel Corporation Limited (DSC) and portions of the landed were titled to Gibraltar Land Company.

DSC did not file a Baseline Environmental Assessment (BEA) within 45 days of purchasing the site and EGLE determined DSC became legally liable for hazardous substance releases or threat of release to the environment from the leachate lagoons, Tandem Mill Pond, Landfills 1A and 1B, and Countywide Landfill. DSC conducted environmental investigations at the site beginning in 1997. DSC developed a BEA, dated May 22, 1997, for the southwest corner of the site. However, development of this area never occurred.

A Consent Judgment, 97-78609 CE, was entered into on December 3, 1997 by EGLE, McLouth Steel, and Gibraltar Land Company. This action arose following a complaint by EGLE in which EGLE alleged that McLouth Steel violated various parts under the Natural Resources and environmental Protection Act, 1994 PA 451, as amended (NREPA). The purpose of this Consent Judgment was to settle and resolve all violations of NREPA and provide for bringing he landfills into compliance with NREPA and implementing rules and regulations.

An Administrative Order, Docket No. R7003-5-99-003, between the EPA and DSC was executed on June 21, 1999, instructing DSC to conduct both immediate emergency measures and continuing emergency measures in addressing the oily waste material located in the Tandem Mill Pond to protect wildlife or wildlife habitat from any harmful effects of solid waste. DSC identified the source of the accumulating free oil waste in the Tandem Mill Pond as a sewer discharge pipe (oily water from the plant's basements) and residual oil which adhered to the pond banks.

In July 1999, the EPA received a report titled Project and Environmental Summary for the Made in Detroit Development Group. This report was the first proposed Brownfield type of development to include the entire DSC site. However, this proposed Brownfield redevelopment was never undertaken.

A Consent Order, WMD Order No. 111-15-99, (Order) was finalized between DSC, EGLE, and the Michigan Department of Attorney General in December 1999. The Order instructed DSC to do the following: investigate and evaluateremedial measures through remedial action (RA) plans; submit a Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP); submit interim measures work plans and implement the work to address exposure of migrating birds to floating oil in the Tandem Mill Pond; mitigate all conditions that posed an imminent or substantial threat to human health or the environment; and create a trust fund for disbursement of funds for corrective action and response activities. A November 2000 BEA was also completed at this time.

From 2000 through 2003, limited operations resumed at the plant building but ceased at the end of 2003. During the interim, DSC performed maintenance and limited environmental cleanup at the site. As of December 2002, DSC's ability to address most the environmental issues was severely limited by financial constraints.

Leachates from Landfills 1A, 1B, and Countywide Landfill were contaminated with many compounds including lead, mercury, and polychlorinated biphenyls (PCBs). Analytical data from samples collected on and off the site revealed these contaminants in surface water, sediment, groundwater, and soils. Various metals in soils were detected above

background levels.

In 2006 a Phase II Environmental Site Assessment for the building was completed, followed by a September 2006 BEA and Compliance with Due Care Obligations documents.

On July 10, 2007, the plant and 42-acres of property surrounding the plant was placed under control of a court appointed receiver. Subsequently, the plant and surrounding land was sold to Steel Rolling Holdings, Incorporated, which operated the plant as a rolling mill.

Responding to a request by EGLE in 2010, the EPA Emergency Response Branch, constructed a leachate collection system for the Countywide Landfill, filled the eastern and western leachate ponds with stone and covered them with clay, installed a loading pipe with level indicator, leveled and graded the cap, and seeded the exposed area of the landfill. Three aerators were also added to the leachate treatment system for the ponds and lagoons. The Emergency Response Branch referred the site for National Priorities List (NPL) consideration because of the need for long-term cleanup actions, including the need for a final remedy to cap the Landfills 1A, 1B, and Countywide Landfill; close the ponds and lagoons; find an alternative leachate disposal method and conduct long-term RA to minimize and dispose of leachate.

EGLE conducted an NPL reassessment of the entire site (including the Countywide Landfill, Tandem Mill Pond, the Lagoons, and Landfills 1A and 1B) on July 24, 2013. Despite the interim actions being conducted through the operation of the Countywide Landfill leachate collection system, uncontrolled exposures still existed at the site. The report documented that the site continued to pose a threat to human health and the environment; therefore, the EPA assigned a contractor to score the site and prepare a Hazard Ranking System Score documentation record. A support letter from the Governor of Michigan to the EPA requesting placement of the site onto the NPL was signed on February 15, 2014.

In a letter dated February 16, 2015, from DSC to the Wayne County Treasurer, DSC gave notice of its intention to discontinue payment of property taxes for the entire site and to begin the transfer of ownership/control of the property to Wayne County through the tax reversion process.

The plant was purchased from Steel Rolling Holdings in February 2015 by the Ferrogon Corporation and per agreement between the EPA and EGLE, carved out of the current site property as a Brownfield Redevelopment. The plant underwent a RI and redevelopment under state and county Brownfield Reuse Programs. Ferrogon completed development of a Phase I Environmental Site Assessment, dated February 2, 2015, a new BEA dated April 1, 2015, and a Phase II Environmental Site Assessment dated April 5, 2015.

The site was added to the NPL on March 26, 2015.

RI and removal actions at the plant continued throughout 2015. Brownfield remediation work continued at the former McLouth Steel Plant throughout 2016. Work included removal of interior asbestos; removal and disposal of oily sludge from the basements and the cleaning, pumping, disposal, and backfilling of trenches and pits located in the building; installing stormwater improvements/upgrades and the removal and/or capping of existing storm water components within the facility that historically connected with the former settling ponds/lagoons. Additional work included excavation areas surrounding piping runs thus exposing former drainage lines/pipes to cut and cap thereby assuring that past connections are severed so that potential contaminant fluids can no longer be transported to the former settling ponds/lagoons. In 2017, a two-year quarterly sampling investigation of the building monitoring well network began.

In the spring of 2017, the EPA conducted a site-wide Groundwater and Surface Water Investigation as part of the RI/FS development. The work plan for this specific investigation was developed, reviewed, commented on and approved by both the EPA and EGLE in the fall of 2016.

Throughout 2017, the EPA consultant and EGLE continued collaboration on developing the site wide RI/FS workplans. In 2017, the surface water and sediment RI/FS work plan was negotiated and developed ahead of the rest of the site and implementation began in 2018.
In 2018, negotiation of the surface water and sediment RI work plan continued. Implementation of surface water and sediment field activities began in March 2018 and will continue to 2019.

Throughout 2018, the EPA, their consultant, and EGLE continued collaborative negotiation and development of the site-wide RI/ FS and Risk Assessment work plans, as well as the Surface Water and Sediment Risk Assessment Work Plan.

To assess potential emerging contaminant issues associated with landfills at the site, in April 2018, the EPA sampled leachate receptacles and leachate standpipes at the site for PFAS. Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were detected above NREPA Part 201Residential and Nonresidential Drinking Water Criteria of 70 nanograms per liter (ng/l) in leachate. EGLE has requested that PFAS compounds be added as a potential contaminant of concern to the RI.

In early 2018, the EPA and their consultant redeveloped 28 existing site monitoring wells, collected groundwater elevations, groundwater samples, leachate level elevations, leachate samples, and surface water samples as part of a groundwater and surface water investigation at the site.

OU1-Countywide Landfill: The landfill was licensed as a Type II landfill under Act 87 of Public Acts of 1965 on September 1, 1976, for the entire 244-acres. The landfill historically accepted steal production waste form McLouth Steel Products Plant in Trenton as well as the Gibraltar Plant. DSC obtained the landfill in 1996 as part of the McLouth Steel bankruptcy sale of the site. GLC obtained the majority of the landfill property in 1996 by quit-claim deed. A portion of the southern landfill property was quit-claimed to DSC in 1997. The landfill was licensed to operate as a Type III landfill from 1989 through 2007 to allow it to receive and dispose of construction debris. The landfill has not received any additional waste material since 2010. Percolation of water through the waste produced a leachate like that produced in Landfills 1A and 1B which historically migrated into Brownstown Creek and the Frank and Poet Drain. The leachate has been found to contain barium, carbazole, mercury, silver, PCBs, selenium, vanadium, zinc, cyanide, carbon disulfide, phosphate, naphthalene, phenol, 2,4-dimethlyphenol, and PFAS.

Historical aerial photographs from the 1970's show a quarry located south of Countywide Landfill. The quarry became a landfilling area in the late 1970's into the mid 1980s when all but a small portion of the quarry was filled. The unfilled area of the quarry contained ponded water.

Between August 2008 and March 2009, EGLE assessed the permeability of the Countywide Landfill cap, collected and disposed of approximately six million gallons of leachate, and arranged for additional clay to be added to the cap.

On August 14, 2008, DSC verbally notified EGLE that it lacked financial resources to continue operating the treatment system. EGLE notified the EPA of the potential threat if the treatment system was abandoned, including leachate breakthrough and eventual release of the leachate to the Frank and Poet Drain. EGLE issued a violation notice to DSC on September 2, 2008, and requested assistance from the EPA in a letter dated September 16, 2008.

With DSC becoming financially unviable, the major issue confronting the site was the faulty Countywide Landfill leachate collection system and the potential overflow of leachate into the Frank and Poet Drain. The leachate collection system included two leachate wet wells and pumps equipped with floats. Currently, the floats do not work, requiring manual activation of the pumps. Leachate breakthroughs continued to occur without proper operation of the pumps. One of the landfill cells is adjacent to Jefferson Avenue and uncontrolled leachate breakthroughs may result in public contact with the leachate.

On March 1, 2009, the Emergency Response Branch mobilized to the site to conduct removal actions. The Emergency Response Branch completed construction of the Countywide Landfill upper leachate collection lines, collected and disposed of more than three million gallons of leachate, filled the eastern and western leachate ponds with stone and then covered with clay; leveled and graded the cap; seeded the exposed cap areas, and conducted engineering and treatability testing for a leachate treatment system. The Emergency Response Branch referred the entire DSC site for NPL consideration because of the long-term cleanup actions required for the entire site, including Countywide Landfill. The EPA had indicated a willingness to construct one system to handle both the Countywide Landfill and Landfills 1A and 1B leachate collection with the stipulation that an entity was available to take over the operation after one year. However, the combined leachate system was never constructed.

Countywide Landfill is no longer operational and does not have an operating license.

Through 2015, EGLE Materials Management Division managed the Countywide Landfill leachate collection and hauling off-site for proper disposal through a State Contract funded by the Perpetual Care Fund and a forfeited landfill surety bond, totaling $1.6 million dollars, which was established for financial assurance required when the site was previously licensed under Part 115, Solid Waste Management, of NREPA. Approximately 10,000 gallons per week of leachate was pumped and hauled off-site for proper disposal.

Additional EGLE site maintenance and leachate management activities, also paid from the Perpetual Care Fund,

included the collection of leachate from seven standpipes located at the toe of the slope of the Countywide Landfill, and leachate from a storage tank prior to discharge to the Vreeland Road sewer which discharges into the South Huron Valley Utility Authority wastewater treatment plant. In an effort to address storm water management issues, clean clay soils from a city of Detroit construction project was hauled on-site and used to fill in some of the storm water ponds. In the past, soils from Michigan Department of Transportation projects have been used to cap the landfill.

Beginning in October 2015, as an interim action, EPA initiated a quarterly sampling plan to collect surface water samples from several ponds northeast of the Countywide Landfill, the leachate collection ditch, and the leachate collection sump for the landfill. The sampling was conducted in October 2015, March, June, September, October 2016 and January, March, June, and October 2017. The October 2017 sampling event was the last to be done for this interim action. Sample analysis indicated contaminants of concern are present in the water bodies but at very low concentrations or non-detect.

With the depletion of the Perpetual Care Fund, a new leachate hauling contract was implemented by the State in October 2016 and extended to October 2019. The 2018 average volumes of leachate collected and hauled away for wastewater treatment remained consistent with volumes reported in 2016 and 2017. PFOS and PFOA were detected above Part 201 residential and nonresidential Drinking Water Criteria in the leachate from Countywide Landfill in April 2018. The presence of PFAS has significantly increased the costs for wastewater treatment and disposal, thus additional funding was attained. In an effort to curb the increasing cost of leachate hauling and treatment as a result of the discovery of PFAS in the leachate, EGLE obtained bids and awarded the contract to a new leachate hauling vendor for FY2020. It is expected the leachate hauling and treatment from the landfill will continue into the near future until the site-wide EPA remedy is implemented. As a result of the significant increase in wastewater treatment and disposal costs, EGLE retained a consultant to perform a leachate treatment FS and a 10-year cost benefit analysis to determine if an alternative treatment and disposal option would be less expensive.

Enforcement

The EPA issued an Administrative Order (AOC) on June 21, 1999, instructing DSC to conduct both immediate emergency measures and continuing emergency measures in addressing the oily waste material located in the Tandem Mill Pond to protect wildlife or wildlife habitat from any harmful effects of solid waste.

Both the Trenton and Gibraltar facilities were subject to the requirements of the Comprehensive Corrective Action and Remedial Order, WMD Order No.111-15-99, executed on December 17, 1999. The Order was spread over fifteen years and until 2002 DSC was performing remedial actions (RAs) in accordance with the Order's schedule. DSC as of 2003 had spent approximately $4.5 million to perform corrective and RAs at the facilities. At Gibraltar this included: 1) emergency measures, floating oil removal and 70 percent closure of the Tandem Mill Pond, 2) construction of leachate collection system for Landfills 1A and 1B, 3) leachate collection, treatment and disposal from Landfills 1A and 1B.

EGLE and EPA observed that a new lined surface water retention pond was installed in 2018. The lined surface water retention basin was installed in violation of Countywide Landfill’s 1999 Declaration of Restrictive Covenant. EGLE issued a compliance communication to GLC in July 2019 requiring the removal of the lined surface water retention basin and restoration of the grading in the site to allow for proper storm water management. EGLE issued a Notice of Violation in the first quarter of 2020 to GLC for noncompliance with the July 2019 compliance communication.

Operable Units for DSC McLouth Steel-Gibraltar Plant

OU1 Countywide Landfill

OU2 TMP Leachate Lagoons and LF1A LF1B

Decision Documents

Record of Decision	**Amendment:** 0	**ESD:** 0	**Effective:** 9/2/2016

Location Name: OU2 TMP Leachate Lagoons and LF1A LF1B

Comments:
The interim ROD was signed by the EPA on September 2, 2016 and the MDEQ concurred with the interim ROD.

The interim ROD was developed to continue the 2015 pumping and collection of leachate from the collection ponds for Landfills 1A and 1B which was begun by Emergency Response Branch in 2015 as a time critical action. The removal action is needed to stablize the leachate. EPA estimated that approximately two million gallons of leachate are generated each year from these two landfills. EPA will collect the leachate from the ponds two leachate collection sumps and haul it off- site for disposal at an approved facility. This interim action is funded to 2021, with the State providing a ten percent match of the annual costs via an SSC, and is intended to be in effect until the site-wide remedy is implemented.

Response Activities - In Progress

Activity: Interim Response | **Start Date:** 2/1/2020 | **End Date:** 12/31/2022

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
In Progress

Primary Cost:

Primary Source:
Federal

Secondary Cost:

Secondary Source:

Comments:
EPA, the United States Army Corp of Engineers (USACE), and EGLE are assessing options for an interim response to mitigate leachate outbreaks from Countywide Landfill. USACE is currently evaluating several options including cap grading, interim cap construction, support of a long term leachate treatment system, and enhanced draw down of leachate in the landfill.

Activity: Interim Response | **Start Date:** 7/1/2019 | **End Date:** 9/30/2023

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
In Progress

Primary Cost:
$1,000,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
The previous EGLE contract funded by a Prepetual Care Fund and managed by the office of Waste Management of Radiological Protection, for the collection, removal and the disposal of non-hazardous leachate from the Countywide Landfill ended in September 2016. A new EGLE leachate hauling contract began on October 1,2016, to continue these activities. The contract was renewed and expanded through 2019. The leachate hauling contract was changed for FY 19 to update the hauling costs to include treatment of PFAS.

A contractor is currently performing a feasibility study to determine the most cost effective way to manage PFAS containing leachate at the site. Current data shows that pre-treatment of leachate onsite and discharging treated leachate to surface water is likely more cost effective over the next 10 years.

Additionally, leachate outbreaks are still occurring onsite and leachate levels in the collection sump are consistently high to the point of frequent overflow events over the weekend and during periods of heavy rain. Additional pumping, as well as system operations and maintenance (O&M) are needed to reduce leachate outbreaks and prevent collection sump overflows. Additional system O&M includes leachate collection pipe jetting and the installation of a collection sump flow meter, level gauge, and telemetry system.

Leachate hauling of 4,665,000 gallons will cost $700,000. O&M and system upgrades to prevent continual overflows will cost approximately $75,000. A Pilot study of the treatment system will cost approximately $75,000. Full scale treatment system design will cost approximately $150,000.

It is anticipated the contract will be renewed, as needed, until the site-wide remedy is in place or an alternative treatment method is implemented.

PFAS funding is requested.

Activity: Interim Response | **Start Date:** 10/1/2016 | **End Date:** 9/30/2019

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU1 Countywide Landfill

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$650,000.00	State	$0.00	

Comments:
The previous MDEQ contract funded by a Perpetual Care Fund and managed by the office of Waste Management and Radiological Protection, for the collection, removal and the disposal of non-hazardous leachate from the Countywide Landfill ended in September 2016. A new MDEQ leachate hauling contract began on October 1, 2016, to continue these activities. The contract was renewed and expanded through 2018. The leachate hauling contract was changed for fiscal year 2019 to update the hauling costs to include treatment of PFAS. It is anticipated the contract will be renewed, as needed, until the site-wide remedy is in place.

Activity: Interim Response | **Start Date:** 10/1/2016 | **End Date:** 10/1/2021

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU2 TMP Leachate Lagoons and LF1A LF1B

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,350,000.00	Federal	$150,000.00	State

Comments:
The interim ROD was signed by the EPA on September 2, 2016. The MDEQ concurred with the interim ROD. The interim ROD will continue the pumping of leachate from the Landfills 1A and 1B sumps that was begun under the 2015 time critical removal action by the EPA Emergency Response Branch. The action will stabilize the leachate within the ponds associated with the two landfills. The EPA estimates that approximately two million gallons of leachate is generated annually by the landfills. Collected leachate will be taken off-site for disposal at an approved facility. The State will fund 10 percent of the annual cost through the interim response SSC signed September 27, 2016. The interim ROD activities will cover the next five years when it is assumed the site-wide remedy will be developed and implemented.

Activity: Remedial Investigation | **Start Date:** 8/10/2015 | **End Date:** 9/30/2025

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
In Progress

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,500,000.00	Federal	$0.00	

Comments:
EPA began the RI/FS process at this site in October 2016, beginning with the development of the initial draft RI/FS workplan. The RI/FS work plan was incremental approved between 2018 and 2020 by EPA and EGLE. Surface water, sediment, and leachate investigations began in 2018. Geophysical investigations of the landfill caps began in 2019. Additional sampling is planned for 2020 and 2021.

Response Activities - Completed

Activity: Interim Response | **Start Date:** 6/1/2019 | **End Date:** 9/30/2019

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
Completed

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	State		

Comments:
The EGLE leachate hauling contract change order for FY 19 specified a volume of 3,750,000 gallons of leachate for pumping, transport, and disposal. This volume is projected to be exceeded due to increased pumping of leachate due to higher than anticipated leachate levels at Countywide Landfill. The contract amount will run out prior to September 30, 2019 and the requested funds will be used to continue leachate pumping, transport, and disposal through

September 30, 2019.

Activity: Emergency | **Start Date:** 10/1/2015 | **End Date:** 10/1/2016

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU2 TMP Leachate Lagoons and LF1A LF1B

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
Emergency Response Branch took over the visual inspection, collection and removal of hazardous leachate from Landfills 1A and 1B in October 2015. This action ended on October 1, 2016, when the interim ROD activities were implemented. As part of this emergency action, Emergency Response Branch performed at least two leachate collection removals for disposal off-site at an approved facility. Throughout the year, Emergency Response Branch conducted regular site visits to visually monitor the level of leachate collected in the two landfill leachate sumps.

Activity: Monitoring | **Start Date:** 10/1/2015 | **End Date:** 10/1/2017

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU1 Countywide Landfill

Status:
Completed

Primary Cost:
$150,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
The EPA contractor completed quarterly sampling events (October 2015, January, April, July, October 2016; January, March, June, and October 2017) of the surface water ponds, drainage ditch and leachate collection sump for the Countywide Landfill. The sampling timeframe ended with the October 2017 event.

Activity: Emergency | **Start Date:** 3/22/2009 | **End Date:** 3/12/2010

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU1 Countywide Landfill

Status:
Completed

Primary Cost:
$2,000,000.00

Primary Source:
Federal

Secondary Cost:
$0.00

Secondary Source:

Comments:
At the request of the MDEQ, Emergency Response Branch updated the current Countywide Landfill leachate collection system, filled in the eastern and western leachate ponds with stone and covered with clay; installed a loading pipe with level indicator, leveled and graded the cap and seeded the exposed areas of the landfill.

Response Activities - Future Need

Activity: Operation and Maintenance | **Start Date:** 10/1/2022 | **End Date:** 9/30/2031

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
Future Need

Primary Cost:
$1,350,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
9 years of O&M at $150,000 per year for the leachate treatment system that is scheduled to be constructed in FY 2021.

Activity: Operation and Maintenance | **Start Date:** 11/30/2021 | **End Date:** 9/30/2022

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$150,000.00	State		

Comments:
1 year of O&M of the leachate treatment system projected to be built at Countywide Landfill in FY 2021.

Activity: Interim Response | **Start Date:** 10/1/2021 | **End Date:** 9/30/2026

Operable Unit: DSC McLouth Steel-Gibraltar Plant - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,800,000.00	Federal	$200,000.00	State

Comments:
The interim Record of Decision (ROD) was signed by the EPA on September 2, 2016. EGLE concurred with the interim ROD. The interim ROD will continue the pumping of leachate from the Landfills 1A and 1B sumps that was begun under the 2015 time critical removal action by the EPA Emergency Response Branch. The action will stabilize the leachate within the ponds associated with the two landfills. The EPA estimates that approximately two million gallons of leachate is generated annually by the landfills. Collected leachate will be taken off-site for disposal at an approved facility. The State funded 10 percent through 2021 through the interim response Superfund State Contract (SSC) signed September 27, 2016. The interim ROD activities covered 2016 through 2021. The site-wide remedy is not anticipated to be developed and implemented until 2026. Additional leachate collection will need to continue through 2026, including a 10 percent state match.

Activity: Remedial Action | **Start Date:** 5/1/2021 | **End Date:** 8/31/2021

Operable Unit: DSC McLouth Steel-Gibraltar Plant - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$1,500,000.00	State		

Comments:
A contractor has completed a feasibility study to determine the most cost effective way to manage PFAS containing leachate at the site. Previously funded bench testing of three potential treatments is scheduled for early summer 2020 and pilot testing of a treatment system is scheduled for Fall 2020. Current data shows that pre-treatment of leachate on-site and discharging treated leachate to surface water is likely more cost effective over the next 10 years.

$1,500,000 requested to construct full scale leachate treatment system to manage leachate with PFAS and elevated concentrations of ammonia and metals. Upfront construction and O&M costs are projected to save the state approximately $4,000,000 over the next 10 years by eliminating the need to pump, haul, and treat leachate off-site while EPA conducts a remedial investigation and feasibility study and implements a final remedy for the landfill. The use of an on-site leachate treatment system is also a more sustainable method of leachate management as a reduction in daily trucking will reduce the projects overall carbon footprint.

Activity: Interim Response | **Start Date:** 10/1/2020 | **End Date:** 9/30/2021

Operable Unit: DSC McLouth Steel-Gibraltar Plant - OU Entire Site
Status: Future Need

Primary Cost:	Primary Source:	Secondary Cost:	Secondary Source:
$700,300.00	State		

Comments:
$700,300 for 5,600,000 gallons of leachate to be pumped, hauled, and treated in Fiscal Year (FY) 2021 under current contact with leachate hauling contractor. Leachate pumping volume increased from 4,660,000 gallons in FY 2020 to 5,600,000 gallons in FY 2021 to attempt to mitigate ongoing leachate outbreaks around the perimeter of the landfill.

Activity: Operation and Maintenance | **Start Date:** 10/1/2020 | **End Date:** 9/30/2021

Operable Unit:
DSC McLouth Steel-Gibraltar Plant - OU Entire Site

Status:
Future Need

Primary Cost:
$150,000.00

Primary Source:
State

Secondary Cost:

Secondary Source:

Comments:
O&M activities, including a leachate collection system inspection of leachate piping and jetting clogged lines, are necessary to maintain proper flow of leachate to the leachate collection tank leachate disposal, and also facilitate proper leachate transport and mitigate leachate outbreaks. Current leachate outbreaks are occurring in areas where the leachate collection piping is likely blocked from mineral precipitation. The leachate from the outbreak locations makes it way to surface water by way of overland flow.

State Superfund Contracts

Activity: Interim Response | **Effective Date:** 9/27/2016 | **Most Recent Mod:** 5/27/2020

Location Name: DSC McLouth Steel-Gibraltar Plant - OU Entire Site | **Status:** Open - Active

Total Contract:
$0.00

State Total:
$150,000.00

State Share Balance:
$150,000.00

Expenditures to Date:
$0.00

Expenditures in FY2019:
$0.00

Contracted in FY2019:
$0.00

Summary:
453115

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $4,874.23	**Exp for Year:** $4,197.18
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2019	**Status:** Closed
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $16,968.33	**Exp for Year:** $6,218.25
Grant #: V03E00776	**Activity:** Management Assistance	**End Date:** 3/31/2018	**Status:** Closed
Fed Total Award: $279,328.61	**State Total Award:** $0.00	**Exp to Date:** $25,689.02	**Exp for Year:** $0.00
Grant #: V02E00776	**Activity:** Management Assistance	**End Date:** 3/31/2017	**Status:** Closed
Fed Total Award: $629,172.00	**State Total Award:** $0.00	**Exp to Date:** $67,817.79	**Exp for Year:** $0.00

Superfund Legislative Report
Fiscal Year 2019

Site Name: McLouth Steel Trenton (Former)

State Site ID:
82001699

Federal Site ID:
KV

Full Address:
1491 W. Jefferson, Trenton, MI, 48183

County:
Wayne

Location

The former McLouth Steel Corp facility property consists of approximately 273 acres located in the cities of Trenton and Riverview, Wayne County, Michigan, along the western bank of the Trenton Channel of the Detroit River. The former facility property is bounded by the Grosse Ile Toll Bridge and Monguagon Creek, as well as commercial/industrial property to the north; the Trenton Channel of the Detroit River and Grosse Ile to the east; Meyer Ellias Park, the Black Lagoon, and residential and commercial/industrial property to the south; and West Jefferson Avenue with a quarry, residential and commercial/industrial property to the west.

Status

The former McLouth Steel Corp property originally consisted of approximately 273 acres and operated from about 1950 until 1995. In 1995, McLouth filed for bankruptcy and the property has been transferred to multiple owners between 1996 and 2017. The original property is now split into a 76-acre northern portion presently owned by Riverview-Trenton Railroad Co. (RTRR) and a 197-acre southern portion, most of which is owned by MSC Land Co., LLC (MSC).

The EPA, U.S. Department of Justice (DOJ), and EGLE (formerly known as MDEQ) have negotiated a legal agreement called a “Settlement Agreement and Covenant Not to Sue” with Crown Enterprises, Inc., and MSC. On December 12, 2018, work plans were approved by the Agencies for the 183-acre southern portion of the site. Cleanup and assessment activities delineated in the 2018 Settlement have already begun and are expected to be completed by 2021. Additionally, a Baseline Environmental Assessment (BEA) was completed on December 12, 2018.

For environmental issues not covered by the proposed settlement, the EPA proposed the entire southern portion of the site consisting of approximately 197 acres for listing on the Superfund National Priorities List (NPL). The site was officially listed June 2019. Listing on the NPL allows work conducted within the southern portion to be eligible for federal funding.

For the 76-acre northern portion of the site, EGLE is committed to ensuring that RTRR undertakes actions as defined by the 2018 Corrective Action Consent Order (CACO) and performs a cleanup in the northern portion of the site in accordance with Superfund guidelines. EGLE will use the information that RTRR collects during the first phase of the corrective action and other sources to help determine if additional phases of corrective action are necessary.

History

The former McLouth Steel facility was owned and operated by the McLouth Steel Products Corp as an integrated steel and iron production facility from 1954 to 1995. McLouth used both basic oxygen furnaces (BOF) and electric arc furnaces (EAF) to produce steel. During its operation, McLouth established and operated a storage pile for EAF air pollution control dust, a listed hazardous waste pursuant to Part 111 of the Michigan Natural Resources and Environmental Protection Act (NREPA) and the federal Resource Conservation and Recovery Act of 1976 (RCRA).

In September 1995, McLouth filed for Chapter 11 bankruptcy protection. In 1996, the McLouth bankruptcy estate sold the entire McLouth facility to Hamlin Holdings, Inc., which transferred title to DSC, Ltd. DSC tried without success to restart steel operations.

In December 1999, DSC entered into a Comprehensive Corrective Action and Remedial Consent Order (WMD Order No. 111-15-99) with EGLE Materials Management Division (MMD) to take corrective actions and remedial activities to

address contamination from more than 70 waste management units (WMUs) and areas of concern (AOCs). DSC began to perform but did not successfully complete all work required according to the EGLE Order.

In 2000, DSC sold the 76-acre northern portion of the facility to Manuel J. Maroun, who transferred title through Crown Enterprises, Inc., to RTRR.

On June 14, 2007, a fire broke out at the property in an open pond used to collect waste oil. Firefighters and the Downriver Emergency Response Team extinguished the fire.
During a review of the scene, first responders identified hundreds of containers and drums of wastes. On October 16, 2007, the EPA and EGLE also discovered over 3,700 polychlorinated biphenyl (PCB)-containing transformers and capacitors stored in the upper rafters of one of the steel production buildings.

Between May 12 and October 2, 2009, the EPA conducted a fund-led removal action at the property that included the removal and disposal of 3,744 PCB capacitors, 39,783 gallons of PCB oil, and 1,877 containers of hazardous substances. In September 2012, the EPA closed out the approximately $2 million in costs after it determined that DSC had no ability to pay those costs. The EPA elected not to record a lien against the Property after it determined that there were already significant tax liens in place that had priority over the EPA's potential lien.

On March 18, 2011, EGLE referred the southern section of the former McLouth facility, including the property, to the EPA Region 5 Superfund Program. EGLE noted, "The current owners and operators are unable to perform the necessary corrective actions, and this referral is necessary to ensure that actions can be taken to protect the public health, safety and welfare, and the environment from hazardous substances that remain on the property." On May 11, 2011, Region 5 transferred responsibility for the southern portion of the former McLouth facility from its RCRA to its Comprehensive Environmental Response, Compensation and Liability Act 1980 PL 96-510 (CERCLA) program.

In March 2017, Wayne County acquired 183 acres of the 197-acre southern portion through tax foreclosure. Wayne County then entered into a Purchase and Development Agreement with Crown. One of the purposes of this settlement is to provide the non-liable parties, Crown and its affiliate, MSC, with covenants not to sue so that MSC can take title to the property with clarity concerning its obligations under CERCLA, RCRA, and the Toxic Substance Control Act (TSCA).

In August 2017, vandals broke into an office and laboratory area on the property. The vandals found a container of mercury and spilled the mercury. The EPA conducted a removal action which was completed in a matter of days.

On October 24, 2018, the EPA, DOJ, and EGLE finalized the "Settlement Agreement and Covenant Not to Sue" with Crown Enterprises, Inc. and MSC Land Co., LLC. The covenants enable MSC to take title to 183 acres of the southern portion of the McLouth Steel facility from the Wayne County Land Bank. This southern portion of the site is referred to as the McLouth Steel Facility. The settlement fosters redevelopment by allowing MSC and Crown to clarify their cleanup responsibilities while the EPA investigates and later fully addresses existing contamination within the property. The steps to be taken by MSC mark the first but not the final steps in addressing conditions at the property.

To secure the covenants not to sue, the 2018 Settlement requires MSC to conduct cleanup and assessment activities in the southern portion of the site. This includes: 1) the demolition of 45 structures; 2) removal of asbestos-containing material, containerized wastes and materials containing PCBs from all structures prior to demolition; install a fence around the property; 2) the removal of contaminated water and sludges from 23 subsurface structures (pits, basements and lagoons), clean or remove the structures and, if the structures remain, fill them with clean fill materials; 3) the investigation of five areas where PCBs may have been released; and 4) the assessment and report on options for stormwater management to eliminate uncontrolled flow to the Trenton Channel of the Detroit River.

Effective October 30, 2018, EGLE and RTRR entered into a CACO. Pursuant to this Order, RTRR is committed to undertake certain corrective actions within the 76-acre northern portion of the former McLouth Steel facility. This portion of the facility is referred to as the RTRR Facility.

Pursuant to the 2018 CACO, RTRR has committed to undertake certain corrective actions within the RTRR Facility. The requirements include: 1) to perform the first phase of the corrective action (environmental investigation and response activities) that includes investigation of the five known waste management units, or WMUs, on the northern portion of the site, 2) clean up the waste management units (WMU) if needed, 3) investigate groundwater contamination, 4) control dust, and 5) evaluate stormwater management options to eliminate flow to the Trenton Channel of the Detroit River.

Enforcement

On October 24, 2018, the EPA, the DOJ, and EGLE finalized the “Settlement Agreement and Covenant Not to Sue” with Crown Enterprises, Inc., and MSC. The covenants enable MSC to take title to 183 acres of the southern portion of the McLouth Steel facility from the Wayne County Land Bank. Under the terms of the settlement, MSC will conduct cleanup and assessment activities and in exchange, MSC and Crown Enterprise, Inc., parties not responsible for the contamination on the property, receive covenants not to sue.

Effective October 30, 2018, EGLE and RTRR entered into a CACO. Pursuant to this Order, RTRR is committed to undertake certain corrective actions within the 76-acre northern portion of the former McLouth Steel facility. This portion of the facility is referred to as the RTRR Facility.

Response Activities - Future Need

Activity: Remedial Investigation		**Start Date:** 7/1/2021	**End Date:** 7/1/2026
Operable Unit: McLouth Steel Trenton (Former) - OU Entire Site		**Status:** Future Need	
Primary Cost: $100,000.00	**Primary Source:** Federal	**Secondary Cost:**	**Secondary Source:**

Comments:
To address environmental issues not covered by the 2018 Settlement Agreement, the EPA will conduct an investigation on the 197-southern portion of the site to characterize the nature and extent of contamination. Costs shown are estimated.

Federal Grants

Grant #: V04E00776	**Activity:** Management Assistance	**End Date:** 3/31/2021	**Status:** Open
Budget Amount: $0.00	**State Total Award:** $0.00	**Exp to Date:** $130.01	**Exp for Year:** $0.00

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APPENDIX B
LEGISLATIVE REPORT COMMONLY USED ACRONYM LIST

ACLs	alternate concentration limits
AOC	Administrative Order by Consent
ARARS	Applicable or Relevant and Appropriate Requirements
AS	air sparging
AS/SVE	air sparging/soil vapor extraction

BEA	Baseline Environmental Assessment
BTEX	benzene, toluene, ethylbenzene, and xylene

CA	Cooperative Agreement, also known as a grant
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended

DCE	dichloroethylene
DDT	dichlorodiphenyltrichloroethane
DEE	diethyl ether
DNAPL	Dense Non-Aqueous Phase Liquid
DPW	Department of Public Works

EGLE	Michigan Department of Environment, Great Lakes, and Energy
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference

FFS	Focused Feasibility Study
FS	Feasibility Study
FY	Fiscal Year
FYR	Five Year Review

GSI	Groundwater/Surface water Interface

HBB	hexabromobenzene

IC	Institutional Control
ICIAP	Institutional Control Implementation Assurance Plan

LNAPL	Light Non-Aqueous Phase Liquid
LTHA	Lifetime Health Advisory
LTMP	Long-Term Monitoring Plan
LTNAMP	Long-Term Natural Attenuation Monitoring Plan
LTRA	Long-Term Remedial Action/Long Term Response Action
LTS	Long-Term Stewardship

APPENDIX B
LEGISLATIVE REPORT COMMONLY USED ACRONYM LIST

MCL	Maximum Contaminant Level
MDAG	Michigan Department of Attorney General
MDCH	Michigan Department of Community Health (formerly known as Michigan Department of Public Health)
MDEQ	Michigan Department of Environmental Quality (prior to October 1, 1995, the Michigan Department of Environmental Quality was a part of the Michigan Department of Natural Resources)
MDHHS	Michigan Department of Health and Human Services
MDNR	Michigan Department of Natural Resources
MNA	Monitored Natural Attenuation
MNR	Monitored Natural Recovery
µg/kg	micrograms per kilogram
µg/l	micrograms per liter

NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NREPA	Natural Resources and Environmental Protection Act, 1994 PA 451, as amended

O & M	Operation and Maintenance
OU	Operable Unit

P & T	Pump and Treat
PAHs	Polycyclic Aromatic Hydrocarbons
PBB	polybromobiphenyl
PCB	polychlorinated biphenyl
PCE	perchloroethylene, tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PL	Public Law
PM	Project Manager
PNA	polynuclear aromatic hydrocarbons
POC	Point of Operational Compliance
POTW	Publicly Owned Treatment Works
ppb	parts per billion
PPE	Personal Protection Equipment
ppm	parts per million
PRP	Potentially Responsible Party

APPENDIX B
LEGISLATIVE REPORT COMMONLY USED ACRONYM LIST

RA	Remedial Action
RAP	Remedial Action Plan
RC	Restrictive Covenant
RCRA	Resource Conservation and Recovery Act, 1976 PL 94-580, as amended
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FFS	Remedial Investigation/Focused Feasibility Study
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Regional Project Manager
SARA	Superfund Amendments and Reauthorization Act, 1986 PL 99-499, as amended
SRD	Substantive Requirements Document
SSC	Superfund State Contract
SSD	subslab depressurization
SVE	Soil Vapor Extraction
SVOC	semivolatile organic compound
SVVS	Subsurface Volatilization and Ventilation System
TCE	trichloroethylene
TCRA	Time Critical Removal Action
Tris	tris(2,3 dibromopropyl)phosphate
USACE	U.S. Army Corps of Engineers
VC	vinyl chloride
VI	vapor intrusion
VOCs	volatile organic compounds
WWTP	wastewater treatment plant