THE SUPERFUND PROGRAM IN MICHIGAN

Fiscal Year 2010 Legislative Report

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 Brownfield Revitalization Act, 2002 PL 107-118

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PREFACE

The 2010 Superfund Legislative Report has been prepared pursuant to the requirements of Section 224 of 2009 PA 118, the fiscal year 2010 appropriations bill for the Department of Environmental Quality and the Department of Natural Resources. The report details the federal Superfund appropriations awarded during fiscal year 2010 for use at specific National Priorities List sites. In addition, the report summarizes the federal funding history and cleanup activities at each site.

On January 17, 2010, Executive Order No. 2009-45 created the Department of Natural Resources and Environment. All of the former authority and resources from the former Department of Environmental Quality were transferred to the Department of Natural Resources and Environment and the former Department of Environmental Quality was abolished. On January 4, 2011, Executive Order No. 2011-1 was issued that created the Department of Environmental Quality (and the Department of Natural Resources) and abolished the Department of Natural Resources and Environment. For ease of use, this report will use the term Department of Environmental Quality when referring to environmental actions taken by either the Department of Natural Resources and Environment or the Department of Environmental Quality.

The Department of Environmental Quality welcomes any suggestions for improving this report. Please direct your comments or questions to Mr. David Kline, Superfund Section Chief, Remediation Division, at 517-373-8354 or klined@michigan.gov.

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LEGISLATIVE REPORT
COMMONLY USED ACRONYM LIST

ACLs	**a**lternate **c**oncentration **l**imits
ACOE	**A**rmy **C**orps **o**f **E**ngineers
ARARS	**A**pplicable or **R**elevant and **A**ppropriate **R**equirements
BEA	**B**aseline **E**nvironmental **A**ssessment
BTEX	**b**enzene, **t**oluene, **e**thylbenzene, and **x**ylene
CA	**C**ooperative **A**greement, also known as a grant
CERCLA	**C**omprehensive **E**nvironmental **R**esponse, **C**ompensation, and **L**iability **A**ct, 1980 PL 96-510, as amended
CMI	**C**lean **M**ichigan **I**nitiative
DCE	**d**i**c**hloro**e**thylene
DDT	**d**ichloro**d**iphenyl**t**richloroethane
DOJ	**D**epartment **o**f **J**ustice
DPW	**D**epartment of **P**ublic **W**orks
DWRPD	**D**rinking **W**ater and **R**adiological **P**rotection **D**ivision
EPA	**E**nvironmental **P**rotection **A**gency
ERD	**E**nvironmental **R**esponse **D**ivision
ESD	**E**xplanation of **S**ignificant **D**ifference
FIELDS	**F**ully **I**ntegrated **E**nvironmental **L**ocation **D**ecision **S**upport
FS	**f**easibility **s**tudy
FY	**f**iscal **y**ear
GSI	**g**roundwater/**s**urface **w**ater **i**nterface
HBB	**h**exa**b**romo**b**enzene
LNAPL	**l**ight **n**onaqueous **p**hase **l**iquid
LTRA	**l**ong-**t**erm **r**emedial **a**ction
MCL	**m**aximum **c**ontaminant **l**evel
MDAG	**M**ichigan **D**epartment of **A**ttorney **G**eneral
MDEQ	**M**ichigan **D**epartment of **E**nvironmental **Q**uality (prior to October 1, 1995, the Michigan Department of Environmental Quality was a part of the Michigan Department of Natural Resources)
MDNR	**M**ichigan **D**epartment of **N**atural **R**esources
MDPH	**M**ichigan **D**epartment of **P**ublic **H**ealth (now known as Michigan Department of Community Health)
MTSCC	**M**ichigan **T**oxic **S**ubstances **C**ontrol **C**ommission
NPDES	**N**ational **P**ollutant **D**ischarge **E**limination **S**ystem
NPL	**N**ational **P**riorities **L**ist
NREPA	**N**atural **R**esources and **E**nvironmental **P**rotection **A**ct, 1994 PA 451, as amended

LEGISLATIVE REPORT
COMMONLY USED ACRONYM LIST

O & M	**o**peration and **m**aintenance
PAHs	**p**olynuclear **a**romatic **h**ydrocarbons
PBB	**p**oly**b**romo**b**iphenyl
PCB	**p**oly**c**hlorinated **b**iphenyl
PCE	**p**er**c**hloro**e**thylene, tetrachloroethylene
PNA	**p**oly**n**uclear **a**romatic hydrocarbons
POTW	**p**ublicly **o**wned **t**reatment **w**orks
ppb	**p**arts **p**er **b**illion
ppm	**p**arts **p**er **m**illion
PRP	**p**otentially **r**esponsible **p**arty
QAPP	**Q**uality **A**ssurance **P**roject **P**lan
RA	**r**emedial **a**ction
RAP	**R**emedial **A**ction **P**lan
RCRA	**R**esource **C**onservation and **R**ecovery **A**ct, 1976 PL 94-580, as amended
RD	**r**emedial **d**esign
RD/RA	**r**emedial **d**esign/**r**emedial **a**ction
RI	**r**emedial **i**nvestigation
RI/FS	**r**emedial **i**nvestigation/**f**easibility **s**tudy
ROD	**R**ecord **o**f **D**ecision
SARA	**S**uperfund **A**mendments and **R**eauthorization **A**ct, 1986 PL 99-499, as amended
SRD	**S**ubstantive **R**equirements **D**ocument
SSC	**S**uperfund **S**tate **C**ontract
SVE	**s**oil **v**apor **e**xtraction
SVOC	**s**emi**v**olatile **o**rganic **c**ompound
SWQD	**S**urface **W**ater **Q**uality **D**ivision
TCA	**t**ri**c**hloroeth**a**ne
TCE	**t**ri**c**hloro**e**thylene
Tris	tris(2,3 dibromopropyl)phosphate
μg/kg	micrograms per kilogram
μg/l	micrograms per liter
USCG	**U**nited **S**tates **C**oast **G**uard
VOCs	**v**olatile **o**rganic **c**ompounds
WWTP	**w**aste**w**ater **t**reatment **p**lant

INTRODUCTION

Superfund Program Background

The Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510 (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.

The CERCLA initially established the Superfund as a five-year, $1.6 billion fund generated by taxes on crude oil and certain commercially produced chemicals. In 1986, the Superfund Amendments and Reauthorization Act extended CERCLA authority for another five years and increased the Superfund to $8.5 billion. These additional monies were generated by excise taxes on petroleum and feedstock chemicals, a tax on certain imported chemical derivatives, an environmental tax on corporations, appropriations made by Congress from general tax revenues, and any monies recovered or collected from Potentially Responsible Parties (PRPs). In 1990, the taxing authority was extended through December 31, 1995, at which time it expired. The Superfund trust fund is essentially depleted. Program implementation is now funded through increased reliance on general tax revenue and cost recovery actions.

Pursuant to the CERCLA, the EPA can take legal action to force the parties responsible for the contamination to conduct a cleanup. If 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 available information on the site in order to determine if enough is known about the site to pursue one of the Superfund remedial processes. The cleanup processes are: Emergency Removal, Non Time-Critical Removal, and Remedial Action after NPL listing. 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 serious contamination 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, 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. As a general rule, groundwater cleanup is not conducted in a removal action, unless it is necessary to prevent or eliminate contamination of municipal water supplies above drinking water criteria. Money is available through the 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.

A non time-critical removal action may be appropriate for a site where an imminent and substantial endangerment may not exist, but there is still a significant risk to public health or the environment. Non time-critical removal actions are best suited to situations where there are only a few obvious actions for cleanup, remedy selection can be easily accomplished, and implementation completed within a fairly short time. Sites for which remedies can be completed for less than $2 million with no further action necessary are more likely candidates for non time-critical removals. Groundwater cleanup is usually not done during a non time-critical removal action, but rather through action taken under state authority or as part of a remedial action for an NPL site.

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, if any, 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

ten percent (10%) of the cost of any RA paid for by the Superfund. If the Superfund pays for the RA at a municipally operated site, the state is responsible for fifty percent (50%) of the cost of the RA. In addition, the state is required to fund one hundred percent (100%) 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 until the state provides the required funding, referred to as State Match funding, and agrees 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. The EPA also provides Superfund Core Program CAs that are used to fund non site-specific activities that develop and maintain a state's ability to participate in the CERCLA response program.

Michigan participates fully with the EPA in the Superfund Program through the Michigan Department of Environmental Quality (MDEQ), Remediation Division, Superfund Section. Michigan has had up to 81, and currently has 67, sites on the NPL (See map, Figure 1) and two sites historically proposed for listing on the NPL. Three letters dated July 1, 2009, from then Governor Jennifer M. Granholm expressed support for three additional sites to be proposed for inclusion on the NPL. In 2010, two of the three sites, the Gratiot County Golf Course and the Ten-Mile Drain site, were placed on the NPL. The third site may be formally proposed for listing on the NPL in 2011. There have been 16 sites deleted from the NPL. The MDEQ has, or has had, lead agency responsibility for response actions at many of these sites. The 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. 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, the MDEQ frequently recommends appropriate sites to the EPA's Emergency Removal Program. In addition, the MDEQ 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, the MDEQ 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. The MDEQ's participation in the remedy selection process favors remedies which 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 thus far is from $1 million to $97.3 million. Cost for O & M at individual sites can range up to $2 million per year. Obviously, it is in Michigan's financial interest to ensure that remedies

which meet state requirements and minimize State Match and O & M costs are selected. 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.

Brownfield Redevelopment

Michigan has focused substantial efforts in working to foster redevelopment of brownfields, sites for which business expansion or economic development is hindered by the existence of, or potential for, environmental contamination. The federal Superfund Program is supplying funding to local units of governments and states for their redevelopment efforts. Between Fiscal Year (FY) 1999 and FY 2004, a total of $1,495,607 in federal funds was awarded to Michigan for this program. This funding primarily assisted in implementation of the brownfield redevelopment aspects of the Clean Michigan Initiative.

To further support brownfield redevelopment, the CERCLA was amended by the "Small Business Liability Relief and Brownfield Revitalization Act" (2002 PL 107-118) on January 11, 2002. The act expands EPA's programs by authorizing funding for brownfield assessment and cleanup, as well as for state response programs. Since FY 2005, Michigan has received $8,562,235 through CAs to enhance the state's brownfield redevelopment efforts, including brownfield assessments. Of that amount, $1,068,350 were received in FY 2010. The act also provided certain liability protection for certain contiguous property owners, prospective purchasers, and extremely small contributors of hazardous substances.

Brownfield assessments at properties in Michigan are done at the request of a local unit of government, without making the site subject to the federal Superfund process. Sampling is conducted to determine whether contamination may be present at concentrations which would define the property as a facility pursuant to Part 201, to recommend a level of mitigation for the property, and to determine whether asbestos is present at quantities regulated by the National Emission Standards for Hazardous Air Pollutants.

Superfund Money in Michigan

Since the beginning of the program in 1980, federal Superfund money has been awarded to the state to address 74 NPL sites. Page I-8 lists the federal grant dollars awarded in FY 2010. In FY 2010, the state spent or committed to $893,255 in 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, on the next page.

TABLE 1

SUPERFUND FUNDING IN MICHIGAN

FUNDING SOURCE	FUNDS PRIOR TO FY 2010	FUNDS IN FY 2010 ***	TOTAL BY SOURCE
SUPERFUND STATE CONTRACTS (Federal, Direct)	$ 221,449,415	-$ 3,205,653	$ 218,243,762
SUPERFUND STATE CONTRACTS (State Match)	$ 24,712,812	-$ 1,056,184	$ 23,656,628
SUPERFUND SITE ASSESSMENTS (Federal, CA)	$ 8,331,901	$ 100,000	$ 8,431,901
SUPERFUND SITE AWARDS (Federal, CA)	$ 102,605,536	$ 1,593,811	$ 104,199,347
STATE FUNDS (State Match, CA)**	$ 8,902,488	$ 56,400	$ 8,958,888
PRP COMMITMENTS*	$ 565,990,523	$ 14,100,000	$ 580,090,523
SUBTOTAL SITE ACTIVITY	**$ 931,992,675**	**$ 11,588,374**	**$ 943,581,049**
BROWNFIELD REVITALIZATION CA (Federal)	$ 7,493,885	$ 1,068,350	$ 8,562,235
BROWNFIELD CA (Federal) (closed)	$ 1,495,607	$ 0	$ 1,495,607
SUPERFUND CORE CA (Federal)	$ 13,727,255	$ 193,275	$ 13,920,530
BROWNFIELDS & CORE CA (State Match)**	$ 1,697,224	$ 0	$ 1,697,224
TOTAL FUNDING*	**$ 956,406,646**	**$ 12,849, 999**	**$ 969,256,645**

*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.

**When the EPA provides partial federal funding for a project, they award all the state match funding in addition to the partial federal funding. Subsequently, as the remaining federal funds are awarded, there will be no corresponding match, as that has already been awarded.

***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. Negative numbers for Superfund State Contracts in FY 2010 reflect reductions in funding committed in these contracts (typically because actual costs have been less than original cost estimates).

Cleanup Progress

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 ROD and go through the various remedial stages independent of activities at other parts of the site. 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. To date, 16 sites have been deleted from the NPL (see page I-10). Details on progress toward addressing Superfund sites in Michigan can be found in Table 2.

TABLE 2

CLEANUP PROGRESS AT FEDERAL NPL AND REMOVAL SITES IN MICHIGAN

ACTIVITY*	PRIOR TO FY 2010	FY 2010	TOTAL
REMOVAL ACTIONS	273	16	289
WATER SUPPLY REPLACEMENTS	25	0	25
RI/FS STARTS	126	2	128
RI/FS COMPLETIONS	120	0	120
RODS and ROD AMENDMENTS	144	2	146
RD STARTS	94	1	95
RD COMPLETIONS	87	1	88
RA STARTS	101	2	103
RA (CONSTRUCTION) COMPLETIONS	87	1	88
ONGOING O & M, LTRA	65	-7	58
DELETIONS	16	0	16
ADDITIONS	81	2	83
FIVE-YEAR REVIEWS	120	15	135

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

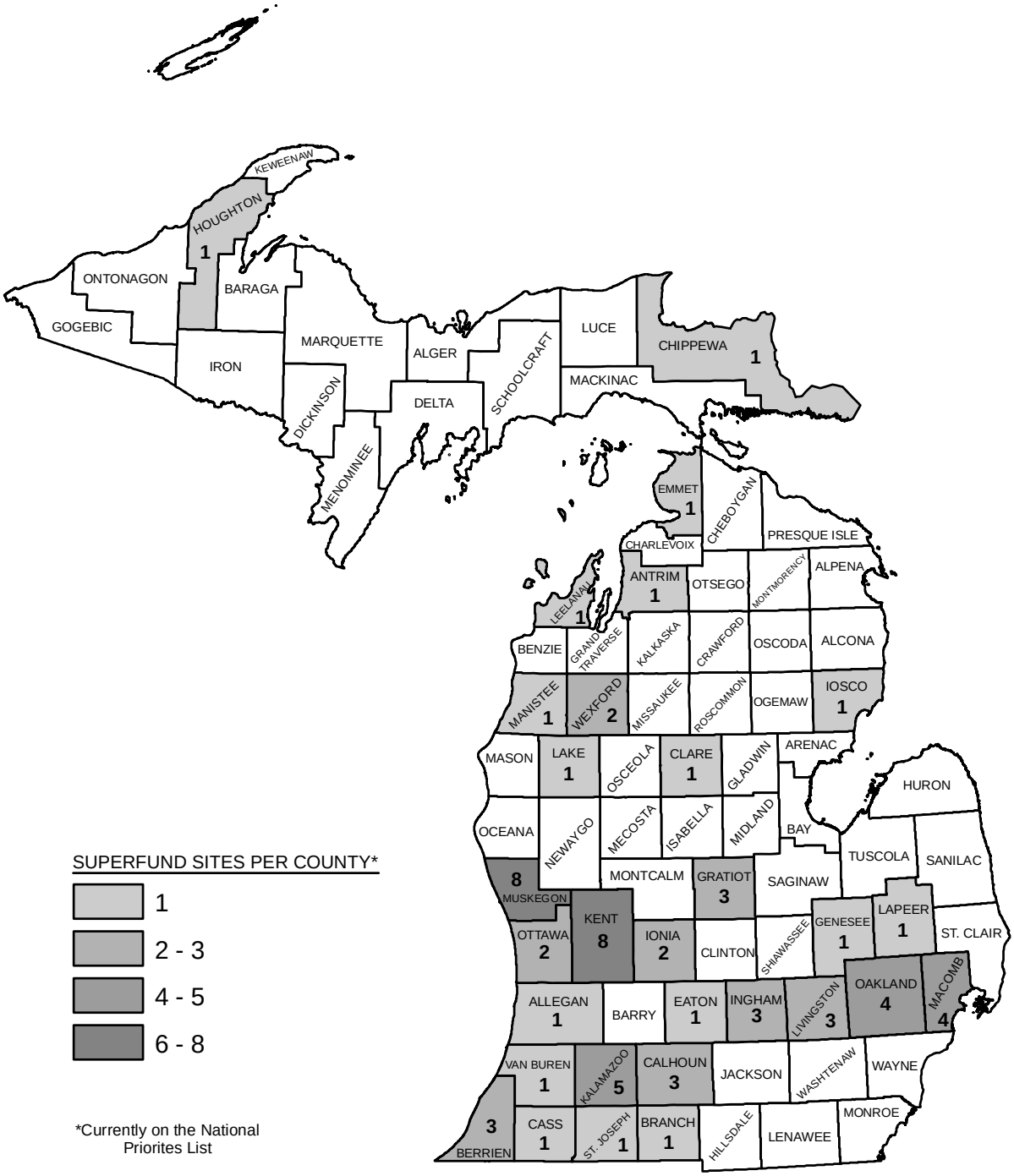
2010 Superfund Legislative Report

Superfund Site Summaries have been prepared for all of 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 terms with definitions as they apply to their use in this document.

Figure 1
Michigan Superfund Sites
FY 2010



MDEQ - SUPERFUND
FEDERAL GRANT DOLLARS AWARDED IN FY 2010

CA #	FEDERAL AMOUNT	STATE MATCH	DATE	SITE/PROJECT
V00E82601-1	$0	$0	10-8-2009	Rebudgeting of existing grant dollars for the Verona Well Field site.
V96585302-1	$38,000	$0	11-16-2009	Enables MDEQ to continue O & M activities at the Jones and Laughlin Landfill site.
V00E19201-3	$0	$0	12-17-2009	Eliminates the required five-year review for the U.S. Aviex site. Allows grant funds to be used for a five-year review for the Wash King site.
V995884-01	$0	$0	1-7-2010	Provides for a no-cost date extension of the Spartan Chemical grant to allow for time to close out the grant.
RP96507702-2	$0	$0	1-7-2010	Provides for a rebudgeting of existing grant funds between various grant tasks.
V99588402-0	$250,000	$0	2-3-2010	Provides funding to conduct remedial design activities at the Spartan Chemical site.
VC00E18202-1	$193,275	$0	2-24-2010	Awards the remaining balance of Core grant funds. State match was provided in previous award.
V00E18302-1	$302,032	$0	3-1-2010	Provides funding for Management Assistance activities at federal lead sites.
V00581301-4	$0	$0	3-11-2010	Extends the end date of the Parsons Chemical grant.
V00E19201-4	$40,000	$0	3-16-2010	Provides additional funding to the five-year review multi-site cooperative agreement.
V00595001-U	$300,000	$56,400	4-6-2010	Provides additional funding to continue long-term remedial action activities at the Wash King Laundry site.
V00E18302-2	$16,779	$0	5-18-2010	Provides additional funding for Management Assistance activities at federal lead sites.

CA #	FEDERAL AMOUNT	STATE MATCH	DATE	SITE/PROJECT
V00584403-1	$100,000	$0	5-24-2010	Provides additional funding for Superfund pre-remedial activities.
V99588402-1	$600,000	$0	6-21-2010	Provides additional funding for design activities at the Spartan Chemical site.
30181AJ275	$47,000	$0	8-18-2010	Provides funding for management assistance activities at the Grassy Island site.
RP96507704-0	$1,068,350	$0	9-8-2010	Provides funding to continue Brownfield section 128(a) activities.
TOTAL	**$2,955,436**	**$56,400**		

MICHIGAN SITES ADDED TO THE NPL IN FY 2010
(Alphabetically by County)

COUNTY	SITE NAME	DATE ADDED
Gratiot	Gratiot County Golf Course	March 4, 2010
Macomb	Ten-Mile Drain	September 29, 2010

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
Marquette	Cliffs/Dow Dump	November 17, 2000
Mason	Mason County Landfill	September 9, 1999
Monroe	Novaco Ind.	July 14, 1998
Muskegon	Whitehall Municipal Wells	February 11, 1991
Oakland	Cemetery Dump	April 19, 1995
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

SUPERFUND

SITE

SUMMARIES

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Rockwell International Corp.
One Glass Street
Allegan , MI

County: Allegan
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 1B
State Site ID#: 03000030
State Site Score: 48

LOCATION
The Rockwell International Corporation site encompasses approximately 30.4 acres at One Glass Street, Allegan, Michigan. It is bound by the Kalamazoo River to the north, by residential areas and an elementary school on North Street to the south, River Street to the east, and the city of Allegan waste water treatment plant (WWTP) to the west.

SITE HISTORY
Operations at the Old Rockwell Site began in 1901 with the manufacture of glass. In 1916, the facilities at the site were sold and thereafter operated for the machining and assembly of automotive drive-line parts until 1992. Since then, the buildings have been leased for various purposes ranging from tire recycling and composting businesses to a paint shop. The manufacturing process at the site generated two types of waste streams, contact and quenching fluids. In general, these waste streams contained lubricants, emulsifiers, oxidation inhibitors, cleaning compounds, treatment compounds, metal filings, and metal salts. Several oil spills to the Kalamazoo River have been historically documented. The Old Rockwell Building has been declared hazardous and much of the building was demolished in 2005.

Several environmental investigations have been implemented at the site. The site is currently on the National Priorities List due to contamination issues related to lagoons on the northern portion of the property. Contaminants of concern include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyl (PCBs), dioxins, and various other metals.

Under a 1988 Administrative Order by Consent (Order), the responsible party 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 liable party in 1998. A Record of Decision (ROD) completed in July 1995 separated the "Landfill Contents Operable Unit" from the rest of the site. The landfill operational unit was declared to present no threat to human health and the environment as long as it was restricted to industrial use and the "no action" remedy was selected. This allowed the city of Allegan WWTP to expand onto 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]). A removal action was undertaken by the liable party, Arvin-Meritor at a residential property located south of North Street, and overseen by the EPA. The area in which the removal action 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 requires 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 value s to be left in place. A 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 institutional controls 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 requiring them to initiate and complete the cleanup identified in the September 2002 ROD. Arvin-Meritor is currently complying with the Unilateral Administrative Order.

Arvin-Meritor has continued to comply with the EPA's Unilateral Administrative Order and in 2005 began implementing the approved remedial action. In 2005 and 2006, Arvin-Meritor demolished all of the former manufacturing buildings that were located on the tax reverted portion of the site. However, large portions of the foundations and flooring, remain in place. The buildings, including the WWTP and the main manufacturing facility, were demolished in order for Arvin-Meritor to remove most of the contaminated soil. Upon completion of the excavation and removal activities, the site was regraded and seeded in late 2006. In the fall of 2007 Arvin-Meritor submitted a workplan meant to determine whether or not the installation of a funnel and gate system was necessary. The EPA and the MDEQ provided comments on the workplan. 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.

SITE STATUS

The city of Allegan continues to propose redevelopment options for the property. Various commercial, industrial, and recreational uses that have been suggested include use as a county complex, additional fair grounds' parking, a soccer and/or football field and/or an indoor tennis/racquetball facility. The MDEQ is currently trying to assist the city of Allegan in it's redevelopment of the property.

In 2008, non-aqueous phase liquids (NAPL) were observed in multiple monitoring wells across the site. In addition PCBs and mercury were detected in wells installed to monitor compliance with groundwater/surface water interface regulations. The EPA requested that Arvin-Meritor re-evaluate the extent of NAPL present across the site. Reviews were performed and comments were provided on numerous revised drafts of the workplan in 2009 and 2010. The NAPL removal action started in October 2010 and was expected to take three weeks. The NAPL was much farther reaching than the delineation report outlined; the removal action ran into January 2011.

The agencies are working to develop and implement the interim monitoring plan for the design of the slurry wall. The parameter list has been completed and the plans for a monitoring well network are nearly complete and ready for installation.

ENFORCEMENT STATUS

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

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

SPECIAL CONSIDERATIONS

This property is surrounded by residential areas, a wastewater treatment plant, and the

Kalamazoo River. There is a NAPL on the water table at this site that is currently being evaluated in follow-up work. The site is adjacent to the Kalamazoo River which flows past nature preserves, a great blue heron rookery, and a bald eagle nest, all within approximately 20 miles downstream.

OPERABLE UNITS

00	Entire Site
01	Landfill Contents

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/2002**

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 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 institutional controls such as water well restrictions to be put in place. The ROD does not address impacts to the Kalamazoo River.

Response Accomplishments: Cancelled

Interim Response Funding may be necessary for building demolition and site redevelopment activities upon completion of the RA by the PRP.

Start Date: Primary Cost: $0 Source:

End Date: Secondary Cost: $0 Source:

Response Accomplishments: Completed

Remedial Investigation 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, the MDEQ/Environmental Response Division also performed an exacerbation assessment in order to aid in the development of the facility and to further assess the facilty.

Start Date: 07/22/1987 Primary Cost: $900,000 Source: State

End Date: 07/01/2002 Secondary Cost: $800,000 Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

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

Start Date: 09/03/2001	Primary Cost:	$1,350,000	Source: Private
End Date: 05/01/2003	Secondary Cost:	$50,000	Source: Federal

Remedial Design

Start Date: 12/02/2002	Primary Cost:	$1,500,000	Source: Private
End Date: 06/01/2005	Secondary Cost:	$50,000	Source: Federal

5 Year Review

The first Five-Year Review was completed in 2010.
NAPL remains at site. The remedy from the ROD called for removal of the NAPL and it is scheduled to be removed in summer/fall of 2010.

Start Date: 08/11/2009	Primary Cost:	$0	Source: Federal
End Date: 05/05/2010	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Action

The need for a funnel and gate system is being evaluated through additional monitoring in 2008, 2009, and 2010. The NAPL removal was not successful; the NAPL came back into areas that were previously excavated. Also, VOCs were removed from the sampling parameters list; that information is necessary to evaluate the need for the implementation of the groundwater remedy.
The PRP group undertook a NAPL removal action in October 2010 that was expected to take three weeks. The NAPL was much farther reaching than the delineation report outlined; the removal action ran into January 2011.
The agencies are working to develop and implement the interim monitoring plan for the design of the slurry wall. The paramter list has been completed and the monitoring well network is nearly ready for installation.

Start Date: 06/01/2005	Primary Cost:	$12,000,000	Source: Private
End Date: 10/31/2011	Secondary Cost:	$193,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance Costs for Operation and Maintenance are estimated for a per year cost.

Start Date: 01/01/2007 Primary Cost: $200,000 Source: Private

End Date: 06/01/2033 Secondary Cost: $10,000 Source: Federal

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is due in 2015.

Start Date: 10/01/2014 Primary Cost: $0 Source:

End Date: 09/30/2015 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Landfill Contents

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 07/11/1995**

The landfill contents operable unit was formerly a city dump area. The area is now serving as expansion space for the city of Allegan publicly owned treatment works (POTW).

Response Accomplishments: Ongoing

Operation and Maintenance The city of Allegan WWTP purchased, fenced, and paved or landscaped the property to prevent direct contact hazards.
The city of Allegan was aware of the contaminants of concern on the property at the time of the ROD. The city has utilized the parcel for a Publicly Owed Treatment Works expansion and has agreed to keep the area covered (vegetated or paved) and fenced to eliminate direct contact hazards.

Start Date: 07/11/1995 Primary Cost: $40,000 Source: Private

End Date: 07/11/2025 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$38,765	$0	$2,809	$38,765	$21,331

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,000	$0	$0	$30,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,338	$0	$0	$40,338	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$6,184	$0	$0	$6,184	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,073	$0	$0	$20,073	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,335	$0	$0	$2,333	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$100,000	$0	$0	$76,667	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$45,000	$0	$0	$44,991	$0
Totals:	$282,695	$0	$2,809	$259,351	$21,331

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Tar Lake
U.S. 131
Mancelona , MI

County: Antrim
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: 71
State Site ID#: 05000012
State Site Score: 36

LOCATION

Tar Lake is located east of Highway 131 and south of Elder Road in Mancelona Township, Antrim County, Michigan. The site covers approximately 200 acres and consists of ruins from various iron manufacturing company activities dating back to 1882.

The former "Tar Lake" has been removed but two other surface water bodies exist on the facility: Nelson Lake is northeast of the former "Tar Lake," and Peckham Lake is located directly east of the former "Tar Lake."

SITE HISTORY

The Tar Lake Superfund Site is a 200-acre parcel of land located in Mancelona Township, Antrim County, Michigan. It is a former iron manufacturing facility that operated between 1882 and 1945. Tar Lake was placed on the National Priorities List (NPL) September 1983. The site consists of two operable units. The first operable unit included contamination in a four-acre depression (hence the name Tar Lake) through a removal action. The second operable unit included the remaining contamination present in the 200-acre former iron manufacturing facility, including the contaminated rind and groundwater beneath the first operable unit.

The iron works operated by burning hardwood charcoal to manufacture iron ingot. The plant had a lumber mill and kilns for the manufacture of hardwood charcoal. The charcoal process was improved by replacing the kilns with sealed retorts. The sealed retorts produced a crude pyroligneous liquor as a by-product that, starting in 1910, was further processed into calcium acetate, methanol, acetone, creosote oil, and wood tar. This secondary charcoal manufacturing process produced a tar waste, similar to coal gasification still bottoms, which was discharged into a depression located on the property. The tar contains phenols, heavy metals, and volatile organic compounds. Direct contact with the tar has caused burns to exposed skin. In 1949 phenolic compounds attributable to the site were detected in the groundwater up to three miles from the site. The tar waste odors were strong during hot months.

There were several domestic wells contaminated with low level phenolic compounds and high levels of dissolved iron and manganese. The groundwater tastes and smells "chemical"; however, phenolic chemical levels are below health-based standards. Several domestic wells have been abandoned. Large portions of the local aquifer encompassing an area approximately 1/2 mile wide by at least 4-1/2 miles long are unusable, due to the taste and odor problem. Due to the poor aesthetic quality of the groundwater emanating from the site, the DNRE authorized the replacement of private wells with a municipal water supply extended from an expansion of the Mancelona municipal system. Water was supplied to residents in the path of the Tar Lake plume and the neighboring "Dura plume" (a trichloroethylene plume) as part of a comprehensive $6,000,000 water system expansion funded by the state. A local water and sewer authority has been established to administer the operation and maintenance (O & M) of the system. The water supply system is currently in operation and the final state-funded connections to the system were completed in 2005.

The potentially responsible parties (PRPs) voluntarily installed a fence around the Tar Lake waste. The EPA negotiated an order with one of the PRPs, Fifty-Sixth Century Antrim Iron Company, a subsidiary of Gulf & Western Manufacturing Company (part of Viacom), to fund the Remedial Investigation/Feasibility Study (RI/FS) at Tar Lake. Work started on the RI/FS in the spring of 1986.

In the fall of 1988, the DNRE requested removal or treatment of tar waste and the resumption of groundwater investigations. In February 1989 the EPA requested that the PRPs submit plans for removal of tar wastes, and complete the RI. During quarters one and two of fiscal year 1989-1990, the PRPs installed monitoring wells in and through Tar Lake and collected samples to characterize the extent of contamination in the groundwater. The resultant data indicate several of the compounds detected exceed the maximum contaminant levels established by the Safe Drinking Water Act, 1976 PA 399, as amended.

A Record of Decision (ROD) was issued in September 1992 by the EPA before completion of the RI. The selected remedy consisted of a predesign study, excavation, and consolidation of the Tar Lake tar and contaminated soils, and solidification and containment of the material in on-site Resource Conservation and Recovery Act (RCRA), 1976 PA 94-580, as amended, cells. To prevent exacerbation of the contaminant plume, the groundwater was to be addressed by an interim extraction and treatment system. The Administrative Order by Consent requiring the PRPs to implement the ROD was signed on March 9, 1993.

The first draft of the predesign work plan was submitted by the PRPs on July 7, 1993. The final plan was approved in September 1993. The fieldwork consisted of installing large diameter purge wells, conducting a pump test on the aquifer, collecting soil samples beneath Tar Lake itself, and fully defining the volume and chemical characteristics of the tar. The predesign work plan report was submitted by the PRPs in September 1994 and revised in January 1995. It recommended alternative strategies to treat the tar and groundwater to those proposed in the ROD. The PRPs recommended the tar be used as fuel or recycled as building materials. The PRPs also preferred air sparging to treat the groundwater instead of the pump and treat technology specified in the ROD. The PRPs never implemented the Remedial Action (RA).

An Explanation of Significant Difference (ESD) to the ROD was completed in 1998. The EPA began an emergency removal action of the Tar Lake tar deposits in September 1998 and completed the operation in the spring of 1999. The DNRE installed and is currently operating a biosparging system to treat the uppermost portion of the groundwater aquifer affected by the former "Tar Lake." Groundwater monitoring using the wells that comprise the O & M system is conducted semiannually. The second ROD for the remainder of the site was signed on February 25, 2002. In 2004, the EPA removed the contaminated soil "rind" from the site and disposed of it at a landfill in Frederic, Michigan. During the installation of the water main along the road adjacent to the site, additional tar was found associated with the historical underground waste transmission system of the Antrim Iron Works operation.

A Five-Year Review was completed on June 12, 2009. The review found that RAs in the former "Tar Lake" area of the site (tar and soil removal, biosparge groundwater treatment system) are protective in the short term. Required Institutional Controls are necessary for the site to be protective in the long term. Additional information and actions are needed to assure long-term protectiveness and are identified in the review.

An ESD was executed by the EPA on September 14, 2009. The ESD documents a change in the Institutional Control component of the groundwater remedy the EPA selected for Tar Lake. The DNRE was provided an opportunity to comment and concurred with the ESD.

The agencies have been working with the Mancelona community to return the Tar Lake site to economic use. Part of a proposed energy project is located on the 45-acre east tailings

area, which was deleted from t he NPL in 2005. The remaining portion of the energy project is located south of the east tailings area, and this area is currently being considered for partial deletion from the NPL as well, contingent upon appropriate Institutional Controls being in place.

SITE STATUS

Cost documentation for the 10 percent required state match is being assembled; then, negotiations to complete the draft site specific contract with the EPA will resume. It is then expected that the EPA will provide funding sufficient to backfill costs incurred since the previous grant expired in the fall of 2009; however, if the EPA does not fund all or part of the deficit, the Remediation Division will need to cover those costs with state funds.

The site is comprised of several parcels of property. Two of those parcels are being proposed for deletion from the NPL, similar to the East Tailings Area, which was deleted from the NPL is 2005. The deletion documents are currently in draft form and are being reviewed by both the EPA and the state.

Several potential source areas and/or areas of contamination remain. The ten-year long-term response action period ends in February 2012. The additional areas for which a work plan is now being developed by contractors of the EPA include residual and/or undetermined extent of tar (or “rind”) in the former "Tar Lake" area, the smoke tunnels near Elder Road, former municipal landfill, and former orchard. The MDEQ is reviewing partial work plans intended to address these areas. It is anticipated that some level of investigation will be implemented in the spring of 2011. The EPA-funded portion of the long-term RA (until February 2012) for the site consists of the O & M of the biosparge system, along with continued groundwater monitoring for those wells installed to monitor impact from the former "Tar Lake."

ENFORCEMENT STATUS

Prior to 1999, property owners (Viacom) had been identified as liable parties (PRPs) and were liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 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 was unsuccessful in negotiating 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) use the fenced portion of the facility as a community recreational area and plans to develop the uncontaminated portion of the properties for housing developments.

During the spring of 2003 the EPA re-entered into cost recovery negotiations with Viacom. The EPA was unsuccessful in having Viacom voluntarily reimburse either federal or state expenditures or in getting Viacom to commit to undertake the RA.

SPECIAL CONSIDERATIONS

Additional tar, adjacent to Elder Road, was discovered during the municipal water system installation. The MDEQ conducted an emergency removal of much of the contaminated soil so that the water main installation could be completed. A MDEQ investigation in 2003 delineated the extent of that tar-contaminated soil and found that it extended from on-site, to the north side of Elder Road. The EPA had committed to removing this tar as part of the RA for the site, but this was not accomplished due to a funding shortfall. The MDEQ refined its delineation of the off-site soil contamination problem during February 2004. In addition, in

February 2004 the MDEQ collected and analyzed cores of lake sediments from Nelson Lake to determine if mercury or other metal contamination existed in these sediments that could cause long-term ecological problems. The results of these analyses indicated that metals did not exist in these sediments above levels of concern.

Additional fish, water, and sediment samples were collected from Peckam Lake in June 2008 and 2009. It also appears that the decrease in water table elevations in the area has resulted in some of the points in the biosparge line being above the water table now. At least one downgradient monitoring well has revealed elevated contaminants that have escaped the zone of influence of the sparge line. Additional work will be needed to install additional sparge points to address this concern. An additional segment of sparge line, along with two or three monitoring wells will be also installed across the road in a recently discovered area of contamination.

OPERABLE UNITS

00	Entire Site
01	Tar Removal
02	Soil and Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Cancelled

Remedial Design Details are not available.

Start Date: 07/01/1993 Primary Cost: $300,000 Source: Federal

End Date: 01/01/1995 Secondary Cost: $0 Source:

Response Accomplishments: Completed

Remedial Investigation 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.

Start Date: 06/02/1999 Primary Cost: $1,300,000 Source: Federal

End Date: 06/18/1999 Secondary Cost: $0 Source:

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

Start Date: 11/06/2000 Primary Cost: $60,000 Source: State

End Date: 11/01/2002 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Alternate Water Clean Michigan Initiative funds and Drinking Water and Radiological Protection Division funds financed this 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.

Start Date: 11/01/2001 Primary Cost: $6,750,000 Source: State

End Date: 09/30/2005 Secondary Cost: $0 Source:

5 Year Review First Five-Year Review 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 Institutional Controls 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.

Start Date: 09/21/2008 Primary Cost: $0 Source: Federal

End Date: 06/12/2009 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Tar Removal

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1992**

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 RCRA 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 06/12/1998**

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.

OPERABLE UNIT 01: Tar Removal

Response Accomplishments: Completed

Emergency

The tar was removed as part of an EPA emergency removal action. 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.

Start Date: 09/07/1998	Primary Cost:	$6,300,000	Source: Federal
End Date: 11/06/2000	Secondary Cost:	$3,500,000	Source: Private

OPERABLE UNIT 02: Soil and Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 02/25/2002**

The RA chosen for the site is be 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 09/27/2004**

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 09/14/2009**

The ESD documents a change in the institutional control component of the groundwater remedy the EPA selected for Tar Lake.

Response Accomplishments: Cancelled

Remedial Design

Start Date: 08/01/2003	Primary Cost:	$230,000	Source: Federal
End Date: 09/30/2004	Secondary Cost:	$0	Source:

Response Accomplishments: Completed

Interim Response

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

Start Date: 07/01/1985	Primary Cost:	$18,900	Source: Private
End Date: 07/31/1985	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Soil and Groundwater

Response Accomplishments: Completed

Interim Response

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.

Start Date: 11/15/1998	Primary Cost:	$263,000	Source: State
End Date: 03/01/2006	Secondary Cost:	$0	Source: <None>

Response Accomplishments: Construction Complete

Remedial Action

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.

Start Date: 06/01/2004	Primary Cost:	$1,200,000	Source: Federal
End Date: 09/15/2004	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Investigation

The PRPs had been performing the investigation. The PRP-led RI/FS was never completed. The Tar Lake depression (also known as OU-1) represents about 14 acres of the 234-acre facility. OU-2 is treating contaminated groundwater that originates at the Tar Lake depression, as well as addressing other areas of known or potential soil and groundwater contamination. The EPA secured CH2MHill to complete the RI/FS. Additional investigation is planned for those other areas beginning in April 2011. The additional areas include, but may not be limited to the former municipal landfill, with suspected deposits of tar; the smoke-tunnels near Elder Road; and, the former orchard on the residential property in the northeast corner of the site.

Start Date: 07/01/1986	Primary Cost:	$900,000	Source: Private
End Date: 10/01/2014	Secondary Cost:	$0	Source:

Long Term Remedial Action

Long-term RA includes operation of the biosparge system and long-term groundwater monitoring. The EPA-funded portion of the long-term remedial action for the site will consist of continued operation of the biosparging system and periodic groundwater monitoring. The MDEQ will continue groundwater monitoring.

Start Date: 03/01/2006	Primary Cost:	$200,000	Source: Federal
End Date: 04/12/2012	Secondary Cost:	$40,000	Source: State

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V965858-01-0 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Operation and Maintenance	$249,295	$0	$0	$293,180	$73,385
Totals:	$249,295	$0	$0	$293,180	$73,385

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$41,500	$0	$0	$40,304	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$26,535	$0	$0	$26,236	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,212	$0	$0	$8,212	$0

Cooperative Agreement Number V995259-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$4,933	$0	$0	$4,933	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$14,456	$0	$0	$14,456	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$35,000	$0	$0	$24,703	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$30,000	$0	$0	$28,068	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$40,000	$4,000	$0	$39,718	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$20,101	$0	$0	$19,445	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$40,000	$0	$0	$39,909	$0
Totals:	$260,737	$4,000	$0	$245,983	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Aircraft Components
671 North Shore Drive
Benton Harbor , MI

County: Berrien
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 0W
State Site ID#: 11000320
State Site Score: 41

LOCATION
The Aircraft Components site (a.k.a. D & L Sales, Benton Harbor Warehouse) covers 17 acres 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 a residential area to the west, and another residential area to the north.

SITE HISTORY
With the end of World War II, 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. Aircraft Components operated a mail order catalog business selling army surplus supplies and equipment. The radioactive gauges purchased from the Air Force were stored in a warehouse on the site. Although the bulk of the aircraft components were later sold to an aircraft parts dealer who moved them to Belding, Michigan, there still remained thousands of gauges with dials containing radio-luminescent paint on the Aircraft Components 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-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 radiological contamination was associated with the warehouse buildings along with a small area of surface soils. A Record of Decision (ROD) for the radiation operable unit 1 was signed in September 2000. The Remedial Design (RD) was completed in 2001. The Remedial Action (RA) for OU1, radiation contamination, was initiated in November 2002 by the EPA. The state and the EPA have entered into Superfund State Contracts to provide the required state match to the EPA for the RA for both operable unit 1 and 2. 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 volatile organic compounds (VOCs) [vinyl chloride, cis-1,2-dichloroethene, trichloroethylene (TCE), and tetrachloroethylene (PCE)]; semi-volatile organic compound (SVOC) [benzo[a]pyrene] and inorganics (aluminum, iron, and mercury as well as numerous other metals) in the various media (soil, sediments, groundwater, and surface water) at the site. To determine the full extent of this

problem, a Phase III RI/FS for operable unit 2 chemical contamination was initiated in 2001. The final RI was submitted in May 2002 with the FS completed in June 2002. In July 2002, a public meeting was held to present the proposed plan for the chemical contamination. The ROD for operable unit 2 was signed by the EPA in September 2002 and the state conditionally concurred. The EPA initiated Treatability Study activities in Summer 2003 with the final round of sampling conducted in January 2004.

The MDEQ reviewed the RD and bid documents prepared by the EPA's contractor in Fall 2003, for the clean up of operable unit 2 chemical contamination. The on-site pre-bid meeting for completing the soil excavation activities portion of the RA at the site was conducted in December 2003 and excavation activities were completed by August 2004. The final draft of the Treatability Study Report was completed in Spring 2004. The groundwater work began with the mobilization of the contractor to the site in June 2004 with the injection of Hydrogen Releasing Compound completed by mid-August. Quarterly groundwater sampling was conducted through April 2007 to evaluate the effectiveness of the selected groundwater remedy.

In May 2007, the Harbor Shores redevelopment project was initiated. The development encompasses 530 acres that spans parts of Benton Harbor, St. Joseph, and Benton Township. The new development would include new homes, space for new businesses, a hotel/conference center, a Jack Nicholas Signature golf course, 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 was completed in late fall of 2007. Two follow up Hydrogen Releasing Compound injections into the contamination source area were completed in November 2007 and March 2008. Replacement and repair of all monitoring wells damaged during the grading was completed in spring of 2008. The quarterly groundwater sampling resumed in the summer of 2008 once all of the monitoring wells were either replaced or re-installed.

The EPA wrote the Five-Year Review which was signed on August 11, 2008. The Five-Year Review concluded for operable unit 1, that the remedy was protective in both the short and long term. For operable unit 2, in the short term, the remedy continued to be protective of the 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 institutional controls are implemented, maintained, and monitored.

Both the EPA and the MDEQ reviewed and approved the Residential Use Demonstration Work Plan submitted by Harbor Shores in May 2009. Soil and methane gas sampling under this work plan was completed in August and November 2009. Review of the investigation results was completed in early 2010.

SITE STATUS

Quarterly groundwater sampling under the Long-Term Remedial Action resumed at the site in June 2008 and will continue for an indefinite time.

Both the EPA and the MDEQ review of the Residential Use Demonstration investigation report determined that two hot spots of elevated contamination were located in the site soil. In May 2010, Harbor Shores excavated only one of the two hot spot areas and added clean soil.

With Harbor Shores moving forward with plans for residential redevelopment of the western half of the site, the EPA developed an Explanation of Significant Differences (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 institutional controls 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.

ENFORCEMENT STATUS
The former property owner, D & L Sales, is considered non-viable in regard 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 have 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 is negotiating a new Consent Decree (Decree), Scope of Work and Institutional Controls to allow for the redevelopment of the site. Under the new Decree and Scope of Work, Harbor Shores Development has 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 the MDEQ 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.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
1	Radiation Contamination
2	Chemical Contamination

OPERABLE UNIT 1 : Radiation Contamination

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/15/2000**

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.

OPERABLE UNIT 1 : Radiation Contamination

Response Accomplishments: Completed

Interim Response The removal addressed the bulk of the radiation contamination. The aircraft dials and gauges were shredded and put into drums and taken off-site for appropriate disposal out of state.

Start Date: *09/16/1996*	Primary Cost:	$6,169,000	Source: Federal
End Date: *09/28/2000*	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: *06/28/1998*	Primary Cost:	$339,000	Source: Federal
End Date: *09/25/2002*	Secondary Cost:	$0	Source:

Remedial Design

Start Date: *11/21/2000*	Primary Cost:	$10,000	Source: Federal
End Date: *07/29/2002*	Secondary Cost:	$0	Source:

Remedial Action 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 the MDEQ.

Start Date: *11/04/2002*	Primary Cost:	$2,089,800	Source: Federal
End Date: *07/31/2003*	Secondary Cost:	$232,200	Source: State

OPERABLE UNIT 2 : Chemical Contamination

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/25/2002**

State provided conditional concurrence.

OPERABLE UNIT 2 : Chemical Contamination

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/30/2010**

With Harbor Shores moving forward with plans for residential redevelopment of the western half of the site, the EPA developed an Explanation of Significant Differences (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 RUD 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 institutional controls to ensure adequate protection of future residential development; and, determination of the need for additional injections of HRC to remediate the remaining groundwater contamination plume.

Response Accomplishments: Completed

Remedial Investigation Remedial Investigation dollars for Operable Unit 1 and 2 are combined and were not tracked separately.

Start Date: 02/01/2001	Primary Cost:	$0	Source: Federal
End Date: 06/28/2002	Secondary Cost:	$0	Source:

Remedial Design The EPA submitted the initial RD document addressing both soil and groundwater remedial actions in July 2003. The MDEQ 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 and the on-site pre bid meeting was conducted by the EPA in December 2003. The groundwater RD was completed in June 2004 following the completion of the groundwater Treatability Study Report in the Spring of 2004. The EPA WASTELAN Report does not identify funding for this activity.

Start Date: 09/26/2002	Primary Cost:	$0	Source: Federal
End Date: 03/17/2004	Secondary Cost:	$0	Source: Federal

OPERABLE UNIT 2 : Chemical Contamination

Response Accomplishments: Completed

5 Year Review The EPA wrote the Five-Year Review which was signed on August 11, 2008. The Five-Year Review concluded for operable unit 1, that the remedy was protective in both the short and long term. For operable unit 2, in the short term the remedy continued to be protective of the 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 need to be implemented. Long term protectiveness will occur after institutional controls are implemented, maintained, and monitored.

Start Date: 12/01/2007	Primary Cost:	$0	Source: Federal
End Date: 07/11/2008	Secondary Cost:	$0	Source:

Remedial Investigation Both the EPA and the MDEQ reviewed and approved the Residential Use Demonstration Work Plan submitted by Harbor Shores in May 2009. Soil and methane gas sampling under this work plan was completed in August and November 2009. Review of the investigation results was completed in 2010.

Start Date: 08/01/2009	Primary Cost:	$0	Source: Private
End Date: 08/01/2010	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Action The developer, through agreement with the EPA, is continuing to remediate the groundwater at the site. The regular monitoring of groundwater at the site has been conducted since 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 Hole 14 of the new golf course and to conduct two hydrogen releasing compound injections (November 2007 and March 2008). When all of the monitoring wells were replaced or re-installed from the redevelopment activities, quarterly groundwater sampling resumed, in June 2008.

Start Date: 08/30/2003	Primary Cost:	$0	Source:
End Date: 09/30/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is due on July 11, 2013.

Start Date: 12/01/2012	Primary Cost:	$0	Source: Federal
End Date: 07/11/2013	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$10,481	$0	$7,778	$10,481	$7,778

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$21,400	$0	$0	$21,400	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$57,883	$0	$0	$57,883	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,434	$0	$0	$12,434	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$27,778	$2,778	$0	$27,547	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$10,000	$0	$0	$0	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$55,000	$0	$0	$54,980	$0
Totals:	$194,977	$2,778	$7,778	$184,725	$7,778

STATE SUPERFUND CONTRACTS

For Operable Unit 1 : Radiation Contamination : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$2,322,000	$232,200	$232,200	$0

For Operable Unit 2 : Chemical Contamination : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$3,500,000	$350,000	$315,283	$0
Totals:	$5,822,000	$582,200	$547,483	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Bendix Corp./Allied Automotive
3737 Red Arrow Highway
St. Joseph , MI

County: Berrien
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: AS
State Site ID#: 11000005
State Site Score: 26

LOCATION
The Bendix Corp./Allied Automotive Superfund site (Bendix site) is located at 3737 Red Arrow Highway, Lincoln Township, Berrien County, Michigan, approximately four 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 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 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.

SITE 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.

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 a Michigan Department of Environmental Quality (MDEQ) approved clay cap.

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, 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 leve ls 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, the MDEQ concurred with the remedy selected by the EPA. The preferred remedy for the western groundwater plume venting into Lake Michigan was monitored natural attenuation. The remedy chosen for the eastern plume venting into Hickory Creek was monitored natural attenuation 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 using cone penetrometry and direct-push technologies. During this investigation, groundwater was collected and analyzed using vertical aquifer sampling techniques from many of the locations proposed for compliance monitoring. In 1999 the EPA and Bosch negotiated and agreed to a Statement of Work and Consent Decree for the construction and operation of a SVE system for the eastern plume source area and compliance monitoring wells in the eastern and western plumes. Just prior to the installation of the point of compliance wells along the Lake Michigan bluff, the MDEQ performed vertical aquifer sampling to assist in the proper placement of key point of compliance wells, work that the potentially responsible parties (PRPs) were unwilling to do.

During mid-1999 and early 2000, the MDEQ initiated an investigation to determine the zone of discharge of the two groundwater plumes to the open water sources. This study was successful, and for the western plume, 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. VOCs were also found in the discharge area of the eastern plume, but concentrations were below acute mixing-zone based GSI values. Discussions regarding the human health and ecological consequences of these discharges are continuing. The MDEQ has performed seven investigations in the area of the western plume discharge to delineate this discharge and study its behavior over time. Each sampling event confirmed that the plume discharge area is fairly stable with contaminant concentrations greater than chronic and acute mixing-zone based GSI criteria. 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. This is 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 MDEQ. Their findings confirmed the work conducted by MDEQ 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. The MDEQ performed additional sampling in Lake Michigan during the winter of 2002/03 to further define the area(s) of contaminant discharge.

The Bendix site is an active manufacturing facility owned by Bosch. The last of twelve baseline rounds of quarterly sampling in the point of compliance wells was conducted during December 2003. The data from the point of compliance (POC) 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 POC 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 POC 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 POC wells. Recent data indicates 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, the MDEQ 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. This apparent plume movement helps explain the decreasing trend in the VOC concentration seen in the compliance monitoring wells during 2002/03. VOCs have been found in previously unimpacted monitoring wells near the Bosch plant, suggesting that the source area may not be stable. A resampling of many of the 2003 pore water sampling locations in Lake Michigan in 2004 indicated that the plume discharge in 2004 was in a similar location to that observed in 2003. Additional pore water sampling in 2004 and 2005 demonstrated higher concentrations than had been previously observed. The pore water sampling that was conducted in 2005 indicated that the footprint of the plume discharge had decreased slightly in area and magnitude, but the "core" of the plume discharge remains highly concentrated.

The EPA completed its first five year review evaluation of the site in 2004. The conclusions of that review are:
1) Plume boundaries need to be re-established. Current institutional controls/restrictions need to be reviewed to insure that institutional controls/deed restrictions apply to all property with access to the contaminated groundwater.
2) Quarterly monitoring/reporting must be continued until further notice. Lake water sampling must be added to the sampling program.
3) Replacement wells need to be installed at all locations that do not permit Low Flow sampling procedures to be practiced.
4) A better understanding of the VOC plume path and discharge of VOCs to Lake Michigan is necessary. This will necessitate additional vertical aquifer sampling and installation of multi level groundwater micro samplers along the beach area between point of compliance well 2 and point of compliance well 4, and additional sampling of Lake Water. Tracer studies should be considered to identify plume movement.
5) All historical and current site data needs to be consolidated and used to better identify the location of the west plume TCE source, in the event additional remedial activity is warranted for the source area.
6) The PRPs need to prepare a report that identifies the specifics of alternate treatments/enhancements to monitored natural attenuation, including cost estimates and a time line schedule, should they be required. At a minimum two enhancements should be considered A) injection of specific TCE destroying microbes near the TCE source area, and B) chemical release into the plume to enhance conversion of vinyl chloride to ethane/ethene, without upsetting the "natural" biogeochemical process now operating. The work plan should also suggest pilot studies for these or other alternates. Additional recommendations from the PRPs are encouraged.
7) Alternate concentration limits or GSI values must be selected for both the east and west plumes.

These 5-Year Review conclusions are supported by the MDEQ Remediation and

Redevelopment Division with the exception of item # 7. The MDEQ commented to the EPA on this final item, in that the GSI mixing-zone based criteria have already been calculated for the site.

In conjunction with the 2004 5-year review conclusions, the PRPs 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 PRPs were able to install the monitoring wells across the plume core as recommended in the 2004 5-year review.

A notice was incorporated into a newsletter prepared by the Churchill Farms Homeowners Association for distribution to the residents advising them of the existence and location of the plume discharge area 20 feet off-shore of their beach. It further recommended that they avoid this area. Risk calculations performed by Bosch concluded that there is negligible calculable risk to human receptors associated with the plume discharge; however, contaminants in the groundwater and sediment pore water continue to exceed MDEQ acute and chronic GSI criteria developed to be protective of human and ecological receptors in the lake. 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. The MDCH and the MDEQ have discussed the potential for signs to be posted at the beach to discourage potential exposure to the discharge.

Due to on-going exceedances of criteria in the point of compliance wells, the PRPs have been directed by the EPA to implement contingent remedial measures. The PRPs submitted a workplan to install three extraction wells and two additional monitoring well clusters to be used to effect a "mass reduction" in the source area. They have proposed this extraction without the monitoring necessary to determine its effectiveness, and without the GSI monitoring mandated by state regulations. The MDEQ is working towards augmenting the minimal monitoring system with a more robust monitoring array in the plume core that will be capable of determining the effectiveness of the PRPs proposed remedial effort.

The MDEQ has requested voluntary access from the Churchill Farms governing board to install GSI monitoring wells and potentially, in-situ remedy wells. This was met with opposition from the governing board. The MDEQ instead requested and received voluntary access from Shoreham Village to install monotoring wells within the roadway of Churhill Farms which is owned by the Village . In addition, the MDEQ is currently negotiating access to install near-source monitoring wells along Red Arrow Highway.

In February 2009, the EPA issued an Explanation of Significant Difference 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 Five-Year Review report for the site in 2009. The only recommendation from this review was for Bosch to implement their contingent remedial action. The MDEQ provided extensive comments to this Review, most of which were not incorporated into the report by the EPA. The MDEQ's concerns were further expressed to the EPA Region 5 Administrator in correspondance from the MDEQ Director. Despite our appeals, the EPA has failed to adequately address these concerns.

SITE STATUS

In September 2008 the PRPs installed three extraction wells and two monitoring well clusters as had been proposed. The MDEQ has requested that the PRPs install additional

source area monitoring wells to provide an infrastructure capable of monitoring the effects of the PRPs source control efforts. This request was not supported by the EPA and was rejected by the PRPs. Thus, the MDEQ has initiated a state contract to install 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 addition, the MDEQ has begun the process to implement a semi-passive remedial system near the discharge point to reduce contaminant concentrations to below regulatory levels before reaching Lake Michigan. The monitoring well installation should be implemented in 2011. All work in the Churchill Farms community is on hold pending further discussions between the MDEQ and the state representative for Berrien County who interceeded the process on behalf of Churchill Farms residents.

In August 2009, Bosch started operation of its new source area groundwater extraction system. This system extraction well transmission piping became fouled due to the deposition of fine sand material. The extraction wells were more aggressively developed to reduce this problem and the system was put back on-line. 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, we are unable to predict whether the system will be effective or how long it may need to operate. From August 2009 to December 2010, about 400 puonds of contaminants have been removed from the source area.

ENFORCEMENT STATUS

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 remedial action (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.

SPECIAL CONSIDERATIONS

None.

OPERABLE UNITS

00	Entire Site
1	Eastern Plume, SVE, Monitored Natural Attenuation
2	Western Plume, Monitored Natural Attenuation
3	Western Plume, Contingent RA

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1997**

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:* 00 *ESD:* 1 **Effective 02/19/2009**

An Explanation of Significant Differences (ESD) that presents 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 Accomplishments: Completed

Remedial Investigation

Start Date: 02/01/1989	Primary Cost:	$250,000	Source: Private
End Date: 07/31/1997	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 04/14/1999	Primary Cost:	$75,000	Source: Private
End Date: 06/17/1999	Secondary Cost:	$0	Source:

5 Year Review

The EPA, in consultation with the MDEQ, concluded in the 2004 5-year review that monitored natural attenuation 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.

Start Date: 06/01/2004	Primary Cost:	$123,000	Source: Federal
End Date: 09/01/2004	Secondary Cost:	$0	Source:

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Completed

5 Year Review The Five-Year Review found that the remedy is currently protective of human health and the environment in the short term. Long-term protectiveness will depend upon the following: 1) reducing contaminant loading from the source of the western plume to augment the effectiveness of natural attenuation through groundwater extraction and treatment; 2) maintaining and strengthening, if necessary, the ICs that restrict access to potentially contaminated groundwater; 3) implementing additional contingent remedial actions if compliance criteria are exceeded; and 4) monitoring the site until remedial standards are achieved. The state had additional concerns that were not incorporated into the Five-Year Review.

Start Date: *09/09/2008*	Primary Cost:	$0	Source:
End Date: *08/18/2009*	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: *08/18/2013*	Primary Cost:	$0	Source:
End Date: *08/18/2014*	Secondary Cost:	$0	Source:

OPERABLE UNIT 1 : Eastern Plume, SVE, Monitored Natural Attenuation

Response Accomplishments: Construction Complete

Remedial Action SVE and monitored natural attenuation were chosen for remediation of the eastern plume. The SVE was installed near the eastern Bosch loading dock and seems to be effective. Monitored natural attentuation of the groundwater is ongoing.

Start Date: *06/17/1999*	Primary Cost:	$606,000	Source: Private
End Date: *12/13/2000*	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance 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.

Start Date: *12/13/2000*	Primary Cost:	$2,612,000	Source: Private
End Date: *09/30/2050*	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Western Plume, Monitored Natural Attenuation

Response Accomplishments: Construction Complete

Remedial Action The western plume has been allowed to naturally attenuate per the 1997 ROD. Post-construction information about the plume discharge has caused this decision to be modified, and a more active in-situ RA has been initated, but not yet been shown to be effective. Small amounts of contaminant mass have been recovered from the groundwater but the contamination levels eminating from the site are unchanged.

Start Date: 06/17/1999	Primary Cost:	$150,000	Source: Private
End Date: 12/13/2000	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Action Installation of source and GSI monitoring wells with associated monitoring. Installation of injection wells for the introduction of emulsified vegetable oil and bacteria to the plume near the discharge in order to reduce contaminant concentrations by the time the plume discharges to Lake Michigan.

Start Date: 12/06/2007	Primary Cost:	$700,000	Source: State
End Date: 02/01/2028	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Western Plume, Monitored Natural Attenuation

Response Accomplishments: Ongoing

Operation and Maintenance

The intensive baseline study of the monitored natural attenuation at the site for 12 quarters (3 years) is finished, and while this evaluation has been completed, groundwater sampling for monitored natural attenuation will continue indefinitely. At the conclusion of this study the EPA was expected to establish Alternate Concentration Levels (ACL) for the eastern and western plumes, above which the concentrations in the groundwater are not allowed to exceed. As of February 2010, ACLs have yet to be established. During the monitored natural attenuation process, the groundwater will be monitored first quarterly, then semi-annually, and then annually. During the course of the baseline sampling certain monitoring wells became unusable coincident with high VOC concentrations migrating to those wells. Some of those monitoring wells were replaced, based on vertical aquifer sampling, at the same locations. Some key monitoring wells were not replaced over our objections. In addition, four new monitoring well clusters were installed by the PRPs near the Lake Michigan beach at the north edge of the plume. The MDEQ has been discussing the appropriateness of the future use of monitored natural attenuation for this plume as VOCs are continuing to vent to the lake above acute GSI criteria and the plume seems to be expanding at the boundary wells near the source. It is unlikely that the PRPs will be required by the EPA to install a more dense network of monitoring wells near the beach to monitor the core of the plume and that the MDEQ will have to install the necessary monitoring points and equipment.

Start Date: 12/13/2000	Primary Cost:	$800,000	Source: Private
End Date: 12/31/2050	Secondary Cost:	$0	Source:

OPERABLE UNIT 3 : Western Plume, Contingent RA

Response Accomplishments: Construction Complete

Remedial Action

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

Start Date: 09/14/2007	Primary Cost:	$1,250,000	Source: Private
End Date: 09/15/2009	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,204	$0	$2,580	$5,204	$2,580

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$45,367	$0	$0	$45,367	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$42,139	$0	$0	$41,733	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$14,515	$0	$0	$14,514	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$11,868	$0	$0	$11,868	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$5,000	$0	$0	$538	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$140,846	$0	$0	$133,086	$0
Totals:	$264,938	$0	$2,580	$252,309	$2,580

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Electrovoice
600 Cecil Street
Buchanan , MI

County: Berrien
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: E8
State Site ID#: 11000010
State Site Score: 29

LOCATION
The Electrovoice, Inc. site (the site) is an 11.5-acre parcel in Buchanan Township, Berrien County, and 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 two thousand feet from the source of contamination.

SITE HISTORY
Mark IV Dayco Products, Inc., (formerly Electrovoice, Inc.), is the current owner of the property; however, Electrovoice, Inc. assumes responsibility for any site-related remediation. Activities 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. Use of the dry well was discontinued in 1973.

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, and toluene, as well as trichloroethylene, at least two orders of magnitude above cleanup levels in one instance. In September 1983, the site was placed on the National Priorities List.

In 1987, Electrovoice, Inc. entered into an Administrative Order by Consent (Order) 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 decided to divide the site work into two operable units with Operable Unit 1 consisting of on-site soils and the lagoons, and Operable Unit 2 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-site using subsurface volatilization and ventilation system to remediate both the soils and groundwater on 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 subsurface volatilization and ventilation system technology performance on site, the EPA, with state concurrence, issued another ESD to the 1992 ROD, in May 1995. This ESD selected the subsurface volatilization and ventilation system as the remedy for the dry well 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.

Excavation and removal of waste fluids and contaminated soils from the former lagoon area were completed in August 1996. The contaminant concentrations in the on-site groundwater had been below cleanup criteria for eight consecutive quarterly monitoring events. In 2003, review of the cumulative groundwater data from the dry well and on-site lagoons indicated the contaminant concentrations were below the current cleanup criteria and that remediation of the on-site operable unit was complete. The final remedial actions (RA) report for the on-site operable unit was written in 2003 stating remediation was complete. Operation of the subsurface volatilization and ventilation system 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 are 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/mixing zone determination criteria into McCoy Creek. The selected remedy was natural attenuation. The components of this remedy were natural attenuation via stream capture and dilution with some biodegradation, institutional controls, 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 finaled in 2002. The initial groundwater study, which included sampling all of the monitoring wells, was conducted in September 2002. The EPA completed a Five-Year Review report in 2001. The report recommended closure for the on-site soils operable unit, but continued monitoring and development of the groundwater monitoring well network for the off-site groundwater plume.

In 2003, the EPA and the MDEQ agreed to implement a Long Term Remedial Action (LTRA) Plan to replace the RD/RA for the off-site groundwater plume. The LTRA was implemented in October 2004 and 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 remedy should continue, or if the remedy should be altered, or if Operation and Maintenance (O&M) could begin at this site. A draft LTRA was submitted to the EPA and the MDEQ for review and comment in mid 2003. The LTRA was finaled in September 2004 and implementation began in October 2004.

The second Five-Year Review for the Electrovoice, Inc. site was completed in 2006. The report recommended that the current LTRA continue at the site. In addition, 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 and heavy metals, specifically mercury and zinc, had been documented.

SITE STATUS
Monitoring and sampling of the groundwater every six months under the LTRA continued through 2010. The MDEQ continued to review and provide comments on the Annual Groundwater Monitoring Report submittal.

ENFORCEMENT STATUS
Electrovoice, Inc. remains the potentially responsible party for the site and is responsible for cleanup. On October 8, 1987, an Order was agreed to by Electrovoice, Inc. and was signed by the EPA. The Order 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.

SPECIAL CONSIDERATIONS
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 the current time, the facility is unoccupied. The PRP completed negotiations with the EPA to ensure funds will be made available to continue with the RD and long term O&M monitoring requirements as specified in the ROD and in the LTRA.

OPERABLE UNITS

00	Entire Site
01	On-Site Soils/Lagoons
02	Off-Site Groundwater Plume

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The Five-Year Review report was written by the EPA. The MDEQ was responsible for reviewing and providing comments on the report. The report recommended closure of the on-site soils operable unit, but continued monitoring and development of the groundwater monitoring well network for the off-site groundwater plume.

Start Date: 01/01/2001	Primary Cost:	$0	Source: Federal
End Date: 09/28/2001	Secondary Cost:	$0	Source:

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Completed

5 Year Review The second Five-Year Review was written by the EPA. The MDEQ 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.

Start Date: 01/09/2006	Primary Cost:	$0	Source: Federal
End Date: 09/30/2006	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The third Five-Year Review is scheduled to be completed in 2011.

Start Date: 01/01/2011	Primary Cost:	$0	Source:
End Date: 09/28/2011	Secondary Cost:	$0	Source:

OPERABLE UNIT 01 : On-Site Soils/Lagoons

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 01/23/1992**

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

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 04/24/1993**

An ESD was signed in April 1993 proposing to modify the ROD selected remedy from an SVE to an Substance Volatilization & Ventilation System, an innovative technology remedy.

Record of Decision *Amendment:* 0 *ESD:* 2 **Effective 05/01/1995**

A second ESD was signed in May 1995 selecting the SVVS remedy for the operable unit 1.

Record of Decision *Amendment:* 0 *ESD:* 3 **Effective 04/24/1996**

An ESD was signed in April 1996 to incorporate the new Part 201 cleanup criteria into the ROD.

Response Accomplishments: Completed

Remedial Investigation The EPA conducted an RI/FS.

Start Date: 09/04/1987	Primary Cost:	$159,000	Source: Federal
End Date: 10/08/1987	Secondary Cost:	$0	Source:

Remedial Investigation The PRPs conducted an RI/FS with federal oversight.

Start Date: 10/08/1987	Primary Cost:	$0	Source: Private
End Date: 06/24/1992	Secondary Cost:	$228,000	Source: Federal

OPERABLE UNIT 01: On-Site Soils/Lagoons

Response Accomplishments: Completed

Remedial Design The PRPs conducted the remedial design with federal oversight.

Start Date: 09/29/1993	Primary Cost:	$0	Source: Private
End Date: 05/24/1996	Secondary Cost:	$263,000	Source: Federal

Remedial Action The PRPs conducted a remedial action with federal oversight.

Start Date: 05/01/1996	Primary Cost:	$0	Source: Private
End Date: 03/17/1997	Secondary Cost:	$162,000	Source: Federal

Operation and Maintenance The SVE system was discontinued as treatment for the on-site soils and lagoons, and was considered complete in the 2001 Five-Year Review of the site.

Start Date: 08/01/1996	Primary Cost:	$0	Source: Private
End Date: 09/01/2001	Secondary Cost:	$0	Source:

Operation and Maintenance Monitor 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 Five-Year Review.

Start Date: 08/01/1996	Primary Cost:	$0	Source: Private
End Date: 12/30/2003	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Off-Site Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/21/1999**

The off-site groundwater plume, is being treated by monitored natural attenuation. The state did not concur with this remedy as it ignores the heavy metals exceedances of the groundwater/surface water interface/mixing zone determination criteria into McCoy Creek.

Response Accomplishments: Completed

Remedial Investigation The EPA conducted an RI/FS.

Start Date: 09/15/1992	Primary Cost:	$79,000	Source: Federal
End Date: 09/21/1999	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 04/12/2001	Primary Cost:	$0	Source: Private
End Date: 09/19/2003	Secondary Cost:	$6,000	Source: Federal

Remedial Action Install additional monitoring wells.

Start Date: 09/19/2003	Primary Cost:	$0	Source: Private
End Date: 12/30/2003	Secondary Cost:	$5,000	Source: Federal

OPERABLE UNIT 02: Off-Site Groundwater Plume

Response Accomplishments: In Progress

Long Term Remedial Action The LTRA consists of semi-annual sampling of the monitoring wells and began in 2004. It will continue through 2011.

Start Date: 10/01/2004 Primary Cost: $0 Source: Private

End Date: 10/01/2011 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Operation and Maintenance O&M operations may begin in 2012 once information gathered from the LTRA phase has been reviewed in the 2011 Five-Year Review. If the monitored natural attenuation remedy is proven to be working, the LTRA will cease and O&M will commence with reduced frequency and number of wells sampled and possibly reduction in contamination sampled for.

Start Date: 01/01/2012 Primary Cost: $0 Source: Private

End Date: 12/31/2043 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,426	$0	$5,310	$7,426	$5,310

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$4,831	$0	$0	$4,831	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,000	$0	$0	$20,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$35,371	$0	$0	$35,371	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$3,263	$0	$0	$3,263	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$105,000	$0	$0	$104,950	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$9,893	$0	$0	$9,893	$0
Totals:	$185,785	$0	$5,310	$185,735	$5,310

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Bronson Reel Company
505 N. Douglas Street
Bronson , MI

County: Branch
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: B5
State Site ID#: 12000018
State Site Score: 31

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.

SITE HISTORY
The Bronson Reel Company 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 (site) at one time. The two other sites are the Scott Fetzer Corporation site and the L.A. Darling site. In September 1993, the EPA redefined the boundaries of the NBIA site and excluded a significant portion of the area, including these three former 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 to determine that a strong liklihood existed that each of the former manufacturing facilities was a source of contamination. Following extensive negotiations with the potentially responsible parties (PRP) for each facility, it was decided that each PRP would conduct a remedial investigation/feasibility study (RI/FS) at their site. 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; Numbers 1, 2, or 3. Bronson Reel is Operable Unit 1. For details on the other NBFF or the NBIA site, see individual Legislative Reports.

Bronson Reel Company History:

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 located at 123 North Matteson Street initially. The company outgrew this and a subsequent location until in 1929 they built a new facility at Douglas and State Streets in Bronson. 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 WWI 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, and no manufacturing operations are reported to be conducted currently at the site, although Bronson Precision Products, Inc. has used, and may currently be using, the buildings to store a limited amount of equipment.

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 Michigan Department of Natural Resources (MDNR) inspected the site and subsequently issued a list of required corrective actions. In their follow-up letter, the MDNR 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 the MDNR. 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 in 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 PRPs for the former Bronson Reel Company site entered into an Administrative Order by Consent with the EPA to conduct a streamlined RI/focused FS at the site on September 30, 2002.

The PRP retained Fletcher Driscoll and Associates to conduct a Streamlined Remedial Investigation (SRI) at the site to determine whether it was a source of TCE contamination in the groundwater. A draft SRI report was submitted in November 2004. A meeting was held at the offices of the EPA in Chicago on January 13, 2005, during which the PRP and Fletcher Driscoll and their subcontractors presented their findings. The MDEQ participated via telephone. It was agreed during this meeting that the 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 determined that the Record of Decision (ROD) would address soils only to facilitate the decision process. The revised SRI report was approved in 2005.

The draft Focused Feasibility Study (FFS) was submitted in October 2005. The final 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.

SITE STATUS

A draft Restrictive Covenant as stipulated in the ROD was submitted to the agencies in 2010. It is under review as of December 2010.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/26/2006**

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 incaccessible.

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$34,999	$0	$0	$34,999	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$152	$0	$0	$152	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$2,724	$0	$0	$2,722	$0
Totals:	$37,876	$0	$0	$37,874	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: L.A. Darling Subarea
Matteson and E. Railroad St.
Bronson , MI

County: Branch
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: B6
State Site ID#: 12000084
State Site Score: 45

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.

SITE HISTORY
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 North Bronson Industrial Area (NBIA) Superfund site (site) at one time. The other two sites are the Scott Fetzer Corporation and Bronson Reel Company. 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 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 parties (PRP) for each facility, it was decided that each PRP would conduct a remedial investigation/feasibility study (RI/FS) at their site. 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; Numbers 1, 2, or 3. L.A. Darling is Operable Unit 2. For details on the other NBFF or the NBIA site, see individual Legislative Reports.

The L.A. Darling site is located in the NBIA in the city of Bronson. 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 NBIA. Historically Lots 45 and 46 on the northern half of the site were separated from Lots 47 and 48 by East Railroad Street. 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.

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 trichloroethene (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 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.

The city of Bronson hopes to redevelop the site. The MDEQ conducted a Brownfield Redevelopment Assessment (BFRA) at the site on March 25, 1997, via a cooperative agreement with the EPA. Included in the BFRA was the collection of twenty-four soil samples, five temporary monitoring well samples, one permanent monitoring well sample, one piezometer well sample, and two tank/cistern samples. 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 BFRA, the MDEQ 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, the MDEQ 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. To accomplish this, the work plan called for field activities including completion of GeoProbe borings, groundwater and soil sampling, vertical aquifer sampling, concrete coring, concrete chip sampling, surveying site boundaries, installing a perimeter fence to limit site access, obtaining approximate dimensions of underground storage tanks, on-site interviewing of persons knowledgeable with past site activities, and laboratory analysis. The field sampling events were performed from September 20, 1999, to October 8, 1999. During this time period, 14 GeoProbe borings and three hand-augered borings were advanced with a number of samples collected from each location. In addition, eight concrete chip samples were collected, two underground storage tanks were measured, a property boundary survey was performed, perimeter fencing was installed and an electromagnetic survey was conducted over a portion of the property. Groundwater was vertically sampled to a depth of 58 feet below ground surface.

The study revealed that TCE and a number of metals are present in the site soil above Industrial and Commercial Drinking Water Protection Criteria. TCE is also present in groundwater above the Part 201 Drinking Water Criteria as are several of the metals. 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 a second phase of 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 (Order) with the EPA to conduct a streamlined RI/focused FS on the L.A. Darling property. The PRP's contractors mobilized to the site in October 2001 and conducted the initial primary phase of field work during which soil and groundwater samples were collected. Note that the field activities actually began prior to the finalization of the Order. Additional groundwater sampling was performed in February 2003. Additional soil sampling and source delineation investigations were conducted in May 2003 and August 2004.

The PRPs submitted a Remedial Investigation Report in November 2004 summarizing their investigations to date. At that time they proposed performing a source and contaminated soil removal. Their report contended that saturated soils and groundwater had been sufficiently characterized by the work conducted. Agency comments were issued in June 2005. While the MDEQ agreed that unsaturated site soils had been adequately characterized, the MDEQ could not concur that saturated soils and groundwater had been sufficiently characterized as the report contended. The PRPs had not fully characterized the extent of groundwater contamination nor groundwater flow paths leaving the site. The PRP submitted a revised RI report in February 2006. The PRP did not adequately revise the RI report in response to agency comments. Nevertheless, in order to move the project along, 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 Streamlined Feasibility Study (SFS) was submitted by the PRP in July 2006. The SFS proposes to remove unsaturated contaminated soils and treat groundwater to Part 201 generic industrial criteria. The MDEQ submitted comments on the SFS in December 2006. The groundwater remedy proposed in the SFS was not supported by actual aquifer hydraulic data and, therefore, could not be assessed for adequacy. In addition, the format for the SFS was not acceptable to the EPA.

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 SFS 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 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 the MDEQ, issued a Proposed Plan (PP) for soil and groundwater work. The PP calls for removal of contaminated soil to Part 201 industrial clean-up criteria to the depth of the groundwater. It is estimated that 2,700 additional cubic yards of material will be removed. A groundwater treatment system will be installed to remove contaminants from the groundwater. The treatment will consist of technologies called air sparging and soil vapor extraction. In addition, a groundwater pump and treat system will be constructed. Air sparging consists of introducing air into the groundwater which will cause the volatile organic compounds to move from the groundwater into the air space between soil particles. A vacuum will then draw the contaminants from the soil into a collection system. After several years of operating the air sparge/soil vapor extraction system, it is anticipated that the effectiveness of this technology will level off. At that time, a groundwater pump and treat system will take over groundwater treatment. 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 Record of Decision (ROD) for this response on September 22, 2008. The MDEQ concurred with the ROD.

Also 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 continues to monitor soil gas.

SITE STATUS
The PRP has begun design of the remediation systems. However, design cannot be finalized until the EPA issues a legal contract called a Unilateral Administrative Order (UAO) to the PRP. It was anticipated that the EPA would issue the UAO in 2010. However, as of mid December 2010, the UAO has not been issued.

ENFORCEMENT STATUS
The PRPs for the L.A. Darling site entered into an Order 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. See Site Status above for details.

OPERABLE UNITS

00	Entire Site
02	NBFF OU2 RI/FS

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/22/2008**

Remaining contaminated soil will be excavated to the water table. If source material is detected at water table, the PRP will attempt to remove source. Groundwater treatment will be Air Sparge/Soil Vapor Extraction. When effectiveness of Air Sparge/Soil Vapor Extraction is shown to be dropping, pump and treat will be employed.

Response Accomplishments: Completed

Interim Response Determine the horizontal and vertical extent of the soil contamination.

Start Date: *10/29/1998* Primary Cost: $97,821 Source: State

End Date: *10/22/2000* Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

Start Date: 08/01/2000 Primary Cost: $3,268 Source: State

End Date: 11/30/2001 Secondary Cost: $0 Source:

Interim Response 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.

Start Date: 11/01/2007 Primary Cost: $0 Source:

End Date: 02/28/2008 Secondary Cost: $0 Source:

OPERABLE UNIT 02: NBFF OU2 RI/FS

Response Accomplishments: Completed

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

Start Date: 06/30/2002 Primary Cost: $0 Source:

End Date: 05/07/2008 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$51,199	$0	$0	$51,199	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$14,343	$0	$0	$14,343	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$307	$0	$41	$307	$41

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$5,508	$0	$0	$5,508	$0
Totals:	$71,357	$0	$41	$71,357	$41

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: North Bronson Industrial Area
135 Industrial Avenue
Bronson , MI

County: Branch
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 1C
State Site ID#: 12000012
State Site Score: 41

LOCATION
The North Bronson Industrial Area 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.

SITE 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 North Bronson Industrial Area Superfund site as defined by the EPA encompasses two series of industrial waste lagoons located at the northern edge of the industrial area, 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. 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). Each of these former manufacturing campanies is a site of environmental contamination in their own rite, as well as having contributed to the NBIA site contamination. Clean-up activities are tracked individually for each North Bronson Former Facilities, therefore, separate Legislative Reports have been generated for each site.

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 the city still owns, were used until 1981. The Bronson Plating Company continued to discharge to the eastern lagoons until 1981.

Initial investigations in the North Bronson Industrial Area were conducted as early as 1978, by the Michigan Department of Natural Resources (MDNR). Monitoring well samples contained trichloroethylene (TCE) and elevated concentrations of cadmium, chromium, copper, nickel, zinc, and cyanide. Polychlorinated biphenyls (PCBs) 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.

The MDNR 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 North Bronson Former Facilities 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 North Bronson Industrial Area was placed on the National Priorities List and became eligible for funding under the Superfund Program. Using a federal grant, the MDNR conducted a two-phase remedial investigation (RI) to characterize contamination in the North Bronson Industrial Area. Initially the North Bronson Industrial Area site encompassed a 220 acre area that included the North Bronson Former Facilities. Therefore, the RI included preliminary investigation of the North Bronson Former Facilities sites. However, in the early 1990's the EPA redefined the boundaries of the North Bronson Industrial Area 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 feasibility study (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 Operable Unit 1. A Proposed Plan, released in late summer 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 Cunty 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 the Michigan Department of Environmental Quality (MDEQ) negotiated an agreement with the potentially responsible parties (PRPs) to design and implement the selected, or an equivalent, remedy. The MDEQ participated in these negotiations but is not a party to the agreement. The PRPs signed a Consent Decree (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 North Bronson Industrial Area Superfund site boundaries. The DNRE petitioned the EPA to include the former industrial facilities in the North Bronson Industrial Area 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 North Bronson Industrial Area site description, but not the former manufacturing facilities. The MDEQ conducted industrial sewer investigations in 1996 and again in 1998. These two investigations are known as Phases 1 and 2 of Operable Unit 2. Two technical memoranda were written summarizing the results of the Operable Unit 2 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 Baseline Risk Assessment for this portion of the site. Following the FS, a proposed plan for Operable Unit 2 will be released for public comment, which will be followed by the issuance of a second ROD.

The Decree for Operable Unit 1 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, the MDEQ 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. The MDEQ identified several revisions that would be necessary to be consistent with Part 201 policy.

Discussions between the Agencies and the PRPs relative to the North Bronson Former Facilities 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 Operable Unit of the North Bronson Industrial Area was placed in abeyance until they completed the RI/FS studies at each of the North Bronson Former Facilities sites. Each North Bronson Former Facilities 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, and 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, 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 North Bronson Industrial Area 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 North Bronson Industrial Area, 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 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, the MDEQ has been financing 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 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 North Bronson Industrial Area. 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 North Bronson Industrial Area. 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 vapor intrusion indicated no unacceptable levels of VOCs were detected in structures in the vicinity of the lagoons. However, some elevated levels were detected near two of the North Bronson Former Facilities. Please refer to the L.A. Darling and the Scott & Fetzer Corporation Legislative Reports for details.

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, Vinyl Chloride, DCE and TCE were detected in some of these groundwater samples.

In response to the question of whether or not to pursue to 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 GSI criteria and what is acceptable for a compliance demonstration.
-Determination of applicable clean-up criteria for the dredged sediment spoils deposited on farmland north of the county drain.
-Completion of extent of contamination characterization in groundwater.

SITE STATUS

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 clean-up goals for some media. At the close of 2010, the Agencies are reviewing these documents and proposals and preparing comments on them.

As of December 2010, 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, cis 1,2-dichloroethene (DCE) , and vinyl chloride, in exceedance of allowable levels. However, it appears that the extent of

groundwater contamination associated with the lagoons is closer to being delineated and the data on soil and sediment may be sufficient to move forward toward actual remediation in the near future.

ENFORCEMENT STATUS

The PRP group, which includes existing and former area manufacturers as well as the city of Bronson, entered into a Consent 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 Risk Assessment for Operable Unit 2, the PRPs requested a meeting with the Agencies and raised the issue of upgradient contamination. Separate Orders have been signed by the EPA for each of the North Bronson Former Facilities and the individual PRPs for site characterization and source remediation. The Operable Unit 2 Special Notice of Liability and anticipated negotiations have been put in abeyance pending the outcome of the site work.

SPECIAL CONSIDERATIONS

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, the MDEQ notified the EPA of the situation and the agencies took the following actions. The Agencies met with the Drain Commissioner, as well as with the PRP group. The PRP group agreed to assist in characterizing the make-up and volume of the dredged material and explore possible response alternatives, although they are not responsible for the Drain Commissioner's actions.

In January 2005, MDEQ 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 Xray 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 his 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 North Bronson Industrial Area PRPs will remove some of the excavated material during implementation of the Remedial Action.

The PRPs initiated an investigation of possible vapor intrusion pathways into residences and other inhabited buildings in 2007. Investigations have largely been concluded and evaluations of the data and next steps are on-going.

OPERABLE UNITS

00	Entire Site
1	East & West Lagoons-Sludge, Soil, Assoc.'d GW, Sed. & SW
2	Industrial Sewer & Media Cont.'d via Sewer

OPERABLE UNIT 1 : East & West Lagoons-Sludge, Soil, Assoc.'d GW, Sed. & S

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 06/19/1998**

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 09/26/2008**

The PRPs have determined that the lagoon materials do not have sufficient strength to support the cover that is necessary for closure. This ESD clarifies that the stabilization and solidification of materials (either in-situ or ex-situ) falls within the scope of the 1998 North Bronaon Industrial Area operable unit 1 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 Accomplishments: Completed

Remedial Investigation The RI was performed under direction of the MDNR by Warzyn Inc.

Start Date: *06/01/1987* Primary Cost: $1,423,784 Source: Federal
End Date: *07/31/1997* Secondary Cost: $0 Source:

Negotiations Consent Decree for operable unit 1 PreDesign, Design, and Remedial Action lodged in Federal Court on February 24, 2000.

Start Date: *08/01/1998* Primary Cost: $0 Source:
End Date: *02/24/2000* Secondary Cost: $0 Source:

Response Accomplishments: In Progress

Remedial Design The PRPs are evaluating a remedy enhancement consisting of sludge stabiliation. Pilot studies are incomplete as of January 2008. An ESD will be necessary if the lagoons are stabilized. Dredging of contaminated sediments from County Drain 30 remains a component of the remedy. Groundwater response may differ from the ROD.

Start Date: *06/01/2000* Primary Cost: $0 Source: Private
End Date: Secondary Cost: $0 Source:

OPERABLE UNIT 2 : Industrial Sewer & Media Cont.'d via Sewer

Response Accomplishments: Completed

Remedial Investigation

The RI was completed and the Technical Memorandum written by the MDEQ and approved by the EPA. The EPA issued a Special Notice of Liability on September 28, 2000, for FS and Risk Assessment. The Operable Unit 2 Feasibility Study and Baseline Risk Assessment negotiations were placed in abeyance in approximately February 2001 while negotiations for the North Bronson Former Facilities site characterizations continue. Negotiations for the FS have not resumed as of January 2009.

Start Date: 05/01/1998	Primary Cost:	$48,000	Source: Federal
End Date: 12/31/2000	Secondary Cost:	$0	Source:

Negotiations

Notice letters were issued by the EPA for the Operable Unit 2 Feasibility Study and Baseline Risk Assessment. However, Operable Unit 2 negotiations have been placed in abeyance pending completion of the site characterizations of the North Bronson Former Facilities. Groundwater will then be addressed regionally, along with the industrial sewer and impacted media and not on a site-specific basis. As of January 2009 negotiations have not resumed.

Start Date: 09/29/2000	Primary Cost:	$0	Source:
End Date: 12/29/2000	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Remedial Design

The EPA has not resumed negotiations on addressing Operable Unit 2 of the North Bronson Industrial Area site for which an FS remains to be done. When negotiations resume, a Remedial Design date can be estimated.

Start Date:	Primary Cost:	$0	Source: Private
End Date:	Secondary Cost:	$0	Source:

Remedial Action

The EPA will pursue negotiations on addressing the industrial sewers and possibly area-wide groundwater not associated with the lagoons. Because negotiations have not begun, it is not possible to estimate a start date.

Start Date:	Primary Cost:	$0	Source: Private
End Date:	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005934-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$1,471,784	$0	$0	$1,471,784	$0
Totals:	$1,471,784	$0	$0	$1,471,784	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$13,562	$0	$7,550	$13,562	$7,550

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$73,082	$0	$0	$71,185	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$16,241	$0	$0	$16,241	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$25,000	$0	$0	$6,803	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$55,000	$0	$0	$52,295	$0
Totals:	$182,885	$0	$7,550	$160,086	$7,550

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Scott & Fetzer Corporation
141 W. Railroad Street
Bronson , MI

County: Branch
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: B7
State Site ID#: 12000085
State Site Score: 45

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.

SITE HISTORY
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 (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 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 parties (PRP) for each facility, it was decided that each PRP would conduct a remedial investigation/feasibility study (RI/FS) at their site. 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; Numbers 1, 2, or 3. The Scott & Fetzer site is Operable Unit 3. For details on the other two NBFF or the NBIA site, refer to individual Legislative Reports.

Scott & Fetzer 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 Warne 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 shut down in 1986.

The company name changed in 1915 to Douglas & Rudd, and in 1922, the company name changed 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.

Concerns with the deteriorating Scott & Fetzer building, as it came to be known, 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, escalated during the years from 1986 into the early 1990s. The Michigan Department of Natural Resources (MDNR) 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 the MDNR 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. The roof was observed to be partially collapsed, allowing precipitation to enter.

The EPA entered into an Administrative Order by Consent (Order) 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. The MDNR 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 the MDEQ 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.

The MDEQ 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 three 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 six-foot chain-link fence was constructed around the grounds of the Scott & Fetzer site.

The PRPs for Scott & Fetzer and the EPA entered into an Order, signed on June 5, 2002, committing the PRPs to conduct a streamlined RI/FS at the Scott & Fetzer site.

The PRPs were given conceptual approval for their RI Work Plan in April 2003. Field Event I of the RI began at the Scott & Fetzer site in July 2003. A Technical Memorandum describing the results of Field Event I and an amended Work Plan for Field Event II were submitted to the MDEQ in December 2003. Following a meeting between the agencies and the PRPs in May 2004, the Work Plan for Field Event II was revised and the second phase of field work began in September 2004. Following submission of preliminary groundwater sampling data by the PRP, MDEQ staff met with EPA officials and the PRPs in April 2005 to discuss the final Field Event II tasks and to preliminarily discuss Field Event III. The final Field Event II work consisted of installation and sampling of permanent monitoring wells. This work was completed during late summer and early fall of 2005. A draft Field Event III work plan was submitted to the agencies in November 2005. The EPA, the MDEQ, and the PRPs met in December 2005 to discuss the Field Event III work plan. A revised version was submitted in late December. With conceptual approval for the vertical aquifer sampling portion of Field Event III, the PRP began field studies in January 2006.

The PRPs submitted a draft RI Report in February 2007. A revised report was submitted following comment by the agencies, and the EPA gave the PRPs conditional approval of the RI on May 7, 2008. The Focused Feasibility Study (FFS) was submitted in August 2008. Comments were provided to the PRPs by both agencies and a revised FFS was submitted in January 2009.

The soil gas investigation begun in 2007, to assess the vapor intrusion pathway into

residences and other inhabited buildings continues. Three residences were equipped with vapor abatement systems as a result of the investigations.

The FFS was approved by the EPA in June 2009, with several conditions that should 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. The public comment period spanned July 9 to August 10, 2009, during which written or telephoned comments were accepted. Following public input, the EPA, with support from the MDEQ, issued a Record of Decision for the site in September 2009, which outlines 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. Soil vapor extraction and air sparging 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.

SITE STATUS
The PRP will begin design of the remediation systems when the EPA issues a Unilateral Administrataive Order (UAO) which directs them to begin work. It was anticipated that the EPA would issue the UAO in 2010. However, as of mid-December 2010, the Order has not been issued.

ENFORCEMENT STATUS
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/focused FS 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. It is anticipated that the cleanup actions will be done under a UAO issued by the EPA.

OPERABLE UNITS

00	Entire Site
03	Focused RI/FS

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/2009**

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

Scott & Fetzer Plant #1 manufactured and electroplated metal parts from the early 1990s until the 1980s. Subsequently, part of the plant was used as a warehouse facility, until the property tax reverted. Arsenic is documented above direct contact criteria in the soil around an annex building. Trichloroethylene, 1,2 dichloroethylene, and vinyl chloride are present in groundwater at many times greater than the health based drinking water criteria. The annex building was secured with fencing in 1996 to protect human health from direct contact concerns. This project incudes building demolition; removal and disposal of underground water storage tanks; disposal of contaminated soil; and determination of further response actions needed.

Start Date: 06/17/1997	Primary Cost:	$130,613	Source: State
End Date: 08/31/2002	Secondary Cost:	$0	Source:

Interim Response

Services performed under this contract included sampling the potential asbestos containing material (ACM) in the Annex building. Sampled second floor plaster walls which were previously determined to contain ACM. 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 ACM. Removal of liquids, cleaning and backfilling of four additional pits. Abandonment of the existing well on the west side of the courtyard.

Start Date: 10/27/1997	Primary Cost:	$612,574	Source: State
End Date: 08/31/2002	Secondary Cost:	$0	Source:

Interim Response

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

Start Date: 05/08/2001	Primary Cost:	$76,956	Source: State
End Date: 06/19/2002	Secondary Cost:	$0	Source:

Remedial Investigation

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.

Start Date: 06/05/2002	Primary Cost:	$0	Source:
End Date: 05/07/2008	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$47,417	$0	$0	$45,961	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$6,174	$0	$0	$6,174	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,897	$0	$811	$8,897	$1,021

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,768	$0	$0	$10,397	$0
Totals:	$73,256	$0	$811	$71,429	$1,021

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Albion-Sheridan Twp. Landfill
1355 29 Mile Road
Albion , MI

County: Calhoun
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: AN
State Site ID#: 13000003
State Site Score: 40

LOCATION
The Albion-Sheridan Township Landfill site is an inactive landfill located approximately one mile east of Albion in Sheridan Township, Michigan. The landfill, which covers approximately 18 acres, 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.

SITE 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 the Michigan Department of Environmental Quality (MDEQ), indicate that the sludges contain 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 several thousand drums of waste were disposed of at the site. The groundwater is contaminated with inorganic contaminants such as sodium, calcium ammonia, and heavy metals including arsenic, iron, potassium, lead, and magnesium. 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 potentially responsible parties (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, the MDEQ 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. The MDEQ, 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.

The second Five Year Review for this site was completed 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 restrictive covenants regarding groundwater. The

current status of the concentrations of contaminants is not clear due to the outdated sampling techniques previously used at this site (including bailers and filtered samples). New arsenic groundwater trend analysis and institutional controls (IC) analysis are needed. A new multi-year trend analysis was performed to take into account the updated sampling techniques. The MDEQ recommended additional updates to site technologies and expressed other concerns at this site to EPA in 2009. The 2008 groundwater sampling data for arsenic had elevated reporting limits (0.5mg/L) and was unable to be compared to the newer compliance criteria (0.1mg/L) at that time.

The south branch of the Kalamazoo River is directly south of the site and near the offsite wells. Many of the wells located in that area are not sampled. That part of the river is potentially at risk. MDEQ staff suggest that additional evaluation and analytical work be performed to assess the release of arsenic and manganese to the wetland and surface water immediately south of the site.

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 and installation of an active landfill gas collection system, including 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 calls for an option for passive gas venting. Institutional controls were to be placed on the landfill property to limit both land and groundwater use and remain until the cleanup standards are attained (estimated at 14 years). The EPA subsequently approved passive gas venting for landfill gases and appropriate criteria must be met at the fence boundary. The ROD also included a contingent remedy for groundwater treatment by in-situ oxidation if, five years after the landfill cap installation, the arsenic concentrations in the groundwater did not decline at a sufficient rate or 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 sample events in 2000. Two additional gas probes were installed and monitoring of methane continued for a total of twelve 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 the MDEQ approved the landfill vegetative cap in June 2002, after it withstood a winter without erosion problems.

The landfill has not had significant erosion problems since 2002. There is still a groundwater migration concern because of elevated concentrations of some contaminants near residential wells.

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, PRPs have not taken any readings since March 2002. The MDEQ took readings from the gas probes in 2006 along with the 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 of the remedy in August 2002. The 2002 Five Year Review 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 will continue to be monitored.

The groundwater is sampled each fall and an annual report is submitted each March. The current ROD requires that five 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. MDEQ staff have discontinued work on this site due to budgetary contraints and lack of cooperation between the agencies.

The arsenic criteria (maximum contaminant level [MCL]) has been changed to be more stringent at 10 ppb in drinking water: the statistical criteria are expected to be modified as well.

SITE STATUS

The data from November 2009 and submitted in March 2010 showed positive signs of compliance in most wells. MW-15SB is the primary well of concern for both arsenic and manganese.

Due to budget issues, this site has been targeted as a low priority site.

ENFORCEMENT STATUS

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.

SPECIAL CONSIDERATIONS

Arsenic concentrations are declining overall, but will be evaluated more closely with the new lower standard. The October 2004 concentrations were 80.7 and 78.6 ppb in duplicate samples from well SB06, up from 26.1 and 33.6 in October 2002 and 2003 respectively. The concentrations in that well have continued to increase with 96.7 and 106 ppb detected in January and September 2006. Also, the manganese, aluminum, and ammonia concentrations were elevated and will continue to be monitored as part of the O & M activities. A new arsenic groundwater trend analysis and IC analysis for arsenic in groundwater are needed at the site. A new multi-year trend analysis will be performed to take into account the updated sampling techniques. The dissolved arsenic trend analysis was started in 2009, but there were insufficient data points for a trend analysis at the time of this report. Early indications are that most are decreasing. One well near residences is stabilizing and the well nearest Kalamazoo River is increasing. Additional updates to site technologies combined with the other concerns at this site are worthy of investigation. The 2008 groundwater sampling was analyzed with elevated reporting limits (0.5mg/L) and was unable to be compared to the newer compliance criteria (0.1mg/L). The 2009 data includes limited trends analysis in the near future to ensure that the the local residents are not drinking elevated levels of heavy metals like manganese.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 03/28/1995**

The remedy includes: removal and off-site treatment and disposal of drums, construction of a solid waste landfill cap, institutional controls, active landfill gas collection, groundwater monitoring, and treatment of groundwater by in-situ oxidation if arsenic contamination does not decline within five 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 Accomplishments: Completed

Interim Response

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. The entire landfill is covered with a flexible membrane liner and landfill cap.

Start Date: 01/01/1990	Primary Cost:	$100,000	Source: Private
End Date: 01/01/1991	Secondary Cost:	$1,000	Source: State

Remedial Investigation

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, the MDNR used state funding to conduct additional investigations of the potential hot spots to better determine their nature and extent. The MDNR 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 EPA.

Start Date: 01/01/1992	Primary Cost:	$1,201,000	Source: Private
End Date: 03/28/1995	Secondary Cost:	$200,000	Source: State

Remedial Design

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

Start Date: 12/11/1995	Primary Cost:	$270,000	Source: Private
End Date: 09/01/1997	Secondary Cost:	$50,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The 2002 5-Year Review acknowledged that the groundwater concentrations of arsenic and manganese may be problematic due to more stringent criteria being implemented in the risk based derivations.

Start Date: 05/02/2002	Primary Cost:	$0	Source: Federal
End Date: 09/06/2002	Secondary Cost:	$0	Source:

5 Year Review The 2007 5-Year Review has 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.

Start Date: 10/11/2006	Primary Cost:	$0	Source: Federal
End Date: 08/15/2007	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action 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 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.

Start Date: 09/01/1997	Primary Cost:	$2,654,734	Source: Private
End Date: 05/31/2001	Secondary Cost:	$78,000	Source: Federal

Response Accomplishments: Ongoing

Operation and Maintenance 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. $145,000/first 5 years then $14,000/year the next 15 years plus mowing and maintenance costs.

Start Date: 01/01/1998	Primary Cost:	$980,000	Source: Private
End Date: 10/27/2019	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The next 5 -Year Review is due by August 15, 2012.

Start Date: 08/15/2011	Primary Cost:	$0	Source:
End Date: 08/15/2012	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,506	$0	$930	$2,506	$930

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,873	$0	$0	$2,873	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$15,015	$0	$0	$14,957	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$4,489	$0	$0	$4,489	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$65,000	$0	$0	$62,330	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$61,252	$0	$0	$61,252	$0
Totals:	$151,135	$0	$930	$148,407	$930

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: McGraw Edison Corp.
704 North Clark Street
Albion , MI

County: Calhoun
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: T9
State Site ID#: 13000090
State Site Score: 36

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. The property has been sold and is active.

SITE 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. TCE was found in two on-site water supply wells and 45 nearby residential wells in 1980. Nearby Albion municipal wells also showed TCE contamination in the past.

A former "fire-well" had been used to purge the bedrock aquifer of contaminants. A number of shallow purge wells have been installed in several phases to purge the upper contaminated aquifer. McGraw Edison Corporation and the MDEQ continue to evaluate the effectiveness of the system. The purged groundwater is treated via activated carbon and air stripping and then discharged to the Kalamazoo River.

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 Consent 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 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, the MDEQ'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 the MDEQ's air quality discharge and National Pollutant Discharge Elimination System permits.

In 1997, a Baseline Environmental Assessment of the property was conducted and submitted to the MDEQ for review prior to the purchase of the property by a local development group. The property transfer was approved by the state Attorney General in accordance with the Decree and the stipulation and order to implement final remediation.

The building at the property is currently being used for warehousing and assembly. The property transfer did not affect Cooper Industries' obligation to continue to perform remedial actions (RAs) in accordance with the Decree and the stipulation and order to implement final remediation.

In September 1999, the MDEQ completed a Five-Year Review using federal funds assessing the groundwater contaminant levels surrounding the site and evaluating the effectiveness of the remedy. The Five-Year Review, 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 as well as changing the sampling frequency from three times per year to two times per year. 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 Michigan Department of Attorney General'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 going into the shallow aquifer. The MDEQ 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 the MDEQ, completed a second Five-Year Review 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 November 2004, Cooper Industries submitted a document titled "Proposed Deep Aquifer Groundwater Extraction Rate Optimization Plan" for review by MDEQ staff. The document proposes to reduce the pumping rate or eliminate pumping from the deep well. It is the MDEQ's position that Cooper Industries would have to conclusively demonstrate that reducing the pumping rate or eliminating pumping from the deep well will not release part of the shallow contaminant plume. This may require a revision of the existing monitoring system and/or expansion of the shallow aquifer extraction system.

In 2005, MDEQ staff reviewed, evaluated, and approved Cooper's 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 pump and treat system. The pilot test was conducted and results were inconclusive as to the viability of the technology for this site.

Cooper Industries has prepared a deep aquifer shutdown work plan which includes the updating and replacement of the old treatment system that will be able to meet current treatment requirements. The shutdown was originally for a one-year period (extended three months due to equipment failure) and requires that the MDEQ be convinced that the deep aquifer is no longer contaminated and that the shallow aquifer is not negatively impacted by the shutdown and the associated shift in the groundwater levels in the vicinity. 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. To date, the MDEQ has concurred with the assessment that additional wells are not yet necessary. The data in first reports were promising. There are still a few isolated locations with contamination, but the majority of the contamination in the deep aquifer appears to have been removed.

On April 7, 2008, the deep aquifer pump was turned off temporarily in order to evaluate the contamination in the deep aquifer and the need to maintain that portion of the treatment system. The one-year period was extended to June 2009 after the stripper suffered irreparable freeze damage on December 18, 2008, and the entire pump and treat system was shut down for two months. MDEQ staff continues to evaluate the data to determine next steps regarding installation of additional monitoring and /or deep extraction wells. A few deep wells continue to show elevated concentrations of certain contaminants. Staff continues to evaluate the urgency and ability to treat the deep aquifer.

In February 2009, the potentially responsible parties (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.

SITE STATUS
Cooper Industries continues to operate the groundwater pump and treat 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.

The MDEQ and the EPA continue to work on the process of drafting a restrictive covenant document to impose institutional controls on the property to prohibit installation of water wells in the affected area.

The MDEQ is currently preparing a Five-Year Review for 2011. It is not required under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510 (CERCLA) as this site is being performed pursuant to state law, but it has been determined that a Five-Year Review is desireable for this site.

ENFORCEMENT STATUS
A Consent 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 were 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.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Alternate Water

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.

Start Date: 09/30/1980	Primary Cost:	$250,000	Source: Private
End Date: 09/30/1987	Secondary Cost:	$0	Source:

Remedial Investigation

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.

Start Date: 09/30/1985	Primary Cost:	$2,000,000	Source: Private
End Date: 09/30/1986	Secondary Cost:	$0	Source:

Remedial Action

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

Start Date: 02/22/1986	Primary Cost:	$5,000,000	Source: Private
End Date: 10/30/1997	Secondary Cost:	$0	Source:

5 Year Review

The Five-Year Review was completed by MDEQ 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. To complete the Five-Year Review, $8,528 of federal funds were expended by the state.

Start Date: 05/30/1999	Primary Cost:	$8,528	Source: Federal
End Date: 10/29/1999	Secondary Cost:	$0	Source:

5 Year Review

The 2004 Five-Year Review was completed by the EPA in coordination with MDEQ 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.

Start Date: 08/09/2004	Primary Cost:	$0	Source:
End Date: 10/27/2004	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

5 Year Review Five-Year Review to be done in 2011.

Start Date: 05/27/2009 Primary Cost: $0 Source: State

End Date: 09/30/2011 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Operation and maintenance (O&M) of the groundwater extraction and treatment system has been going on 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 is $113,500 per year. The PRPs implemented a one-year shutdown of the deep aquifer pumping well (initiated in April 2008) to determine whether or not the deeper well was pulling contamination down to the lower aquifer. The shallow wells were still pumped until late December when the stripper tower froze and broke due to significantly lower flow and extremely cold temperatures. The PRPs installed a two-unit shallow tray air stripped system in February 2009 and continue to operate and maintain it.

Start Date: 09/30/1990 Primary Cost: $28,000,000 Source: Private

End Date: 12/30/2030 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$8,529	$0	$0	$8,528	$0
Totals:	$8,529	$0	$0	$8,528	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Verona Well Field
250 Brigden Drive
Battle Creek , MI

County: Calhoun
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 51
State Site ID#: 13000006
State Site Score: 38

LOCATION
The Verona Well Field site (the 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 (Raymond Road), Thomas Solvent Annex (Annex), and the Grand Trunk Western Railroad Paint Shop (Paint Shop). The Raymond Road 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 marshalling 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 marshalling yard borders the well field to the east. A large undeveloped wetland area is located north of the well field.

SITE 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. 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.

The Michigan Department of Natural Resources (MDNR) initiated investigations into the source of contamination to the well field in 1981 and the EPA began remedial investigation/feasibility study (RI/FS) work in 1983. In accordance with the May 1, 1984, Record of Decision (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 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. Because the well field is only protected by the operation and efficiency of the blocking wells, this site currently poses an acute public health risk.

The EPA's investigation identified three source areas: Raymond Road, the Annex, and the Paint Shop. Raymond Road has tax-reverted to the State while the latter two source areas are owned by the Grand Trunk Western Railroad. Raymond Road 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 Raymond Road to begin groundwater remediation at this source area. Soil vapor extraction (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. Subsequent "hotspot and residual contamination investigation" sampling (report dated April 2006) indicated exceedences of both Part 201 generic residential cleanup criteria and 2003 Explanation of Significant Differences (ESD) criteria for tetrachloroethene (eight of eight boring locations) and trichloroethene (three of eight boring locations exceeded Part 201 criteria and five of eight boring locations exceeded ESD criteria). The detection of higher contaminant concentrations was likely due to improved sample preservation methods. Groundwater continues to be extracted and treated and has not yet reached residential cleanup goals identified in the ROD.

The final operable unit one (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 design of the groundwater remedy at the site and construction of the final remedy was completed 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 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 have voluntarily continued sparging with no definite shutdown date scheduled.

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 the MDEQ 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 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 the MDEQ and implemented in 2003. The PRP group worked with the MDEQ 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 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 (southern) 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 Raymond Road source area, and modification of the cleanup criteria specified in the 1991 ROD. The MDEQ 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 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 air sparging 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.

The state currently operates and maintains the groundwater extraction and treatment systems at Thomas Solvent Raymond Road. On May 6, 2002, the state became responsible for 100 percent of the operation, maintenance, and monitoring costs associated with the Raymond Road remediation. When petroleum product was discovered in one of the extraction wells (EW3) in May 2004, the well was temporarily shut down. It was determined that the petroleum product was originating from the adjacent Davis Oil underground storage tank site. EW3 was restarted in January 2005. Weekly petroleum product levels were noted in the well and groundwater samples were collected every two weeks for analysis. When a spike in petroleum product or noted elevation of contaminant concentrations was observed, the well was shut down. To address this problem, the MDEQ installed a replacement extraction well (EW3R) and an adjacent free product recovery well/system in November 2007. The former is operated by the MDEQ and the latter operated by Davis Oil. To date, no free product has been identified in EW3R. After installation of EW3R, flow rates were adjusted and capture was field verified.

The MDEQ undertook a soil investigation at the Thomas Solvent Raymond Road site in 2005 and the results were summarized in a report dated April 2006. Results indicated exceedences of both Part 201 generic residential cleanup criteria and 2003 ESD criteria for tetrachloroethene (eight of eight boring locations) and trichloroethene (three of eight boring locations exceeded Part 201 criteria and five of eight boring locations exceeded ESD criteria). 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. The results of this investigation led the EPA and the MDEQ to initiate evaluation of possible treatment options for the Raymond Road-related contaminants in the Raymond Road soils and possibly downgradient soils. Both Agencies agreed that soil vapor extraction (SVE) and air sparge (independently or in combination, depending on location) is appropriate to implement at Thomas Solvent Raymond Road, Davis Oil, and the "northwest area" (NWA-located at the northwest corner of Raymond Road and Emmett Street) with the intent of remediating residual vadose zone soils (Thomas Solvent Raymond Road) and reducing contaminant mass in the smear zone soils (Thomas Solvent Raymond Road and downgradient). In July 2008, the MDEQ completed the state-funded SVE/air sparge remedial design.

A separate ESD, executed September 29, 2008, supported these recommendations and documented the following significant differences from 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 clean-up objectives, and to control air sparge emissions as needed;
*Performance of air sparge to improve SVE performance in achieving soil clean-up objectives in smear zone and shallow saturated zone soils at Thomas Solvent Raymond Road.

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.

SITE STATUS

Almost one year after submitting a cooperative agreement application to the EPA requesting money to construct and operate the Air Sparge/SVE design, the EPA made a partial award (October 2009) and backdated the budget period to May 1, 2009. MDEQ began construction of the Air Sparge/SVE systems in November 2009. The Air Sparge/SVE operation begain June 8, 2010. Adjustments have been made to the extraction wells to accommodate the influence of the Air Sparge system. The EPA has agreed that the Air Sparge/SVE system should be optimized to mazimize contaminant reduction and, secondarily, the extraction wells will operate to maintain backward gradient, understanding that this may not be at optimal rates in order to allow the Air Sparge/SVE system to be the most effective. To date, the MDEQ has been able to operate the extraction wells while still demonstrating a backward gradient.

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 does not provide complete capture, it is understood that the air sparge system will continue to operate to optimize contaminant removal. In the spring 2010, the PRPs petitioned the agencies to shut down the two remaining Annex extraction wells and convert them to air sparge points. In the fall 2010, the MDEQ 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. As of December 1, 2010, the PRPs shut down the Annex air sparge system and are evaluating when to begin soil verification sampling.

In response to the PRPs submittal of modifications to the 2001 soil verification sampling plan, the MDEQ provided an approval with modifications. Even after conference call discussions with the PRPs, the PRPs do not support the modifications and are in the process of gathering information from the MDEQ to modify the requirements.

The PRPs continue the operation of the air sparge system at the Paint Shop Source Areas.

The PRPs continue to operate the groundwater extraction and treatment systems and, in late 2008, petitioned the EPA and MDEQ to shut down all or a portion of the northern blocking well line. In 2009, the Agencies have tentatively agreed to allow the shutdown 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. As of fall 2010, four quarterly events have continued to demonstrate this reduction in blocking well operation has been acceptable. In fall 2010, the PRPs requested shutting down the remaining northern blocking wells. The MDEQ responded that site conditions did not yet meet the Decree requirements for shutting down the remaining northern blocking wells.

ENFORCEMENT STATUS

Enforcement actions were taken against the Thomas Solvent Company and the Grand Trunk Western Railroad. The Thomas Solvent Company subsequently filed for bankruptcy. After numerous settlement meetings and discussions, 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 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 MDNR and the EPA initiated enforcement actions against four companies who are liable for costs incurred at the Raymond Road 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 remedial actions at the site and settlement of the natural resources damage claim. The settlement includes source area enhancements (for contaminant mass removal) 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. The MDEQ 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 and is currently being disputed by the PRPs.

SPECIAL CONSIDERATIONS

It is important to continue the groundwater extraction and treatment system at this site because the contaminants from this source area, if not controlled, will enter the capture zone of the Verona Well Field, the primary water supply for the city of Battle Creek and several surrounding communities.

OPERABLE UNITS

00	Entire Site
01	Thomas Solvent Raymond Rd Source Area GW/Soil Remediation
02	Verona Well Field Interim Action

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 06/28/1991**

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 Raymond Road source area groundwater extraction system, installation of an on-site air stripper/vapor phase carbon treatment system at the Raymond Road source area, and installation of additional extraction well(s) near Raymond Road.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/29/2003**

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 Raymond Road source area, and modification of the cleanup criteria specified in the 1991 ROD. The MDEQ 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 with corresponding cleanup criteria.

Note: The ESD did not discuss capital or O&M costs. See 1991 ROD information for details on the EPA projected costs.

Response Accomplishments: Completed

Alternate Water Extended municipal water supply to residents whose wells had been affected by the groundwater contaminant plume. Housing & Urban Development spent $1,000,000; the federal government (likely the EPA) spent $475,000, and the city of Battle Creek spent $35,000.

Start Date: 01/01/1983	Primary Cost:	$1,475,000	Source: Federal
End Date: 12/31/1984	Secondary Cost:	$35,000	Source: Private

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

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.

Start Date: 06/15/1983	Primary Cost:	$2,085,000	Source: Federal
End Date: 06/28/1991	Secondary Cost:	$0	Source:

Bottled Water

Bottled water was provided to residents whose wells had been impacted by the groundwater plume. The State agreed to continue to provide this bottled water even after residents were connected to municipal water until the results of the health study were available. When the health study came out in 1989, it indicated that there were no demonstrable adverse effects to the public and the bottled water was terminated.

Start Date: 01/01/1984	Primary Cost:	$150,000	Source: State
End Date: 01/01/1989	Secondary Cost:	$0	Source:

Remedial Design

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.

Start Date: 01/01/1992	Primary Cost:	$0	Source: Private
End Date: 01/01/1994	Secondary Cost:	$0	Source:

5 Year Review

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 SVOCs and metals into the source area monitoring and cleanup requirements; implementation of screening-level sampling of source area soils for SVOC, pesticide/PCB, and metals contamination, and any significant risks from these parameters need to be addresed 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."

Start Date: 11/07/2001	Primary Cost:	$0	Source: Federal
End Date: 09/30/2002	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review 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 cleanup the free product near Raymond Road, 2) evaluation of further treatment options for Raymond Road 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 vapor intrusion. The MDEQ does not support all of the recommendations and is in the process of writing a comment letter on the final Five-Year Review with a request that it be appended to the administrative record.

Start Date: 12/18/2006	Primary Cost:	$0	Source: Federal
End Date: 09/20/2007	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action 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 soil vapor extraction systems.

Start Date: 01/01/1994	Primary Cost:	$0	Source: Private
End Date: 12/01/1996	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance

PRP operation of the final remedy for the site. This consists of: O&M of the northern and southern blocking well lines, O&M of the Annex groundwater extraction system, O&M of the Verona Well Field air stripper/vapor phase carbon treatment system and monitoring and evaluation of those systems. In 2003, the piping at the air stripper was modified to allow the Annex and southern blocking well line water to enter the air stripper directly, the northern blocking well line water to enter the wet well and be blended (untreated) with the treated air stripper discharge. Also in 2003, the Annex had two shallow groundwater extraction wells installed to better achieve capture in the glacial aquifer. State costs are associated with a 1999 supplemental evaluation involving the installation of 29 monitoring wells in the well field.

Per a January 17, 2008, e-mail from Progressive: "Continued O&M and monitoring of the groundwater remedy which includes two lines of blocking wells that protect the city well field and groundwater recovery at the Annex source area, including activities related to NPDES compliance monitoring/reporting, site-wide water quality and hydraulic monitoring, implementation of treatment bypass in January 2007 following the EPA and the MDEQ approval, air stripper packing media removal and preparation of treatment equipment for standby service, well maintenance, annual alarm/telemetry testing, annual header pressure testing, etc." The EPA's 2007 Second Five-Year Review found the remedy protective of human health and the environment. Remedy O&M is anticipated to continue for many years.

Continued O&M and monitoring of voluntary groundwater remedial activities at the Annex source area involving air sparging. The air sparging system has significantly reduced contaminant concentrations in groundwater at this source area and continued O&M is planned for 2008.

Costs:
Remediation costs totaled approximately $500,000 in 2007. A similar cost level is expected in 2008. 2009 Costs were $550,000 and estimate 2010 will be $750,000.

Start Date: 06/01/1996	Primary Cost:	$500,000	Source: Private
End Date: 12/31/2040	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Next Five-Year Review due September 20, 2012 (five years after last one).

Start Date: 12/18/2011	Primary Cost:	$0	Source:
End Date: 09/20/2012	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Thomas Solvent Raymond Rd Source Area GW/Soil Rem

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 08/12/1985**

The remedy consists of installation of nine groundwater extraction wells at Raymond Road with air stripper treatment at the Verona Well Field (one of the wells was abandoned due to lack of production), and 22 SVE wells with carbon/CATOX off-gas treatment. Costs are taken from the 1985 ROD. The 1985 ROD estimated the O & M cost of the SVE portion to be $0 because the anticipated operation duration was less than one year. Actual SVE O & M costs were higher since the SVE system ran for four years. The 1985 ROD estimated the annual O & M cost of the groundwater extraction system to be $90,000 yet actual costs were higher and for a much longer duration than the anticipated three years (1987 to present).

Record of Decision *Amendment:* 0 *ESD:* 2 **Effective 09/29/2008**

The ESD provides for the following modifications to the TSRR remedy: 1) perform a second phase of soil vapor extraction (SVE) in combination with air sparge to try to achieve soil cleanup objectives, 2) allow a temporary shutdown during air aparge operation if it is demonstrated that air sparge 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: 1) The USEPA identified this ESD as ESD#2 because this is the second ESD for the site but the first ESD for OU#1 (TSRR). 2) The cost estimate includes construction and three years of operation of the air sparge/SVE systems; the ESD did not break down costs into capital costs and O&M costs.

Response Accomplishments: Completed

Remedial Investigation RI/FS for Raymond Road source area groundwater and soils.

Start Date: 01/01/1983	Primary Cost:	$1,130,000	Source: Federal
End Date: 01/01/1985	Secondary Cost:	$0	Source:

Long Term Remedial Action The MDEQ began operation of the Raymond Road groundwater extraction system (for the EPA) in March 1987 and continued operation under a Cooperative Agreement with the EPA (90/10 split funding) until May 6, 2002, at which time the funding became 100 percent State responsibility. The EPA operated the system from approximately June 1996 to November 1997 when they installed the on-site air stripper and conducted startup of the new air stripper.

Start Date: 02/28/1987	Primary Cost:	$1,373,400	Source: Federal
End Date: 05/06/2002	Secondary Cost:	$152,600	Source: State

OPERABLE UNIT 01: Thomas Solvent Raymond Rd Source Area GW/Soil Rem

Response Accomplishments: Completed

Remedial Investigation The MDEQ undertook a soil investigation in 2005. The investigation was conducted to determine how much contamination remained in the on-site soils and to complete a recommendation in the 2003 Five-Year Review.

Start Date: 04/01/2005	Primary Cost:	$20,000	Source: State
End Date: 12/30/2005	Secondary Cost:	$0	Source:

Remedial Action The MDEQ will replace extraction well EW3. Petroleum product from the adjacent Davis Oil Underground Storage Tank site was found in EW3 in May 2005. Replacement with a dual phase extraction well was to originally have been completed in mid 2007 but was actually completed by mid-November.

Start Date: 12/01/2005	Primary Cost:	$100,000	Source: State
End Date: 11/13/2007	Secondary Cost:	$0	Source:

Remedial Design Earth Tech (later AECOM), on behalf of the MDEQ, designed an air sparge and SVE system to address residual contamination at the Thomas Solvent Raymond Road source area and address two locations downgradient that had historically become impacted by Thomas Solvent Raymond Road-related contamination due to migration: Davis Oil (across Raymond Road to the west of Thomas Solvent Raymond Road) and the livestock yard (northwest corner of the Raymond Road/Emmett Street intersection).

Start Date: 10/01/2007	Primary Cost:	$128,000	Source: State
End Date: 07/09/2008	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action The Raymond Road groundwater extraction system was constructed in late 1986 and began operation in late February 1987. The untreated groundwater was sent to the air stripper at the Verona Well Field until the PRP group took over operation of the Verona Well Field blocking well and air stripper treatment system in June 1996. At that time, the Raymond Road water began being treated at the air stripper that had been constructed in 1996 at Thomas Solvent Raymond Road. The Thomas Solvent Raymond Road 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 Raymond Road air stripper.

Start Date: 09/01/1986	Primary Cost:	$6,973,200	Source: Federal
End Date: 06/01/1996	Secondary Cost:	$774,800	Source: State

OPERABLE UNIT 01: Thomas Solvent Raymond Rd Source Area GW/Soil Rem

Response Accomplishments: In Progress

Remedial Action Thomas Solvent Raymond Road/Davis Oil/Northwest Area air sparge/SVE construction (11/2009-6/7/2010), operation (estimated three years beginning 6/8/10), verification sampling, decommissioning. Cooperative Agreement application was for $2,839,355. The EPA awarded $2,533,935 with the understanding that additional funds may become available at a future date.

Start Date: 11/01/2009	Primary Cost:	$2,555,420	Source: Federal
End Date: 05/31/2015	Secondary Cost:	$283,935	Source: State

Response Accomplishments: Ongoing

Operation and Maintenance The State assumed 100 percent of the costs associated with long-term O&M at the Raymond Road Source Area on May 6, 2002. O&M is estimated to continue for 35 years, costs to be funded by the State, approximate total $15 million. Costs shown are for one year.

Start Date: 05/06/2002	Primary Cost:	$425,000	Source: State
End Date: 12/31/2040	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Verona Well Field Interim Action

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 05/01/1984**

The remedy consists of twelve 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. Costs are based on 1984 ROD with annual O & M costs of $470,000. The ROD originally anticipated the blocking well system to run for five years. The blocking well system ultimately became a part of the final remedy defined in the 1991 ROD.

Response Accomplishments: Completed

Remedial Investigation The RI to determine how to address contamination in the Verona Well Field municipal water supply.

Start Date: 01/01/1983	Primary Cost:	$1,000,000	Source: Federal
End Date: 05/01/1984	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Verona Well Field Interim Action

Response Accomplishments: Completed

Remedial Design Designing the northern blocking well and groundwater treatment system (air stripper/vapor phase carbon).

Start Date: 01/01/1984 Primary Cost: $210,900 Source: Federal

End Date: 01/01/1984 Secondary Cost: $0 Source:

Long Term Remedial Action 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. Costs shown are from Cooperative Agreement expenditures. Additional related costs are included with the interim response construction and may also be included in the Raymond Road Superfund State Contracts.

Start Date: 09/01/1984 Primary Cost: $492,000 Source: Federal

End Date: 06/01/1996 Secondary Cost: $54,600 Source: State

Response Accomplishments: Construction Complete

Interim Response Conversion of municipal wells to the northern blocking well line and construction of the air stripper treatment system.

Start Date: 01/01/1984 Primary Cost: $2,039,000 Source: Federal

End Date: 09/01/1984 Secondary Cost: $226,000 Source: State

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005793-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Long Term Remedial Action	$3,710,712	$371,072	$0	$2,485,381	$0
Remedial Design	$210,900	$0	$0	$210,900	$0

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E82601 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$2,533,935	$283,935	$0	$860,140	$859,475
Totals:	$6,455,547	$655,007	$0	$3,556,421	$859,475

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$25,903	$0	$0	$25,902	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$303,590	$0	$0	$229,301	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$108,582	$0	$0	$107,895	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$3,858	$0	$0	$3,839	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$305,000	$0	$0	$304,926	$0
Totals:	$746,933	$0	$0	$671,864	$0

STATE SUPERFUND CONTRACTS

For Operable Unit 01 : Thomas Solvent Raymond Rd Source Area GW/S : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$6,147,887	$736,378	$736,378	$0
Long Term Remedial Action	$3,886,100	$388,610	$181,800	$0

For Operable Unit 02 : Verona Well Field Interim Action : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Interim Response	$2,300,000	$230,000	$226,000	$0
Totals:	$12,333,987	$1,354,988	$1,144,178	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: U.S. Aviex
1056 Huntly Road
Niles , MI

County: Cass
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: T8
State Site ID#: 14000017
State Site Score: 40

LOCATION
The U.S. Aviex Superfund site (the site) covers about six acres in Howard Township, Cass County. The area surrounding the site is primarily residential with farmland to the east. The Jerry Tyler Memorial Airport is located approximately 1.5 miles west and in the direction of groundwater flow from the site. The groundwater contamination plume from the site is located within, and east of, the 10-year time of travel capture zone of the "Parker #3" city of Niles municipal water supply wells.

SITE HISTORY
U.S. Aviex was the former owner of the property and produced various nonlubricating automobile solvents. In July 1972, an underground pipeline containing diethyl ether was ruptured and nearby residential wells became contaminated within three to four months. In November 1978, fire destroyed most of the facility resulting in the release of a number of other organic compounds into the soil and groundwater.

The site was placed on the National Priorities List 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, it was completed in August 1986 by the EPA. The RI identified impacted groundwater moving 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.

In 1988, U.S. Aviex declared Chapter 11 Bankruptcy and the EPA assumed the cleanup responsibilities. Later in 1988, an FS was completed and the Record of Decision (ROD) was signed with the selection of an on-site soil flushing treatment with groundwater purging and treatment remedy. The state concurred with the ROD and in September 1991 the Michigan Department of Natural Resources (MDNR) 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 Difference (ESD) was issued eliminating soil flushing from the remedy. The final RA construction report was completed in October 1993. The MDNR assumed the operation of the treatment system duties from the EPA in October 1994, and in October 1995 the site switched to a fund-financed state lead (90 percent federal funding and 10 percent state funding) for operation and maintenance (O & M) costs over ten years.

In October 1997, under authorization of the EPA, Tetra Tech Environmental Management, Inc. mobilized 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 the MDEQ received a $367,000 grant from the EPA for state-lead work to determine how to best capture and clean up the escaping plume. An additional extraction well (EW-6) was installed in 2000 to prevent further downgradient

migration of contaminated groundwater until the extent of contaminated groundwater could be fully defined.

The MDEQ conducted several additional groundwater investigations in 2002 and 2003 to better define the extent of the downgradient plume, the effectiveness of the installed pump and treat system, and 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 the 2002 and 2003 investigations, the MDEQ and the EPA installed a series of additional monitoring wells downgradient of the contaminated areas to further monitor the groundwater concentrations and ensure detection if any remaining impacted groundwater migrates further into two separate well-head protection areas. In addition, due to the age of the groundwater pump and treat system, and the amount of volatile organics remaining at the site, the MDEQ, with the EPA's concurrence, performed two separate expanded pilot tests in 2003 and 2004 at the site 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. The pump and treat system was shut down in late 2003, during the pilot testing. The EPA issued a ROD Amendment on September 29, 2004, that modified the remedy. The modified remedy included the shutdown of the groundwater pump and treat system, continued operation of the ozone sparging system, and monitored natural attenuation for the remaining low level groundwater contamination off the U.S. Aviex property.

Based on the results of the successful MDEQ and EPA's ozone sparge pilot test at the site, the MDEQ operated the sparge system 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, to below residential criteria. The sparge system was shut down to evaluate any potential rebound of levels in 2008 and 2009. Remaining low level contamination that is located downgradient of the site will be continued to be monitored for natural attenuation.

The other pilot test that was performed was conducted over a small area at the site that 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 addressed. In the fall of 2007 excavation of the LNAPL and off-site disposal began. Excavation activities were completed in 2008 and the contract was closed in the fall of 2009.

All affected residents in the area are on public water supply and a Five-Year Review was completed by the EPA in September 2004. However, several additional homes including a part of a subdivision, were located on the downgradient extent of impact. In order to reduce future monitoring costs of residential well sampling and monitor well sampling, municipal water was extended to several homes. Work began on the water main extension in the fall of 2007 and was expected to be completed in 2008; however, multiple contract issues had delayed the completion until spring of 2009. Extension of the water main through a section of homes that is not impacted (proposed in 2007) has been placed on hold due to limited funding availability. Water sampling collected in randomly selected residential homes in this area had no detections in any of the wells above the Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Criteria for the protection of drinking water.

The 2009 Five-Year Review 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. This is the third Five-Year Review for the facility. Previous reviews were completed in 1999 and 2004.

SITE STATUS
The site continues to have groundwater monitored annually to evaluate: (1) any potential rebound from the response actions in 2009; (2) the progress of natural attenuation of down-gradient impacted groundwater; and (3) potential migration of contaminated groundwater toward the local municipal well field. Deed restrictions will be placed on the site in 2011 and the property will be made available for redevelopment.

ENFORCEMENT STATUS
The state received funds from the bankruptcy settlement of 1988. Federal funding was provided March 31, 2004, under the Superfund Program with a 10 percent state match for RAs. Currently the state provides 100 percent of the funding for the facility.

SPECIAL CONSIDERATIONS
The impacted groundwater is currently being monitored and the only remediation currently occuring on the site is natural attenuation.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1989**
The ROD calls for groundwater pump and treat with soil flushing at the source.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/30/1993**
This ESD eliminated the soil flushing component of the remedy.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 09/30/2004**
The ROD Amendment included the shutdown of the pump and treat system, continued operation of the ozone sparging system, and monitored natural attenuation for the remaining low level groundwater contamination off the U.S. Aviex property.

Response Accomplishments: Completed

Remedial Investigation This was a federal-lead, fund-financed activity. The PRP began an RI/FS to determine the extent and nature of contamination. However, the EPA took over and completed the RI.

Start Date: 12/30/1983 Primary Cost: $412,176 Source: Federal
End Date: 12/30/1988 Secondary Cost: $400,000 Source: Private

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Alternate Water The MDNR extended the water main to the municipal water system for residents.

Start Date: 12/30/1986	Primary Cost:	$992,331	Source: State
End Date: 09/30/1987	Secondary Cost:	$0	Source:

Remedial Design Remedial Design (RD) of the groundwater treatment system.

Start Date: 01/30/1991	Primary Cost:	$726,000	Source: Federal
End Date: 10/30/1991	Secondary Cost:	$0	Source:

Remedial Action In September 1991 the MDNR entered into an SSC with the EPA for $305,110 for the state's share of capital costs of the RA.

Start Date: 04/30/1992	Primary Cost:	$2,745,990	Source: Federal
End Date: 09/21/1995	Secondary Cost:	$305,110	Source: State

Long Term Remedial Action The groundwater extraction system operated from 1993 to 2004.

Start Date: 10/13/1995	Primary Cost:	$2,459,827	Source: Federal
End Date: 03/31/2004	Secondary Cost:	$314,520	Source: State

Remedial Investigation RI down-gradient plume investigation.

Start Date: 10/30/1997	Primary Cost:	$112,500	Source: Federal
End Date: 06/01/2003	Secondary Cost:	$12,500	Source: State

Remedial Design RD of all additional extraction wells.

Start Date: 02/20/1999	Primary Cost:	$319,500	Source: Federal
End Date: 03/20/2001	Secondary Cost:	$0	Source:

5 Year Review Concluded that the remedy is currently protective of human health and the environment.

Start Date: 09/30/1999	Primary Cost:	$15,000	Source: Federal
End Date: 12/30/1999	Secondary Cost:	$0	Source:

Remedial Action Pilot and expanded pilot test of Air Sparge/Ozone and BIOX injections.

Start Date: 05/01/2003	Primary Cost:	$600,000	Source: Federal
End Date: 04/01/2004	Secondary Cost:	$60,000	Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Operation and Maintenance

O & M for the air sparge system. Interim response action completed. Levels were significantly reduced though still remain above applicable criteria.

Start Date: 04/01/2004	Primary Cost:	$100,000	Source: State
End Date: 10/01/2007	Secondary Cost:	$0	Source:

5 Year Review

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.

Start Date: 09/01/2004	Primary Cost:	$10,000	Source: Federal
End Date: 10/29/2004	Secondary Cost:	$0	Source:

Alternate Water

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.

Start Date: 01/01/2007	Primary Cost:	$200,000	Source: State
End Date: 06/29/2009	Secondary Cost:	$0	Source:

Operation and Maintenance

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.

Start Date: 01/01/2007	Primary Cost:	$600,000	Source: State
End Date: 06/29/2009	Secondary Cost:	$0	Source:

5 Year Review

The EPA completed the Five-Year Review.

Start Date: 01/08/2009	Primary Cost:	$10,000	Source: Federal
End Date: 11/24/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

Monitoring of groundwater for natural attenuation of contaminants in addition to well-head protection. Sampling costs estimated at $100,000 per year.

Start Date: 04/01/2004	Primary Cost:	$100,000	Source: State
End Date: 04/01/2034	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is due in November 2014.

Start Date: 11/24/2013 Primary Cost: $10,000 Source: Federal

End Date: 11/24/2014 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995746-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Long Term Remedial Action	$3,145,197	$314,520	$0	$3,119,912	$0
Remedial Design	$319,500	$0	$0	$314,350	$0
Totals:	$3,464,697	$314,520	$0	$3,434,263	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$9,555	$0	$0	$9,555	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$60,000	$0	$0	$31,429	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$78,222	$7,822	$0	$66,422	$0
Totals:	$147,777	$7,822	$0	$107,406	$0

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$2,598,032	$259,803	$259,803	$0
Totals:	$2,598,032	$259,803	$259,803	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Cannelton Industries, Inc.
South St. between 12th & 18th S
Sault Ste. Marie , MI

County: Chippewa
MDEQ District Location: Upper Peninsula
Managed By: RRD-Superfund

Federal Site Code: 8R
State Site ID#: 17000001
State Site Score: 46

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.

SITE 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 have 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 have 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 potentially responsible parties (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. The MDEQ 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 predesign 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. The remedial action (RA) was completed in early 1999 with 32,000 tons or 35,000 yards removed. The PRPs, in conjunction with the National Oceanic and Atmospheric Administration, also completed studies on the erodibility of contaminated sediments and bioavailability of sediment contaminants. The RA construction was completed in the summer of 1999, including the removal of barren zone and shoreline wastes, fence removal, well abandonment, new well installation, and additional shoreline stabilization.

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 biouptake studies were done during 2000 and 2001. Further biouptake studies would be necessary in future years if sediments were left in place.

Instead of having the PRPs continue to conduct biouptake studies, the MDEQ advocated for a cost-shared sediment removal, to improve upon the EPA's preferred remedy. Soon thereafter the EPA Great Lakes National Program Office (GLNPO) began using Great Lakes Legacy (GLL) funds to cost-share sediment removals in Areas of Concern, and this site qualified. Another biomonitoring study was planned for 2004, but this was put on hold pending the outcome of an application for GLL funding, which would be used to dredge the contaminated sediments, thus obviating the need to do ongoing biouptake studies. A three-party cost-share project agreement between the MDEQ, the EPA-GLNPO and the property owner, Phelps Dodge was agreed to and signed in 2006, and the work of removing sediments began in 2006 and was completed September 2007. The EPA Superfund Program was not involved in the agreement, but supported the work.

In June 2009, MDEQ, CRA, and PRP staff members performed a Five-Year Review site inspection both by land on foot and by boat to discern whether the remedy was functioning as designed.

An Explanation of Significant Differences 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 Record of Decision (ROD) Amendment by elimiating the requirement for biological monitoring. The parties agreed that the monitoring was no longer necessary because of the sediment removal project that was completed in 2007.

SITE STATUS

Discussions of deleting the site from the NPL can now begin between the site owner and the agencies. Five-Year Reviews will be conducted since some low-level waste is left on site. A purple stained sediment area was noted during the site inspection in June 2009. The EPA will work with the MDEQ and the PRP group to further characterize and evaluate potential actions.

MDEQ Staff continue to work with the PRP group to implement appropriate restrictive covenants on the property to consider the allowance of the removal of the site from the National Priorities List.

ENFORCEMENT STATUS

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 action 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 preexisting liability under CERCLA. The MDEQ

continues to serve as a liaison to the EPA regarding consistency of the federally required activities with state statutes.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1992**

The state did not concur with the ROD.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 09/27/1996**

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.

Response Accomplishments: Completed

Interim Response

Start Date: *06/11/1988* Primary Cost: $50,000 Source: Federal
End Date: *07/01/1988* Secondary Cost: $0 Source:

Negotiations RI/FS negotiations.

Start Date: *06/28/1988* Primary Cost: $0 Source: Federal
End Date: *09/27/1988* Secondary Cost: $0 Source:

Remedial Investigation

Start Date: *09/27/1988* Primary Cost: $1,080,000 Source: Federal
End Date: *09/30/1992* Secondary Cost: $0 Source:

Negotiations RD/RA negotiations.

Start Date: *02/05/1993* Primary Cost: $35,000 Source: Federal
End Date: *04/12/1993* Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Design PRP conducted remedial design with EPA oversight.

Start Date: 05/10/1993	Primary Cost:	$0	Source: Private
End Date: 07/01/2007	Secondary Cost:	$324,000	Source: Federal

Remedial Action 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 cu. yd.), fence removal, well abandonment, new well installation, and additional shoreline stabilization. Private party costs of this activity are unknown. The final remedial alternative for the sediments was said in the ROD to be contingent upon storm erosion modeling and biouptake studies. The erosion modeling did show erosion would occur in a 50 year storm. The biouptake studies were suspended pending the outcome of the dredging project. The dredging was successfully completed in 2007 obviating the need for further biouptake or erosion studies. Sediment dredging was performed under a three-party agreement including EPA-Great Lakes National Program Office using Great Lakes Legacy Act funds, the site owner Phelps Dodge, and the State of Michigan, which contributed $600,000.00. The result was an improved, much more permanent remedy for the sediments than the in-situ stabilization remedy previously favored by EPA-Superfund.

Start Date: 12/31/1998	Primary Cost:	$3,500,000	Source: Federal
End Date: 09/30/2007	Secondary Cost:	$3,500,000	Source: Private

5 Year Review EPA concluded that the RA is functioning as intended and is being protective in the short-term of human health and the environment. Long-term monitoring is taking place to ensure that long-term protectiveness is achieved at the site.

Start Date: 02/01/2004	Primary Cost:	$35,000	Source: Federal
End Date: 07/30/2004	Secondary Cost:	$0	Source:

5 Year Review EPA concluded that the Remedial Action is functioning as designed and is protective. Some long-term monitoring will be needed since some low level waste has been left in place.

Start Date: 08/27/2008	Primary Cost:	$0	Source:
End Date: 08/11/2009	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance Limited surface water monitoring and monitoring wells.

Start Date: 09/28/1999 Primary Cost: $0 Source: Private

End Date: 01/01/2030 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: 08/11/2013 Primary Cost: $0 Source: Federal

End Date: 08/11/2014 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$68	$0	$0	$67	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$84,500	$0	$0	$84,500	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$49,791	$0	$0	$48,845	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$17,146	$0	$0	$17,146	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$115,000	$0	$0	$106,550	$0
Totals:	$266,505	$0	$0	$257,108	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Clare Water Supply
Clare Industrial Park
Clare , MI

County: Clare
MDEQ District Location: Saginaw Bay
Managed By: RRD-Superfund

Federal Site Code: 55
State Site ID#: 18000006
State Site Score: 39

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 Rd., 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.

SITE HISTORY
The Michigan Department of Public Health (now the Michigan Department of Community Health) 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). Sampling revealed VOCs in two of four municipal production wells: Municipal Well #2 and Municipal Well #5. 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 trichloroethylene 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. The Michigan Department of Natural Resources (MDNR, now the Michigan Department of Environmental Quality (MDEQ)) 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 (NPL), and identified potentially responsible parties (PRPs). At the request of the MDNR, 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. Operable Unit 1, the interim remedial action 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 Operable Unit 2. Both of these operable units 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 of the Site. It concluded

that remedial actions were still effective and that the remedies protected the municipal water supply.

In 2003, the MDEQ 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 municipal wells #2 and #5. At the MDEQ's urging, the EPA asked Clare to begin monitoring for this chemical of concern. For further details, see the section below on the first operable unit.

Beginning in January 2006, the MDEQ began planning and participating in EPA's second Five-Year Review. Technical and managerial staff of the MDEQ participated in numerous meetings and conference calls to evaluate site data dating back to 1988. Staff evaluated the effectiveness of currently operating remedies. Staff also looked at the question of whether the remedies are protective of human health and the environment. Staff reviewed numerous draft reports sent by the EPA. After completing its evaluation, the MDEQ sent a letter to the EPA with its recommendations. Some deficiencies were noted, along with recommended actions. Many of these recommendations were incorporated in the EPA's final Five-Year Review report, which was issued in September 2006.

Stakeholders participated in a public meeting and site inspection from August 29 to 30, 2006 in Clare. These were required by the Five-Year Review. Staff from the MDEQ, EPA, City, and PRP consultants attended, in addition to a local resident who lived in an apartment near the Stanley Oil facility. The EPA presented a site history and recent developments. The resident notified the attendees of a concern he had over air inhalation risks at the apartment where he lived. The site inspection included the apartment where the resident lived. The site inspection also included all the site remedies currently in operation, all the monitoring wells, and the municipal supply wells, including a newly installed one.

Operable Unit 1 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 Operable Unit 1 to protect the public water supply (interim action operable unit). This action was funded by the PRPs, and 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. The pounds per month of VOCs removed from PRP-1 varied sharply between 1996 and 1998. But, from 1999 to 2003, removal rates dropped from 0.54 to zero pounds per month. Removal rates after 2003 never exceeded 0.024 pounds per month. Due to the very low removal rates between 2003 and 2006, the EPA eventually approved the decommissioning of PRP-1, but required that it be kept as a monitoring point.

The MDEQ evaluated the need for adding a new chemical of concern – 1,4-dioxane – to the regular analysis of Clare's municipal water supply. The MDEQ suggested to EPA that this be done, and 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. 1,4-dioxane

has been used elsewhere as a stabilizer in chlorinated solvents such as 1,1,1-trichloroethane, which has been found in on-site groundwater sampling since 1988. The chemical is considered to be a probable human carcinogen, and has been known to exhibit health effects even from exposure to low concentrations. Michigan's residential drinking water standard is currently set at 85 ppb.

In FY05, the City notified the EPA that Municipal Well #2, which is a part of the interim action operable unit remedy, was failing. This issue was evaluated and the PRPs agreed to pay for its replacement. The City installed the replacement well (Municipal Well#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 operable unit. 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.

Operable Unit 2 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 Operable Unit 2, the final response to address remaining soil and groundwater contamination (soil and groundwater remedy operable unit). 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 will continue to be monitored to ensure that its drinking water continues to be safe for human consumption.

In Fiscal Year (FY) 2003 (FY03), the PRPs and the EPA completed an Engineering Evaluation/Cost Analysis for a proposed revision to the soil and groundwater remedy operable unit. 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. The PRPs evaluated two alternatives to treat the contaminated groundwater: 1) installation of a permeable reactive iron slurry wall or barrier, and 2) groundwater extraction and treatment. The PRPs recommended alternative #1 since the cost was about half as much as alternative #2, and it was believed to be more effective. The EPA later concurred with this recommendation.

Further actions to revise the soil and groundwater remedy operable unit were completed during FY04. The EPA drafted another ESD document to describe the reason for changing the remedy. The MDEQ evaluated various drafts and provided comments to the EPA. The EPA also scheduled a public meeting in Clare to describe the change to the public. Representatives of the EPA, MDEQ, SECOR International (the PRP Group consultant) and the City attended the meeting in April 2004. Later in the year, SECOR submitted draft work plans for the installation of the reactive barrier noted above in alternative #1. The EPA and the MDEQ reviewed the drafts and provided comments to SECOR.

The existing remedy for the soil and groundwater remedy operable unit continued to be operated, monitored and maintained in FY05. Contaminated soils from the Filcon facility were previously placed in a containment cell at the Ex-Cell-O facility. Wells installed in the containment cell extracted contaminated water and air to remove the contaminants. Since most of the wells became dewatered and are often dry, they were changed to operate in a "pulse" mode. This means they were turned off for a month and then on again for a month. This allowed the wells to recharge somewhat so that contaminant removal could continue. The EPA also began working with the MDEQ, the City,and other stakeholders to reuse a portion of the Ex-Cell-O property.

An addition to the Operable Unit 2 remedy was constructed at the Filcon facility in FY05. This is 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. The PRPs chose a new consultant for the Site, Progressive Engineering and Construction, Inc., who took over from SECOR at this time. The effectiveness of the barrier is unclear; the MDEQ has recommended further evaluation.

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.

SITE STATUS

Remedial actions continue for the whole Site and for both operable units. An updated long-term groundwater monitoring plan was implemented in 2008 and is under review pending finalization. Site-wide groundwater monitoring continues on a semi-annual basis. Operations and Maintenance activities are still occurring at the air strippers while continuing to remove groundwater contaminants prior to mixing with the water supply (Operable Unit 1). This includes monthly monitoring of the public water supply, where concentrations continue to be equal to or less than 2.0 part per billion VOCs. Monitoring, maintenance, and cleanup activities continue to remove VOCs at three source areas (Operable Unit 2).

In the fall of 2009, aging Municipal Well #5 was replaced with Municipal Well #9.

At the EPA's request, in January 2010, the MDEQ provided the EPA with a technical evaluation of the eleven year old "time critical" removal action at the Stage Right source area. The EPA subsequently provided that to the potentially responsible party who subsequently submitted its own "evaluation" that stated the current remedy was effective. Site data indicates otherwise and future discussions are anticipated.

ENFORCEMENT STATUS

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 are on properties owned by entities responsible for cleanup actions under state programs. The Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and Part 213, Leaking

Underground Storage Tanks, as amended (Part 201 and Part 213) programs have oversight responsibilities for the Stanley Oil source area, the American Dry Cleaners source area, and the former Standard Oil source area. MDEQ Saginaw Bay District Office staff is working with the EPA and the MDEQ Superfund Section staff in this regard.

The MDEQ requested and the EPA provided several historical enforcement documents for the MDEQ files. These were used in FY07 and FY08 to aid in the development of a new long-term groundwater monitoring plan.

SPECIAL CONSIDERATIONS
Several source areas at the site are being handled by the Part 201 and Part 213 State Programs. Some coordination between State Program staff and Superfund Program staff is on-going and expected to continue.

OPERABLE UNITS

00	Entire Site
01	Interim Action - Wellhead Treatment
02	Final Remedial Actions for groundwater and source soils

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA prepared the Five-Year Review with State assistance. The EPA concluded that the site remains protective although specific areas within the site are still under active remedial actions.

Start Date: 09/03/2001	Primary Cost:	$3,000	Source: Federal
End Date: 09/30/2001	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

This second Five-Year Review was completed by the EPA with the MDEQ's assistance. The start and end dates match those in EPA's CERCLIS database as of January 24. 2007. The end date is the signature date of the report. The report states 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 dependant upon effective Institutional Controls that are maintained and monitored."

Start Date:	*06/23/2005*	Primary Cost:	$20,000	Source: Federal
End Date:	*09/28/2006*	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Anticipated date of this Five-Year Review (based on signature date of the September 28, 2006 Five-Year Review).

Start Date:	*03/28/2011*	Primary Cost:	$0	Source:
End Date:	*09/28/2011*	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Interim Action - Wellhead Treatment

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 08/18/1990**

Interim action ROD to treat municipal water.

Response Accomplishments: Completed

Remedial Investigation

RI/FS conducted by PRP group. Costs unknown.

Start Date:	*04/12/1985*	Primary Cost:	$0	Source: Private
End Date:	*09/27/1985*	Secondary Cost:	$25,000	Source: Federal

OPERABLE UNIT 01: Interim Action - Wellhead Treatment

Response Accomplishments: Completed

Remedial Design

Start Date: 09/14/1990	Primary Cost:	$0	Source: Private
End Date: 03/07/1991	Secondary Cost:	$0	Source:

Remedial Action Construction of air stripping towers to treat municipal water supply.

Start Date: 03/07/1991	Primary Cost:	$530,000	Source: Private
End Date: 03/07/1992	Secondary Cost:	$105,000	Source: Federal

Response Accomplishments: Ongoing

Operation and Maintenance PRP cost for FY05 is $300,000, for FY06 $240,000, for FY08 $205,000. 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.

Start Date: 03/07/1992	Primary Cost:	$540,000	Source: Private
End Date: 03/07/2022	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Final Remedial Actions for groundwater and source soils

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/16/1992**

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 08/04/1995**

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. O&M cost is based upon $61,000 annually for 27 years. The first three years of O&M are included under the emergency action.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 05/15/1997**

The ROD was amended to change soil remedy to excavation and encapsulation in an on-site containment cell. The change was made because pre-design studies showed that the site soils were not conducive to SVE treatment. The remedy consists of: excavation and consolidation of soils; installation of a perimeter slurry cut-off wall; groundwater dewatering and treatment; construction of a multi-media cap; and groundwater monitoring.

OPERABLE UNIT 02: Final Remedial Actions for groundwater and source soils

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 2 **Effective 09/29/2004**

The overall sitewide remedy has been constructed and operating since March 1999. Since then, information has come to light which necessitates modifications to three (3) aspects of the remedies that were implemented at the Site. The first relates to groundwater contamination emanating from the Mitchell facility in the southwestern portion of the Site. A permeable reactive barrier has been proposed to remediate contaminated groundwater at the Mitchell facility. The estimated cost of this part of the modified remedy is about $300,000. Secondly, the city of Clare has advised the EPA and the PRPs that municipal well #2, which is part of the groundwater extraction network provided for in a ROD signed on September 16, 1992, is failing and will need to be replaced. And finally, the Groundwater Surface Water Interface criteria provided in a 1992 ROD have become more stringent for ethylbenzene and xylene, and these new criteria are being adopted herein.

Response Accomplishments: Completed

Interim Response Contaminated soil excavation and off-site disposal of site hot spots conducted under State request and oversight. Costs unknown.

Start Date: 05/01/1987	Primary Cost:	$0	Source: Private
End Date: 01/29/1988	Secondary Cost:	$0	Source:

Remedial Design Design of groundwater remedy by PRP group. Costs unknown.

Start Date: 09/17/1993	Primary Cost:	$0	Source: Private
End Date: 10/03/1995	Secondary Cost:	$200,000	Source: Federal

Remedial Action Construction of enhanced groundwater capture and treatment via air stripping.

Start Date: 10/03/1995	Primary Cost:	$220,000	Source: Private
End Date: 08/26/1996	Secondary Cost:	$180,000	Source: Federal

Remedial Design Design of soil containment cell by PRP group. Cost unknown.

Start Date: 05/15/1997	Primary Cost:	$0	Source: Private
End Date: 04/28/1998	Secondary Cost:	$0	Source:

Remedial Action Excavation of contaminated soils into an on-site containment cell constructed by the PRP group.

Start Date: 04/28/1998	Primary Cost:	$1,361,200	Source: Private
End Date: 06/15/1999	Secondary Cost:	$55,000	Source: Federal

OPERABLE UNIT 02: Final Remedial Actions for groundwater and source soils

Response Accomplishments: Completed

Remedial Design Remedial Design for the installation of a permeable reactive barrier to treat contaminated groundwater at the Filcon facility, formerly known as Mitchell Corporation, was completed in FY05. Groundwater sampling in this area has shown vinyl chloride is present at concentrations up to 940 ppb. Groundwater in this area is likely contributing to the recharge of one or two of Clare's municipal wells. Some design elements, such as monitoring well placement, were implemented with MDEQ input. The estimated cost to the PRPs for calendar year 2004 was $20,000.

Start Date: 06/15/2001 Primary Cost: $20,000 Source: Private

End Date: 11/30/2004 Secondary Cost: $0 Source:

Remedial Action A permeable reactive barrier was installed along with a monitoring well network in FY05. The estimated cost to the PRP Group was $300,000. The completion date was in May 2005.

Start Date: 12/13/2004 Primary Cost: $300,000 Source: Private

End Date: 05/31/2005 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Operation & Maintenance and monitoring of the permeable reactive barrier and soil containment cell remedy. 2004 PRP Group costs are estimated at $200,000. FY05 PRP costs are $100,000, FY06 PRP costs are $130,000, FY08 PRP costs are $155,000. City of Clare costs for FY09: $96,715.

Start Date: 07/01/1999 Primary Cost: $2,634,000 Source: Private

End Date: 12/21/2018 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$24,231	$0	$0	$24,231	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$125,000	$0	$0	$113,660	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$93,114	$0	$0	$92,645	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,876	$0	$0	$40,876	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$19,490	$0	$10,615	$19,490	$10,614

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$141,619	$0	$0	$141,618	$0
Totals:	$444,330	$0	$10,615	$432,519	$10,614

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Parsons Chemical Works, Inc.
3562 W. Jefferson Street
Grand Ledge , MI

County: Eaton
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: DX
State Site ID#: 23000010
State Site Score: 35

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. In the immediate vicinity of the former Parsons plant, Millbrook Printing is located on the south, the Church of the Nazarene and its associated parsonage are located immediately to the west, and commercial operations are located on the north side of Jefferson Street. Two residential subdivisions, Russell Subdivision and Fairview Subdivision, are located immediately east of the site across Oneida Street. The Grand River is located approximately 3/4 of a mile north of the plant.

SITE HISTORY
Parsons Chemical Works, Inc., which operated from1945 through mid-1979, mixed, manufactured, and packaged agricultural chemicals including pesticides, herbicides, solvents, and mercury-based compounds. Floor drains in the Parsons plant discharged into a septic tank and leach field, which were connected to a catch basin leading to a county drain system. Parsons apparently discharged manufacturing liquid wastes through the drainage 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 on soil primarily around the perimeter of the building, particularly the south side, impacting approximately one acre. 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 into the Grand Ledge municipal water and sanitary waste systems.

The EPA conducted the first of two Non Time-Critical Removal actions at the site from October 1990 until June 1994. During this removal, 3,000 cubic yards of contaminated soil were 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 Time-Critical Removal.

A remedial investigation/feasibility study (RI/FS), conducted between 1993 and 1995, consisted of a hydrogeologic 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 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 unquantified potential threat. The residential wells sampled during the RI revealed no contamination. The MDEQ 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 Time-Critical Removal 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, the MDEQ 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. No pesticides were detected in the water samples. No metals 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 (pbb). The aesthetic criterion was typically associated with non health-related objectionable characteristics such as taste or staining. The MDEQ 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, the MDEQ began the remedial design in 1998. Because the concentration of manganese in some wells exceeded the aesthetic criterion for manganese, the MDEQ 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, the MDEQ 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 the MDEQ 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 (SOW) was developed in 2002 . The SOW stated that annual groundwater sampling of both site monitoring wells and the adjacent residential wells was to be conducted for fifteen years or until the data confirmed that any residual groundwater contamination was below Part 201 Drinking Water criteria.

The MDEQ obtained funding from the EPA in October 2002, through a Cooperative Agreement in conjunction with the SOW, for 90 percent of the downgradient investigation and implementation of the long-term monitoring required by the ROD.

In March 2004, MDEQ in consultation with EPA, completed the first Five-Year Review for the site. The Five-Year Review concluded that the remedy remains protective of human health and the environment.

The second Five-Year Review, written by the MDEQ in consultation with the EPA, was completed on April 15, 2009. The Five-Year Review 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.

SITE STATUS

Annual groundwater sampling under the SOW began in late October 2002 and had been conducted in 2003, 2004, 2005, 2006, 2007, 2008, 2009 and 2010. MDEQ staff performed the on-site monitoring well groundwater sampling investigation while the Barry - Eaton County Health Department conducted the annual residential well sampling. Based upon 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 seven residential wells located along the Parsons site boundary. This reduction in residential well sampling began in 2010 and will be discontinued in 2011.

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. It was decided that annual monitoring of the groundwater could be discontinued. MDEQ began the process to hire a contractor to plug an abandon the monitoring wells, anticipated to be completed in 2011.

ENFORCEMENT STATUS

The state of Michigan has 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 that there are no viable responsible parties.

MDEQ began development of a site specific Restrictive Covenant anticipated to be completed in 2011.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1997**

Long-term monitoring with trend analysis and contingency for alternate water supply, if needed.

Response Accomplishments: Completed

Interim Response Remediated 3,000 cubic yards of soil using In-Situ Vitrification. Conducted by the EPA Emergency Response Branch as a Non Time-Critical Removal.

Start Date: 10/31/1990 Primary Cost: $3,146,000 Source: Federal
End Date: 06/30/1994 Secondary Cost: $200,000 Source: State

Remedial Investigation State lead RI/FS.

Start Date: 02/28/1993 Primary Cost: $870,957 Source: Federal
End Date: 06/30/1997 Secondary Cost: $0 Source:

Interim Response 5,102 cubic yards of soil, contaminated with elevated concentrations of arsenic and/or dieldrin, were excavated and disposed of at an approved landfill.

Start Date: 12/01/1997 Primary Cost: $1,000,000 Source: Federal
End Date: 05/21/1999 Secondary Cost: $6,000 Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

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.

Start Date: 12/01/1997	Primary Cost:	$0	Source: Federal
End Date: 04/30/1998	Secondary Cost:	$15,000	Source: State

Remedial Design

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. However, arsenic and lead were not uniformly present in background at elevated concentrations but did detect arsenic at increased concentration in one off-plant-property monitoring well downgradient of the former plant.

Start Date: 08/31/1998	Primary Cost:	$178,660	Source: Federal
End Date: 12/31/2002	Secondary Cost:	$0	Source:

Remedial Action

Long-term monitoring for 15 years with trend analysis and contingency was the intended long-term remedial action. 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 is no longer needed.

Start Date: 10/01/2002	Primary Cost:	$390,921	Source: Federal
End Date: 10/01/2010	Secondary Cost:	$43,436	Source: State

5 Year Review

The first Five-Year Review concluded that the remedy remains protective of human health and the environment.

Start Date: 11/30/2003	Primary Cost:	$0	Source: Federal
End Date: 03/31/2004	Secondary Cost:	$0	Source:

5 Year Review

The EPA provided funding to the MDEQ to conduct the second Five-Year Review investigation. The second Five-Year Review was completed on April 15, 2009. The Five-Year Review 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.

Start Date: 03/01/2008	Primary Cost:	$20,000	Source: Federal
End Date: 04/15/2009	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Action Funding will be provided by the EPA to allow the MDEQ to hire a Level of Effort contractor to plug and abandon the site monitoring well network. The actual work is expected to occur in 2011. The MDEQ will also develop a site specific Restrictive Covenant.

Start Date: 10/10/2010 Primary Cost: $100,000 Source: Federal

End Date: Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: 03/01/2013 Primary Cost: $0 Source: Federal

End Date: 04/01/2014 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005953-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$363,212	$0	$0	$178,659	$0
Remedial Investigation	$870,958	$0	$0	$870,957	$0

Cooperative Agreement Number V005813-01 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$434,357	$43,436	$0	$225,934	$20,514
Totals:	$1,668,527	$43,436	$0	$1,275,551	$20,514

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E192-01 : Open

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$20,000	$0	$0	$19,941	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,788	$0	$0	$7,788	$0
Totals:	$27,788	$0	$0	$27,730	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Petoskey Municipal Well Field
200 West Lake Street
Petoskey , MI

County: Emmet
MDEQ District Location: Gaylord
Managed By: RRD-Superfund

Federal Site Code: 54
State Site ID#: 24000011
State Site Score: 37

LOCATION
The Petoskey Manufacturing Company site 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.

SITE HISTORY
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. Petoskey Manufacturing Company, 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.

As a result of negotiations with the Michigan Department of Natural Resources (MDNR), the PRP removed the most highly contaminated soils and capped the site in 1982. The MDNR conducted preliminary hydrogeological investigations in 1982 and 1983. In 1984 the PRP performed additional hydrogeological studies under an EPA-issued Administrative Order by Consent (Order). In the spring of 1987, the PRP signed an Order to perform a complete remedial investigation/feasibility study (RI/FS). 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 Petoskey Manufacturing Company building and into the surrounding soils. The PRP proceeded to excavate some of the contaminated soils and the MDNR 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. The MDEQ 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 FS and the Record of Decision (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 Petoskey Manufacturing Company building, excavation of soils around the Petoskey Manufacturing Company building to a depth of five 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 Petoskey Manufacturing Company property, and groundwater monitoring with a contingency plan to ensure compliance with groundwater/surface water interface (GSI) criteria.

Because one of the city's two municipal wells became contaminated, the MDEQ provided $500,000 in 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 MDEQ Water Bureau staff, the Ingall's well was filled with layers of rock and sand from bottom to top. The piping between the Ingall's Avenue booster station and well was cut off and plugged.

In August 1999, through a Superfund State Contract, funds were provided to assist in the EPA-designed remedial action to mitigate movement of contamination from soils to groundwater. These actions included site preparation, excavation (including dust control measures and a temporary fence), transport and off-site disposal of solid waste, fill, site restoration, and intermittent SVE operation.

The EPA designed and completed the excavation. Several areas were only excavated to two feet (as opposed to the five feet identified in the ROD) and one area of concern was excavated to approximately seven feet to ensure that residential direct contact criteria were met. The MDEQ 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, the MDEQ 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 the MDEQ 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 Ingall's water supply well, a major hydraulic and chemical transport influence, had been taken out of service.

The objectives of the Baseline Monitoring Program at the site were to:

1. Determine the groundwater flow direction.
2. Characterize the contaminant distribution.
3. Obtain current groundwater quality data.
4. Provide the basis for development of the long-term monitoring program which may include identification of new monitoring well locations and/or the possible abandonment of existing monitoring wells.

During the baseline monitoring sampling, 32 monitoring well samples were collected from the existing monitoring wells around the site. Additionally, one sample was collected from the old Ingall's municipal well, and four samples were collected from the three residential wells located at 542, 546, and 550 West Lake Street.

Analysis of the monitoring well samples identified the presence of TCE and bis(2-ethylhexyl)phthalate at concentrations above the Residential and Commercial I 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 Commercial I Drinking Water and the GSI Criteria of NREPA throughout the site.

On September 6, 2002, the Baseline Monitoring Technical Memorandum Report was sent to the EPA for review. This report provided supporting information for use by both the EPA and the MDEQ to design the long-term groundwater monitoring program.

In June 2004, the EPA tasked the MDEQ to conduct the Water Level Data Collection and

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. This survey was completed in November 2004 and will assist preparation of the long-term groundwater monitoring plan for the site. The study report was released in May 2005 and 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.

An inspection at the site was conducted on September 21, 2004. The purpose of the inspection was to assess the protectiveness of the Remedial Action performed at the site. Based on site inspection, all existing Petoskey Manufacturing Company buildings have been demolished. The demolition area was covered with clean soil. There was not a fence to restrict access to the site. Most of the existing monitoring wells were in good condition. Based on EPA staff pictures taken in January 2006, a portion of the site has been developed into condominiums.

In November 2004, a draft Five-Year Review report for the site was prepared by the EPA. The purpose of the Five-Year Review was to evaluate the implementation and performance of the selected remedy for the site in order to determine if this remedy will be protective of human health and the environment.

The MDEQ's review of the draft Five-Year Review report made use of new information concerning soil contamination beneath the former building from the Due Care and Demolition Report for the former Petoskey Manufacturing Company by Environmental Consultants & Services, Inc., dated October 25, 2004, and the results of the draft MDEQ groundwater level survey. Based on this review, the MDEQ concluded that the natural attenuation remedy for the site is appropriate, but identified concerns with the remaining soil contamination, the existing monitoring system, the need for a monitoring plan for the monitored natural attenuation remedy, the lack of institutional controls, 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 March 2006, the EPA submitted a draft Long-Term Groundwater Monitoring Plan for the site. The MDEQ provided comments and indicated that, if the comments were incorporated into the final document, the MDEQ would consider the document approved. The EPA issued the final Groundwater Monitoring Plan in August 2006 without retaining several monitoring wells important to meeting the remediation objectives. Due to lack of funding, the MDEQ did not review the final Groundwater Monitoring Plan. In 2007, the MDEQ secured limited funds to evaluate the final Groundwater Monitoring Plan and determined it does not meet all of the groundwater remedial action objectives outlined in the ROD (monitored natural attenuation, aquifer cleanup to comply with drinking water standards and meet the GSI protection criteria). Because the EPA is still sampling the groundwater, the number and locations of monitoring wells has been changing, the adequacy of some of the city-replaced monitoring

wells is questioned by the EPA, and the potential for the EPA to further modify the Groundwater Monitoring Plan, the MDEQ will wait to see what the EPA plans are to modify the Groundwater Monitoring Plan. In December 2007, the EPA and the MDEQ had a brief meeting concerning the site. At this meeting, the MDEQ 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) 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/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 Petoskey Manufacturing Company property. The EPA also indicated it would like to abandon two additional monitoring wells (PS-6, and MW-10A).

SITE STATUS

In December 2009, the EPA issued the second Five-Year Review for the site. During the development stage, the MDEQ had identified and recommended several key concerns be included in the Five-Year Review 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 erroneously elected to "interpret" that all of these ROD components have been adequately implemented. None of these MDEQ recommendations were included in the issues and recommendations sections of the final Five-Year Review. The MDEQ is in the process of reviewing the final Five-Year Review and providing comments for the administrative record.

Additionally, the EPA has incorrectly asserted that the long-term remedial action (LTRA) period began in 2008 even though all of the components of the ROD have not been implemented. In January 2010, the MDEQ provided written confirmation of disagreement with this assertion. In April, 2010, the EPA submitted a draft Superfund State Contract (for state payment of its match contribution) to which the DNRE 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 the DNRE to 10% match for ten years followed by 100% state funding. Further discussions with the EPA will occur.

ENFORCEMENT STATUS

In 1984, the PRP performed additional hydrogeological studies under an EPA-issued Administrative Order. In the spring of 1987, the PRP signed an Order 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 the MDEQ. It has been determined that the Petoskey Manufacturing Company is liable under NREPA. On June 1, 2000, the Petoskey Manufacturing Company filed for protection under Chapter 11 of the Bankruptcy Code for a second time (the first time was March 8, 1990). On February 16, 2001, the Chapter 11 filing was converted to Chapter 7. The Petoskey Manufacturing Company property then became a part of the bankruptcy estate.

In April 2003, the former Petoskey Manufacturing Company 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 MDEQ 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. As of late 2004/early 2005, the developer has begun construction of residential condominuims and limited commercial space on the property.

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 the MDEQ Compliance & Enforcement staff.

In December 2009, MDEQ was notified that Perazza Products, the developer, was filing for bankruptcy.

SPECIAL CONSIDERATIONS

The property was formerly zoned light industrial but has been rezoned to residential/commercial with the surrounding properties zoned as residential. Beginning in 2005, the property was being developed into condominiums with limited commercial space. As of Fiscal Year 2010, the property was partially developed (with the rest having slab construction with no condominiums built).

OPERABLE UNITS

00	Entire Site
01	Interim Action (Ingalls Well)

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1998**

Soils Remedy: Operation of the pilot test SVE system (three SVE wells) until no detections of organic vapors in wells; excavation of contaminated soils to five feet, with one area (NW corner of building) excavated to seven feet with no confirmation sampling. Excavation to eliminate residential direct contact concern and to minimize the potential for soils leaching to groundwater in excess of GSI criteria. Implementation of deed restriction on the former Petoskey Manufacturing Company property is also required.

Groundwater Remedy: Installation of deed restrictions to prevent exposure/consumption of contaminated groundwater (both at the Petoskey Manufacturing Company property and downgradient properties, installation of additional monitoring wells, and groundwater monitoring for 1) GSI compliance, 2) monitored natural attenuation, and 3) eventual compliance with generic residential drinking water criteria (maximum contaminant levels). Final remedy is to meet generic residential drinking water criteria (maximum contaminant levels) and GSI protection.

Contingency Plan: The 1998 ROD calls for a contingency plan to be developed. 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 exceedances and possible implementation of active groundwater remediation, additional source controls, etc., to prevent further release of contaminants to the surface water body.

Response Accomplishments: Completed

Remedial Investigation The five 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.

Start Date: 01/01/1982	Primary Cost:	$0	Source: Private
End Date: 12/31/1983	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

Under a 1984 EPA-issued Administrative Order, Petoskey Manufacturing Company performed additional hydrogeological investigation activities and installed four monitoring well clusters (PS-A, PS-B, PS-C, and PS-D) in 1984.

Under a second EPA Administrative Order in 1987, Petoskey Manufacturing Company was directed to conduct a full RI/FS. They installed four additional monitoring wells in 1988 (PS-104, PS-105S, PS-105D, PS-106). The EPA assumed responsibility for the RI in 1990 due to Petoskey Manufacturing Company delays in work plan development and their filing for Chapter 11 bankruptcy in 1990.

Start Date: 01/01/1984	Primary Cost:	$0	Source: Private
End Date: 12/31/1990	Secondary Cost:	$275,000	Source: Federal

Remedial Investigation

The MDEQ conducted two phases of RI focusing on soil and groundwater contamination and the extent of on-site contamination.

Start Date: 01/01/1991	Primary Cost:	$672,279	Source: Federal
End Date: 02/28/1998	Secondary Cost:	$0	Source:

Remedial Design

The EPA designed the proposed soil excavation and modification to the RI/FS SVE pilot extraction wells in 1999-2000. The EPA and the MDEQ will use the baseline groundwater monitoring report to design the long-term groundwater monitoring for the site (monitored natural attenuation and GSI compliance).

Start Date: 04/01/1999	Primary Cost:	$65,000	Source: Federal
End Date: 11/30/2000	Secondary Cost:	$0	Source:

Remedial Action

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 two feet at select locations (the ROD required five 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 MDEQ 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 a Superfund State Contract with EPA, ensuring the state's 10 percent cost share of the Remedial Action.

Start Date: 09/01/1999	Primary Cost:	$333,826	Source: Federal
End Date: 12/31/2000	Secondary Cost:	$37,092	Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA issued the first Five-Year Review 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."

Start Date: 10/18/2004	Primary Cost:	$0	Source: Federal
End Date: 03/16/2005	Secondary Cost:	$0	Source: Federal

5 Year Review In spite of very limited review time provided by the EPA, the MDEQ provided several iterations of extensive comments identifying key Record of Decision remedy components that have not but need to be implemented. The EPA ignored these MDEQ recommendations in the final version of the Five-Year Review.

Start Date: 10/28/2009	Primary Cost:	$0	Source:
End Date: 12/23/2009	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Action Work is being performed by the MDEQ under a Cooperative Agreement from the EPA.

Groundwater: The EPA requested that the MDEQ conduct a "baseline" groundwater sampling event at the site. This sampling was conducted in June 2002. On September 6, 2002, the Baseline Monitoring Technical Memorandum Report was sent to the EPA for review and designing of the groundwater monitoring program. Once the EPA and the MDEQ have agreed to the long-term monitoring program, any needed additional monitoring wells will be installed and sampled and the thirty year groundwater monitoring program will begin. The schedule is dependent on the EPA development of a long-term groundwater monitoring plan and installation of additional monitoring wells. In FY07, the EPA conducted groundwater sampling to better understand the site before revising the groundwater monitoring plan dated August 2006. The MDEQ believes this plan does not meet all of the objectives outlined in the final ROD for the site.

In June 2004, the EPA tasked the MDEQ to conduct the Water Level Data collection and Monitoring Wells 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 final report was released on May 10, 2005, indicating "Lake Michigan's influence on the groundwater at the site is large, sporadic, and erratic" making it difficult to know with certainty when GSI can be representatively sampled, additional monitoring wells are needed to the north/northeast, and due to the nature of the geology, data collected from replacement monitoring wells will need to be differentiated from data collected from historical wells.

In 2006-2007, the EPA conducted 6 rounds of quarterly groundwater sampling for an EPA estimated cost of $90,000 (Jan 17, 2008 e-mail from Owen Thompson, EPA). This cost has been added to the Primary Estimated Cost. The EPA anticipates continuing this sampling through September 2009 (estimated cost of $15,000 per quarterly sampling event).

Start Date: *10/01/2000*	Primary Cost:	$145,080	Source:	Federal
End Date: *09/30/2009*	Secondary Cost:	$6,120	Source:	State

Response Accomplishments: Future Need

5 Year Review Anticipated date of this Five-Year Review (based on signature date of the December 23, 2009 Five-Year Review).

Start Date:	Primary Cost:	$0	Source:	
End Date:	Secondary Cost:	$0	Source:	

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

Long Term Remedial Action

Long-term groundwater monitoring will be conducted at this site to determine compliance with GSI criteria, long-term compliance with Maximum Contaminant Levels (MCLs), and to evaluate monitored natural attenuation of the groundwater. The State is to pay a ten percent match for the first ten years. Cost is based on FY06 dollars (assuming approx. 4 percent inflation/year) for ten-year period (Assumes quarterly sampling for 3 years ($503k) followed by semi-annual sampling for 7 years ($938k). Assumes samples will be sent to the Contract Laboratory Program lab at no cost to State. State ten percent match total for ten years = $144,100.

In FY07, the EPA conducted groundwater sampling to better understand the site before revising the groundwater monitoring plan dated August 2006. The MDEQ believes this plan does not meet all of the objectives outlined in the final ROD for the site.

Note: In January 2010, the EPA sent the MDEQ correspondence indicating that the ten year Long Term Remedial Action (LTRA) time clock began in April 26, 2008. The MDEQ sent the EPA an email refuting the LTRA start date because not all components of the remedy have been appropriately implemented. Scheduled start dates for LTRA and O&M will not be adjusted/corrected until this issue is resolved.

Start Date: 10/01/2012	Primary Cost:	$1,296,900	Source: Federal
End Date: 09/30/2022	Secondary Cost:	$144,100	Source: State

Operation and Maintenance

The MDEQ will continue conducting long-term groundwater monitoring (100 percent state funds) at this site to determine compliance with GSI criteria and to evaluate monitored natural attenuation of the groundwater and achieving long-term compliance with MCLs. Total cost of $3,005,315 is based on 20 years of semi-annual groundwater monitoring ($150,266/year) at an estimated 2015 dollars.

Note: In January 2010, the EPA sent the MDEQ correspondence indicating that the ten year Long Term Remedial Action time clock began in April 26, 2008. The MDEQ sent the EPA an e-mail refuting the Long Term Remedial Action start date because not all components of the remedy have been appropriately implemented. Scheduled start dates for LTRA and O&M will not be adjusted/corrected until this issue is resolved.

Start Date: 01/01/2018	Primary Cost:	$150,266	Source: State
End Date: 01/01/2038	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Interim Action (Ingalls Well)

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 06/14/1995**

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. The MDEQ elected to have the money applied to an alternate water supply consisting of a groundwater source located in Bay Harbor, a development located approximately five miles west of Petoskey. If the air stripper were to have operated, the ROD estimated the annual Operation and Maintenance cost at $169,000.

NOTE: The EPA has subsequently audited the interim action ROD and resulting $1.238 million payment to the state (which was forwarded to the city of Petoskey for the alternate water supply). The September 14, 2001, audit report determined that the EPA should have paid 90 percent of $1.238 million (as opposed to $1.238 million being the EPA 90 percent share), and that the remaining costs should be recovered.

Pursuant to a January 16, 2002, letter from the MDEQ Director Harding to the EPA Regional Administrator Skinner, the MDEQ agreed to repay the EPA $123,800 identified as an overpayment by the Office of Inspector General.

Response Accomplishments: Completed

Interim Response After the MDNR collected soil samples, Petoskey Manufacturing Company removed contaminated soils from the west side of the building sometime in 1982.

Start Date: 06/01/1982	Primary Cost:	$50,000	Source: Private
End Date: 06/30/1982	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Interim Action (Ingalls Well)

Response Accomplishments: Completed

Interim Response

On October 28, 1996, the state provided the City of Petoskey (City) with $500,000 toward an alternate water supply. The EPA awarded a $0 cooperative agreement (grant) 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. The State's 10 percent match of $137,555 came out of the $500,000 that had already been provided by the State to the City. The EPA awarded the $1.238 million via grant to the State on September 22, 1998. The City finalized their agreement with the State in September 1999 (to allow for the EPA funding to be transferred from the State to the City) after which the MDEQ authorized the $1,238,000 payment to the City on September 20, 1999. The MDEQ subsequently refunded $123,800 to the EPA per a federal audit.

Start Date: 10/28/1996 Primary Cost: $1,114,200 Source: Federal

End Date: 09/20/1999 Secondary Cost: $623,800 Source: State

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995105-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$1,375,555	$137,555	$0	$1,375,555	$0
Remedial Investigation	$840,924	$0	$0	$672,279	$0

Cooperative Agreement Number V975314-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$61,200	$6,120	$0	$50,037	$0
Totals:	$2,277,679	$143,675	$0	$2,097,870	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$640	$0	$0	$638	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$63,375	$0	$0	$45,155	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,752	$0	$3,234	$7,752	$5,205

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$27,349	$0	$0	$27,349	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$16,667	$1,667	$0	$16,606	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$11,111	$1,111	$0	$11,012	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$10,000	$0	$0	$7,881	$0
Totals:	$136,894	$2,778	$3,234	$116,393	$5,205

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$306,794	$30,679	$30,679	$0
Totals:	$306,794	$30,679	$30,679	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Forest Waste Products
8359 East Farrand Road
Otisville , MI

County: Genesee
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: D5
State Site ID#: 25000009
State Site Score: 27

LOCATION
The Forest Waste Products site is located in a rural area about two miles northwest of Otisville. Butternut Creek is located about 1,000 feet from the eastern site boundary. No municipal water supply exists near the site; however, private wells are nearby.

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, polybromobiphenyl (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 have been 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 pH of 10 (normal background is 6 to 7) showed the water 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, recommending 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. These drums had been excavated from the landfill in 1990. This drum removal activity was completed by the PRPs 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 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 Difference (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 during 1995. Construction of the landfill cap was completed in September 1997, with approval of the final inspection. The approximate landfill area of 15 acres is fenced separately from the rest of the site.

A Five-Year Review 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. Different wells were sampled at different times, and it became difficult to keep current on the groundwater data, so 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 spring 2002. Following review and comments from the agencies, the report was finalized in October 2003. The MDEQ performed additional investigation in 2002 and into 2003, including 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 Five-Year Review for Forest Waste was finalized at the end of September 2002. The Five-Year Review concluded that the remedy in place is protective in the short-term because there is no evidence that there is current exposure. However, it stipulated multiple actions that needed to take place 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 is 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. Additional investigation continues to assess the extent of landfill gas migration.

A ROD Amendment to address the north plume of contamination, which incorporated current federal and state cleanup criteria for all media including groundwater-to-surface-water criteria, and which redefined the site property boundaries, was signed by the EPA in September 2005. The MDEQ supported moving forward with the proposed remedy described in the ROD Amendment. However, the MDEQ 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 (Part 201). Specifically, the ROD Amendment did not comply with Sections 20120b(4) and (5) of Part 201 relative to Remedial Action Plans and the associated rules. The agencies continue 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 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. The PRPs are continuing to monitor the contamination in this area of the site. A decision will have to be made as to whether the contingency treatment trench technology stipulated in the ROD Amendment should be implemented. Multiple phases of the in-situ chemical oxidation pilot studies on both the shallow and deep aquifers were conducted beginning in 2006. The PRPs had difficulty achieving and sustaining adequate distribution, both vertically and horizontally, of the potassium permanganate solution during the pilot studies. Additional groundwater characterization investigations performed by the PRPs at the urging of the MDEQ and EPA, facilitated refinements to the system designs to attempt to enhance groundwater treatment.

The Third Five-Year Review was completed in 2007. The conclusions of the Five-Year Review 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 must monitor the chemical oxidant near the lake to confirm it is not impacting the surface water.

Landfill gas testing and residential well sampling by the PRPs continued through 2008. No impacts to water supply wells were seen.

Full scale operation of the in-situ chemical oxidation treatment systems began in 2008. The PRP initiated monitoring for evidence that potassium permanganate was moving toward the lake in the shallow aquifer treatment area. Modifications were made to the injection locations if evidence of migration was observed. The PRP monitored both treatment areas for evidence that treatment was effective. With each monitoring event, modifications to the treatment systems were made to improve effectiveness of treatment. A report summarizing the results of one year of treatment was submitted to the agencies in late 2008. The

agencies have determined that at least another year of data will be needed before real assessments of system success can be measured.

Operation and monitoring of the treatment continued for another year through 2009. The annual report summarizing the past year's results of treatment was submitted in draft in October 2009. Results were not as good as hoped. The agencies have directed the PRP to develop a proposal for modifying the systems and submit their proposal for review. The PRP has been advised that, if progress cannot be documented in 2010, alternative treatments will have to be considered. During this phase, residential wells will be sampled, monitoring will take place, and the annual groundwater monitoring program will be implemented.

SITE STATUS
Operation and monitoring of the in-situ chemical oxidation treatment system 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.

At the request of the agencies, the PRP submitted a draft shallow aquifer long-term in-situ chemical oxidation design document including a pilot-scale test work plan in September 2010. After considering comments from the EPA and MDEQ, the PRP submitted a revised shallow aquifer long-term in-situ chemical oxidation design document in November 2010 and another one in January 2011. The PRPs intend on implementing their in-situ chemical oxidation design in the Spring of 2011.

In December, the PRPs installed two new sentinel monitoring wells in the shallow aquifer.

The PRPs continue to operate the in-situ chemical oxidation treatment system within the deep aquifer with improved recirculation.

ENFORCEMENT STATUS
In 1994, the EPA entered into a Consent Decree with the PRP (Forest Waste Coordinating Committee) to complete the Remedial Action and operation and maintenance for this site. The EPA considers them to be in compliance with the Order. The state has entered into a 1993 Administrative Order by Consent with the Forest Waste Coordinating Committee to reimburse the state for oversight costs associated with the management of this site.

SPECIAL CONSIDERATIONS
Forest Township has obtained ownership of this tax-reverted property.

OPERABLE UNITS

00	Entire Site
01	Lagoons
02	Landfill
03	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response Fence construction around site.

Start Date: *07/17/1984* Primary Cost: $0 Source: Federal
End Date: *08/28/1984* Secondary Cost: $0 Source:

5 Year Review The EPA completed a Five-Year Review. (Dates obtained from the EPA.)

Start Date: *10/31/1996* Primary Cost: $0 Source: Federal
End Date: *03/28/1997* Secondary Cost: $0 Source:

5 Year Review A Second Five-Year Review was conducted by the EPA for the entire site.

Start Date: *12/14/2001* Primary Cost: $0 Source: Federal
End Date: *09/30/2002* Secondary Cost: $0 Source:

5 Year Review The Third Five-Year Review was signed on September 21, 2007.

Start Date: *01/25/2007* Primary Cost: $0 Source: Federal
End Date: *09/21/2007* Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review Next Five-Year Review due September 21, 2012.

Start Date: *03/21/2012* Primary Cost: $0 Source: Federal
End Date: *09/21/2012* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Lagoons

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 06/30/1986**

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.

Response Accomplishments: Completed

Remedial Investigation 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.

Start Date: *12/30/1983* Primary Cost: $545,000 Source: Federal
End Date: *06/30/1986* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Lagoons

Response Accomplishments: Completed

Remedial Design Activity leads are mostly federal, but the PRPs did conduct some of the work. Dates and cost information are from the EPA.

Start Date:	*04/20/1987*	Primary Cost:	$530,000	Source: Federal
End Date:	*07/19/1988*	Secondary Cost:	$0	Source:

Remedial Action The sediments and contaminated soils associated with the lagoons were excavated and disposed of off-site.

Start Date:	*09/21/1987*	Primary Cost:	$0	Source: Private
End Date:	*06/28/1988*	Secondary Cost:	$268,000	Source: Federal

OPERABLE UNIT 02: Landfill

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/31/1988**

Drum removal, construction of a landfill cap and vertical barrier wall, groundwater monitoring and deed restrictions.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 05/04/1993**

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.

Response Accomplishments: Completed

Remedial Investigation Most of the dates and cost 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.

Start Date:	*02/26/1986*	Primary Cost:	$519,000	Source: Federal
End Date:	*03/31/1988*	Secondary Cost:	$0	Source:

Remedial Design Dates are from the EPA. It lists the Remedial Design as performed by the PRPs.

Start Date:	*06/27/1988*	Primary Cost:	$0	Source: Private
End Date:	*03/26/1996*	Secondary Cost:	$0	Source:

Interim Response Drum removal was conducted by the PRPs. Dates are from the EPA. Costs are paid by the PRPs, so no cost information is available.

Start Date:	*01/01/1990*	Primary Cost:	$0	Source: Private
End Date:	*05/01/1994*	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Landfill

Response Accomplishments: Construction Complete

Remedial Action The landfill has been capped by the PRPs.

Start Date: 09/29/1989	Primary Cost:	$0	Source: Private
End Date: 06/30/1990	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance Landfill maintenance and groundwater monitoring are the responsibility of the PRPs. Costs are based on the annual operation and maintenance 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.

Start Date: 04/19/1990	Primary Cost:	$6,000,000	Source: Private
End Date: 06/30/2020	Secondary Cost:	$0	Source:

OPERABLE UNIT 03: Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/31/1988**

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 09/28/2005**

Two groundwater treatment technologies will be implemented to address the north plumes. In-situ chemical oxidation lines will be installed to treat groundwater near the north and northwest site property boundaries. In-situ oxygen curtain technology will be installed immediately north of the landfill face to treat groundwater near its source.

Response Accomplishments: Completed

Remedial Investigation 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.

Start Date: 12/12/1995	Primary Cost:	$0	Source:
End Date: 03/31/2003	Secondary Cost:	$0	Source:

OPERABLE UNIT 03 : Groundwater

Response Accomplishments: In Progress

Long Term Remedial Action Following pilot studies and system design modifications, full-scale treatment began in 2008.

Start Date: 06/30/2006 Primary Cost: $0 Source:

End Date: 06/30/2016 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$200,000	$0	$0	$128,094	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,939	$0	$0	$10,939	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$23,411	$0	$0	$22,926	$0
Totals:	$234,350	$0	$0	$161,959	$0

STATE SUPERFUND CONTRACTS

For Operable Unit 02 : Landfill : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Investigation	$385,000	$70,000	$70,000	$0
Totals:	$385,000	$70,000	$70,000	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Gratiot County Landfill
7391 Croswell Road
St. Louis , MI

County: Gratiot
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: 05
State Site ID#: 29000046
State Site Score: 43

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 land surrounding the landfill is primarily used for agricultural purposes.

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 the MDEQ until 1974 and was subject to several operating conditions by the MDEQ. In November 1976, because of operating violations, the MDEQ initiated proceedings to revoke the landfill's license and close the facility. Later that year, the EPA informed the MDEQ that approximately 269,000 pounds of polybromobiphenyl (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 livestock feed was inadvertently mixed with a flame retardant. The flame retardant (Firemaster) 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 MDEQ 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, the MDEQ 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.

The MDEQ 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 5 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 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 compound (VOC) contamination.

In 1993, the MDEQ retained Eder Associates 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 natural environment. Eder Associates 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 Associates report review, the MDEQ 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, the MDEQ 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 not used 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, 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 unit in 2007 most likely due to malfunctioning flare units. The flares have since been repaired. Additional methane vents will be installed between 2009 and 2015.

Monitoring of the groundwater and methane generation is being performed around the entire landfill and the State continues to perform routine maintenance on the landfill and methane system.

A fourth Five-Year Review was prepared by the State and submitted to the EPA in September 2006. The Five-Year Review 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.

SITE STATUS

Through a joint Consent Judgment in 1983 between the Michigan Department of Natural Resources (MDNR), the EPA, and Velsicol Chemical Company, the MDNR received $13.5 million to investigate, remediate, and maintain the Gratiot County Landfill and the former Velsicol plant. While this source of funds has been depleted for the two facilities, the State continues to evaluate and address site contamination at the Gratiot County Landfill using State funds. The MDEQ is beginning to transition some of its maintenance obligations to Gratiot County who is the owner/operator and has obligations pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

The cap continues to undergo settlement and erosion continues to be a problem. Repairs to these areas will continue in 2011. Additional methane vents and flares continue to be installed by RD field staff and is expected to be completed in 2015. A fifth Five-Year Review for the site is due in September and will be prepared by the MDEQ. The Five-Year Review is expected to identify that the facility does not pose a risk as long as it continues to be maintained.

ENFORCEMENT STATUS
Through a joint Consent Judgment in 1983 between the MDNR, the EPA, and Velsicol Chemical Company, the MDNR received $13.5 million to investigate, remediate, and maintain the Gratiot County Landfill and the former Velsicol plant. While this source of funds has been depleted for the two facilities, the State continues to evaluate and address site contamination at the Gratiot County Landfill using State funds. The MDEQ is currently discussing with Gratiot County its owner/operator obligations pursuant to Part 201, of the NREPA.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation The State sampled groundwater, surface water, and soils on and around the landfill.

Start Date:	*06/15/1974*	Primary Cost:	$500,000	Source: State
End Date:	*06/15/1980*	Secondary Cost:	$386,000	Source: Federal

Remedial Action The State installed a landfill cap and slurry wall to contain waste. Settlement funds from Velsicol were used.

Start Date:	*06/15/1984*	Primary Cost:	$10,000,000	Source: Private
End Date:	*06/15/1986*	Secondary Cost:	$0	Source:

Remedial Investigation State groundwater investigation using settlement funds.

Start Date:	*06/15/1991*	Primary Cost:	$40,000	Source: Private
End Date:	*06/15/1994*	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

Start Date: 01/23/1992	Primary Cost:	$10,000	Source: Federal
End Date: 08/04/1992	Secondary Cost:	$0	Source:

5 Year Review

Start Date: 05/10/1994	Primary Cost:	$0	Source:
End Date: 08/27/1996	Secondary Cost:	$0	Source:

Alternate Water Bottled water was provided to one residence adjacent to the landfill where well was susceptible to impact.

Start Date: 06/15/1994	Primary Cost:	$1,791	Source: State
End Date: 02/15/1995	Secondary Cost:	$0	Source:

Remedial Design State contracted with ABB Environmental Services, Incorporated to design groundwater extraction and treatment system.

Start Date: 06/15/1994	Primary Cost:	$200,000	Source: Private
End Date: 06/15/1996	Secondary Cost:	$0	Source:

Remedial Action The State contracted for installation of groundwater extraction and treatment system to capture and treat groundwater.

Start Date: 11/15/1997	Primary Cost:	$384,961	Source: State
End Date: 06/15/1998	Secondary Cost:	$0	Source:

Remedial Investigation The State assigned Harding ESE to conduct 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.

Start Date: 01/26/2000	Primary Cost:	$576,344	Source: State
End Date: 09/02/2002	Secondary Cost:	$0	Source:

5 Year Review The State completed a Five-Year Review for the EPA.

Start Date: 01/15/2001	Primary Cost:	$15,000	Source: Federal
End Date: 09/29/2001	Secondary Cost:	$0	Source:

5 Year Review The State prepared a Five-Year Review report, and concluded that the remedy is protective of human health and the environment.

Start Date: 03/24/2006	Primary Cost:	$10,000	Source: Federal
End Date: 09/28/2006	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Action Engineering repairs and upgrades to the methane system and existing cap.

Start Date: 01/13/2003	Primary Cost:	$550,000	Source: State
End Date: 09/01/2015	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

5 Year Review Five year funding provided by the EPA.

Start Date: 01/10/2011 Primary Cost: $10,000 Source: Federal

End Date: 09/30/2011 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Continued Operation and Maintenance (O & M) and quarterly monitoring of groundwater and methane. An estimated $150,000 per year is needed at this site. It is expected that this cost will be fully borne by Gratiot County starting in 2013.

Start Date: 06/15/1998 Primary Cost: $150,000 Source: State

End Date: 11/29/2013 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Operation and Maintenance Continued O & M and monitoring of groundwater and methane. An estimated $150,000 per year is needed at this site. All maintenance costs will be borne by Gratiot County.

Start Date: 11/29/2013 Primary Cost: $150,000 Source: Private

End Date: 11/29/2043 Secondary Cost: $0 Source: <None>

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E192-01 : Open

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$20,000	$0	$20,000	$0	$0

Cooperative Agreement Number V965855-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$10,000	$0	$0	$9,699	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$15,000	$0	$0	$14,906	$0
Totals:	$45,000	$0	$20,000	$24,605	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Pine River Downstream of M-46
500 Bankston Street
St. Louis , MI

County: Gratiot
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: 33
State Site ID#: 29000007
State Site Score: 45

LOCATION
The Pine River site borders three sides of the former chemical plant site of the Velsicol Chemical Corporation, a 52 acre site in St. Louis, Gratiot County, Michigan. Migration of contaminants from the former chemical plant site and a disposal area known as the Gratiot County Golf Course site or Burn Pit Area has resulted in contamination of both the sediments and fish in the St. Louis Impoundment and the Pine River downstream of the St. Louis Impoundment.

SITE HISTORY
From 1935 until September 1978, the Velsicol Chemical Corporation (and its predecessor, the Michigan Chemical Corporation) was 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 and the St. Louis Reservoir. Due to natural topographical, geological, and hydrological conditions, the Pine River and the St. Louis Reservoir received surface drainage, soil erosion, and groundwater flow contaminated with hazardous wastes from the main plant site. The main contaminants of concern are hexabromobenzene (HBB), dichlorodiphenyltrichloroethane (DDT), polybrominated biphenyl (PBB), and tris(2,3-dibromopropyl)phosphate. The site was placed on the National Priorities List (NPL) in September 1983.

In May 1996, the MDEQ 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. Because the former activities at the Velsicol Chemical Corporation involved the use of potentially radioactive rare earth materials, all cores were scanned for beta and gamma radiation prior to field processing. Sediment cores were analyzed using polychlorinated biphenyls and pesticides methodology at the MDEQ/Community Health Department Laboratory. 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 remedial investigation/feasibility study (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 remedial action (RA). A Record of Decision (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 ten percent cost share for this action, approximately $750,000, which had a total cost of $7.5 million, through a State Superfund Contract (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 ten percent cost share for the RA. Based on amendments to the RA SSC in 2002 and 2004, the cost for the RA is 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 non-aqueous phase liquids migrating from the former Velsicol Chemical Plant site (EPA Operable Unit 1) into the Pine River (EPA Operable Unit 2 of the Velsicol Chemical Corporation Superfund site) excavation. The migration pathways of the non-aqueous phase liquids and dissolved contaminants are through the slurry wall, under the slurry wall, and in the sand seams and fractures within the till. During the 2002 sediment removal activities, the EPA pumped 3,000 gallons of this dense non-aqueous phase liquids contaminated material into drums and disposed of it off-site. The dense non-aqueous phase liquids were found to contain 820,000 ppm of DDT. As an interim response, the EPA elected to construct an interceptor trench with a sub-aqueous clay cap over the trench. In areas of the river bottom where the contamination in the till exceeded the cleanup goal of 5 ppm and could not be removed, the sub-aqueous cap was used to isolate this contaminated till from contact with the river. The EPA will continue to pump this interceptor trench every three months to collect and dispose of the DDT-contaminated non-aqueous phase liquids off-site until the final remedy is constructed. The continued operation of the collection trench is being performed under the SSC for RA. This interim action will not be sufficient in the long term to prevent the on-going migration of non-aqueous phase liquids and dissolved constituents to the Pine River in the area that the EPA remediated with the sediment removal. The Velsicol Chemical Plant site remedy will address this contaminant pathway on a long-term basis. Two other distinct non-aqueous phase liquids 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. To date, 6,000 gallons of non-aqueous phase liquids have been removed.

SITE STATUS

The RI results for the Velsicol Chemical Plant Site (OU1) confirmed the failure of the 1983 containment system remedy (see Velsicol Chemical Corporation Superfund site Legislative Report for details) prompting the MDEQ to initiated an RI/FS on the Pine River on May 1, 2003. The RI for the Pine River is designed to determine the nature and extent of the contamination in sediments, biota and surface water of the Pine River downstream of the St. Louis Dam, provide baseline data in which to compare the performance of the sediment removal in the impoundment, and provide data for the Long Term Monitoring of the sediment removal. The EPA sediment removal of DDT-contaminated sediments from the St. Louis Impoundment of the Pine River was completed at the end of 2006. The MDEQ completed Phase 1 & 2 of the sediment characterization and is pursuing Phase 3 in 2012 using the existing funding.

ENFORCEMENT STATUS

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 will receive $12.5 million from this settlement. The EPA and the MDEQ must agree how the money is to be spent on the site.

SPECIAL CONSIDERATIONS

The Pine River site is considered by the EPA to be Operable Unit 02 of the Velsicol Chemical Corporation Superfund site listed on the NPL in 1983. Operable Unit 01 includes the former Velsicol Chemical Plant site area, adjacent and nearby properties(which includes the adjacent residential area) and groundwater. The residential area adjacent to the former plant site is also contaminated in five areas by PBB and DDT from the site. However, the State tracking system records it as a separate site. Refer to the Velsicol Chemical Corporation Superfund site Legislative Report for additional information.

OPERABLE UNITS

00	Entire Site
01	Plant site ID 32 Site # 29000070
02	Pine River Downstream of M-46/St. Louis to end of contam.

OPERABLE UNIT 02: Pine River Downstream of M-46/St. Louis to end of contai

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 02/12/1999**

Removal, dewatering, and disposal of sediments contaminated with DDT at concentrations equal to or greater than 5 ppb.

Response Accomplishments: Completed

Remedial Investigation Only a small portion of the site, the St. Louis Impoundment next to the plant site, was investigated.

Start Date: 07/01/1997 Primary Cost: $100,000 Source: State

End Date: 06/30/1998 Secondary Cost: $0 Source:

Interim Response The 1999 Removal Action excavated, dewatered, and disposed of off-site, 36,000 tons of DDT contaminated sediments. The State provided a ten percent cost share through a State Superfund Contract.

Start Date: 05/01/1999 Primary Cost: $6,746,069 Source: Federal

End Date: 10/31/1999 Secondary Cost: $749,563 Source: State

OPERABLE UNIT 02: Pine River Downstream of M-46/St. Louis to end of contai

Response Accomplishments: In Progress

Remedial Action The State provided a ten percent match for this remediation through a State Superfund Contract (SSC). The EPA remedial program removed a total of 670,000 cubic yards of DDT contaminated sediments. This is considered one of the Superfund "MEGA" sites. The total cost is estimated at $97.3 million dollars. During this remedial action the EPA installed an interim non-aqueous phase liquids collection trench to minimize the on-going migration of non-aqueous phase liquids from the Velsicol Chemical Plant site. The interim collection system will be operated under this SSC until the final remedy is constructed.

Start Date: 06/01/2000 Primary Cost: $87,570,000 Source: Federal

End Date: 05/31/2013 Secondary Cost: $9,730,000 Source: State

Remedial Investigation Phase 1 & 2 of the RI collected sediment and biota samples upstream and downstream of the St. Louis Impoundment where the EPA conducted a sediment removal that was completed in 2006. This work provided a baseline and is part of the larger assessment of the nature and extent of the contamination in the sediment, surface water, and biota that will resume in May 2011. Using the previously RI data the last Phase will map depositional areas of the Pine River. All of this data will feed into the development of the Human Health and Ecological Risk Assessment and provide information to be used in the development of the long-term monitoring strategy and development of a FS for remediation of the Pine River.

Start Date: 05/01/2003 Primary Cost: $3,120,000 Source: State

End Date: 02/23/2012 Secondary Cost: $0 Source:

STATE SUPERFUND CONTRACTS

For Operable Unit 02 : Pine River Downstream of M-46/St. Louis to end : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Interim Response	$7,495,633	$749,563	$749,563	$0
Remedial Action	$97,300,000	$9,730,000	$7,868,411	$0
Totals:	$104,795,633	$10,479,563	$8,617,975	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Velsicol Chemical Corp.
500 Bankston Street
St. Louis , MI

County: Gratiot
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: 32
State Site ID#: 29000070
State Site Score: 33

LOCATION
The Velsicol Chemical Corporation site consists of 52 acres, the adjacent and nearby properties and the groundwater in St. Louis, Michigan and is located adjacent to the St. Louis Reservoir of the Pine River. The EPA considers the plant site and the river contamination as one site with two operable units. The Plant Site is considered Operable Unit 1 by the EPA. The EPA's Operable Unit 2 consists of contamination in sediments and fish in the St. Louis Reservoir and the Pine River. The population within one mile of the site is approximately 4,100. The nearest residence to the plant site is less than 50 feet away. The MDEQ considers the two EPA operable units as separate sites. Refer to the Legislative Report for the Pine River for additional information.

SITE HISTORY
From 1935 until September 1978, the Velsicol Chemical Corporation (and it's predecessor, Michigan Chemical Corporation) engaged in the production of various chemical compounds and products at it's 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 and the St. Louis Reservoir. Due to natural topographical, geological, and hydrological conditions, the Pine River and the St. Louis Reservoir received surface drainage, soil erosion, and groundwater flow contaminated with hazardous wastes from the main plant site. The main contaminants of concern are hexabromobenzene, dichlorodiphenyltrichloroethane (DDT), polybrominated biphenyl (PBB), and tris(2,3dibromopropyl)phosphate (TRIS). 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.

A 1982 Consent Judgment between the EPA, the Michigan Department of Natural Resources (MDNR), 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. Maintenance and monitoring reports continue to be submitted by the PRP to the MDEQ.

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. Since March 1989, the measured water table in some of the monitoring wells has exceeded this requirement. The MDNR 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, the MDNR 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 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.

A thorough review of all the existing data for the plant site by the MDEQ, in March 2000, determined that the containment system was releasing contaminants to the environment. In order to further investigate this situation, the MDEQ drafted a remedial investigation (RI) work plan and a demand letter requesting that the PRPs conduct a complete investigation of the problems identified at the containment system. The MDEQ requested that the EPA also sign the demand letter. After a three month delay on the signing of the letter, the EPA informed the MDEQ that the federal government had been in bankruptcy negotiations with the PRPs (i.e., Fruit of the Loom, North West Industries, and Velsicol Chemical Corporation) for several months and therefore was unable to sign the demand letter. Due to the insistence of the PRPs, the state of Michigan was asked to join the bankruptcy negotiations.

The MDEQ conducted Phase 1 of the RI in 2001. Phase 1 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. Phase 1 also found that the water elevation of 724.13 ft. is inappropriate for the containment system and would result in a hydraulic head that would move contaminated water into the Pine River. In October 2001, the EPA, while conducting the contaminated sediment removal in the St. Louis Impoundment of the Pine River, discovered a sand seam within the till that acts as the bottom of the containment system. This sand seam contained a non-aqueous phase liquid 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 2 further investigated the breaches in the slurry wall, the sand seams in the till, the groundwater movement within and between the Pine River, the upper aquifer, and the lower aquifer. Phase 3 investigated the groundwater flow, contaminant distribution, and migration on and off-site. The RI was completed on November 20, 2006. A Phase 4 of the RI, necessary to fill the gaps and provide critical information to the draft Feasibility Study (FS),completed in July 2008, RI findings are:

1. The existing containment system is failing and is not effective in stopping the release of contaminants, at levels that cause a risk to human health and the environment, to both the Pine River and the upper and lower aquifer. The lower aquifer is the drinking water source for the city of St. Louis.
2. Outward hydraulic gradient within the containment system exacerbates containment failures and has resulted in the migration of contaminants to the Pine River and the upper, intermediate, and lower aquifers.
3. The cap fails to prevent the migration of precipitation into the containment system. This failure is a direct result of the inadequate grading, internal drainage, frost protection, and barrier layers of the cap construction.
4. Evidence of two or possibly three distinctly separate, dense non-aqueous phase liquids and light non-aqueous phase liquids (free product, globules, sheens, stained soils, and odors) are present in site soils and groundwater.
5. The dense non-aqueous phase liquids seep area coincides with low till topography, buried sand and gravel channel, wall defects, significantly lower hydraulic gradient, and convergence of groundwater flow.
6. The migration pathways identified for the non-aqueous phase liquids and the contaminated groundwater are the sand seams in the till and movement under and through breaches in the slurry wall as well as fractures in the till.

7. Significant contamination has been identified beyond the containment system in the Pine River, the upper aquifer, intermediate, and the lower (drinking water) aquifer.
8. Sample results from municipal wells indicate that three of these wells are contaminated with para-chlorobenzene suflonic acid. However, at this time the data indicates that all the city wells have become contaminated with para-chlorobenze sulfonic acid.
9. One of the dense non-aqueous phase liquids found at the site contains 80 percent DDT.
10. The contamination at this site presents a potential risk to both human health and the environment.

Phase 4 RI data indicates that the large amounts of non-aqueous phase liquids have migrated into the drinking water aquifer and that DDT has also migrated into the drinking water aquifer. Non-aqueous phase liquids were found at several depths down to 96 feet below ground surface. The RI data indicates that the soils in the residential area adjacent to the chemical plant site exceed the Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201) Direct Contact Criteria for TRIS, DDT, and PBB and will need to be remediated in the near future. Data also indicates that the adjacent residential area and the residential area downwind of the burn pit area exceed the site-specific ecological risk criteria for DDT. Additional investigation of these areas may be necessary. The MDEQ released the Phase 4 RI Addendum in August 2008. The total funds expended by the State of Michigan on the RI for this site is $6,527,700.

The EPA announced on September 23, 2005, that their September 2004 and May 2005 sampling was necessary to investigate the distribution and migration of para-chlorobenzene sulfonic acid. The highest concentration of para-chlorobenzene sulfonic acid found in the city wells was 180 parts per billion (ppb), while a site monitoring well within 250 feet of this city well contains 630,000 ppb. The MDEQ has calculated an interim Drinking Water Criteria of 7,300 ppb. The Water Bureau is working with the city of St. Louis to eliminate and reduce the use of contaminated wells while identifying a new source of water for the city.

Additional sampling being conducted by the EPA to monitor the migration of contamination from this site to the city wells indicates that the concentration of para-chlorobenzene sulfonic acid has increased in city well #4 from 180 ppb to 460 ppb causing the city to discontinue the use of city well #4. The effect of turning off well #4 was that concentrations in other city wells seem to increase. The data indicates that there is a complete migration pathway for contaminants migrating from the Velsicol Chemical Plant site to the city of St. Louis drinking water wells. New data collected in the Phase 4 RI indicated that DDT and non-aqueous phase liquids continue to migrate along this same pathway.

The Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510 (CERCLA) requires that all NPL remediated sites must have be reviewed every five years to determine if the remedy is protective of human health and the environment. The first Five-Year Review 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 Five-Year Review was completed on September 25, 2002 and found that the remedy at operable unit 1 is not protective. The third Five-Year Review was completed on September 29, 2007 and found that base on the RI conducted by the MDEQ that the remedy at operable unit 1 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 phased liquids from the main plant site. Some areas in the residential neighborhood adjacent to the main plant site have soil concentrations that exceed the State of Michigan's Part 201 Direct Contact Criteria.

In September 2009, the MDEQ sent a letter to EPA indicating that the increasing trend of

p-CBSA in the city wells, the large mass of contaminants that have migrated away from the Velsicol site, and the fact that it is unlikely that contaminants that have left the plant site can be fully addressed, it appears to be only a matter of time before the pumping of the other city wells increases the concentration of para-chlorobenzene sulfonic acid (p-CBSA) to unacceptable levels and/or other contaminants are detected. We believe that this situation presents an imminent and substantial endangerment to the citizens of the city of St. Louis and any selected remedial alternative should provide for an alternative source of drinking water.

The MDEQ had recommended the replacement of the entire water system after being informed in September 2005 that the USEPA had detected p-CBSA in the city wells during September 2004 and again in May 2005. Later, during an October 2005 meeting, the USEPA proposed the use of sentinel wells as an early warning system instead of the water source replacement proposed by the MDEQ. The USEPA claimed that the sentinel wells would provide a five-year advanced notice of p-CBSA increases at the city wells. The USEPA installed the sentinel wells but these wells have failed to monitor the increasing concentrations of p-CBSA in the city wells. The reason for this failure is that these wells are not screened in the contaminant migration pathways between the site and the city wells. Precise identification of these contaminant migration pathways would be extremely difficult. This task is further complicated by the existence of numerous pathways and the fact that the RI data confirm that the p-CBSA contamination has migrated from the site to the city drinking water supply. Therefore, additional sentinel wells will likely not be effective or appropriate because the precise migration pathways are not known. Without a reliable early warning system, the MDEQ must recommend that any remedial action implemented at this site include the replacement of the source of drinking water for the city of St. Louis.

Per the Memorandum of Agreement with the EPA, signed in March 2003, the MDEQ has conducted the RI on the plant site to assess the degree of failure of the 1983 containment system, define the nature and extent of the contamination, and to conduct the human health and ecological risk assessment. Under the same Memorandum of Agreement, the MDEQ is developing the FS to determine what remedial alternatives could be used to remediate the plant site. The MDEQ submitted the draft Feasibility Study to the EPA for review on June 30, 2010 and continue to work cooperatively with the EPA on the FS. Also the MDEQ has also initiated an RI on the Pine River to determine the extent of impact on the Pine River due to this release and previous activities at the plant. For more details see the Pine River Legislative Report.

SITE STATUS

The MDEQ is the lead agency performing the FS per the Memorandum of Agreement with the EPA. Completion of the FS is scheduled for December 2011. The draft FS is expected to be presented to the EPA Remedy Review Board in May 11, 2011. Remedial Actions are anticipated to begin in spring 2013.

A portion of the site known as the Burn Pit was an unlicensed hazardous waste disposal dump that was assumed to be remediated in 1984. However, RI data indicated that contaminants of concern in the soil and groundwater exceeded the cleanup criteria. A non-aqueous phased liquid was also determined to be present at this site. In May 2010, the Velsicol Chemical Burn Pit (also known as the Gratiot County Golf Course) was placed on the NPL as a separate site.

ENFORCEMENT STATUS

A Consent Judgment was signed between the MDNR, 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.

In December 1999, Fruit of the Loom/North West Industries filed for bankruptcy under Chapter 11. The MDEQ and the EPA have entered into a bankruptcy settlement with Fruit of

the Loom, North West Industries, and Velsicol Chemical Corporation. There is also an Memorandum of Agreeement between the EPA and the MDEQ, signed in 2003.

OPERABLE UNITS

00	Entire Site
01	Plant, residential area, groundwater, till
02	Pine River from M-46/St. Louis to the end of contamination

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The 1982 remedy at operable unit 1 is not protective, but is expected to be protective once a new remedy is selected and implemented for operable unit 1.

Start Date: 10/31/2001 Primary Cost: $0 Source:
End Date: 09/25/2002 Secondary Cost: $0 Source:

Remedial Investigation Groundwater remedial investigation at burn pit area across the Pine River.

Start Date: 08/01/2003 Primary Cost: $500,000 Source: State
End Date: 11/20/2006 Secondary Cost: $0 Source:

5 Year Review The remedy at operable unit 1 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 phased liquids from the main plant site. Some areas in the residential neighborhood adjacent to the main plant site have soil concentrations that exceed the State of Michigan's Part 201 Direct Contact Criteria.

Start Date: 02/28/2007 Primary Cost: $0 Source:
End Date: 09/24/2007 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Action A Remedial Action for this site has been estimated to fall in the range of $150 to $500 million. Ten percent of the cost will be paid by the State.

Start Date: 01/02/2011 Primary Cost: $300,000,000 Source: Federal
End Date: 01/01/2014 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

Remedial Design

Start Date: 01/02/2011	Primary Cost:	$40,000	Source:
End Date: 12/30/2012	Secondary Cost:	$0	Source:

5 Year Review Next Five-Year Review is scheduled to be conducted in 2012.

Start Date: 01/01/2012	Primary Cost:	$0	Source: Federal
End Date: 09/29/2012	Secondary Cost:	$0	Source:

Long Term Remedial Action The O&M of the treatment system will cost approximately $1 to $2 million per year. The first ten years of a fund financed groundwater remedy O&M is called a Long Term Remedial Action, and is cost shared with the state in a 90/10 ratio, federal to state.

Start Date: 12/31/2014	Primary Cost:	$900,000	Source: Federal
End Date: 12/31/2024	Secondary Cost:	$100,000	Source: State

OPERABLE UNIT 01: Plant, residential area, groundwater, till

Response Accomplishments: Completed

Remedial Design The Velsicol Chemical Corporation designed the containment system while negotiating the Consent Judgment. Most of the design work was complete prior to signing the Consent Judgment. The design complies with what was stipulated in the Consent Judgment. However, certain components, such as the cap, slurry wall, and monitoring system, appear not to be constructed as designed.

Start Date: 01/01/1981	Primary Cost:	$0	Source: Private
End Date: 01/01/1982	Secondary Cost:	$0	Source:

Remedial Action 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 were also encapsulated at the plant site. This remedy has failed and the PRPs have gone bankrupt.

Start Date: 01/01/1982	Primary Cost:	$0	Source: Private
End Date: 10/01/1984	Secondary Cost:	$0	Source:

5 Year Review The Agencies are currently evaluating the structural integrity of the Containment System to ensure that additional contaminants are not released to the environment. The Agencies are also re-evaluating the 1982 decision to leave contaminated sediments in the St. Louis Reservoir of the Pine River Adjacent to the Velsicol Chemical Plant site.

Start Date: 01/01/1997	Primary Cost:	$15,000	Source: Federal
End Date: 08/27/1997	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Plant, residential area, groundwater, till

Response Accomplishments: In Progress

Remedial Investigation

From review of PRP documents and existing data, the MDEQ determined that the 1983 plant site remedy had failed and began a RI. The initial work focused on finding the location of the slurry wall because there were no existing plans or maps indicating its location. Remote sensing was used to determine the extent of the problem. The Phase 1 RI assessed the integrity of the slurry wall. Phase 2 investigated the breaches in the slurry wall, the sand seams in the till, and the groundwater movement within and between the Pine River, upper aquifer, and the lower aquifer. Phase 3 has better defined the nature and extent of the contamination and will assess the human health and ecological risk. Phase 4 determined the extent of contamination in the deep aquifer and investigated the extent of non-aqueous phase liquids migration. Investigation of DDT, PBB, and TRIS contamination of the residential soils in the residential area adjacent to the plant site and the residential area downwind of the burn pit in St. Louis. Dense Non-Aqueous Phased Liquid was discovered and the extent determined by the RI. Dense Non-Aqueous Phased Liquid was found to be migrating from the plant site into the Pine River and 100 feet below ground surface in the till and groundwater that is the St. Louis drinking water supply. In order for the FS to determine remediation cost, the extent of contamination was determined both vertically and horizontally during the RI. The MDEQ is currently developing the FS and will present it to the EPA Remedy Review Board April 2011. It is anticipated that the FS will be complete by December 2011.

Start Date: 03/01/2000	Primary Cost:	$2,500,000	Source: State
End Date: 12/31/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

Per the Consent Judgment, the Velsicol Chemical Corporation is responsible for O&M activities at the plant site containment system. In December 2001, the company ceased performing O&M due to bankruptcy. The bankruptcy trust has since assumed the responsibility for the O&M.

Start Date: 01/01/1984	Primary Cost:	$0	Source: Private
End Date: 01/01/2009	Secondary Cost:	$54,000	Source: Federal

Response Accomplishments: Future Need

Remedial Design

Design a new cap and containment system for the plant site. Also design a non-aqueous phase liquid and groundwater collection, extraction, and removal system.

Start Date: 10/01/2009	Primary Cost:	$1,000,000	Source: Federal
End Date: 12/31/2010	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Plant, residential area, groundwater, till

Response Accomplishments: Future Need

Remedial Action The cap and slurry wall of the landfill are expected to be redone in the Remedial Action. Addition of a non-aqueous phase liquid and groundwater collection and treatment system is also needed at the site. Hydraulic containment will be necessary.

Start Date: 01/01/2013 Primary Cost: $100,000,000 Source: Federal

End Date: 12/31/2023 Secondary Cost: $10,000,000 Source: State

Operation and Maintenance The O&M of the treatment system will be approximately $1 to $2 million per year. After the Long Term Remedial Action is complete, the State is responsible for the O&M.

Start Date: 01/01/2025 Primary Cost: $1,000,000 Source: State

End Date: 07/31/2075 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$49,201	$0	$0	$48,915	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$463	$0	$0	$463	$351

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,232	$0	$0	$20,232	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$31,737	$0	$0	$28,539	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$80,000	$0	$0	$76,226	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$128,333	$12,833	$0	$126,989	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$100,000	$10,000	$0	$99,920	$0
Totals:	$409,966	$22,833	$0	$401,285	$351

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Torch Lake
Ste Rte 26 N Of Quincy Mills
Hubbell , MI

County: Houghton
MDEQ District Location: Upper Peninsula
Managed By: RRD-Superfund

Federal Site Code: S8
State Site ID#: 31000003
State Site Score: 32

LOCATION
Torch Lake is a 2,700-acre lake located in the Keweenaw Waterway in Michigan's Upper Peninsula. The site also includes several nearby areas including Lake Linden, Point Mills, Boston Pond, Mason Sands, Tamarack City, Calumet Lake, The North Entry, Michigan Smelter, Isle Royale, Scales Creek, and Dollar Bay in which stampsands and slags have been deposited in the vicinity of former copper smelters, stamp mills, leach plants, reclamation plants, power plants, as well as directly into the waterways and lakes.

SITE HISTORY
Copper mining activities in the area from the 1890s until 1969 produced mill tailings that were deposited in the lake and shoreline. About 200 million tons of copper mill tailings were dumped into the lake. The contaminated sediments are believed to be 70 feet thick in some areas, and surficial sediments contain up to 2,000 parts per million (ppm) of copper. Copper and arsenic concentrations exceed state direct contact cleanup criteria in some areas. 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 the lake from storage vats. Barrels were also found at several places along the shoreline of Torch Lake.

Most of the exposed deposits were unable to support vegetation except at Calumet Lake and Mason Sands, where municipal sewage sludges have been applied, and parts of Isle Royale, where topsoil has been added. These areas have been remediated with a soil cover and a failed attempt has been made to produce a sustainable vegetative cap by the EPA.

The Michigan Department of Natural Resources (MDNR) 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.

The site was listed on the National Priorities List (NPL) on June 10, 1986. A Remedial Investigation (RI) and Feasibility Study (FS) was initiated to determine the extent and nature of the contamination and evaluate cleanup alternatives. The EPA and the MDNR completed fieldwork on the Torch Lake shoreline areas during the summer of 1989. The RI for this area report 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 scrap metal, but removal activities were not necessary.

The RI fieldwork for the Keweenaw Waterway (including Torch Lake) 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 stamp sands in the outlying areas was conducted during the fall of 1990 and focused on tailings and slag piles in areas other than the immediate vicinity of

Torch Lake. The RI report for these stamp sands 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 during the summer of 1991. Drums were taken from several shore and lake locations between Lake Linden and Mason Sands. Disposal was done by a group of potentially responsible parties (PRPs) in 1992.

An ecological assessment 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 OU3, the stamp sands along Torch Lake and in the outlying areas which called for soil cover and revegetation of exposed stamp sands 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 which called for monitoring of the lake was signed in March 1994 for OU2.

Remedial Action Designs were approved and Remedial Action Funding was obtained in September 1998. The EPA entered into a Superfund State Contract authorizing the remedial action (RA) in September 1998. Construction kick-off was in the Spring of 1999. Actual field work was scheduled for a five-year period up to and including the summer of 2004. The Lake Linden parcel was delisted in 2002 along with the surface water (i.e., the Torch Lake). The Hubbell and Tamarack parcels were delisted in 2004. The Boston Pond, Calumet Lake, Dollar Bay, Michigan Smelter, Isle Royale, Scales Creek, and North Entry parcels are all potentially eligible for delisting once the necessary deed restrictions are filed, recorded, and documentation is provided to MDEQ staff. Recent discoveries of remaining waste areas have led to questions regarding data gaps in the RI. Additional work is needed prior to delisting parcels. The EPA has agreed to perform additional investigative work at some locations; timing will depend on funding availability.

Some portions of the stamp sands are owned by private landowners, others by a village or city. The Lake Linden stamp sands have been partially reclaimed by the village and are currently used for a campground, park, and wastewater treatment retention lagoons. There are also boat launches on some of the stamps and deposits. Many of the stamps and areas receive regular recreational use. Several alternate uses have been initiated, some with informal permission of the EPA. Uses include residential subdivisions, road traction material, and recreational uses.

A baseline lake study was initiated in 1999 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 conducted to gain a snapshot view of the health of the lake in 1999-2000 at the beginning of the RA. 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 has reduced the erosion of stamp sands 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. Up to this point, the plan was to conduct these studies every five years. The type and frequency of studies is now being reevaluated. The EPA and the MDEQ agree that a new approach is necessary for determination of any recovery of the lake.

Construction of the cover over the stamp sands began in June 1999. The Lake Linden stamp sands 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. Restoration of the Borrow area used for covering the Mason Sands was not completed until 2004. 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 the MDEQ during area remediation efforts. The Michigan Smelter, Calumet Lake and Boston Pond areas were covered and vegetated in 2003. The Isle Royale Waste Water 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. The EPA will monitor the cover and make any necessary repairs until the parcels are deleted from the NPL, after that the state will be responsible for monitoring and maintaining the cover. Several parcels have suffered significant erosion after construction has been completed and the EPA has made the necessary repairs. There are outstanding repairs for the EPA to address prior to transition to Operation & Maintenance and part of the Point Mills parcel is very poorly established.

The EPA conducted the first Five-Year Review 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 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 long-term access, 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.

The MDEQ Superfund staff and the EPA have determined that the Quincy Smelter property warrants a soil and vegetative cap similar to the rest of the stamp sands and slag piles. To minimize the migration of mining wastes into the water the EPA Removal Branch performed regarding 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 indicated that reevaluation of the remedy was to be undertaken at the Quincy Smelter only if the property was not used by the National Parks Service in the near future. Additional concerns regarding asbestos and other issues have surfaced at the Quincy Smelter. 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 Removal Branch staff demolished the hazardous smokestack and performed 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. A Record of Decision (ROD) Amendment to implement a vegetative cover at the Quincy Smelter was finalized on July 31, 2009.

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 the MDEQ 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 indentified that the groundwater is contaminated in this area.

The MDEQ performed the sampling for the first of the Long Term Monitoring studies (follow up to the 1999/2000 Baseline) in the summer of 2004. Some additional data was collected in 2005. A comprehensive report as well as the Long Term Monitoring Report were finalized in March 2009. The findings of this study are:
1. Natural recovery of the sediments does not appear to be occurring at any appreciable rate and has not been sufficient to improve the health of the benthic community.
2. Some improvement in pelagic species was noted (Kerfoot et al. 2007).
3. Based on the results of the sediment trap investigation, sources of copper contamination and other contamination remain uncontrolled at the site.

4. In addition to a continuing source of copper contamination which appears to be preventing natural recovery, the sedimentation rates are too low for natural recovery to occur within a reasonable amount of time (e.g., 20 to 30-year period). Based upon the difference in sediment base materials and accumulation in Portage and Torch Lakes, the study conducted by Dr. Kerfoot predicts that natural recovery for Torch Lake will be on the order of 800 years. This is assuming that all the sources of contamination are controlled.
5. Evaluation of any change in bioavailability of copper in sediments is inconclusive.
6. Increase in copper concentrations in surficial sediment has occurred based on the limited amount of data collected to date.
7. The thin surficial sediment layer has increased copper concentrations that are elevated above those observed in the deeper sediments deposited during the late mining era.
8. Mercury is also present in surficial organic sediments at levels above those observed during the late mining era. Concentrations of methylmercury are elevated above those observed in deep sediments, and demonstrate that conditions are favorable for methylation in these surficial sediments. The mining sources of mercury are unidentified and uncontrolled.
9. The low abundance and richness of benthic macroinvertebrates in samples collected in 2004 is similar to low abundance and richness reported in a 1977 survey (as reviewed in LSI, 1992), but lower than that observed in the 1999/2000 baseline samples. The benthic invertebrate study findings are confounded by the fact that the baseline study dataset has more results from shallow sites than the 2004 monitoring study which had more deep sites. Overall, abundance and diversity of benthic organisms at the site remain low, and natural recovery processes have not resulted in any apparent changes/improvements in the health of the benthic community.

The MDEQ study conducted in 2004 clearly indicates that the Torch Lake No Action remedy is not working and needs remedy rescue. According to the available data the top inch of sediments contain higher levels of contamination than the sediments from the years when the mining operations were discharging mining waste into Torch Lake.

SITE STATUS

The MDEQ has failed to convince the EPA that the contaminated mining facilities that produced the stampsands should be investigated and remediated as part of the Torch Lake Superfund site. It is the MDEQ's assessment that the EPA's approach does not follow the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), or the EPA's own guidance on setting the boundaries of the site to include the extent of the contamination present at the site. Access to these contaminated mining facilities are not restricted and they potentially present a risk to both human health and the environmental. To assess the risk, these facilities must be investigated and characterized.

Individual operation and maintenance (O&M) plans were drafted by the Natural Resource Conservation Service for each stamp sand parcel as they were completed using a draft created by the EPA. Deed restrictions were required for each covered parcel. Deed restrictions are still not in place on all the covered stamp sand parcels and the ones that are in place may not be sufficient.

The MDEQ and the EPA worked cooperatively on the second Five-Year Review in 2008. However the EPA is now not willing to honor the agreements to investigate the issues highlighted in the 5 Year Review. The remedial actions implemented at OU1 and OU3 are protective in the short term however not in the long term. To be protective in the long term, a review of institutional controls must be performed and modified as appropriate. The ROD for OU3 anticipated that the Quincy Smelter property would be developed as a National Historic Park. However, since this has not taken place, a ROD Amendment for OU3 has been prepared and a remedial action will be implemented in 2011 at the Quincy Smelter property. The determination of protectiveness for OU2 could not be made due to the habitat destruction and impaired use from the contaminated sediments and the associated

ecological risks needing further evaluation. The 2004 monitoring data clearly indicates that the time for recovery of area water bodies will be unacceptably long (approximately 850 years) and that the No Action remedy will not work. Additional characterization is necessary providing data for assessment of alternative approaches. The EPA is unwilling to investigate why the remedy is not performing as expected.

The groundwater remedy relies on institutional controls that have not been fully implemented and are not adequate or enforceable for ensuring the safety of the drinking water supply. An evaluation of groundwater, municipal wells, and drinking water wells needs to be completed. An addendum will be planned within 2-3 years to make a protectiveness determination at OU2 as well as a site-wide protectiveness statement. Groundwater is also a sources of contamination to Torch Lake. The MDEQ is investigating alternative way to conduct the necessary groundwater investigation due to EPA's refusal to investigate.

One such way is the utilization of the Site Assessment process of CERCLA. The MDEQ plans to score all industrial mining facilities associated with the stampsands that a soil cover has been constructed under the three RODs for the site. It is anticipated that this work will be performed in the spring 2011. The MDEQ has developed a list of properties and associated additional evaluation/investigation activities that are needed at the site beyond the work of Site Assessment. The 2008 Monitoring Report for Torch Lake indicates that uncontrolled contamination sources still exist even after the capping of the stampsands areas. Understanding the sources and developing a strategy to control them is urgently needed. These uncontrolled contaminant sources are responsible for the failure of the OU2 remedy at Torch Lake. The proposed investigations of the 19 mining facility properties and Torch Lake must be conducted as soon as possible to direct the development of the necessary RA for remedy rescue at OU2.

O&M surveys conducted by the MDEQ indicate that the vegetative covers are not being sustained due to poor nutrients in the soil used to construct the soil covers and the inability of this soil to hold moisture. Without a sustainable vegetative cover the soil cover is susceptible to erosion. Currently, there is a difference of opinion between the MDEQ and the EPA regarding the significance of this issue and, thus, the EPA has not been willing to investigate this issue.

ENFORCEMENT STATUS

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 to pursue the other identified PRPs. The EPA entered into an Administrative Order by Consent with numerous land owners in 1994 which requires 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, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

SPECIAL CONSIDERATIONS

Public reaction is mixed concerning the stampsands. Many do not believe there is any risk associated with the stampsands while others are very concerned about the potential hazards associated with the area. The EPA prefers to use the ecological impact as the reason for determination and remediation, although Part 201 criteria for human health are exceeded in some areas.

Deed restrictions for the properties are still needed. The EPA continues in its efforts to secure access and deed restrictions for all parcels but to date has not put deed restrictions in place.

The landowners for the Hubbell/Tamarack and Point Mills/Dollar Bay parcels have submitted letters to the EPA and the MDEQ stating their intent to take over ownership of any fence on or adjacent to their respective properties. This relieves both agencies of the issues of fence maintenance, repairs, or removal. However, they have not taken any responsibility for the maintainance of the fencing.

Some landowners have shared discontent over the condition of the cover material. In several areas, the vegetation has not established in part due to poor soil quality. This pertains to part of Point Mills in particular.

OPERABLE UNITS

00	Entire Site
1	Stampsands, Torch Lake (OU1) and Outlying Areas (OU3)
2	Keweenaw Waterways incl. Torch, Calumet, and Portage Lakes
3	Stampsands Along Outlying Shorelines incl. Lake Superior

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review EPA conducted the first Five-Year Review 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 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 long-term access, 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.

Start Date: 10/09/2002	Primary Cost:	$0	Source: Federal
End Date: 03/04/2003	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

The MDEQ and the EPA worked cooperatively on the second Five-Year Review in 2008. The remedial actions implemented at OU1 and 3 are protective in the short term. To be protective in the long term, a review of institutional controls must be performed and modified as appropriate. Also, the remedial action at the Quincy Smelter property has not been implentented to date, because the ROD anticipated this area to be developed as a National Historic Park. The determination of protectiveness for OU2 could not be made due to the habitat destruction and impaired use from the contaminated sediments and the associated ecological risks needing further evaluation. The 2004 monitoring data suggests that the time for recovery of area water bodies may be unacceptably long (several hundred years). An assessment of alternative approaches and additional data collection needs to be discussed. The groundwater remedy relies on institutional controls that may not have been fully implemented and may not be adequate for ensuring the sately of the drinking water supply. An evaluation of groundwater, municipal wells and drinking water wells needs to be completed. An addendum will be planned within 2-3 years to make a protectiveness determination of OU2 as well as a site-wide protectiveness statement.

Start Date: 10/01/2007	Primary Cost:	$0	Source:
End Date: 03/27/2008	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Operation and Maintenance

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. The vegetative cover has failed to perform as anticipated.

Start Date: 01/01/2011	Primary Cost:	$25,000	Source: State
End Date: 01/01/2031	Secondary Cost:	$0	Source:

5 Year Review

Start Date: 03/04/2012	Primary Cost:	$0	Source:
End Date: 03/04/2013	Secondary Cost:	$0	Source:

OPERABLE UNIT 1 : Stampsands, Torch Lake (OU1) and Outlying Areas (OU3)

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1992**

The state concurred with the remedy in the ROD to the extent that the risk level exceeds one in 1,000,000, whereas the federal risk level is one in 10,000. The remedy calls for 6 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. OU1 and OU3 are addressed together in one ROD.

Response Accomplishments: Completed

Remedial Investigation

Start Date: 01/01/1988	Primary Cost:	$1,229,000	Source: Federal
End Date: 09/30/1992	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 09/01/1994	Primary Cost:	$476,000	Source: Federal
End Date: 09/29/1998	Secondary Cost:	$0	Source:

Operation and Maintenance

Monitor and maintain the soil and vegetative cover of the stampsands has been put on hold due to the failure of the soil cover to produce a sustainable vegetative cover. The estimate was based on an assumption of 20 years of O&M starting in 2002 at a cost of $25,000 per year. The O&M is to begin after the completion of the establishment period. The vegetative cover appeared to be performing much worst than anticipated. See the O&M entry under future need for anticipated future costs. Estimated final closure on this is expected to be November 30, 2022 but only if the problems with the vegetative cover are resolved.

Start Date: 04/08/2002	Primary Cost:	$25,000	Source: State
End Date: 09/30/2009	Secondary Cost:	$0	Source:

Emergency

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.

Start Date: 07/26/2007	Primary Cost:	$0	Source:
End Date: 10/03/2007	Secondary Cost:	$0	Source:

OPERABLE UNIT 1 : Stampsands, Torch Lake (OU1) and Outlying Areas (OU3)

Response Accomplishments: Construction Complete

Remedial Action The RA consists of a 6-inch sandy loam cover and vegetation over the ten following parcels according to the following schedule. This work is being conducted by the EPA with the state providing a ten percent cost share through a Superfund State Contract.

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

Note that these costs are estimates from the September 1998 Superfund State Contract. They do not necessarily represent the actual expenditure amount.

Start Date: 09/29/1998 Primary Cost: $13,680,000 Source: Federal

End Date: 09/29/2005 Secondary Cost: $1,520,000 Source: State

OPERABLE UNIT 2 : Keweenaw Waterways incl. Torch, Calumet, and Portage

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/31/1994**

The future status of Torch Lake is directly related to the effectiveness of the vegetative cover in preventing the erosion of stampsands into Torch Lake and other surface water bodies. Five-Year Reviews of the site are conducted to assess the effectiveness of the remedy. They include an evaluation of the status of Torch Lake sediments and ecology and a reassessment of the necessity for RA should the extent of the lake's recovery fall short of expectations. Groundwater, surface water, sediment, and general ecological monitoring, including an evaluation of the rate and effectiveness of organic sediment build-up and the recovery of the benthic community, are included as part of the O&M Plan.

Response Accomplishments: Completed

Remedial Investigation

Start Date: 01/01/1988 Primary Cost: $0 Source: Federal

End Date: 01/01/1992 Secondary Cost: $0 Source:

OPERABLE UNIT 2 : Keweenaw Waterways incl. Torch, Calumet, and Portage

Response Accomplishments: Ongoing

Operation and Maintenance

The ROD called for monitoring to be sure that the lake bottom was recovering and the wastes left in place were stabilized as predicted. This monitoring was initiated in 1999. The EPA Fully Integrated Environmental Location Decision Support program worked with the EPA Superfund Program and the MDEQ to develop sampling plans and follow up baseline studies of Torch Lake and the other water bodies of the site. Costs are estimated costs associated with the 1999/2000 Baseline Lake Study and the 2004/2005 Long Term Lake Monitoring. This will continue once the investigation is complete on the transport of metals , identification of the contaminant sources and the degradation of the benthos.

Start Date: 01/01/1999	Primary Cost:	$400,000	Source: State
End Date: 12/30/2012	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Operation and Maintenance

The soil covers on the stampsands are in urgent need of help to produce a sustainable vegetative cover on them. A study to identify bacteria and plant species that grow well in the highly toxic metal concentrations found in the aquatic and terrestrial stamp sands and Superfund caps at the Torch Lake Superfund site is needed. Heavy metal resistant, growth promoting bacteria and fast-growing/metal resistant plants need to be identified and methods developed for producing a sustainable vegetative cover on stamp sand areas. These covers will stabilize the toxic stamp sands preventing erosion into the lake. This will help address the Degradation of Benthos and allow Torch Lake to recover.

Start Date: 01/01/2011	Primary Cost:	$2,500,000	Source: State
End Date: 12/31/2013	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Keweenaw Waterways incl. Torch, Calumet, and Portage

Response Accomplishments: Future Need

Operation and Maintenance

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. This assessment was to be performed every five years (as called for in the OU2 ROD) and was originally anticipated to continue for a total of seven rounds at a cost of approximately $150,000 per round. Due to an increase of metals concentraions in the uppermost layer of sediments, the monitoring is being shifted to focus on determining the metals transport mechanism involved. Due to failure of the Torch Lake remedy the macroinverebrate population is not recovering. A complete investigation into the cause of the failure of the remedy is warrented. Degradation of Benthos in Torch Lake superfund site results from waste disposal of the copper mining industry. This project must characterize the spatial distribution of the benthos and determine the sources of the ongoing contaminants to the surface sediments that are preventing colonization by a benthic community and recovery of the lake. Surveys of benthic macroinvertebrates, sediment microbial community, and measurements of physical and chemical properties of the sediments must be co-collected. Data will be used to quantify metal migration pathways to the lake and develop cleanup alternatives.

Start Date: 01/01/2011	Primary Cost:	$2,500,000	Source: State
End Date: 12/31/2014	Secondary Cost:	$0	Source:

Operation and Maintenance

Upon completion of the investigations into how to produce a sustainable vegetative cover on the stampsands, a complete investigation into the causes of the failure of the Torch Lake remedy, and an investigation into the degradation of benthos in Torch Lake superfund site the five year lake assessment monitoring program will be developed and implemented. The cost will be aproximately $150,000 per year in O&M for the state.

Start Date: 01/01/2015	Primary Cost:	$150,000	Source: State
End Date: 12/31/2070	Secondary Cost:	$0	Source:

Operation and Maintenance

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. This assessment was to be performed every five years (as called for in the OU2 ROD) and was originally anticipated to continue for a total of seven rounds at a cost of approximately $150,000 per round. Due to an increase of metals concentraions in the uppermost layer of sediments, the monitoring is being put on hold until other work is done. It is anticipated that the monitoring will begin in 2015 if the other work is funded and completed.

Start Date: 01/01/2015	Primary Cost:	$150,000	Source: State
End Date: 12/31/2050	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Keweenaw Waterways incl. Torch, Calumet, and Portage

Response Accomplishments: Future Need

Operation and Maintenance Five year lake assessment.

Start Date: *01/01/2024* Primary Cost: $150,000 Source: State
End Date: *12/31/2024* Secondary Cost: $0 Source:

Operation and Maintenance Five year lake assessment.

Start Date: *01/01/2029* Primary Cost: $150,000 Source: State
End Date: *12/31/2029* Secondary Cost: $0 Source:

OPERABLE UNIT 3 : Stampsands Along Outlying Shorelines incl. Lake Superi

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 01 *ESD:* 0 **Effective 07/31/2009**

Amendment to OU3 ROD to allow the remediation of the Quincy Smelter, associated stamp sands and slag.

Response Accomplishments: Completed

Emergency An Emergency Removal effort took place in 2004/ 2005 to remove drums, boxes, and friable asbestos from in the warehouse and other buildings as well as numerous chemicals from the chemical assay building. Emergency Removal also performed waterway routing and shoreline erosion control at the request of the Remedial Branch.

Start Date: *10/17/2004* Primary Cost: $0 Source:
End Date: *05/17/2005* Secondary Cost: $0 Source:

Emergency 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.

Start Date: *04/08/2008* Primary Cost: $0 Source:
End Date: *04/10/2008* Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$75,365	$0	$0	$75,365	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,184	$0	$0	$12,184	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$55,841	$0	$55,841	$55,841	$28,135

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$129,995	$0	$0	$128,510	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$37	$0	$0	$37	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$106,136	$10,613	$0	$104,960	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$227,519	$22,752	$0	$227,487	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$50,000	$0	$0	$49,833	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$14,478	$0	$0	$14,478	$0
Totals:	$671,554	$33,365	$55,841	$668,693	$28,135

STATE SUPERFUND CONTRACTS

For Operable Unit 1 : Stampsands, Torch Lake (OU1) and Outlying Are : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$12,920,289	$1,292,029	$1,229,397	($2,279,711)
Totals:	$12,920,289	$1,292,029	$1,229,397	($2,279,711)

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Adam's Plating
521 N. Rosemary
Lansing , MI

County: Ingham
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: DJ
State Site ID#: 33000001
State Site Score: 37

LOCATION
Adam's Plating Company is a one-acre facility located in Lansing Township, Ingham County. It is located in a mixed commercial/industrial and residential area. The site area is serviced by a municipal water supply system and is located in a wellhead protection area.

SITE HISTORY
Since 1964 the facility has been used for electroplating operations, which are still on-going. Prior to that time, 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 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 Adam's Plating. As a result, chromium wastewater was released into the ground and seeped into a residential basement. The residents subsequently brought the release to the attention of the Ingham County Health Department.

In October 1982 an underground drainage system was installed between the facility and the residence to address the contaminated water seeping into the basement. The drainage system redirected the flow of wastewater away from the basement and into a pre-treatment system installed at Adam's Plating. The pre-treatment system was installed to primarily treat wastewater generated during plant operations before discharge to the sanitary sewer.

The Remedial Investigation/Feasibility Study (RI/FS) was completed in 1993. Based on total estimated exposures and current toxicity information, total carcinogenic (cancer) risk levels to exposed populations from chemicals of potential concern at this site ranged from five in ten thousand to three in a million. These risk levels exceeded the less stringent end of the EPA acceptable risk range of one in ten thousand to one in a million. These exceedances were primarily related to resident, trespasser, and construction worker inhalation of contaminants in sub-surface soils containing unacceptable levels of arsenic and chromium VI. The only unacceptable non-carcinogenic risks were those related to resident ingestion of surface soil and dermal contact with surface soil due to the presence of antimony and chromium.

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 remedial design (RD) was streamlined and was completed in 1994. The MDEQ entered into a State Superfund Contract with EPA in the amount of $150,000 for the required state

ten 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 complet e 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.

Prior to the fire, the project had been in the Operation and Maintenance (O & M) phase since October 1995. The O&M consisted of groundwater monitoring for a period of up to 30 years. In April 1997 the MDEQ successfully negotiated an agreement which transferred the O & M responsibilities to Adam's Plating. State oversight costs are being paid by Adam's Plating pursuant to this agreement. The MDEQ sent a letter to the warehouse owner 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, with regard to the contamination likely to exist under the building.

On October 7, 1999, a Five-Year Review document was signed by the EPA. According to the Five-Year Review, the remedy selected in the ROD has been implemented and remains functional, operational, and effective. The soil source area contamination has been removed from the Adam's Plating property to ensure the protection of human health. No deed restriction or other institutional control prohibits the warehouse owner (adjacent to the Adam's Plating property) from exposing contaminated soil beneath the warehouse, so the future protectiveness of the remedy was in question.

The MDEQ recommended the following:
(1) Adam's 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 Adam's Plating building and the warehouse south of Adam's Plating are maintained and not demolished due to the likelihood that contaminated soil remain in these two areas.

On September 28, 2001, the EPA issued an addendum to the 1999 Five-Year Review Report that clarified the protectiveness of the remedy after it was questioned by an independent review team. The recommendations stated above have been implemented and are on-going.

The results of the 2003 data revealed no significant changes or concerns to warrant additional sampling beyond the previously agreed upon schedule. On March 12, 2004, Adams Plating submitted a Notice of Migration of Contamination regarding the groundwater contamination to the MDEQ pursuant to R 299.5522 and R 299.51017(1) of Part 201.

Monitoring wells were sampled in 2005. No significant changes were noted in analysis of the samples. Several groundwater samples exceed drinking water criteria for 1,1,1-TCE and heavy metals. Some VOCs have been dropped from the analytical parameters list and need to be re-added.

The EPA completed a second Five Year Review of the remedy on June 27, 2005. The Five Year Review concluded that the remedy at the Adams Plating Company 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 become necessary to have additional institutional controls put in place to prevent exposure to contaminated groundwater and soils. Staff of the MDEQ alerted the EPA that additional deed restrictions are needed to address contamination under a warehouse building on property adjacent to the Adams Plating property.

The groundwater was initially monitored every two years. In 2005, the MDEQ agreed with a request from owner Steve Adams to reduce sampling frequency to every three years. Therefore, the next sampling event was performed in 2006 instead of 2005. This frequency still allowed for a round of sampling in 2009, prior to the Five Year Review in 2010.

SITE STATUS
Upon request by the PRP and review of data, MDEQ determined that a delay of the next sampling round was appropriate and opted to push back the next round of sampling to 2009. The 5 Year Review was completed and signed on June 25, 2010. As follow up to the Five Year Review, one well was sampled in August 2010 to recheck contaminant concentrations. The results of that and other existing data is being taken into consideration to evaluate the current monitoring plan.

The 2009 data revealed continued exceedances and apparent contaminant increases in some wells. The 2010 Five Year Review called for additional evaluation of the monitoring plan; MW-9D was resampled in August 2010 as part of that evaluation. MDEQ staff continue to evaluate all of the data from the site and evaluate next steps. The next round of data is scheduled in spring of 2012, however, due to the runoff from the fire suppression water, an EPA Emergency Removal Crew will be sampling those wells in March 2011 as part of their removal action.

Adam's Plating continued to operate until a massive fire on December 27, 2010, destroyed the 5,400sq ft building. The fire caused the release of hazardous materials stored and used at the site and affected the 1-acre Adams Plating property as well as another acre of ground surrounding the site, including two homes. 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.

ENFORCEMENT STATUS
In April 1997, an Agreement for Groundwater Monitoring and O & M was signed by the MDEQ and Adam's Plating. In November 1998, a neighboring business was notified of it's due care responsibilities.

The Adam's Plating property has deed restrictions in place. MDEQ staff have been in contact with the current owner of the adjacent warehouse and continue to discuss the need for deed restrictions on this property to ensure any remaining contamination under this building does not pose a threat to human health in the future. MDEQ staff have been waiting for the release of the new Michigan Model Restrictive Coventant to move forward with obtaining that deed restriction. No other enforcement action is anticipated.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/29/1993**

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 Accomplishments: Completed

Remedial Investigation

The RI was conducted in two phases. On October 3, 1988, the EPA authorized Donahue & Associates to conduct the RI. Phase I of the RI was conducted in August and September 1989. On March 10, 1991, the EPA authorized PRC (the EPA contractor) to conduct Phase II of the RI. The 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. The ROD date is September 29, 1993.

Start Date: *10/03/1988*	Primary Cost:	$1,857,000	Source: Federal
End Date: *09/29/1993*	Secondary Cost:	$0	Source:

Remedial Design

On September 29, 1993, the EPA notified Adam's Plating Company that the EPA would do the RD. On September 30, 1993, PRC was issued the work assignment for RD.

Cost information from the EPA.
May 1994 - completion of RD documents.

Start Date: *09/30/1993*	Primary Cost:	$395,000	Source: Federal
End Date: *05/25/1994*	Secondary Cost:	$0	Source:

5 Year Review

The 1999 Five-Year Review was completed by the state. The EPA prepared an addendum to the Five-Year Review, which was signed by the EPA on September 28, 2001.

Start Date: *06/01/1999*	Primary Cost:	$0	Source:
End Date: *10/07/1999*	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA completed the second Five-Year Review on June 27, 2005, and concluded that the remedy remains protective in the short term, although it may be necessary to implement additional institutional controls for the remedy to be protective in the long term.

Start Date: 06/15/2004	Primary Cost:	$20,000	Source: Federal
End Date: 06/27/2005	Secondary Cost:	$0	Source:

5 Year Review MDEQ staff completed the third 5 Year Review on June 25, 2010. It was concluded that the remedy remains proective in the short term, but implementation of additional institutional controls is necessary for the remedy to remain protective in the long term. Some contaminants appeared to be elevated in some of the wells. MDEQ and EPA staff are working to evaluate the current monitoring network and may propose modifications based on the 2009 and 2010 data collected from site wells.

Start Date: 04/29/2010	Primary Cost:	$0	Source: Federal
End Date: 06/25/2010	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action The completed RA consisted of source removal (soil excavation), underground waste tank removal, and groundwater monitoring to evaluate the effectiveness of the completed RA. The completion date is the date of substantial completion/prefinal inspection. 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. A notice of intent to delete was submitted to the MDEQ in early 1996. The MDEQ did not concur with the deletion (letter dated June 21, 1996) because of a concern with the lack of deed restrictions on adjacent property where contamination was assumed to be located (under a warehouse building). The site remains listed on the National Priorities List. Cost information was obtained from the EPA.

Start Date: 08/01/1994	Primary Cost:	$1,202,000	Source: Federal
End Date: 09/14/1995	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Emergency

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 in their basements. EPA Emergency Response Staff came to the site, worked with area personnel and stabilized the contaminated area such that the emergency hazard was minimized until February 28, 2011, when that crew was able secure EPA funds to remobilize for the actual removal effort. Removal will include drums stored on site, chemical vats, the building structure and slab, and large amounts of contaminated soil from the yard and the adjacent properties.

Start Date: 12/28/2010	Primary Cost:	$0	Source:
End Date: 05/27/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

The liable party is funding the O & M. There is no total cost information available. A state agreement with Adam's Plating to conduct the O & M and reimburse the state for oversight costs was signed in 1997. Although the agreement was not signed until 1997, Adam's Plating started conducting the O & M voluntarily in 1995. Thirty years of groundwater monitoring are covered in the agreement with Adam's Plating. No other O & M activities are required; however, the state is conducting inspections every six months to verify that the buildings remain in place over the potentially contaminated soil areas. If at some point the buildings are removed, the state will assess whether additional remedial actions are necessary.

Start Date: 10/01/1995	Primary Cost:	$0	Source: Private
End Date: 10/30/2025	Secondary Cost:	$0	Source:

Recovered/ Reimbursed

A state agreement with Adam's Plating to conduct the O & M and reimburse the state for oversight costs was signed in 1997. This covers thirty years of groundwater monitoring.

This amount may include other costs recovered by the MDEQ 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.

Start Date: 05/21/1997	Primary Cost:	$30,930	Source: Private
End Date: 10/30/2025	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

Remedial Investigation Because of the uncertainty in the financial integrity of the PRPs, EPA has indicated that the Remedial Branch will conduct another RI as follow up to the current emergency response. It is unknown at this point how extensive that work will be.

Start Date: 05/27/2011 Primary Cost: $0 Source:
End Date: 05/25/2012 Secondary Cost: $0 Source:

Remedial Investigation Because of the uncertainty in the financial integrity of the PRPs, the EPA has indicated that the Remedial Branch will conduct another RI as follow up to the current emergency response. It is unknown at this point how extensive that work will be.

Start Date: 05/27/2011 Primary Cost: $0 Source:
End Date: 05/25/2012 Secondary Cost: $0 Source:

5 Year Review The fourth 5 Year Review will be triggered by the 6/25/2010 signature date of the third 5 Year Review.

Start Date: 06/25/2014 Primary Cost: $0 Source:
End Date: 06/25/2015 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E192-01 : Open

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$20,000	$0	$0	$19,976	$19,976

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$4,708	$0	$0	$4,708	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$50,000	$0	$0	$50,000	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$14,445	$1,445	$0	$13,941	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$11,058	$0	$0	$11,058	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$6,302	$0	$0	$6,302	$0
Totals:	$106,513	$1,445	$0	$105,985	$19,976

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$758,600	$75,860	$75,860	$0
Totals:	$758,600	$75,860	$75,860	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Motor Wheel, Inc.
2401 N. High Street
Lansing , MI

County: Ingham
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: S5
State Site ID#: 33000033
State Site Score: 33

LOCATION
The Motor Wheel, Inc., site (the site) is located at 2401 N. 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 to below the water table, creating a large pond on-site. Several municipal drinking water production wells are located nearby.

SITE HISTORY
This 22-acre site was used from approximately 1938 to 1979 by Motor Wheel, Inc., 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. W. R. Grace and Co. contributed waste to the site from their fertilizer and pesticide reformulation plant adjacent to the Motor Wheel, Inc., property.

At the MDEQ's direction, Motor Wheel, Inc., removed some oils floating on ponds and containerized some waste materials and soils in 1970. A clay cap was placed over a portion of the site sometime in the 1970s. The property was sold to MSV Associates in 1978 for the purpose of mining sand and gravel. During mining activities, the clay cap was broken at least one time, exposing buried tanks and drums. Some of the exposed material was analyzed and sent to a local licensed landfill.

Motor Wheel, Inc., initiated hydrogeologic investigations of the site in 1982 and 1984. Results of these investigations showed groundwater in a shallow glacial drift aquifer to be contaminated with volatile organic compounds (VOCs). These investigations also indicated contaminated groundwater migrating on-site from other sources, as well as migrating off-site.

The site was placed on the National Priorities List on June 10, 1986. An Administrative Order by Consent (Order) went into effect on October 7, 1987, wherein Motor Wheel, Inc., Goodyear, and W. R. Grace and Co. agreed to conduct a remedial investigation/feasibility study (RI/FS) to determine the extent and nature of the contamination and to evaluate cleanup alternatives. The MDEQ is a party to the Order and has been reimbursed for previous response costs of $7,160. The RI report and the Baseline Risk Assessment were issued on May 15, 1990, and February 28, 1991, respectively. An FS for the waste source and shallow groundwater was issued in August 1991.

The RI found that groundwater is contaminated with concentrations of hazardous substances including vinyl chloride, fluoride, ammonia, and others, which may cause health problems to area residents if they were to drink the water over a lifetime. In addition, wastes remaining on the property act as a continuing source of groundwater contamination.

A Record of Decision (ROD) outlining the chosen remedy was signed on 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. The ROD did not address the Saginaw bedrock aquifer, which was to be addressed in a 2001 Explanation of Significant Difference document.

A group of potentially responsible parties (PRPs) agreed to conduct the remedial design (RD) for the waste source and shallow groundwater in 1992. As part of the pre-design investigation, the PRP consultants defined the extent of the groundwater contaminant plum e in the glacial aquifer. During this investigation, it was discovered that there are areas where the contaminated glacial aquifer is in communication with the deeper bedrock aquifer. Because of this, the PRP consultants installed a series of wells into the bedrock. Analytical results of samples collected from the bedrock wells indicate low-level contamination has occurred. Also, during this phase it was decided to eliminate the slurry wall as a component of the remedy.

In Spring 1997, the design was finalized and remedial action (RA) construction began. RA construction was completed in late Fall 1997. The RA was conducted by the PRPs pursuant to a Consent Decree (Decree) they signed with the EPA in 1994. During the RA, the PRPs constructed a hazardous waste cap over the disposal area, installed one extraction well in the perched aquifer, installed six extraction wells in the glacial aquifer, laid all of the necessary piping, and constructed the treatment plant. Even though the PRPs had no enforceable agreement for cleanup of the Saginaw Aquifer, 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 the 1999 order was issued, a meeting was held with W. R. Grace and Co., at which time they expressed interest in working with the regulatory agencies in developing a strategy that would be acceptable to all parties. Shortly afterward, the EPA withdrew the 1999 order with the understanding that discussions would take place, the outcome of which would form the basis for issuance of a new order. Although the W. R. Grace and Co. expressed a willingness to cooperate with the agencies, they also filed a request for judicial review of the order with the Third United States Circuit Court of Appeals in Philadelphia.

Meetings were held on a weekly basis between W. R. Grace and Co., their environmental consultant, the EPA Superfund Division, the EPA Water Division, the MDEQ, the Lansing Board of Water and Light, and the Lansing Board of Water and Light's environmental consultant. The group was collectively called the Saginaw Aquifer Technical Evaluation Team.

A final Saginaw Aquifer Technical Evaluation Team meeting was held in Chicago, Illinois. The purpose of that meeting was to: 1) make a final recommendation for the approach to dealing with ammonia in the Saginaw aquifer, and 2) to get a commitment from W. R. Grace and Co. that they would implement the Saginaw Aquifer Technical Evaluation Team's recommendation. The Saginaw Aquifer Technical Evaluation Team's recommendation included a long-range goal of aquifer remediation and a short-term goal of managing the Board of Water and Light pumping to ensure that ammonia influent concentrations at the Board of Water and Light water conditioning plant remain below levels that might harm the plant. For various reasons, W. R. Grace and Co. refused to commit to the cleanup voluntarily.

A decision was reached to issue a new order under Section 1431 by the EPA Water Division. The new order was issued by the EPA on July 29, 1999, and required W. R. Grace and Co. to prevent ammonia from reaching the capture zone of the Board of Water and Light wells in concentrations equal to or exceeding 1.2 milligrams per liter (mg/L).

Following release of the July 29, 1999, order, the EPA and the MDEQ continued settlement discussions with W. R. Grace and Co. These discussions centered around the development of an acceptable Statement of Work for implementation of the order. As these discussions were progressing, W. R. Grace and Co. continued with litigation with Goodyear, in an

attempt to get Goodyear to contribute financially to the response to the July 29, 1999, order. The litigation between W. R. Grace and Co. and Goodyear resulted in an out-of-court settlement whereby Goodyear assumed complete responsibility for responding to the July 29, 1999, order.

By the end of 2000, discussions between the EPA, the MDEQ, and Goodyear resulted in a preliminary agreement on a Statement of Work for response to the July 29, 1999, order. The first step in implementing the order was installation of a series of monitoring wells. This work began in December 2000 and was completed in the Spring of 2001.

While field work progressed, the agencies and Goodyear continued to work toward formalizing the legal framework for implementing the Section 1431 Order as well as the remaining Superfund response actions. By the middle of the Summer 2001, agreements for an amended Decree and Statement of Work had been preliminarily approved and were awaiting signature when the Third Circuit Court released its decision on the W. R. Grace and Co. appeal of the Section 1431 Order. The opinion of the court was to vacate the Section 1431 Order. This decision greatly complicated the negotiation process with Goodyear.

In July 2001, the EPA Superfund Division released an Explanation of Significant Difference (ESD). The ESD changed the original ROD in two ways. First, it added the Saginaw Aquifer cleanup as a component of the overall site remedy. Second, it re-evaluated and changed some of the cleanup standards. The issue of cleanup standards became an item of contention between the EPA and the MDEQ. The MDEQ sought to have the ammonia standard changed to be consistent with the concentration set by the EPA drinking water program as protective of the Lansing Board of Water and Light operations, 1.2 mg/L. The EPA chose instead to leave the standard at 34 mg/L. The MDEQ did not agree, nor concur with the ESD.

After the ESD was released, the EPA then began to negotiate with the PRP group an amendment to the existing Consent Decree, along with a Statement of Work, for necessary response activities in the Saginaw Aquifer. The MDEQ participated in these negotiations. An Amendment to Consent Decree and Amended Statement of Work were finalized in mid-2002. The documents were lodged with the court in April 2003 and entered by the court in June 2003.

In late 2002, Goodyear began installation of a fourth extraction well in the Saginaw Aquifer. They also upgraded the pumps in two other Saginaw Aquifer extraction wells. The four well extraction system became operational in early 2003.

In order 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 became evident that the Saginaw Aquifer ammonia plume was continuing to expand to the north, west, and south, despite the increased pumping started in 2003. To address this issue, Goodyear overhauled extraction well SEW-1, to increase the pumping volume from this well. Goodyear also proposed the installation of another high capacity extraction well, to be 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. Extraction well SEW-5 became operational in mid-2006. Pumping of SEW-5 has improved capture of the Saginaw Aquifer plumes.

In 2007, it became increasingly evident that the portion of the glacial aquifer vinyl chloride plume south of the Zone 2 extraction wells exists outside of hydraulic control of the glacial aquifer extraction system. In response to this realization, the EPA requested Goodyear to propose additional extraction wells in the glacial aquifer, or another remedial approach that

would provide "an equivalent level of protection". Goodyear responded with an initial proposal to conduct enhanced bioremediation of the glacial aquifer south of the Zone 2 extraction wells. Pilot testing, which began in 2007 is now complete. Results of the pilot test caused Goodyear to eliminate enhanced bioremediation as a preferred remedial alternative to address the downgradient vinyl chloride. Instead, Goodyear proposed to conduct traditional groundwater extraction and treatment.

A Five-Year Review was conducted in 2007. The Five-Year Review 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.

SITE STATUS
Most activities at the site are centered around operation and maintenance of the cap and groundwater pump and treat systems.

Goodyear is currently conducting studies that will determine the extent of downgradient vinyl chloride and aquifer characteristics. Studies have included a seismic study, as well as a boring and sampling program. These data will be used in the engineering design of the extraction wells and to determine optimum placement of the extraction wells in the aquifer.

ENFORCEMENT STATUS
Work at the site is currently being conducted pursuant to the 1994 Consent Decree with the EPA and the 2003 Amendment to Consent Decree with EPA.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1991**

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.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 07/12/2001**

The ESD addresses groundwater at the site. The original ROD set cleanup standards for site contaminants at levels established under the old 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 vinyl chloride 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 Board of Water and Light operations, 1.2 mg/L. There were no cost estimates included in the ESD for cleaning up the Saginaw Aquifer.

Response Accomplishments: Completed

Remedial Investigation The RI/FS was conducted by the PRPs pursuant to the 1987 Order with the EPA and the MDEQ. Costs shown are estimated.

Start Date: 01/01/1989 Primary Cost: $1,000,000 Source: Private

End Date: 08/01/1991 Secondary Cost: $0 Source:

Remedial Design 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.

Start Date: 05/01/1992 Primary Cost: $2,000,000 Source: Private

End Date: 05/01/1997 Secondary Cost: $0 Source:

Remedial Action This activity includes construction of the landfill cap over the waste mass area and construction of the groundwater extraction and treatment system by the liable parties pursuant to the 1994 Decree with the EPA. Costs shown are estimates derived from the 1991 ROD.

Start Date: 05/01/1997 Primary Cost: $10,000,000 Source: Private

End Date: 10/31/1997 Secondary Cost: $0 Source:

Remedial Design Investigate extent of contamination in the Saginaw Aquifer and design an expansion to the existing groundwater pump and treat system to incorporate cleanup of the Saginaw Aquifer. Costs shown are estimated.

Start Date: 10/01/2000 Primary Cost: $500,000 Source: Private

End Date: 10/01/2001 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Action Construct expansion of the existing groundwater pump and treat 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.

Start Date: 10/01/2001	Primary Cost:	$500,000	Source: Private
End Date: 03/01/2003	Secondary Cost:	$0	Source:

5 Year Review The first Five-Year Review found that immediate threats associated with the site had been effectively dealt with, but long-term threats remained. Of primary concern was the lack of capture of the groundwater contaminant plumes.

Start Date: 05/14/2002	Primary Cost:	$5,000	Source: Federal
End Date: 07/22/2002	Secondary Cost:	$0	Source:

Remedial Design Design an expansion to the existing groundwater pump and treat 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.

Start Date: 10/01/2005	Primary Cost:	$25,000	Source: Private
End Date: 12/01/2005	Secondary Cost:	$0	Source:

Remedial Action Installation of extraction well (SEW-5) near the center of the deep aquifer plume. The cost shown for this work is an estimate.

Start Date: 01/01/2006	Primary Cost:	$250,000	Source: Private
End Date: 05/31/2006	Secondary Cost:	$0	Source:

5 Year Review The Five-Year Review 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.

Start Date: 09/01/2006	Primary Cost:	$0	Source: Federal
End Date: 07/20/2007	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Design SHALLOW AQUIFER RD: Conduct pre-design and design activities for implementation of a bioremediation cleanup of the vinyl chloride plume, south of the glacial aquifer Zone 2 extraction wells.

Start Date: 03/01/2008 Primary Cost: $500,000 Source:

End Date: 12/31/2011 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Operation and maintenance (O&M) activities for the groundwater extraction and treatment systems will be conducted until cleanup standards are met. With a projected thirty year timeframe to reach cleanup standards, O&M will likely be conducted until 2033. It is estimated that O&M costs are approximately $250,000 per year.

Start Date: 04/09/1998 Primary Cost: $9,000,000 Source: Private

End Date: 10/01/2033 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review The EPA will conduct a Five-Year Review.

Start Date: 11/01/2011 Primary Cost: $0 Source:

End Date: 07/20/2012 Secondary Cost: $0 Source:

Remedial Action SHALLOW AQUIFER RA: Implementation of expanded pump and treat system for the vinyl chloride plume, south of the glacial aquifer Zone 2 extraction wells.

Start Date: 01/01/2012 Primary Cost: $2,000,000 Source: Private

End Date: 06/15/2013 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,191	$0	$8,234	$12,191	$8,234

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$95,000	$0	$0	$48,288	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$129,276	$0	$0	$129,276	$0

Cooperative Agreement Number V995259-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,933	$0	$0	$30,933	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$43,435	$0	$0	$43,435	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$40,000	$0	$0	$36,011	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$360,000	$0	$0	$359,968	$0
Totals:	$710,835	$0	$8,234	$660,101	$8,234

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: American Anodco, Inc.
28 North Beardsley Road
Ionia , MI

County: Ionia
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 2N
State Site ID#: 34000001
State Site Score: 36

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 to the north and east by Prairie Creek and adjacent wetlands. Prairie Creek enters the Grand River approximately 1/2 mile downstream from the site.

SITE 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 lagoon, 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 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 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.

SITE STATUS
Meridian Automotive Systems continues to operate at the site. They have expanded the facility in recent years. Groundwater monitoring, which was part of the selected remedy, has been conducted annually since the ROD. Monitoring has identified a few potential exceedances of GSI mixing zone-based criteria. Further groundwater investigation was conducted in 2001, and the report was completed in May 2002. These findings showed a continuous release of phosphorus, but just one hotspot of manganese in the floodplain. The

state wrote the potentially responsible party (PRP) regarding the few remaining obstacles to deleting the site, and the state and the PRP are currently discussing options for moving forward. In 2003 the MDEQ requested additional investigation of manganese and phosphorus at the GSI. The company performed this investigation in February 2004 with a report in March 2004. The MDEQ told the company that based on the results of their 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. The MDEQ wrote Meridian again about these issues in February and November 2008, and is awaiting a committment and plan from Meridian to do this work.

When the agencies resolve questions about potential impacts of groundwater contaminants on Prairie Creek and adjacent wetlands, the state and the EPA will work toward removing this site from the National Priorities List. Due to the presence of boron and manganese in the groundwater beneath the site at concentrations above residential drinking water criteria, the state has requested that Meridian Automotive Systems impose restrictive covenants preventing use of groundwater for drinking, and they may need to seek a deed restriction against the use of groundwater for drinking water purposes on the Girl Scout Association property.

ENFORCEMENT STATUS

The previous owner of the site, American Bumper Co., fulfulled all the requirements of their March 1994 Administrative Order on Consent (Order) with EPA written for implementation of the ROD. Meridian Automotive Systems is the current owner of the site. Meridian Automotive Systems 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.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/27/1993**

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 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.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response Remediation of on-site lagoon in 1987, including dewatering, and sludge removal and disposal in an off-site landfill.

Start Date: *05/01/1987*	Primary Cost:	$0	Source: Private
End Date: *09/01/1987*	Secondary Cost:	$0	Source:

Negotiations RI/FS negotiations.

Start Date: *06/22/1987*	Primary Cost:	$0	Source:
End Date: *10/23/1987*	Secondary Cost:	$0	Source:

Remedial Investigation PRP conducted RI/FS.

Start Date: *10/23/1987*	Primary Cost:	$0	Source: Private
End Date: *09/27/1993*	Secondary Cost:	$49,000	Source: Federal

Negotiations Remedial Design/Remedial Action (RD/RA) negotiations.

Start Date: *01/03/1994*	Primary Cost:	$0	Source:
End Date: *04/13/1994*	Secondary Cost:	$0	Source:

Operation and Maintenance Groundwater and surface water monitoring continued after the signing of the Order for ROD implementation, April 13, 1994, until the last monitoring report 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.

Start Date: *04/13/1994*	Primary Cost:	$0	Source: Private
End Date: *09/18/1998*	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Remedial Design Design a pump and treat to target remaining phosphorus.

Start Date: *04/01/2008*	Primary Cost:	$0	Source:
End Date: *07/01/2010*	Secondary Cost:	$0	Source:

Long Term Remedial Action LTRA will initiate after pump and treat is installed and operations begin.

Start Date: *07/01/2010*	Primary Cost:	$0	Source: Private
End Date: *07/01/2020*	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,925	$0	$0	$2,923	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,000	$0	$0	$16,708	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,927	$0	$0	$8,927	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$2,136	$0	$0	$2,136	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$40,000	$0	$0	$39,944	$0
Totals:	$73,988	$0	$0	$70,638	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Ionia City Landfill
Cleveland Street/West Main
Ionia , MI

County: Ionia
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: D7
State Site ID#: 34000004
State Site Score: 32

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.

SITE HISTORY
The site is owned by the city of Ionia. The landfill was classified as an open dump in 1966 by the Michigan Department of Natural Resources (MDNR) 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 the MDNR 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. Based on groundwater-monitoring data, contaminant levels in the groundwater are approximately one order of magnitude above the federal cleanup levels. The site posed an acute public health or environmental problem as a result of the potential for direct contact exposure and discharge of bioaccumulative compounds to surface water.

In 1981, the MDNR 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 a creek located on the eastern boundary of the landfill. Traces of volatile organic compounds, 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 and soil borings were installed 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 the MDEQ. The report proposed a pump and treat removal action downgradient within the source area to capture and prevent the new plume from impacting surface water bodies.

In November 1996, the EPA officially approved a groundwater pump and treat 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 has never operated continuously at full pump capacity.

The liable parties requested a mixing zone determination from the MDEQ, Surface Water Quality Division, for a legal discharge into the Grand River and the Kanouse Drain. The mixing zone determination was issued in September 2000. The limits for groundwater discharge of contaminants (volatile organic compounds (VOCs) and heavy metals) established in the mixing zone criteria have been incorporated into the ROD for the groundwater plume, that was issued in September 2000.

The long term remedial action (LTRA) work plan was reviewed by the EPA and the MDEQ at the end of 2001 and finaled 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 railroad tracks) 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 railroad tracks) of the site, which was completed in December 2002. 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 report was submitted to the EPA and the MDEQ for review and comment in early 2003. 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 and included sampling of the four newly installed monitoring wells.

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 ROD, which was submitted to the MDEQ in December 2003 for review and comment. The MDEQ provided comments in early 2004. 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 finaling of the 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 could 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, the MDEQ, 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 has 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 Five-Year Review report was written. The first Five-Year Review, 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 issues of concern identified by the EPA 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 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, the MDEQ 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 mixing zone determination to manganese and chromium only. It was also determined that cleanup criteria for Area B should meet the mixing zone determination 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 pump and treat remedy and collection of data to determine if plume capture has been attained continued through 2008 under the LTRA. Review of the 2008 data indicates 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 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 has been achieved.

Throughout 2008, the EPA, the MDEQ, 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 the MDEQ. 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 Pump and Treat 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 Pump and Treatment System began in June 2008.

SITE STATUS
The EPA completed the second Five-Year Review Report in June 2010. The Five-Year Review 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 volatile organic compounds in at Point Source Monitoring Well (PMW) PMW-1, however, this location appears to be stable and is being monitored to ensure the hot spot is not moving downgradient. A restrictive covenant is in place that prohibits the construction or use of drinking water wells and residential uses at the site.

The two-year Pilot Test Shutdown of the Pump and Treat System was completed in June 2010. Quarterly groundwater sampling data was evaluated and confirmed Monitored Natural Attenuation was remediating the groundwater contamination plume while the treatment system was shut down. Development of a Monitored Natural Attenuation Report began in late 2009 and was completed in mid 2010. The report confirmed monitored natural attenuation was actively remediating the groundwater contamination plume and that the treatment system can be shut down permanently.

In 2011, the EPA will develop a ROD Amendment to change the site remedy from the Pump and Treat system to Monitored Natural Attenuation.

SPECIAL CONSIDERATIONS
From 2000 to 2002, the MDEQ 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.

OPERABLE UNITS

00	Entire Site
01	Waste
02	Groundwater Plume

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1989**

Proposed remedy was in situ vitrification. However, the implementation of the remedy was unsuccessful. Excavation and removal of the source area was initiated instead.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The first Five-Year Review 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.

Start Date: 02/01/2005 Primary Cost: $0 Source: Federal
End Date: 09/30/2005 Secondary Cost: $0 Source:

5 Year Review The EPA completed the second Five-Year Review report in June 2010. The Five-Year Review 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 volatile organic compounds at Point Source Monitoring Well (PMW) PMW-1, however, this location appears to be stable and is being monitored to ensure the hot spot is not moving downgradient. A restrictive covenant is in place that prohibits the construction or use of drinking water wells and residential uses at the site.

Start Date: 06/01/2009 Primary Cost: $0 Source: Federal
End Date: 07/16/2010 Secondary Cost: $0 Source:

Response Accomplishments: In Progress

Operation and Maintenance The EPA is developing a ROD Amendment to change the site remedy from Pump and Treat to Monitored Natural Attenuation. Groundwater sampling has been reduced from quarterly to every six months and will be included in the ROD Amendment.

Start Date: 01/01/2011 Primary Cost: $0 Source:
End Date: Secondary Cost: $0 Source:

OPERABLE UNIT 01: Waste

Response Accomplishments: Completed

Interim Response Drum removal and fencing.

Start Date: 04/01/1981 Primary Cost: $0 Source: Private
End Date: 12/31/1981 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Waste

Response Accomplishments: Completed

Remedial Investigation

Start Date: 09/29/1984 Primary Cost: $171,000 Source: Federal
End Date: 01/29/1986 Secondary Cost: $0 Source:

Remedial Investigation

Start Date: 01/29/1986 Primary Cost: $0 Source: Private
End Date: 09/29/1989 Secondary Cost: $101,000 Source: Federal

Interim Response Drum removal.

Start Date: 11/01/1992 Primary Cost: $0 Source: Federal
End Date: 12/31/1992 Secondary Cost: $0 Source:

Remedial Action Excavation of contaminated soils; construction of clay cap with topsoil and grass cover.

Start Date: 04/01/1994 Primary Cost: $0 Source: Private
End Date: 04/01/1999 Secondary Cost: $0 Source:

OPERABLE UNIT 02: Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/2000**

Groundwater pump and treat remedy and monitored natural attenuation were selected for remediation of the groundwater plume. The contaminant concentration must meet mixing zone determination and groundwater/surface water interface criteria for Kanouse Drain and monitored natural attenuation for the plume migrating off site to the southwest. Long-term operation and maintenance, funded by the potentially responsible party will also be used.

OPERABLE UNIT 02: Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/29/2008**

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 MDEQ. 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 shut down of the pump and treat 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.

Response Accomplishments: Completed

Remedial Investigation

Start Date: 01/29/1986	Primary Cost:	$0	Source: Private
End Date: 09/28/2000	Secondary Cost:	$21,000	Source: Federal

Interim Response Construction of groundwater Pump and Treat System. Installation of monitoring wells.

Start Date: 04/01/1995	Primary Cost:	$0	Source: Private
End Date: 12/30/2002	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 10/01/2001	Primary Cost:	$0	Source: Private
End Date: 12/30/2002	Secondary Cost:	$0	Source:

Long Term Remedial Action Operate Pump and Treat System. Quarterly groundwater monitoring until plume capture has been documented. In 2008, the EPA, the MDEQ, and the city of Ionia agreed to conduct a two-year Pilot Test Shutdown of the Pump and Treat System. The pilot test began in June 2008 and ended in June 2010.

Start Date: 01/01/2003	Primary Cost:	$0	Source: Private
End Date: 12/01/2010	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$36,277	$0	$22,732	$36,277	$22,732

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$49,640	$0	$0	$49,640	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$92,292	$0	$0	$92,197	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$19,127	$0	$0	$19,127	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$5,000	$0	$0	$4,835	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$150,000	$0	$0	$144,576	$0
Totals:	$352,336	$0	$22,732	$346,651	$22,732

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Hedblum
1000 AuSable Road
Oscoda , MI

County: Iosco
MDEQ District Location: Saginaw Bay
Managed By: RRD-Superfund

Federal Site Code: E9
State Site ID#: 35000002
State Site Score: 39

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 (Amtel). 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.

SITE 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 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 Michigan Department of Natural Resources 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 (ug/l) which exceeded the residential drinking water standard of 5 ug/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 pump and treat 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 pump and treat 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 Five-Year Review 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 Five-Year Review, 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) 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 ug/l in one private residential well located within the groundwater plume.

In 2005, with the EPA's approval, the MDEQ conducted an RI of the groundwater plume. 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 ug/l to 3400 ug/l and tetrachloroethylene from 14 ug/l to 100 ug/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 current pump and treat remedy.

In 2007, SPX Corporation provided technology-specific information to both the EPA and the MDEQ from the Accelerated Remediation Technologies firm, including site studies and a proposed work plan to implement the Accelerated Remediation Technologies technology remedy at the Hedblum site. The Accelerated Remediation Technologies technology, if implemented, was predicted to meet the cleanup requirements of both the SRD and the ROD within three to five years. Upon review of the information provided, both the EPA and the MDEQ decided that SPX Corporation could proceed with implementation of the Accelerated Remediation Technologies technology provided SPX Corporation first performed a pilot study and revised the work plan based upon comments provided by both the EPA and the MDEQ. SPX Corporation agreed.

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.

Via a letter dated September 10, 2008, the EPA notified both the MDEQ and SPX Corporation that development of the third Five-Year Review had been initiated. This Five-Year Review was completed in August 2009. The third Five-Year Review 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 were implemented to prevent the use of the groundwater and soils. The next Five-Year Review is anticipated to determine if the Accelerated Remediation Technologies remediation was successful in cleaning up the groundwater contamination plume.

SITE STATUS

Throughout 2010, EPA and MacTec, the consultant for SPX, reviewed the ART Technology remedy design documents. The design was finaled in December 2010. It is anticipated that construction of the ART Technology remedy will begin in 2011.

The current operational pump and treat system remedy, which includes quarterly groundwater monitoring, continued through 2010 into 2011.

ENFORCEMENT STATUS

The EPA issued an Order on January 4, 1990, directing Amtel to perform the Remedial Design (RD) and Remedial Actions (RA). Amtel designed, constructed, and operated the pump and treat system. On July 13, 1998, the EPA issued a letter to Amtel 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 Amtel 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 Amtel by SPX and the proposed change in remedy to implement the ART technology at the site, the EPA amended the original 1990 Order in 2009. The new Unilateral Administrative Order (Order) was completed and signed on June 30, 2009. The new Order gave approval to implement the ART remedy while continuing to operate the pump and treat system. The new Order contained a SOW, for both the RD and the RA, as well as the Institutional Controls.

OPERABLE UNITS

00	Entire Site
01	Groundwater Plume

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation SPX Corporation conducted a three phased RI at the site during 2006.

Start Date: 01/01/2006 Primary Cost: $0 Source: Private

End Date: 10/01/2006 Secondary Cost: $0 Source:

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Completed

5 Year Review The third Five-Year Review was written by the EPA with input provided by the MDEQ. In a letter dated September 10, 2008, the EPA provided notice that the process had been initiated. The third Five-Year Review 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 were implemented to prevent the use of the groundwater and soils. The next Five-Year Review is anticipated to determine if the Accelerated Remediatin Technologies remediation was successful in cleaning up the groundwater contamination plume.

Start Date: 09/10/2008	Primary Cost:	$0	Source: Federal
End Date: 08/01/2009	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Design The EPA and the MDEQ have accepted the proposed remedy change. A work plan and design document have been developed. SPX Corporation must first conduct a pilot study before the design is considered complete.

Start Date: 03/01/2009	Primary Cost:	$0	Source: Private
End Date: 06/01/2011	Secondary Cost:	$0	Source:

Remedial Action Once the pilot study is completed and the final design developed, SPX Corporation will move forward and implement the Accelerated Remediation Technologies technology.

Start Date: 03/01/2009	Primary Cost:	$0	Source: Private
End Date: 03/01/2014	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review Future date for fourth Five-Year Review.

Start Date: 08/30/2013	Primary Cost:	$0	Source:
End Date: 08/01/2014	Secondary Cost:	$0	Source:

OPERABLE UNIT 01 : Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1989**

The ROD remedy selected was pump and treat of groundwater estimated until 2010 to achieve cleanup standards with long-term operation and maintainance (O & M) funded by the PRPs.

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 04/08/2009**

The EPA developed an ESD to modify the original ROD pump and treat remedy to include and implement the Accelerated Remediation Technologies remedy, which will run concurrently with the pump and treat system.

Response Accomplishments: Completed

Interim Response

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.

Start Date: 01/01/1977	Primary Cost:	$0	Source: Private
End Date: 12/30/1977	Secondary Cost:	$0	Source:

Remedial Investigation

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 ug/l.

Start Date: 02/15/1986	Primary Cost:	$543,000	Source: Federal
End Date: 05/21/1986	Secondary Cost:	$0	Source:

Remedial Design

The Potentially Responsible Parties 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.

Start Date: 08/13/1992	Primary Cost:	$0	Source: Private
End Date: 09/01/1992	Secondary Cost:	$165,000	Source: Federal

Remedial Action

Construction of the groundwater treatment system was completed in July 1993. The treatment system was inspected, tested, and began operation in August 1993.

Start Date: 12/01/1992	Primary Cost:	$0	Source: Private
End Date: 08/01/1993	Secondary Cost:	$168,000	Source: Federal

5 Year Review

The EPA developed the first Five-Year Review which was reviewed by the MDEQ. The Five-Year Review estimated that the pump and treat system would have to operate for at least five to ten years to achieve the cleanup standards included in the ROD.

Start Date: 04/01/1997	Primary Cost:	$40,000	Source: Federal
End Date: 09/30/1999	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Completed

5 Year Review

The second Five-Year Review report was written by the EPA. The MDEQ reviewed and provided comment on this report. 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 ug/l in one private residential well located within the groundwater plume.

Start Date: 01/01/2004 Primary Cost: $6,000 Source: Federal

End Date: 09/30/2004 Secondary Cost: $0 Source:

Remedial Investigation

With the EPA's approval, the MDEQ undertook a RI which proved the current treatment system is not capturing the groundwater plume. Contaminant concentrations were detected at elevated levels above current criteria.

Start Date: 02/01/2005 Primary Cost: $30,000 Source: State

End Date: 12/31/2005 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

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. It is estimated that O&M will be needed until 2015 to achieve cleanup standards in the aquifer, including meeting the criteria established in the SRD. O&M will continue until the cleanup criteria of both the ROD and SRD have been achieved.

Start Date: 09/01/1993 Primary Cost: $0 Source: Private

End Date: 12/30/2015 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$6,487	$0	$0	$6,487	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,000	$0	$0	$20,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,028	$0	$0	$39,835	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,952	$0	$0	$5,952	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$6,286	$0	$1,498	$6,286	$1,498

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$52,500	$0	$0	$46,355	$0
Totals:	$131,253	$0	$1,498	$124,915	$1,498

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Allied Paper/Portage Crk/Kalam
Morrow Dam to Lake Michigan
Kalamazoo , MI

County: Kalamazoo
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 9B
State Site ID#: 39000051
State Site Score: 46

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 a 3-mile stretch of Portage Creek, from Cork Street to the confluence with the Kalamazoo River and all properties presently or previously owned or operated by the potentially responsible parties (PRPs).

SITE HISTORY
Carbonless copy paper manufactured between 1957 and 1971 contained polychlorinated biphenyls (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. Later, waste effluents were sent to clarifiers prior to being discharged to the river and creek. The bottom sludge from these clarifiers were placed in at least five disposal areas along the site. Because the PCBs were associated with suspended fine clay particles, the clarifiers were ineffective in stopping the discharge of PCBs. 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.

The MDEQ has estimated that this area contains well over 350,000 pounds of PCBs and millions of cubic yards of PCB-contaminated waste in the river, floodplain, and five uncontained disposal areas situated on the river banks. The PCBs continue to migrate into the environment from these areas through 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 Lake Michigan. Public health advisories have been issued against eating fish caught in the Kalamazoo River.

On August 30, 1990, the Allied Paper/Portage Creek/Kalamazoo River Superfund site (the site) was officially included on the National Priorities List pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-540, as amended. The liable parties 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 Co.) whose bankruptcy was approved by the U.S. District Court in Delaware in May 2005, the Fort James Corporation (formerly James River Corp.), 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.

Initially, the MDEQ was the lead agency for this Superfund site and had divided it up into numerous smaller operable units. The EPA has retained the names of Operable Units 1 through 4. There are 80 miles of the Kalamazoo River, including a 3-mile stretch of Portage

Creek that are known as Operable Unit 5. The EPA has also designated the Former Plainwell Paper Mill Property as Operable Unit 7. Operable unit designations have not yet been defined by the EPA for other areas of the river.

An ecological risk assessment for the river was completed by the MDEQ in June 1999, and a human-health risk assessment was completed by the MDEQ 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 document 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 that will relook at floodplain cleanup criteria by utilizing site-specific data previously collected by Michigan State University while under contract to the PRPs.

Study of the river began in 1993 and a remedial investigation and feasibility study (RI/FS) report was submitted by the PRPs in late 2000. The report, reviewed by the MDEQ and the EPA, was ultimately rejected because it did not address vast portions of the floodplain and assumed state-owned dams would be perpetually maintained, inconsistent with future plans of the Michigan Department of Natural Resources (MDNR).

Phase II RI activities, addressing the downstream portion of the site (Lake Allegan Dam to Lake Michigan) were initiated in early 2000, with significant investigative progress made in 2001. Phase II related investigation and possible remediation likely will not be fully considered until resolution of issues in the upstream portion of the site. In 2001, the EPA initiated additional sampling of the Plainwell and Otsego City Impoundments in anticipation of meeting the data requirements of the National Remedy Review Board, who will approve a proposed cleanup plan for the river. The new EPA data are consistent with previous samples, and confirm excessive risk to human health and the environment. The data will be included in a revised RI/FS. The final version of the RI/FS will eventually evaluate the results of sediment work undertaken by the United States Geological Survey which was partially funded by the MDEQ.

In a letter dated December 31, 2003, the EPA expressed its intent to host a series of facilitated discussions to determine how the disparate needs of the various parties involved in the cleanup can best be accommodated. This EPA effort concluded in February 2007 and resulted in the signing of two Administrative Orders by Consent with the Kalamazoo River Study Group. The first order was for the PRPs to conduct a Time Critical Removal Action at the Plainwell Impoundment, to which the MDEQ was a signatory. The second order with the EPA requires the PRPs to conduct Supplemental RI/FS activities which will be followed by the preparation of a Proposed Plan, and Record of Decision (ROD) relative to the river.

The Time Critical Removal Action for the Plainwell Impoundment 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. Initial restoration activities associated with the removal action were completed by the summer of 2009. 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 another Time Critical Removal Action 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 through 2013.

Since 1999, the MDEQ has been implementing a Long-Term Monitoring Program at the site. This program includes the collection of surface water samples and resident fish. The objectives of the program are to develop a baseline dataset for PCBs in fish and surface water at specific reaches of the river as well as system-wide, prior to remedial action (RA). Post-RA sampling of the surface water and fish media can be (and has been) evaluated to determine the effectiveness of RA. The MDEQ has published a series of reports that document the findings of the Long-Term Monitoring activities. An updated Long-Term Monitoring report was completed in May 2009 that incorporated the results of the surface water sampling that was collected to establish baseline (pre-removal or remedial work) conditions, evaluated the effectiveness of the Time Critical Removal Action at the former Bryant Mill Pond, and included trend monitoring results. Data are also collected from post-removal locations (i.e., Portage Creek) to evaluate possible alternatives to using live fish for monitoring purposes.

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 Operable Unit 1 was submitted by the PRP in November 2000, but it did not adequately address all the issues. 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 was removed from the Portage Creek floodplain. A revised RI Report, received by the MDEQ in December 2003, was reviewed but lacked certain elements that the MDEQ considered necessary before the RI Report could be finalized. The PRPs revised Section 4 of the RI report and submitted it to the MDEQ in October 2005 for review. In a letter dated October 25, 2006, the MDEQ exercised its right under the Order to take over responsibility for authoring the final RI Report. The MDEQ worked with the EPA to develop an EPA-Approved RI report consistent with the termination agreement of the state's Order. The EPA in turn shared the draft RI Report with the PRPs and worked with public groups interested in the investigation and cleanup of the site. In March of 2008, the final version of the RI was submitted by the MDEQ to the EPA after the EPA's review and comment giving EPA the lead. 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. In the fall of 2009 the PRPs submitted a draft FS report for agency review. In February of 2010, the EPA issued a disapproval letter to the PRPs regarding the draft FS, requiring a new report be prepared and submitted. On March 30, 2010, the Settlement Agreement for the Lyondell bankruptcy was executed. As such, a PRP for this Operable Unit no longer exists resulting in the facility becoming a fund lead site. The work on the supplemental groundwater investigation for 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 and MDEQ concur that adequate information is available to complete the FS, scheduled for completion in 2011.

Following the court’s acceptance of the Lyondell bankruptcy, the EPA is authoring a Final FS for the Allied Paper Operable Unit. They anticipate that a final version of the FS will be approved in 2011. For the Willow/A-Site Operable Unit, the EPA negotiated a Consent Decree with the PRPs that included consideration of Natural Resource Damage claims. A pre-final (95 percent) design report was submitted by the PRPs in December 2010. The final design is anticipated to be delivered to the agencies in February 2011.

Willow/A-Site - OU2: The Willow Boulevard/A-Site is another ongoing source of PCBs to the Kalamazoo River. The PRPs, taking advantage of low water levels in the Kalamazoo River in 1999, conducted an interim action to remove 7,000 cubic yards of PCB-contaminated waste from the river. Sheetpile was installed to protect against erosion. A draft RI/FS, which included recent groundwater data, was submitted by the PRPs in March 2001; the document

was rejected as inadequate, especially regarding groundwater issues. After review and suggested revision by EPA, the MDEQ completed the RI/FS in December 2003. The PRPs disputed the findings of the December 2003 document regarding the application of cleanup criteria. The MDEQ, after extensive discussions with other divisions within the department, released the final version of the report in November 2004, thereby resolving the PRP's dispute, after which the lead for Willow Boulevard/A-Site was transferred from the MDEQ 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 Consent Decree for Remedial Design/Remedial Action requiring Georgia-Pacific to perform cleanup. In July 2010, the PRPs submitted a Preliminary Remedial Design report for Agency Review.

King Highway Landfill - OU3: A ROD for the King Highway Landfill was signed February 10, 1998. The ROD is being implemented by Georgia Pacific under an Administrative Order by Consent with the MDEQ. 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 is established on the landfill cap and a long-term groundwater monitoring network, landfill gas monitoring network and gas venting system have been installed, with sampling occurring quarterly. 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 storm water 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 being generated. Routine monitoring of landfill gas indicated that methane was migrating off-site in portions along the southern boundary. In the fall of 2008, landfill gas cut-off 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; however, when the extent was greater than anticipated, other remedial alternatives were considered to minimize costs. The DNRE, Department of Attorney General, Georgia Pacific and Department of Transportation have been negotiating a mechanism to leave the material in place. In the interim, the state continues to work with Georgia-Pacific on final removal activities of PCBs that were missed during landfill consolidation efforts before final construction completion is achieved.

12th Street Landfill - OU4: The ROD for the 12th Street Landfill was signed in September 2001, after which the lead was transferred from the MDEQ to the EPA. In 2003, the EPA and MDEQ 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 Consent Decree for Remedial Design/Remedial Action requiring Weyerhaeuser to perform cleanup of the 12th Street Landfill. In fall 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 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 a Remedial Design work plan for the site which is dated April 2008. The Remedial Design report for the Operable Unit was approved in early 2010. Remedial activities were initiated in the spring of 2010.

Mill Properties: The MDEQ 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 MDEQ has reviewed documents prepared by the PRPs. The EPA and the MDEQ have also

worked with the City of Plainwell in redevelopment efforts and with the PRPs in completion of RI/FS activities at the Plainwell Mill. The MDEQ has also worked with the City of Kalamazoo on redevelopment efforts at various sites including the former Performance Paper Mill. Emergency work at the Plainwell Mill, consisting of removal of PCB contaminated bank sediments, was completed in 2008.

SITE STATUS

Substantial portions of this Superfund site remain unaddressed and PCBs in the river continue to pose risks to both human health and the environment. Several Time Critical Removal Actions were conducted in recent years and are further detailed in the history section. Early planning discussions have been initiated for work to be conducted for the Otsego City Dam Impoundment.

The PRPs are concluding Supplemental RI/FS investigation activities on the river between Morrow Dam and the Plainwell Dam (Area 1). The PRPs have been tasked with writing a Supplemental RI report for Area 1, a draft of which is expected in April 2011. The RI report will be followed by the preparation of a FS, Proposed Plan, and ROD for Area 1.

ENFORCEMENT STATUS

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 (NREPA). 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 order with the MDEQ to fund and conduct the RI and FS on the site. A separate order was signed for RA activities at the King Highway Landfill.

In June 2001, the MDEQ asked the EPA to redesignate portions of the greater Kalamazoo River Superfund Site as a federal enforcement lead. Transition of the lead is complete on the river, and is also complete at the remaining landfill operable units as investigation milestones were reached. The King Highway Landfill remains the sole operable unit with the MDEQ 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. The MDEQ has been recovering costs for work conducted at the King Highway Landfill under a separate Order. The MDEQ has billed the PRPs over $269,000 since August 2001, successfully recovering the full amount. Cost recovery will continue indefinitely under the King Highway Landfill Order.

The MDEQ has completed negotiations with the Kalamazoo River Study Group for payment of past costs as specified in the state's Order for the Kalamazoo River RI/FS. Between 1991 and 2006, the MDEQ billed the Kalamazoo River Study Group over $12,037,000 for costs related to the site. As of June 2007, the MDEQ 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 Order, but still necessary under Part 201, of the NREPA. A cost demand package for the lawful expenses incurred by the MDEQ 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. The MDEQ is also looking to negotiate for recovery of future costs related to activities on the river.

In December 2008, the MDEQ prepared a cost demand package for expenses incurred by the MDEQ related to oversight of the Plainwell Time Critical Removal Action. 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 Order for the Kalamazoo River RI/FS. On January 11, 2002, Georgia-Pacific Corporation paid $17,000 in stipulated penalties, the amount requested by the MDEQ for non-compliance.

The EPA and the Weyerhaeuser Company entered into a Consent Decree 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, MDEQ, 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 will receive 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. The MDEQ will receive $1,671,850 to be deposited in the Custodial Trust MDEQ Cost Account for the Allied Paper Mill. In addition, the federal and state agencies designated as Natural Resource Trustees for the Kalamazoo River will receive $2,000,000 for restoration work on the river. The reorganization plan liquidates all Lyondell entities connected to the Allied Paper/Kalamazoo River Superfund site, leaving Georgia-Pacific LLC as the major PRP. (Weyerhaeuser Corporation continues to conduct response activities at a portion of the site known as Operable Unit 4).

SPECIAL CONSIDERATIONS

The MDEQ and the MDNR believe the three state-owned dams need to be removed to achieve state resource and environmental protection goals. The Plainwell Dam was successfully removed in 2007 and 2008. To date, funds have not been made available to initiate dam removal for the two remaining MDNR-owned dams. Research by Georgia-Pacific to see if Great Lakes Legacy funds might be available to address the Otsego City Dam Impoundment is underway.

OPERABLE UNITS

00	Entire Site
01	Allied Paper, Inc.
02	Willow Boulevard/A-Site
03	King Highway Landfill
04	12th Street Landfill
05	Lake Allegan Dam to Lake Michigan
06	Morrow Pond to City of Plainwell
07	City of Plainwell to Plainwell Dam
08	Plainwell Dam to Otsego City Dam
09	Otsego City Dam to Otsego Dam
10	Otsego Dam to Trowbridge Dam
11	Trowbridge Dam to Allegan City Dam
12	Allegan City Dam to Lake Allegan Dam
13	King Mill Lagoons
14	Hawthorne Paper Mill

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Recovered/ Reimbursed

As of June 2007, the MDEQ had received over $10,325,000,000 in payments for RI/FS related activities. The balance of the unpaid charges were moved to the state's Non-Administrative Order by Consent cost package which includes expenses incurred by the state for activities on the river not related to the Order, but still necessary under Part 201, of the NREPA. Importantly, a cost demand package for the Non-Administrative Order by Consent costs lawfully incurred by the MDEQ outside the Order was sent to the Kalamazoo River Study Group and the Weyerhaeuser Company in a letter dated November 22, 2006, seeking $8.3M. 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-Administrative Order by Consent activities. Reimbursed funds may include other costs recovered by the MDEQ pursuant to Part 201, of the NREPA (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.

Start Date: 01/01/1993 Primary Cost: $14,425,000 Source: Private

End Date: Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

The state contracted with the United States Geological Survey to study sediments behind four dam impoundments at the site and to operate two stream gages near the upstream and downstream dam impoundments. This information was used by the United States Geological Survey to publish two reports regarding the nature of the sediments behind the four dams, write a report regarding the stability of river banks in select impoundments, and produce a model that predicts the fate of sediments in the four impoundments given a variety of flood scenarios. Limited sampling was performed by the MDEQ in advance of the United States Geological Survey work in regard to health and safety issues.

Start Date: 07/01/2000	Primary Cost:	$750,000	Source: State
End Date: 12/30/2004	Secondary Cost:	$0	Source:

Emergency

Emergency repairs were conducted in 2001 by the MDEQ 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).

Start Date: 12/07/2000	Primary Cost:	$540,000	Source: State
End Date: 03/30/2001	Secondary Cost:	$0	Source:

5 Year Review

The protectiveness statement in the report concluded that the remedy at Operable Unit 3 currently protects human health and the environment in the short-term, that the remedy at the 12th Street Landfill Operable Unit 4 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 Operable Unit 4, as well as every other operable unit of the site, includes implementation and maintenance of each component of the selected remedy, including any necessary Institutional Controls.

Start Date: 05/01/2007	Primary Cost:	$0	Source:
End Date: 10/18/2007	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

PRP Oversight

The MDEQ and its contractor conduct oversight of the PRP's RI related activities including review of reports and oversight of field activities which has resulted in contractual expenditures of ~$10,350,000. Costs have also been expended by the MDEQ for conducting laboratory analyses on samples collected independently (~$100,000).

Start Date: 01/01/1991	Primary Cost:	$10,450,000	Source: State
End Date: 09/29/2028	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Investigation

RI for Phase I of the river: Site redesignated as federal lead in 2001. Draft RI/FS submitted by the PRP was rejected by the MDEQ 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 Order, dated February 2007, to conduct Supplemental RI/FS activities on the river. The PRPs continue to conduct work in accordance with the EPA's order. A Draft SRI report for Area 1 is anticipated to be submitted by the PRPs in April of 2011. Supplemental RIs are to be conducted for other areas of the river in accordance with the EPAs schedule in the Administrative Order by Consent.

Start Date: 01/01/1993	Primary Cost:	$45,000,000	Source: Private
End Date: 09/30/2030	Secondary Cost:	$0	Source: Federal

Emergency

In 2007, the PRPs, and various state and federal agencies entered an Order to conduct a Time Critical Removal Action in the Former Plainwell Impoundment. This action includes 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.

Start Date: 02/28/2007	Primary Cost:	$26,000,000	Source: Private
End Date: 09/28/2012	Secondary Cost:	$1,000,000	Source: Federal

PRP Oversight

In accordance with the Order for the Plainwell Time Critical Removal Action, the MDEQ and its contractor conduct oversight of removal activities which includes an on-site presence, review of documents for change in scope, and independent collection and analyses of samples. The costs reflected in this activity include contractor costs (~$325,000) and laboratory analytical costs (~$20,000). It is anticipated that restoration activities will continue through the summer of 2009 when completion of construction will be determined. Oversight will continue for a period of three years following the issuance of the construction completion certificate.

Start Date: 06/25/2007	Primary Cost:	$345,000	Source: State
End Date: 09/28/2012	Secondary Cost:	$0	Source:

Emergency

After reviewing the results of sampling and investigation work in the Plainwell No. 2 Dam Area, the EPA determined that another Time Critical Removal Action 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 through 2013.

Start Date: 06/01/2009	Primary Cost:	$10,000,000	Source: Private
End Date: 12/31/2013	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Monitoring

The MDEQ has assumed the role of conducting long-term monitoring at the site. Long-Term Monitoring Activities were initiated by the state in 1999 in order to establish baseline ("pre-removal") conditions, and also post-removal locations (i.e., Portage Creek). The program includes resident fish collection activities that were conducted to establish baseline conditions, to evaluate the effectiveness of remedial/removal actions, trend monitoring, and to evaluate possible alternatives to using live fish to evaluate effectiveness of RA activities. An updated Long-Term Monitoring report is due in March 2009 and will incorporate the results of recent sampling activities. To date, the MDEQ has utilized contractor support (~$785,000) to assist in report generation, work plan development, and conducting field investigations and has spent state money ($1,610,000) for laboratory analyses of various samples (including biota and surface water).

Start Date: 09/01/1999	Primary Cost:	$2,395,000	Source: State
End Date: 09/29/2034	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

The next Five-Year Review for the Allied Paper, Inc./Portage Creek/Kalamazoo River site is required by October 2012, five years from the signature date of the previously completed review.

Start Date: 04/02/2012	Primary Cost:	$0	Source:
End Date: 10/18/2012	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Allied Paper, Inc.

Response Accomplishments: Completed

Remedial Investigation

The PRPs submitted the RI report for the Allied Operable Unit in December 2003 and a revision of Section 4 in October 2005. The MDEQ has reviewed and rejected the documents and has assumed authorship of the final version. In February 2007, the MDEQ submitted a draft version of the RI to the EPA for review and submitted a State-Approved RI report to the EPA in December 2007 based on their initial comments. The EPA will assume enforcement lead upon completion of the RI.

Start Date: 01/01/1993	Primary Cost:	$1,000,000	Source: Private
End Date: 05/30/2008	Secondary Cost:	$0	Source: <None>

OPERABLE UNIT 01: Allied Paper, Inc.

Response Accomplishments: Completed

PRP Oversight

The MDEQ and its contractor conducted oversight of 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 draft report, the MDEQ under authority of the Administrative Order by Consent denied the PRP report and assumed responsibility for authoring an RI for the site with the EPA giving final approval in May 2008. In all, the MDEQ has spent about ~$1,159,000 of state funds on contractual services to assist with review, oversight, and writing of the RI report. Another ~$90,000 has been spent by the MDEQ for laboratory analyses of independently collected samples.

Start Date: *01/01/1993*	Primary Cost:	$1,250,000	Source: State
End Date: *05/30/2008*	Secondary Cost:	$0	Source:

Emergency

Approximately 150,000 cubic yards of sediment were excavated from Bryant Mill Pond as part of a Time Critical Removal Action in 1998-99.

Start Date: *06/15/1998*	Primary Cost:	$8,330,000	Source: Federal
End Date: *10/29/1999*	Secondary Cost:	$0	Source:

PRP Oversight

The MDEQ and its contractor conducted oversight of Interim Remedial Measures conducted by the PRPs at the Allied Paper Operable Unit 1. These activities included completion of portions of the cap, sheetpiling, and groundwater collection system.

Start Date: *06/30/1999*	Primary Cost:	$215,341	Source: State
End Date: *09/30/2005*	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Interim Response

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 completion of the FS.

Start Date: *02/01/2000*	Primary Cost:	$3,000,000	Source: Private
End Date: *09/30/2009*	Secondary Cost:	$0	Source: <None>

OPERABLE UNIT 02: Willow Boulevard/A-Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/27/2006**

Consolidation and capping of PCB-contaminated material.

OPERABLE UNIT 02: Willow Boulevard/A-Site

Response Accomplishments: Completed

Remedial Investigation Initial PRP-generated RI/Focused Feasibility Study report was rejected by the MDEQ who assumed responsibility for authoring the document under the terms of the Administrative Order by Consent.

Start Date: 01/01/1993 Primary Cost: $7,000,000 Source: Private
End Date: 11/01/2004 Secondary Cost: $0 Source: <None>

PRP Oversight The MDEQ 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/Focused Feasibility Study, the MDEQ completed a Final RI/Focused Feasibility Study report in November 2004, which transferred the lead to the EPA. In all, the MDEQ has spent about ~$250,000 of state funds on contractual services to assist with review, oversight, and writing of the RI/Focused Feasibility Study report. Another ~$15,000 has been spent by the MDEQ for laboratory analyses of independently collected samples.

Start Date: 01/01/1993 Primary Cost: $265,000 Source: State
End Date: 11/01/2004 Secondary Cost: $0 Source:

Interim Response 7,000 cubic yards of contaminated sediment were excavated from the river and placed on the landfill.

Start Date: 11/01/1999 Primary Cost: $100,000 Source: Private
End Date: 01/31/2000 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Design Now that the RI/Focused FS, ROD, and Consent Decree have been finalized, the EPA is currently negotiating a Remedial Design (RD) work plan for implementation of the final remedy for the Operable Unit.

Start Date: 05/30/2008 Primary Cost: $50,000 Source: Private
End Date: 09/30/2009 Secondary Cost: $0 Source:

OPERABLE UNIT 03: King Highway Landfill

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 02/27/1998**

Landfill capped and river edge sheetpiled. Groundwater is being monitored.

Response Accomplishments: Completed

PRP Oversight The MDEQ and its contractor have provided oversight of PRP activities including review of documents and site sampling activities.

Start Date: 01/01/1993 Primary Cost: $67,500 Source: State
End Date: 07/31/1997 Secondary Cost: $0 Source:

OPERABLE UNIT 03: King Highway Landfill

Response Accomplishments: Completed

Remedial Investigation The RI for the King Highway Landfill Operable Unit is complete.

Start Date: *01/01/1993* Primary Cost: $4,250,000 Source: Private
End Date: *07/31/1997* Secondary Cost: $0 Source:

Remedial Design Engineer Design Report submitted in lieu of RD report.

Start Date: *07/31/1997* Primary Cost: $0 Source: Private
End Date: *06/01/1999* Secondary Cost: $0 Source:

Interim Response PCB-contaminated material was excavated from the King Street Storm Sewer, the Former Georgia-Pacific 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.

Start Date: *11/01/1998* Primary Cost: $0 Source: Private
End Date: *10/31/1999* Secondary Cost: $0 Source:

Remedial Action 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 Georgia-Pacific Corporation lagoons, and the landfill itself, by controlling the current and potential future release of contaminants. The liable parties are working to resolve outstanding issues with the Michigan Department of Transportation; specifically, several of the components of the remedy such as the sedimentation basin, the landfill berm and cap, and the site security fencing are installed on Michigan Department of Transportation right-of-way property. Certification of Construction Completion will not be granted until a permanent and legally enforceable mechanism is in place to prevent unacceptable exposure or alteration of the remedy, especially with those components on the Michigan Department of Transportation property.

Start Date: *06/01/1999* Primary Cost: $2,000,000 Source: Private
End Date: *12/31/2005* Secondary Cost: $0 Source: <None>

Response Accomplishments: Ongoing

Recovered/ Reimbursed The MDEQ continues to develop cost packages and recover costs related to PRP oversight at King Highway Landfill.

Start Date: *08/20/2001* Primary Cost: $269,875 Source: Private
End Date: *08/20/2021* Secondary Cost: $0 Source:

OPERABLE UNIT 03: King Highway Landfill

Response Accomplishments: Ongoing

PRP Oversight

The MDEQ and its contractor have conducted oversight of operation and maintenance (O & M) activities conducted by the PRPs. These activities include monitoring of groundwater, landfill gas, residuals delineation, and property acquisition issues. In all, the MDEQ has spent about ~$365,000 of state funds on contractual services to assist with report review, and oversight since completion of the RA. Another ~$35,000 has been spent by the MDEQ for laboratory analyses of independently collected samples.

Start Date: 01/01/2003	Primary Cost:	$400,000	Source: State
End Date: 01/03/2033	Secondary Cost:	$0	Source:

Operation and Maintenance

Georgia-Pacific purchased a portion of the adjacent Michigan Department of Transportation Right-of-Way property that was enclosed by the security fence around the landfill, in order to fully contain all components of the remedy that were implemented. O & M of the landfill cap and groundwater monitoring is conducted on a quarterly basis. Analytical results indicate that methane no longer appears to be migrating off-site, suggesting that the landfill gas cutoff trenches that have been installed are effective. Any detectable concentrations of PCBs in groundwater are below trigger levels. A Financial Assurance Mechanism is a requirement of the Administrative Order by Consent and $3.75 million is the projected cost for 30 years of O & M. Costs are recovered for the state to provide oversight during sampling events and for review of site inspection reports and other appropriate project management activities.

During the most recent landfill gas migration mitigation activities, it was discovered that residuals and PCB-contaminated material extend beyond the security fence. Georgia-Pacific, consequently, fell out of compliance with the schedule for completing response activities at the Operable Unit. Georgia-Pacific has recently conducted some excavation of material and delineated the extent of remaining PCB-contaminated material. Georgia-Pacific is currently trying to purchase the additional Michigan Department of Transportation Right-of-Way property adjacent to King Highway Landfill and/or to receive approval for some sort of License Agreement allowing for the material to possibly remain in place. In addition, Georgia-Pacific has submitted an application to the EPA for Risk-Based Disposal of the residuals and PCB-contaminated material. At this time, there has not yet been a resolution to the possible license agreement or the request for Risk-Based Disposal.

Start Date: 01/01/2003	Primary Cost:	$3,750,000	Source: Private
End Date: 01/30/2033	Secondary Cost:	$0	Source: <None>

OPERABLE UNIT 04: 12th Street Landfill

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/28/2001**

PCB-contaminated soil, sediment, and residual material that has eroded from the landfill into areas adjacent to the landfill will be excavated and relocated back into the landfill. The landfill will then be capped and appropriate erosion control measures will be implemented.

Response Accomplishments: Completed

Remedial Investigation

The RI for the 12th Street Landfill Operable Unit is complete. The EPA is currently the lead agency for this Operable Unit.

Start Date: 03/01/1993	Primary Cost:	$0	Source: Private
End Date: 07/31/1997	Secondary Cost:	$0	Source:

Emergency

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.

Start Date: 05/08/2007	Primary Cost:	$1,000,000	Source: Private
End Date: 03/31/2008	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

PRP Oversight

The MDEQ 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. Currently, work is focused on the review of the draft PRP-authored RD document.

Start Date: 03/01/1993	Primary Cost:	$10,000	Source: State
End Date: 09/30/2009	Secondary Cost:	$0	Source:

Remedial Design

As the lead agency, the EPA has negotiated a Decree with the PRPs and is currently working to develop a RD work plan for the Operable Unit.

Start Date: 10/01/2003	Primary Cost:	$50,000	Source: Private
End Date: 06/30/2009	Secondary Cost:	$0	Source:

OPERABLE UNIT 13: King Mill Lagoons

Response Accomplishments: Completed

Interim Response

A total of 11,314 cubic yards of material were excavated 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. The EPA has the enforcement lead for this Operable Unit. The site has been fenced.

Start Date: 09/01/1999	Primary Cost:	$100,000	Source: Private
End Date: 10/29/1999	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995088-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$327,000	$0	$0	$324,389	$0

Cooperative Agreement Number V975860-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$561,000	$0	$0	$560,622	$0
Totals:	$888,000	$0	$0	$885,011	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$24,625	$0	$19,690	$24,625	$19,690

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$3,598	$0	$0	$0	$0
Totals:	$28,223	$0	$19,690	$24,625	$19,690

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Auto Ion Chemicals, Inc.
74 Mills Street
Kalamazoo , MI

County: Kalamazoo
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: C4
State Site ID#: 39000005
State Site Score: 36

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 recently developed city park and recreation area are 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 two miles of the site.

SITE HISTORY
The property 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. 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, trichloroethene, cadmium, and seven halogenated volatile organic compounds (VOCs) were among the contaminants detected in groundwater samples taken from the site. Concentrations of many of these are above Michigan groundwater/surface water interface (GSI) and drinking water criteria. Mercury in particular has been found at levels that present an acute public health or environmental problem.

Actions taken to date include an immediate removal action in 1982, building demolition in September 1986, and operable unit 1 remedial investigation (RI) completion in June 1989. A Record of Decision (ROD), which addressed soil contamination, was signed in September 1989. 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 bioaccumulatives, to the river at levels above criteria pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). The ROD called for monitored natural attenuation and alternate concentration limits (ACLs). It has been determined that the groundwater concentrations, including mercury, have not decreased significantly to date. EPA has made the determination that the contingency for repeated ACL exceedances is to recalculate the ACLs.

The Auto Ion property has tax-reverted to the state of Michigan. Periodically in 1996 through 2002, the city of Kalamazoo expressed potential interest in purchasing the property as an overflow parking area for the recreation facility and park across the river. Liability issues

have prevented this transfer to date. The site is currently a vacant graded parcel with gravel and some vegetation, as required after the 1993/94 excavation. The groundwater monitoring well system is in place, with sampling previously being performed quarterly, modified in 2005 by the agencies to twice a year in January and July. The PRP 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 MDEQ staff or EPA staff. The PRPs submitted a document entitled Review of Monitoring Results Rounds 1-20 in June 2003. This document also proposed that the sampling parameters be scaled back. The review of this document and proposals was comprised primarily of references to the Agency comment letter responding to the Preliminary ACL document. The contaminant levels for several parameters have frequently exceeded proposed ACL criteria during the past five years; the previous EPA RPM agreed with MDEQ staff and stated that it may be a failed remedy. Twelve samples from the July 2005 sampling event exceeded ACL criteria for metals. Elevated mercury concentrations (as high as 4.2 ug/L in 2004 and 3.4 in 2005) continue to be a problem.

In October and November 2003, the MDEQ, 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. Staff of the MDEQ 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. The EPA and PRPs have reduced the number of analytical parameters despite MDEQ concerns.

A Five-Year Review was conducted by EPA in 2006, and signed September 22, 2006. This report 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 ICs [Institutional Controls] or use restrictions may be necessary to ensure the long-term protectiveness of the remedy." Deed restrictions have not been secured to date. Recommendations from this review have not been fully addressed.

SITE STATUS

As required by Statute, EPA inititiated a Five Year Review in October 2010. MDEQ staff accompanied the new EPA project Manager and the consultant for that site visit on November 3, 2010. Several monitoring well concerns were raised and the contractor took actions to repair or address thoe issues promptly. The EPA RPM is currently drafting the Five Year Review.

Monitoring continues to demonstrate that the groundwater exceeds the site-specific criteria for numerous compounds, including mercury.

Due to budget issues, this site has been targeted as a low priority site.

ENFORCEMENT STATUS

This site is a federal-lead site with the PRPs doing the work. The PRPs have secured Conestoga-Rovers & Associates, Inc. (CRA) 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, Environmental Remediation, of the NREPA, has been made.

SPECIAL CONSIDERATIONS

This site remedy calls for natural attenuation with long-term monitoring and utilizes ACLs to determine compliance. The state of Michigan did not concur with this remedy due to the mercury, other bioaccumulatives, and other contaminants discharging to the river at concentrations above state criteria. The concentrations of contaminants of concern are not decreasing as EPA and CRA had predicted.

OPERABLE UNITS

00	Entire Site
01	Soil
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Emergency

The EPA did an emergency removal in 1982. EPA's costs were subsequently recovered from PRPs.

Start Date: 04/30/1982	Primary Cost:	$1,500,000	Source: Private
End Date: 07/30/1982	Secondary Cost:	$0	Source:

Remedial Investigation

Private funding costs were secured from PRP estimates.

Start Date: 09/08/1983	Primary Cost:	$495,000	Source: Private
End Date: 06/01/1989	Secondary Cost:	$5,000	Source: Federal

5 Year Review

The 2001 5-Year Review was completed on 9/30/2001. EPA determined that the Alternate Concentration Limit exceedances at the time made the determination of protectiveness difficult. The protectiveness determination was delayed.

Start Date: 09/07/2001	Primary Cost:	$29,000	Source: Federal
End Date: 09/30/2001	Secondary Cost:	$0	Source:

5 Year Review

MDEQ staff provided a detailed letter of issues to the EPA in preparation for the 2006 Five Year Review. While all of the issues were discussed or at least mentioned in the document, MDEQ staff did not agree with several of the statements made. Some modifications were made at the request of MDEQ staff, but the final document was still controversial. Recommendations and issues have not been addressed to date.

Start Date: 03/27/2006	Primary Cost:	$0	Source:
End Date: 09/29/2006	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

5 Year Review The next 5-Year Review is due by September 29, 2011.

Start Date: 10/18/2010	Primary Cost:	$0	Source:
End Date: 09/29/2011	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Soil

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/27/1989**

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:* 00 *ESD:* 1 **Effective 03/26/1993**

This ESD establishes a treatability variance for excavated soils contaminated with F006 waste. This treatability variance establishes alternate treatment standards for cadmium, chromium, nickel, and lead. Other aspects of the operable unit 1 soil remedy are unchanged.

Response Accomplishments: Completed

Remedial Design Private cost totals were secured from PRP estimates. Remedial design (RD) estimated as 10 percent of the PRP reported RD/remedial action (RA) costs.

Start Date: 02/01/1993	Primary Cost:	$480,000	Source: Private
End Date: 03/01/1993	Secondary Cost:	$305,000	Source: Federal

Remedial Action Private expenditures estimated by PRPs.

Start Date: 04/01/1993	Primary Cost:	$4,000,000	Source: Private
End Date: 11/01/1993	Secondary Cost:	$154,000	Source: Federal

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/23/1994**

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, institutional controls, and development of a RA plan to be implemented in the event ACLs are exceeded.

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Completed

Remedial Investigation The operable unit 1 RI was amended to include operable unit 2. Federal costs are from EPA records.

Start Date: 09/08/1983 Primary Cost: $320,000 Source: Private

End Date: 11/01/1993 Secondary Cost: $55,000 Source: Federal

Remedial Design 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 EPA information.

Start Date: 02/01/1993 Primary Cost: $36,000 Source: Private

End Date: 11/01/1997 Secondary Cost: $11,000 Source: Federal

Response Accomplishments: Construction Complete

Remedial Action Well installation and vertical aquifer sampling. Private costs secured from PRP estimates.

Start Date: 11/02/1997 Primary Cost: $324,000 Source: Private

End Date: 11/02/1998 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance 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.

Start Date: 11/02/1998 Primary Cost: $355,000 Source: Private

End Date: 11/02/2047 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$685	$0	$0	$685	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,000	$0	$0	$40,000	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$92,581	$0	$0	$91,997	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$4,539	$0	$0	$4,538	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$24,783	$0	$0	$24,782	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$9,967	$0	$0	$9,967	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$100,000	$0	$0	$99,958	$0
Totals:	$272,555	$0	$0	$271,927	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: KL Avenue Landfill
8606 West K L Avenue
Kalamazoo , MI

County: Kalamazoo
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 37
State Site ID#: 39000017
State Site Score: 34

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. In the early 1960s, it was a garbage dump for the township but became a county sanitary landfill in 1968 that also accepted industrial waste. Three surface water bodies, Dustin Lake, Springwood Lake, and Bonnie Castle Lake are located nearby. Many residences with private drinking water wells existed in the vicinity of the site. Many of these wells were abandoned as municipal water was extended to the affected areas.

SITE 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. The 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 (RI/FS) 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. Work on the remedial design (RD) was placed on hold pending a study, by the potentially responsible parties (PRPs) and the EPA in conjunction with the MDEQ, 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 remains an appropriate remedy for the groundwater plume. The nature and extent of groundwater contamination has 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 the MDEQ in the form of a second focused feasibility study (focused FS) in the fall of 2001 and a third focused FS 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. Although contaminants are similar to those documented to have come from the landfill, it is not clear at this time if it can be linked to 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 semiannually.

In 2002, the MDEQ 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. The MDEQ completed an investigation in this area and found that the source was an area of buried and decomposing vegetation. In July 2003, the MDEQ installed a seepage collection system to collect this seepage and direct it into the ground to eliminate its surface expression. In 2002, the MDEQ 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 the MDEQ 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, the MDEQ secured an administrative warrant to sample monitoring wells and perform 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. The MDEQ 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 have 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. A presentation of this ROD Amendment was made to the public on October 2, 2002, with a public comment period extending from September 17, 2002, to October 16, 2002. The MDEQ 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. The MDEQ contributed approximately $82,000 towards this project to supply clean water to an area of groundwater contamination that has not definitely 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 (NREPA), drinking water criteria.

In the spring of 2003, the MDEQ again entered into discussions with the EPA and the PRPs about the applicability of an impermeable landfill cap over the landfill contents. The PRPs request for alternate technology implementation in lieu of an impermeable cap was not supported by the MDEQ, and the EPA agreed. 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 Landfill. This dispute resolution had advanced to a formal dispute resolution which temporarily delayed implementation of the capping of the landfill, but the dispute by the township was dropped and the landfill capping resumed, and was completed.

In April 2004, the PRPs submitted their 100 percent design of the landfill cap. The MDEQ and the EPA reviewed design documents for an impermeable cap for the landfill and for investigation of migrating landfill gas within the soil. The design was approved by the EPA. The landfill cap construction was completed in October 2006.

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 has necessitated consideration of an expanded buffer zone at its downgradient edge to include an additional 1000 feet of property. This buffer zone expansion was not addressed in the 2005 ROD Amendment, and will probably result in another modification to the ROD.

The PRPs submitted a revised petition to substitute monitored natural attenuation for the ROD specified pumping and treating of the groundwater. This document was reviewed and commented to by the MDEQ. The EPA wrote a ROD Amendment in 2005 to change the groundwater remedy from pump and treat to monitored natural attenuation. The MDEQ did not concur with this ROD Amendment primarily due to the uncertainties in the definition of the extent of groundwater contamination (1,4 Dioxane) to the northwest, and the lack of adequate institutional controls to limit access to contaminated groundwater.

In the fall of 2005 the PRPs began activities in preparation for capping the landfill during the 2006 construction season. The landfill cap was essentially completed by the winter of 2006 with a final inspection performed in the spring of 2007. 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 the fall of 2008, the MDEQ conducted hydrogeologic investigation to assess if groundwater contamination northwest of the KL Avenue Landfill is associated with impact from the landfill. The investigation confirmed that the source of contamination is within the confines of the northwest corner of the landfill itself and there does not appear to be another source of contamination outside the landfill. The investigation recommended the need for additional investigation to determine the full extent of contamination northwest of the landfill and placement of sentinel wells in the general area where the plume is heading to provide early warning for potentially vulnerable water wells. A Work Plan was developed by the PRPs to install the sentinel wells recommended by the MDEQ. The sentinel wells were installed and sampled in November 2009. In 2010, the PRPs plan to submit an update to the draft Groundwater Restricted Zone previously submitted to the Agencies, incorporating 2009 groundwater data.

The EPA issued the first five-year review report in May 2009. The five-year review 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.

Roughly 95 percent of the RD and 85 percent of the RA has been completed. In March 2010, the PRPs submitted a work plan addendum for additional hydrogeologic investigation that included aquifer profile sampling for screening parameters, monitoring well installation, sampling of select residential wells, and sampling of new sentry monitoring wells to evaluate the performance of monitored natural attenuation.

SITE STATUS

Groundwater data from the past year and a half indicate that the leading edge of the groundwater plume is not stable and is continuing to migrate at concentrations greater than drinking water criteria. The MDEQ is making plans with the EPA to have the PRPs perform additional monitoring well installations and residential connections to the municipal water system in anticipation of additional plume migration.

Most recently, the PRPs completed 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. More similar work is anticipated in 2011.

ENFORCEMENT STATUS

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, of the NREPA.

The EPA, in consultation with the MDEQ, 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 monitored natural attenuation solution to the groundwater contamination problem as described in the 2005 ROD Amendment.

SPECIAL CONSIDERATIONS

Oshtemo Township, Kalamazoo County, and the city of Kalamazoo have received $911,428 from the state through the Municipal Landfill Cost-Share Grant Program to cover 50 percent of their 1996 through 2005 expenses.

The state previously allocated $100,000 to extend municipal water to residents surrounding the landfill. This money was not spent because the PRPs assumed the costs of extending municipal water to affected residents. The MDEQ provided funds ($82,000) to Oshtemo Township in 2003 to extend municipal water to the residents living on north 4th Street between Almena Drive and M-43 as part of a larger Oshtemo Township project to extend municipal water to properties that have contaminated groundwater or are in the path of contaminated groundwater movement. The portion funded by the MDEQ provides municipal water to several residences whose private wells have been affected by groundwater contamination not easily associated with the landfill.

In the fall of 2008, the MDEQ conducted hydrogeological investigation to assess if groundwater contamination northwest of the KL Avenue Landfill is associated with impact from the landfill. The investigation confirmed that the source of contamination is within the confines of the northwest corner of the landfill itself, and there does not appear to be another source of contamination outside the landfill. The investigation recommended the need for additional investigation to determine the full extent of contamination northwest of the landfill and placement of sentinel wells in the general area where the plume is heading to provide early warning for potentially vulnerable water wells.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/28/1990**

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 institutional controls restricting use of the shallow groundwater and prohibiting construction on the landfill cap.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 02/27/2003**

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 institutional controls 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.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 2 *ESD:* 0 **Effective 09/12/2005**

This ROD Amendment changed the groundwater remedy from pump and treat to monitored natural attenuation. 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 institutional control 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.

Response Accomplishments: Completed

Alternate Water The county installed a new water main for 36 residences in 1980 and for several residents in distant subdivisions in 1997, 1999, and 2000. The cost of this effort is unknown.

Start Date: 01/01/1980	Primary Cost:	$0	Source: Private
End Date: 12/29/2000	Secondary Cost:	$0	Source:

Alternate Water The county replaced 11 residential wells with deeper wells. The cost of this effort is unknown.

Start Date: 01/01/1980	Primary Cost:	$0	Source: Private
End Date: 12/31/1980	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: 01/01/1985	Primary Cost:	$1,334,000	Source: Federal
End Date: 12/31/1990	Secondary Cost:	$49,540	Source: State

Remedial Design 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 April 2004.

Start Date: 08/01/1992	Primary Cost:	$1,200,000	Source: Private
End Date: 08/01/2004	Secondary Cost:	$140,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

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. The MDEQ 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 is being conducted by the PRPs. Other potential off-site contaminant source areas on the former Minott property were investigated by the MDEQ 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.

Start Date: 07/02/2001	Primary Cost:	$285,000	Source: State
End Date: 10/31/2008	Secondary Cost:	$0	Source: <None>

Alternate Water

The state started a monitoring program for residential wells surrounding the KL Landfill 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.

Start Date: 07/08/2002	Primary Cost:	$3,000,000	Source: Private
End Date: 11/29/2003	Secondary Cost:	$82,000	Source: State

Alternate Water

Municipal water extension (per 2003 ROD Amendment) to residents along 2nd Street, Almena Drive, M-43.

Start Date: 09/01/2004	Primary Cost:	$0	Source: Private
End Date: 05/01/2005	Secondary Cost:	$0	Source: Private

Remedial Action

This cost reflects the PRP's estimates of a modified RCRA Type C cap, monitored natural attenuation, and sulfate addition to the groundwater near the landfill. The EPA wrote a ROD Amendment in 2005 to change the groundwater remedy from pump and treat to monitored natural attenuation. Preparations for capping the landfill began in the fall of 2005 with the deforestation of the existing cap and some soil relocation, with the majority of the cap construction completed during the 2006 field season.

Start Date: 10/01/2005	Primary Cost:	$25,150,985	Source: Private
End Date: 06/07/2007	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA issued the first five-year review report in May 2009. The five-year review 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. MDEQ staff sent a letter dated September 14, 2009, to the EPA expressing concerns about the omission of relevant issues and recommendations suggested by the MDEQ.

Start Date: 12/10/2008	Primary Cost:	$0	Source: Federal
End Date: 05/11/2009	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Interim Response Residential well monitoring for homes not monitored by the PRPs is being performed for the MDEQ by the Kalamazoo County Health Department. The PRPs are willing to monitor several of these homes, and this is currently being negotiated with the PRPs. The PRPs installed municipal water at 13 residences and abandoned 13 private residential wells on First Street in 2008. The PRPs just 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. More similar work is anticipated in 2011.

Start Date: 01/01/1979	Primary Cost:	$50,000	Source: State
End Date: 09/01/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance Ongoing operation and maintenance of the constructed remedy. The PRPs are maintaining the landfill cap and the active gas collection system on an ongoing basis.

Start Date: 06/07/2007	Primary Cost:	$0	Source: Private
End Date: 07/01/2036	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The next five-year review for this site is due in 2014.

Start Date: 05/11/2013	Primary Cost:	$0	Source:
End Date: 05/11/2014	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$49,540	$0	$0	$49,540	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$117,239	$0	$0	$115,326	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$19,901	$0	$0	$19,901	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,498	$0	$0	$12,498	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$16,196	$0	$10,248	$16,196	$10,248

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$179,631	$0	$0	$179,512	$0
Totals:	$395,005	$0	$10,248	$392,973	$10,248

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Michigan Disposal (Cork St LF)
2800 East Cork Street
Kalamazoo , MI

County: Kalamazoo
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: Q2
State Site ID#: 39000010
State Site Score: 31

LOCATION
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 generally industrial/commercial in nature.

SITE 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 potentially responsible parties (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 purge and treatment 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 remedy of purging and treating groundwater prior to entering Davis Creek, the city requested a mixing zone determination from the MDEQ. After evaluation by the MDEQ Surface Water Quality Division, it was determined that a mixing zone was allowable. The mixing zone approval is contingent upon an acceptable Groundwater Monitoring Plan being put into place and continued compliance with the allowable discharge criteria. A ROD Amendment was issued September 25, 2002, with State concurrence.

The city of Kalamazoo gained approval for placement of a mitigation wetland on the nearly three acre area on the northwest corner of the property. That area is upgradient of the landfill and had been previously determined to be a clean low area, outside of the landfill, but immediately adjacent to the landfill liner. That project was constructed in 2003.

The site Operation and Maintenance Plan was approved in 2004.

Under the state Municipal Landfill Cost-Share Grant Program, the city of Kalamazoo and Kalamazoo County have requested and received state grant funding to offset half of the costs of implementing response actions at the Michigan Disposal landfill in the past.

A Five-Year Review 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. Data from those wells has not been submitted to the MDEQ for evaulation to date. The Five-Year Review 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 potentially responsible parties (PRPs) late in 2006 and revealed that elevated gas levels were 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.

Issues regarding a potential leachate seep were dealt with by the EPA without the MDEQ's involvement. Rather than evaluate the potential source and problem, the PRPs sampled to determine hazard level of the moisture then regraded the area and eliminated the pooling area. Determination of the actual nature and source of the moisture is being evaluated as 2010 Five-Year Review follow-up.

SITE STATUS

Data from 2008 and 2009 revealed extremely high methane concentrations in specific gas probes and manholes on site. Methane has been identified as a 2010 Five-Year Review concern. The remedy is considered to be protective in the short term. In order for the remedy to remain protective in the long term, implementation of the Institutional Controls is necessary and further evaluation of the elevated site methane levels and potential leachate from the site are needed.

The potential zinc and ammonia problem on site is still being monitored by the EPA and the MDEQ. The calculations for the unionized ammonia and the Mixing Zone Determination are due for periodic review.

The MDEQ staff collected and field-analyzed pore water samples from beneath the Storm Drain/Davis Creek sediments to look for indications of site-related discharges venting to surface water. During this investigation several anomalies were found that should be further studied. After the field work, the data were evaluated in light of current and historical site use and boundaries. Changes in landforms accounted for some of the field anomalies.

Due to budget issues, this site has been targeted as a low priority site.

ENFORCEMENT STATUS

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. The MDEQ 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.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1991**

The EPA ROD called for capping of landfill and installation of a groundwater treatment system with extraction wells to capture migrating groundwater.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 09/25/2002**

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.

Response Accomplishments: Completed

Remedial Investigation The RI/FS was conducted by the city of Kalamazoo.

Start Date: 12/15/1987 Primary Cost: $500,000 Source: Private

End Date: 09/30/1991 Secondary Cost: $34,000 Source: Federal

Remedial Design The remedial design (RD) was conducted by the city of Kalamazoo. This includes Pre-RD/groundwater surface water interface 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.

Start Date: 10/01/1998 Primary Cost: $600,000 Source: Private

End Date: 11/30/1999 Secondary Cost: $139,000 Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The first Five-Year Review 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.

Start Date: 10/01/2004	Primary Cost:	$0	Source:
End Date: 12/10/2004	Secondary Cost:	$0	Source:

5 Year Review The issues from the second Five-Year Review 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. Institutional Controls are also necessary for long term protectiveness.

Start Date: 05/06/2009	Primary Cost:	$0	Source:
End Date: 09/30/2010	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action 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.

Start Date: 04/01/2000	Primary Cost:	$6,920,000	Source: Private
End Date: 09/25/2002	Secondary Cost:	$97,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance

Operation and maintenance (O&M) includes cap maintenance and groundwater monitoring with a contingency for additional action if groundwater/surface water interface criteria are exceeded. The ROD called for Groundwater Extraction and Discharge to the publicly owned treatment works (POTW) for treatment. The extraction and discharge to POTW is no longer necessary due to the 2002 mixing zone determination ROD amendment. The mixing zone criteria calculations were actually high enough that the point of compliance wells are defaulting to the Final acute values as the discharge limits for the creek. This is a cost savings of $212,500 over the 30 year O&M period. Additional wells were placed in 2006 in an effort to settle a concern over elevated zinc problem versus an ongoing galvanic reaction in the wells. Unfortunately, the EPA overruled the MDEQ's request for parallel sampling rounds prior to abandoning the original wells. In addition to that, two of the wells could not be replaced; one of the monitoring locations of concern was lost when that well was pulled and placement of another was not possible. In 2009, it was realized that two of the wells had been overlooked in the past two years of sampling rounds. These have been re-added to the sampling list at this time.

Proper measurements and calculations for unionized ammonia, evaluation of the seep area and methane concerns all require additional attention.

Start Date: 09/26/2002	Primary Cost:	$41,300	Source: Private
End Date: 09/27/2032	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: 03/31/2014	Primary Cost:	$0	Source: Federal
End Date: 03/31/2015	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,589	$0	$2,202	$2,589	$2,202

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$15,000	$0	$0	$9,094	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$33,757	$0	$0	$33,662	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,684	$0	$0	$2,684	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$30,192	$0	$0	$30,192	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$70,932	$0	$0	$70,932	$0
Totals:	$155,154	$0	$2,202	$149,153	$2,202

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Roto-Finish Co., Inc.
3700 East Milham Road
Portage , MI

County: Kalamazoo
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 4X
State Site ID#: 39000042
State Site Score: 24

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 miles 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 miles north of the site; the Lexington Green residential development, 0.3 miles northeast of the site; and the Fairfield residential development, 1.0 mile northwest of the site, west of the airport.

SITE HISTORY
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 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 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. The MDEQ determined that monitored natural attenuation was an acceptable remedial alternative for the site. However, since the EPA did not specifically stipulate which institutional controls would be imposed to assure protection of public health during the monitored natural attenuation process, the MDEQ was not able to concur with the ROD. The PRP, 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 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 monitored natural attenuation under natural conditions. The extraction system will continue to be maintained in operational condition as the contingency in the event monitored natural attenuation 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.

The EPA and the MDEQ worked with Illinois Tool Works, the PRP, to develop an acceptable Remedial Design (RD) Work Plan. After efforts to obtain an acceptable RD Work Plan from the PRP proved unsuccessful, the EPA asked their own contractor to revise the PRP's draft sufficiently to make it acceptable. Working together, the EPA, their consultant, and the MDEQ finalized a Pre-Design Work Plan and Field Sampling Plan for the pre-design fieldwork at the site. These documents were forwarded to the PRP in February 2001. The PRP initiated field sampling activities pursuant to the Work Plan and associated documents in August 2001. The pre-design field activities included 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 8 vertical aquifer sampling borings. This portion of the pre-Design study was referred to as Phase I.

The Phase I Report was submitted in May 2002. It indicated that the plume was much larger than the PRP had anticipated. Negotiations for the next phase of drilling began in March 2002, and the PRP resumed vertical aquifer sampling in late summer 2002. The field work included multiple vertical aquifer sample locations and the installation of six shallow piezometers. The MDEQ received and commented on the Phase II Report. In June 2003, the PRP submitted a Monitored Natural Attenuation Assessment Report. The MDEQ's comments on this report indicated that the plume has yet to be completely delineated, additional investigations are needed to be able to demonstrate monitored natural attenuation at this site, and a complete private well survey needs to be conducted to ensure protection of public health.

In 2002, the PRPs vertically sampled the aquifer in several locations (no monitoring wells installed) to continue with the delineation of the plume. They also installed several wells on the airport property to better evaluate groundwater flow direction. The investigation provided inconclusive information and additional wells were necessary to complete the delineation.

The EPA completed a Five-Year Review during 2002. The Review 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 Five-Year Review called for a milestone supplemental update report in September 2003 to incorporate all additional data collected during late 2002 and in 2003. As of winter 2008, the PRPs are in the process of collecting the additional data needed to calculate degradation rates to determine the viability of continuing with monitored natural attenuation as the site remedy.

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 (Phase III). The EPA and the state concur that the PRPs have continued to work towards plume delineation after significant prompting by the Agencies.

Discussions during the spring of 2005 initiated quarterly sampling of the plume core monitoring wells. This sampling was conducted for at least two full years. As of the end of FY07, this quarterly sampling continues. These are the wells that supply the biogeochemical data to demonstrate whether the monitored natural attenuation remedy is effective or not. Additional fieldwork was performed in the fall of 2005 (Phase IV) 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 (Phase V).

In 2007, the PRP replaced one of three core monitoring wells that were abandoned due to airport runway expansion. The PRP's plan to install several additional monitoring wells and sentinel wells in 2007 to fill in data gaps has not yet been implemented (as of winter 2008). Continued effort is needed to comply with the ROD.

On May 1, 2007, the EPA issued the second Five-Year Review 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:
* the rate of attenuation is accurately calculated,
* 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,
* the long-term groundwater monitoring and monitoring well maintenance plan is implemented,
* institutional controls are implemented and monitored to restrict groundwater use in all areas affected by the contaminated groundwater plume until groundwater restoration cleanup standards are achieved,
* an appropriate and effective contingency remedy is proposed,
* 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."

SITE STATUS
In September 2007, the EPA approved (with modification) the Field Sampling Plan and the Performance Monitoring Plan thus signaling the end of the remedial design and the commencement of the remedial action phase. The MDEQ and the EPA have commented on, but the EPA has yet to modify and approve, the latest submittal of the Site Conceptual Model. The PRP has collected the additional data needed and has submitted inaccurate degradation rates. The PRP has declined to actually perform the appropriate calculations to determine the viability of continuing with monitored natural attenuation as the site remedy. Subsequent to the PRP degradation rate submittal, the groundwater flow direction at the site changed, necessitating installation of new monitoring wells, additional data collection, and calculation of subsequent degradation rates.

The MDEQ has also repeatedly 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. While the PRP has implemented a portion of this, the MDEQ does not believe it to be adequate to protect the downgradient private drinking water wells.

ENFORCEMENT STATUS
Illinois Tool Works signed a voluntary Decree in 1998 agreeing to implement the remedial alternative stipulated in the ROD.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/30/1997**

The MDEQ determined that monitored natural attenuation (with a contingency plan of on-site pumping) was an appropriate remedy for the site. However, the EPA did not provide for adequate institutional controls as required by Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; and, for this reason, the MDEQ 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 remedal activities unless a waiver has been granted) by stating that they have made a finding that the remedial action 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 Accomplishments: Completed

Interim Response Lagoon/soil removal.

Start Date: *06/15/1979* Primary Cost: $0 Source: Private

End Date: *06/15/1984* Secondary Cost: $0 Source:

Remedial Investigation PRP Lead RI/FS with an EPA oversite contractor and the MDEQ in support.

Start Date: *12/18/1987* Primary Cost: $0 Source: Private

End Date: *03/31/1997* Secondary Cost: $99,000 Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Design The PRP completed the first phase of fieldwork 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 agree that additional plume delineation is 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. It is still uncertain whether or not the monitored natural attenuation remedy is effective.

Start Date: 06/16/1998	Primary Cost:	$0	Source: Private
End Date: 09/28/2007	Secondary Cost:	$94,000	Source: Federal

5 Year Review The EPA completed a Five-Year Review, and concluded that it was not possible at this time to determine whether the remedy contained in the ROD is protective.

Start Date: 06/30/2002	Primary Cost:	$0	Source: Federal
End Date: 09/24/2002	Secondary Cost:	$0	Source:

5 Year Review The Executive Summary states: "The remedy at the Site is expected to be protective of human health and the environment upon attainment of groundwater cleanup goals...through monitored natural attenuation. The EPA expects these goals to be achieved within the next 40-50 years. In the interim, exposure pathways that could result in unacceptable risks are being monitored and controlled. All immediate threats to human health and the environment have been eliminated....Long-term protectiveness will be determined when:
* the rate of attenuation is accurately calculated,
* 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,
* the long-term groundwater monitoring and monitoring well maintenance plan is implemented,
* institutional controls are implemented and monitored to restrict groundwater use in all areas affected by the contaminated groundwater plume until groundwater restoration cleanup standards are achieved,
* an appropriate and effective contingency remedy is proposed,
* 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."

Start Date: 09/24/2006	Primary Cost:	$0	Source: Federal
End Date: 05/01/2007	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Action Monitored natural attenuation commenced following the ROD.

Start Date: 09/28/2007 Primary Cost: $0 Source: Private

End Date: 10/01/2048 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review Next Five-Year Review is due May 1, 2012 (five years after last one).

Start Date: 09/24/2011 Primary Cost: $0 Source:

End Date: 05/01/2012 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,106	$0	$58	$5,106	$2,268

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,000	$0	$0	$30,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$88,512	$0	$0	$88,328	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,668	$0	$0	$7,668	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$4,790	$0	$0	$4,790	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$135,000	$0	$0	$118,922	$0
Totals:	$271,075	$0	$58	$254,813	$2,268

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Butterworth #2 Landfill
1500 Butterworth SW
Grand Rapids , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: D6
State Site ID#: 41000008
State Site Score: 43

LOCATION
The 180-acre site is located adjacent to the west bank of the Grand River on the south 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 near industrial, residential, and recreational areas and received heavy pedestrian traffic prior to being fenced.

SITE HISTORY
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 on September 8, 1983. The potentially responsible parties (PRPs), including the city of Grand Rapids, agreed to conduct a remedial investigation/feasibility study (RI/FS) that began in January 1988 and was completed in December 1989.

Monitoring wells located between the landfill and the river detected 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 are known to be impacted. The waste is partially saturated by a shallow aquifer which has been contaminated with volatile organic compounds and inorganic contaminants, including ammonia, from the waste. The contaminated groundwater from this aquifer discharges directly to the Grand River. The concentrations of ammonia exceed both the acute and chronic groundwater/surface water interface (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 the MDEQ and the EPA, completed additional investigations. An ecological assessment was also prepared to evaluate the effect of the landfill on the river.

On October 31, 1991, the PRPs submitted an 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. The MDEQ 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. In June 1996, the PRP group submitted a request to the MDEQ 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 group installed a GSI monitoring well network. The well network was later deemed inadequate by the EPA and the MDEQ.

In October 1998, the EPA issued an Explanation of Significant Differences (ESD) to the ROD. The document called for implementation of a GSI performance monitoring program, using individual final acute values established by the MDEQ. 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 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. The MDEQ 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 for the remedial actions was filed in federal court. The Consent Decree outlines work to be performed under the ROD and the ESD, as amended. In June 1999, the EPA and the MDEQ approved an amended remedial design, allowing landfill capping and installation of new GSI wells and gas probes. The final remedial action 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 exceed GSI criteria.

Since 1999, the groundwater has shown no change in concentration of contaminants. However, due to an increase in the GSI criterion, vinyl chloride levels are now below this criterion. The landfill remains in non-compliance with the GSI criterion for ammonia venting to the Grand River.

The EPA completed a Five-Year Review report in September 23, 2004, and concluded that "the remedy is protective of human health and the environment". However, this report did not properly 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 therefore the MDEQ does not concur with the protectiveness statement.

Annually, since October 2001, the MDEQ has raised the concerns that the analytical methods used by the PRPs were outdated and that their groundwater monitoring program could not provide representative groundwater data. The MDEQ presented its concerns that these factors plus the inappropriate well construction on this site were preventing the agencies from accurately assessing the performance and compliance of the remedy. No actions have been taken by either party. After failing for several years to convince either party that there was a problem and actions were needed, the MDEQ spent state funds to collect the necessary data to evaluate the situation. In August 2008, the MDEQ 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. This data indicates that ammonia exceeds both acute and chronic criteria for the State Water Quality Standards. The data also indicates that mercury, chloride, Total Suspended Solids, arsenic, barium, and manganese all exceed the GSI criteria. Consequently, the previous twelve years of monitoring by the PRPs has failed to show this on-going migration of contaminants

to the Grand River.

The EPA has not required the implementation of a remedy that will address the continued acute GSI exceedances of ammonia, and has failed to request that the PRPs perform sampling and analysis for mercury and PCBs. The EPA and the PRPs are moving forward with single point aquifer sampling against the MDEQ's recommendations. Oversight of PRP activities during groundwater monitoring has determined that the PRPs have not used well packers appropriately to isolate and sample discrete depth intervals, and consequently, previously collected groundwater samples may not be representative of the sampled interval.

The failure to detect the on-going contaminant migration to the Grand River for over ten years was caused by inappropriate well construction, inappropriate sample collection, and outdated EPA Methods for sample analysis used by the PRPs. Based upon more recent data, the MDEQ will continue to request that the EPA require the PRPs to develop a new groundwater sampling program that will allow the Agencies to assess compliance with the ROD and state laws. This new data brings into question the performance of the remedy. The MDEQ will request that the EPA require the PRPs to modify the remedy to make it protective of human health and the environment. Also, the extent of the contaminant plume migrating from the landfill must be further characterized.

SITE STATUS

The MDEQ conducted a second phase of groundwater sampling in November 2010 based upon the results of the August 2008 sampling and the lack of action taken by the PRPs to address the contaminant migration to the Grand River. In August 2008, the MDEQ 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. This data indicates that ammonia exceeds both acute and chronic criteria for the State Water Quality Standards. The data also indicates that mercury, chloride, Total Suspended Solids, arsenic, barium, and manganese all exceed the GSI criteria. Consequently, the previous twelve years of monitoring by the PRPs has failed to show this on-going migration of contaminants to the Grand River. This new data brings into question the performance of the remedy. The MDEQ will continue to request that the EPA require the PRPs to modify the remedy to make it protective of human health and the environment. Also, the extent of the contaminant plume migrating from the landfill must be further characterized. The MDEQ awaits the results of the second round of groundwater sampling conducted in November 2010.

ENFORCEMENT STATUS

The 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 Consent Decree with the EPA. The remedial design was conducted by six CERCLA PRPs pursuant to the Order with the EPA for the remedial actions. 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 Consent Decree for remedial actions was entered into federal court in May 1999. No liability determination has been conducted under Part 201.

SPECIAL CONSIDERATIONS

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 money they received from other liable parties to help pay for cleanup costs.

OPERABLE UNITS

00	Entire Site
01	Cap & Contain, ACLs for Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

Start Date: 01/05/2009	Primary Cost:	$15,000	Source:
End Date: 09/29/2009	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Cap & Contain, ACLs for Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1992**

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**

The ESD changed the ROD to allow the PRPs to construct a less protective cap, in the middle of the site and around the radio station towers and building. Also, in December 1998, an amendment to the ESD specified new GSI criteria for 1,1-dichloroethane and chloroethane.

Response Accomplishments: Completed

Remedial Investigation

Start Date: 09/26/1984	Primary Cost:	$500,000	Source: Federal
End Date: 04/22/1987	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: 04/22/1987	Primary Cost:	$0	Source: Private
End Date: 09/29/1992	Secondary Cost:	$0	Source:

Interim Response Removal of PCB contaminated soil.

Start Date: 01/01/1989	Primary Cost:	$0	Source: Private
End Date: 01/01/1990	Secondary Cost:	$0	Source:

Remedial Design Design of the landfill cap.

Start Date: 02/23/1993	Primary Cost:	$0	Source: Private
End Date: 02/03/1998	Secondary Cost:	$200,000	Source: Federal

OPERABLE UNIT 01: Cap & Contain, ACLs for Groundwater

Response Accomplishments: Completed

5 Year Review The Five-Year Review was performed by the EPA and concluded that the remedy is protective of human health and the environment. The MDEQ disagreed with the conclusions.

Start Date: 04/01/2004	Primary Cost:	$0	Source: Federal
End Date: 09/30/2004	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action The cap is complete.

Start Date: 02/03/1998	Primary Cost:	$21,347,000	Source: Private
End Date: 10/01/2000	Secondary Cost:	$24,000	Source: Federal

Response Accomplishments: In Progress

Remedial Action Conduct 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.

Start Date: 08/01/2004	Primary Cost:	$2,500,000	Source: State
End Date: 11/30/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance Maintenance of the cap and monitoring of groundwater are ongoing tasks.

Start Date: 10/01/2000	Primary Cost:	$2,000,000	Source: Private
End Date: 10/01/2030	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Remedial Action Round two of 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 has been completed. This data is being used to build the database that will be used to determine additional actions at the site and to leverage additional work by the PRPs. Tasks that remain are plume deliniation and new well installation.

Start Date: 05/01/2009	Primary Cost:	$330,000	Source: State
End Date:	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,491	$0	$0	$5,491	$1,267

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$89,026	$0	$0	$88,211	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$79,046	$0	$0	$79,028	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$28,735	$0	$0	$28,735	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$26,736	$0	$0	$26,736	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,000	$0	$0	$8,030	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$189,671	$0	$0	$189,671	$0
Totals:	$428,705	$0	$0	$425,901	$1,267

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Chem Central
2940 Stafford Avenue SW
Wyoming , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: W5
State Site ID#: 41000011
State Site Score: 38

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.

SITE HISTORY
In 2007, Univar USA purchased Chem Central and assumed the responsibility for all of the site related remediation.

The Chem Central (now Univar USA) site is an active facility that has distributed chemicals to industry since its construction in 1957. The plant site covers approximately two acres and a large area off 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. The Michigan Department of Natural Resources (MDNR) 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, trichloroethylene, 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.

The MDNR 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 vapor extraction 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 is complying with this order. The MDEQ was funded under a multi-site cooperative agreement to provide technical assistance and community relations support during RD/RA work. The RD/RA work plans were completed in June 1993. The soil vapor extraction (SVE) system became operational in December 1995. Chem Central completed all the expansions to the groundwater purge and treat system with the exception of the extension to the north underdrain extraction system.

Chem Central asked the EPA and the MDEQ 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 (NREPA). 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. As part of its continuing operation and maintenance program, Chem Central installed seven new monitoring wells, and two former monitoring wells were plugged and abandoned in June/July 2000. 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 two years, from July 2000 through 2002, but was extended through 2003 into 2004. The first quarterly report under this program was submitted in October 2000. GSI quarterly sampling and reports were submitted in 2001, 2002, and 2003. Review of the three years of 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 first Five-Year Review 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.

Discussions between the EPA, Chem Central, and the MDEQ at the end of 2002 determined that the current sampling plan would continue, with some slight modifications of frequency to select monitoring wells. Sentinel well data would continue to be evaluated to determine if a GSI issue existed and if a mixing zone determination for Cole Drain was needed. These monitoring changes were implemented in 2004 and are expected to be followed until it is decided that the frequency of the sampling can be modified, if necessary.

The second Five-Year Review was written and submitted 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. The MDEQ agreed with this decision. The EPA also discovered several deed restrictions had not been registered for affected properties located in the off-site groundwater contamination plume path as required in the ROD.

In 2005, the expansion of the Gilmore Building, located within the groundwater plume, necessitated the plugging and abandonment of two monitoring wells (Monitoring Wells MW57 and MW58). Replacement of these two wells, along with replacement and relocation

of the damaged Monitoring Well MW26, was done in early 2006, completing the monitoring well network. The current monitoring network is now complete. Regularly scheduled quarterly monitoring sample collection was conducted through the end of 2008 and will continue into the near future per the requirements of the Operation & Maintenance Plan and the 2004 Five-Year Review.

In 2007, Chem Central submitted a request to the MDEQ Air Quality Division (AQD) to modify the Substantive Requirements Document (SRD) which monitored discharges from the air stripper portion of the treatment remedy. The MDEQ Air Quality Division granted the SRD modification request in March 2008.

The EPA provided notification to both the MDEQ and Univar USA, via a November 2008 letter, that the development of the third Five-Year Review had been initiated. This Five-Year Review was completed on November 12, 2009. The review concluded that the current remedy was protective of the human health and the environment. However, long term protectiveness required compliance with effective Institutional Controls which will 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 proposed bioremedy, if approved by both the EPA and the MDEQ, would operate concurrently with the pump and treat remedy. The initial review of the Conceptual Remediation Enhancement Plan by both the EPA and the MDEQ was completed in August 2009 and comments were provided to Univar USA. A revised 30% Design Conceptual Remediation Enhancement Plan was received from Univar in early 2010.

SITE STATUS

A revised 30% Design Conceptual Remediation Enhancement Plan was received from Univar USA in early 2010. Throughout 2010, both the EPA and the MDEQ reviewed and provided comments on the revised 30% Design Conceptual Remediation Enhancement Plan, and the Aerobic Remediation Enhancement Plan 90% Design. The EPA gave its conditional approval of the 90% Design document in a letter dated October 29, 2010. It is anticipated Univar will begin the installation of the Bioremedy in 2011.

Chem Central (now Univar USA) is continuing to operate the groundwater purge and treat system. The groundwater treatment system may have to operate for 30 years to achieve the site cleanup standards.

ENFORCEMENT STATUS

Chem Central, now Univar USA, is conducting the work under the Unilateral Administrative Order issued by the EPA and under the 1984 Kent County Circuit Court Order.

OPERABLE UNITS

00	Entire Site
01	Groundwater Plume

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Design 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 proposed Bioremedy, if approved by both the EPA and the MDEQ, would operate concurrently with the pump and treat remedy. The initial review of the Conceptual Remediation Enhancement Plan by both the EPA and the MDEQ was completed in August 2009 and comments were provided to Univar USA. A revised 30% Design Conceptual Remediation Enhancement Plan was received from Univar USA in early 2010. Throughout 2010, both the EPA and the MDEQ reviewed and provided comments on the revised 30% Design Conceptual Remediation Enhancement Plan, and the Aerobic Remediation Enhancement Plan 90% Design. The EPA gave its conditional approval of the 90% Design document in a letter dated October 29, 2010. It is anticipated Univar will begin the installation of the Bioremedy in 2011.

Start Date: 05/01/2009	Primary Cost:	$0	Source: Private
End Date: 12/31/2014	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1991**

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 MDEQ agreed the expansion of the underdrain portion of the remedy was no longer required. EPA has yet to write the ESD to cover this remedy change to the ROD.

Response Accomplishments: Completed

Interim Response Groundwater Purge and Treatment System funded by Potentially Responsible Party (private).

Start Date: 03/01/1984	Primary Cost:	$0	Source: Private
End Date: 06/01/1988	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: 06/01/1987	Primary Cost:	$0	Source: Private
End Date: 07/01/1991	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 04/01/1992	Primary Cost:	$0	Source: Private
End Date: 08/01/1994	Secondary Cost:	$125,000	Source: Federal

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Completed

Remedial Action Soil Vapor Extraction system for soil treatment.

Start Date: 08/01/1994	Primary Cost:	$0	Source: Private
End Date: 09/30/2000	Secondary Cost:	$14,000	Source: Federal

5 Year Review The Five-Year Review report was written by the EPA and determined that the remedy was protective of human health and environment.

Start Date: 01/02/1999	Primary Cost:	$0	Source: Federal
End Date: 11/16/1999	Secondary Cost:	$0	Source:

5 Year Review The second Five-Year Review report was written by the EPA in 2004. The MDEQ reviewed, provided comments, and agreed with the conclusion of this report, which stated that the selected remedy was protective of human health and environment. The Five-Year Review report was signed by the EPA on November 16, 2004.

Start Date: 01/01/2004	Primary Cost:	$0	Source: Federal
End Date: 11/16/2004	Secondary Cost:	$0	Source:

5 Year Review Via a letter from the EPA, dated November 26, 2008, the MDEQ received notification that development of the third Five-Year Review has begun. The MDEQ provided assistance to the EPA during this process. This Five-Year Review 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 which will need to be monitored, maintained, enforced, and updated as needed to prevent exposure to the contaminated groundwater and soils.

Start Date: 11/26/2008	Primary Cost:	$0	Source: Federal
End Date: 11/12/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance Groundwater purge and treat system operation.

Start Date: 01/01/1988	Primary Cost:	$0	Source: Private
End Date: 01/01/2018	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is due November 12, 2014.

Start Date: 11/29/2013	Primary Cost:	$0	Source:
End Date: 11/12/2014	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$18,271	$0	$9,563	$18,271	$9,563

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,000	$0	$0	$24,952	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$53,754	$0	$0	$53,421	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,642	$0	$0	$2,642	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$13,090	$0	$0	$13,089	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$6,563	$0	$0	$6,563	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$2,638	$0	$0	$2,638	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$90,000	$0	$0	$89,758	$0
Totals:	$216,958	$0	$9,563	$211,335	$9,563

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: H. Brown Co., Inc.
2200 & 2160 Turner Ave. NW
Walker , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 1A
State Site ID#: 41000031
State Site Score: 41

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.

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 the present.

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 is the primary contaminant in surface soils, subsurface soils, groundwater, surface water, and sediments. Other metals were detected but at much lower concentrations. Among 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 is contaminated by dust carrying lead and other compounds. The groundwater is contaminated with inorganic chemicals, such as antimony, lead, cadmium, and nickel; and organic contaminants, such as benzene, vinyl chloride, and polynuclear aromatic hydrocarbons. 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 or ingest 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, and ingestion and inhalation of, surface soil.

After the remedial investigation was completed in September of 1992, it was determined an imminent public health risk existed at the site and an 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 demolition of the on-property buildings; consolidation of surface soils onto the property; solidification in place of contaminated surface and subsurface soils; construction of a containment wall

around the solidified mass; construction of a hazardous waste landfill cap; collection, treatment, and discharge of contaminated groundwater; implementation of land and groundwater use restrictions; fencing; and installation of additional wells for a predesign study. The 1992 ROD was amended in 1995 based on the results of the predesign study that showed contaminants to be adhering to soil particles on the property and not migrating off-property 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 some non-site related constituents. The state concurred with the ESD. The first 5-Year Review was completed by EPA in May 2004 and it concluded that the remedy continues to be protective of human health and the environment.

SITE STATUS

The site is currently owned by DBV Partners L.L.C., a non-liable 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 a limited industrial use.

A redevelopment plan in the form of a ROD amendment was finalized in 1998 to reconsolidate contaminated soils onto the H. Brown Company, Inc., property, demolish the current building, build new warehouses, cap the site using the buildings, parking lots, and landscaping as a portion of the cover for the contamination, and provide deed restrictions and 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. The second 5-Year Review was completed in May 2009.

ENFORCEMENT STATUS

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 the CERCLA and Part 201, Environmental Remediation, of the NREPA.

SPECIAL CONSIDERATIONS

As stated under the Site Status, DBV Partners L.L.C., bought the H. Brown Company, Inc., property for redevelopment purposes and received grant funds for Brownfield Redevelopment from the state of Michigan. Redevelopment is 100 percent complete.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1992**

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 09/29/1995**

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 02/25/1998**

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 03/30/1999**

Modification of the ROD amendment's cleanup constituents to delete the non-site related contaminants.

Response Accomplishments: Completed

Remedial Investigation

Start Date: 09/12/1988	Primary Cost:	$815,000	Source: Federal
End Date: 09/30/1992	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response 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.

Start Date: *01/30/1991*	Primary Cost:	$0	Source: Federal
End Date: *01/30/1992*	Secondary Cost:	$0	Source:

Remedial Design Please see original ROD description for design description.

Start Date: *03/30/1993*	Primary Cost:	$1,062,000	Source: Federal
End Date: *07/01/1996*	Secondary Cost:	$0	Source:

Remedial Design Remedial design of ROD amendment #2.

Start Date: *08/19/1996*	Primary Cost:	$0	Source: Private
End Date: *07/12/1998*	Secondary Cost:	$49,000	Source: Federal

Remedial Action Remedial action of ROD amendment #2.

Start Date: *01/30/1999*	Primary Cost:	$5,200,000	Source: Private
End Date: *01/30/2001*	Secondary Cost:	$289,300	Source: State

5 Year Review The first 5-Year Review was completed by EPA in May 2004 and it concluded that the remedy continues to be protective of human health and the environment.

Start Date: *01/30/2004*	Primary Cost:	$0	Source: Federal
End Date: *05/28/2004*	Secondary Cost:	$0	Source:

5 Year Review The second 5-Year Review.

Start Date: *10/30/2008*	Primary Cost:	$25,000	Source: Federal
End Date: *05/20/2009*	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance On-going maintenance of the site capping, which includes warehouses with concrete floors, paving, and landscaping. Periodic indoor air monitoring and groundwater monitoring.

Start Date: *01/31/2001*	Primary Cost:	$0	Source: Private
End Date: *01/30/2029*	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,537	$0	$0	$8,490	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,000	$0	$0	$40,000	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$9,211	$0	$0	$9,210	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$40,000	$0	$0	$35,658	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$9,041	$0	$0	$9,040	$0
Totals:	$106,789	$0	$0	$102,399	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Kentwood Landfill
4900 Walma Avenue
Kentwood , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: F1
State Site ID#: 41000039
State Site Score: 33

LOCATION
The Kentwood Landfill occupies 72 acres in the city of Kentwood, Kent County, Michigan, at 4900 Walma Avenue. The site is bordered to the east by Plaster Creek.

SITE 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 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, which determined the nature and extent of environmental contamination caused by leachate seeping from the landfill, 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 maintain health-based groundwater cleanup criteria, installation of a leachate outbreak control system, construction of a fence around the site, institutional controls, and deed restrictions. The state concurred with the ROD. In August 1991 the city of Kentwood and Kent County signed a Consent Decree (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 December 27, 1995.

The EPA conducted five year reviews 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 fence in need of repair. These problems were addressed to some extent by the potentially responsible parties (PRPs) but they continue to work on these issues with our assistance and oversight. The annual site walkthrough took place in Summer 2008, and the MDEQ sent a letter to the PRPs of its findings on August 11, 2008, including primarily the above described issues.

On June 2, 2009, the EPA approved an exemption to the existing institutional controls (deed restriction preventing construction of buildings and the presence of humans for any purpose other than operation and maintenance [O&M] of the remedy) to allow a public library to be constructed within approximately 50 feet of the solid waste fill boundary. The MDEQ was not in support of the deed restriction exemption because of the presence of methane gas at concentrations greater than 5 percent by volume (the lower explosive limit for methane) identified from soil borings within the proposed building footprint. As suggested by the MDEQ, 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 began in the spring of 2009. The building construction includes engineering controls to address methane migration including a subslab depressurization system, positive pressure interior air system, and interior methane monitoring. The PRPs are planning a shallow interceptor trench for methane control between the solid waste fill and the new library building. The MDEQ does not agree with the design of the shallow trench because the depth of migration identified during the limited methane investigation was approximately 20 feet below ground surface (bgs) and the approximate depth of the methane interceptor trench is 6 feet bgs. The EPA and MDEQ are currently working together to assist the PRP with determining acceptable methane gas mitigation measures for the area of the site by the library building.

The third Five Year Review 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 institutional controls that must be maintained, monitored, and enforced. The MDEQ has a different interpretation of how the remedy is being implemented, level of protectiveness, and compliance with the ROD. The MDEQ agrees 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 indicates that after 15 years of active remediation, contamination (volatile organic compounds and metals) persists, and at perimeter monitoring locations, contamination is increasing. Deed restrictions and a groundwater use ordinance have been executed to prevent use of groundwater.

For the remedy to be protective in the long term, the remedy must demonstrate achievement of the remedial goals to capture the contaminated groundwater plume, lower the water table height in the upper aquifer below the level of the landfilled waste, meet the groundwater remediation standards, prevent the build up of gases within the landfill, and prevent uncontrolled migration of gases away from the landfill. Current site conditions (2009) indicate: migration of contaminated groundwater beyond the ROD-specified compliance point; increasing chemical trends in perimeter groundwater monitoring wells; continued perimeter and landfill cap leachate outbreaks; methane gas concentrations greater than the lower explosive limit outside the landfill boundary in a redevelopment area; and potential impacts to surface waters from contaminated groundwater.

SITE STATUS

With the groundwater extraction and treatment system up and running, the focus of the ongoing O & M is cessation of leachate outbreaks. It was hoped that within one to two years after the 1995 RA the significant leachate outbreaks would cease. Some leachate outbreaks did stop, but site inspections by the EPA and the MDEQ from 1997 through 2009 show that many of the original leachate outbreaks are still present. The MDEQ continues to advocate elimination of leachate outbreaks, and the PRPs have now begun to address the issue by recommending modification to the existing leachate collection system to better control leachate migration and assessment of leachate and contaminated groundwater transport into the surrounding wetlands and Plaster Creek. Additional leachate control piping or extraction may be required, as well as groundwater to surface water interface monitoring points. The original estimated duration of operation of the extraction and treatment systems was nine years; however, the system has currently been operating for 16 years without achieving the cleanup goals. The extraction and treatment systems 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.

The city of Kentwood Public Library was constructed and is in full operation on a portion of

the site property. Methane gas was found to be migrating from the landfill into the sub grade of the library building. The PRPs have completed a limited methane investigation and are proposing to install a landfill gas control system in the area of the new library to prevent migration of methane and any other landfill gases from the landfill. The design of the landfill gas control system is underway and not yet ready for MDEQ evaluation.

The PRPs have completed a draft Institutional Control Study to determine the adequacy and effectiveness of the current institutional controls. The draft document recommended that additional private land owners be approached for private well abandonment. The MDEQ agrees with this recommendation and further requested the boundaries of the current drinking water isolation zone be reevaluated to determine if the isolation zone needs to be expanded.

ENFORCEMENT STATUS

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 2002.

The above PRPs are liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended. Because of their association with the deposition of the wastes on the site, they may also be liable under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

SPECIAL CONSIDERATIONS

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.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/29/1991**

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; institutional controls; and deed restrictions. The state concurred with the ROD and participated in negotiation of the RD/RA Decree.

Response Accomplishments: Completed

Negotiations RI/FS negotiations.

Start Date: 05/15/1985	Primary Cost:	$0	Source: Private
End Date: 11/15/1985	Secondary Cost:	$0	Source: Federal

Remedial Investigation

Start Date: 12/13/1985	Primary Cost:	$2,500,000	Source: Private
End Date: 03/29/1991	Secondary Cost:	$13,000	Source: Federal

Negotiations RD/RA negotiations

Start Date: 04/16/1991	Primary Cost:	$0	Source: Private
End Date: 08/28/1991	Secondary Cost:	$0	Source: Federal

Remedial Design Private (PRP) expenditures are unknown.

Start Date: 11/27/1991	Primary Cost:	$0	Source: Private
End Date: 03/17/1994	Secondary Cost:	$237,000	Source: Federal

Remedial Action Remedial action 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; institutional controls; and deed restrictions.

Start Date: 03/17/1994	Primary Cost:	$5,000,000	Source: Private
End Date: 12/27/1995	Secondary Cost:	$194,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA conducted the review and their report concluded that the remedy was protective of human health and the environment.

Start Date: 06/08/1999 Primary Cost: $0 Source: Federal
End Date: 10/15/1999 Secondary Cost: $0 Source:

5 Year Review 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. Issues still being addressed.

Start Date: 06/01/2004 Primary Cost: $0 Source: Federal
End Date: 09/30/2004 Secondary Cost: $0 Source:

Remedial Investigation On January 21, 2009, soil gas concentrations of methane were discovered to be greater than 5 percent (the lower explosive limit) in soil boring located within the footprint of the proposed public library. The EPA required the PRPs to complete a limited methane gas investigation and monitoring plan for the area of the landfill immediately adjacent to the location of the proposed library building. The investigation documented methane concentrations in soil gas at concentrations up to 49 percent by volume. Subsequent monitoring indicates soil gas concentrations of methane up to 60 percent by volume. The EPA and MDEQ are working with the PRPs to determine an acceptable monitoring plan and schedule and methane mitigation measures for the area between the soil waste fill boundary and the library building.

Start Date: 01/21/2009 Primary Cost: $5,000 Source: Private
End Date: 09/01/2009 Secondary Cost: $0 Source:

Remedial Action On June 2, 2009, the EPA approved an exemption to the existing institutional controls (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.

Start Date: 03/10/2009 Primary Cost: $0 Source:
End Date: 06/02/2009 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review A Five-Year Review 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 institutional controls that must be maintained, monitored, and enforced. The MDEQ has a different interpretation of how the remedy is being implemented, level of protectiveness, and compliance with the ROD.

Start Date: 07/21/2009	Primary Cost:	$0	Source:
End Date: 10/23/2009	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Investigation The PRPs have 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 is anticipated for summer 2011.

Start Date: 10/12/2009	Primary Cost:	$0	Source:
End Date: 09/30/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance 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 were $500,000 and $400,000 for 2010. Significant capital costs were reported in 2009 for repair of damaged storm water conveyance structures and conversion of multiple gas vents into leachate extraction wells. Significant capital costs were also reported in 2010 for additional conversions of gas vents to extraction wells, installation of new extraction wells at known leachate breakouts on the landfill cap, investigation of landfill gas migration at the new library building location, and investigation of the groundwater to surface water interface discharge at the landfill perimeter.

Start Date: 03/26/1996	Primary Cost:	$167,000	Source: Private
End Date: 01/01/2026	Secondary Cost:	$0	Source: Federal

Response Accomplishments: Future Need

5 Year Review Five-Year Reviews are planned to be conducted every five years.

Start Date:	Primary Cost:	$0	Source: Federal
End Date: 10/23/2014	Secondary Cost:	$0	Source: Private

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$35,000	$0	$0	$30,842	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$16,583	$0	$0	$16,583	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$177	$0	$0	$176	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,115	$0	$18,985	$30,115	$18,985

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$70,000	$0	$0	$63,825	$0
Totals:	$151,875	$0	$18,985	$141,541	$18,985

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Organic Chemicals, Inc.
3291 Chicago Dr., SW
Grandville , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 9P
State Site ID#: 41000051
State Site Score: 41

LOCATION
Organic Chemicals, Inc. (OCI) 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.

SITE 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. In 1968, Spartan Chemical bought the property to be used by its subsidiary, OCI, for solvent reclamation and chemical manufacturing. In 1979, OCI became the owner of the property by conveyance of deed from Spartan Chemical.

Ongoing operations included recycling approximately 100,000 gallons of used solvents (such as paint thinners) per month and manufacturing small amounts of chemicals used in pharmaceuticals and industry. Between 1968 and 1980, company records indicate that they discharged process waste and cooling water, which contained hazardous materials, into a seepage lagoon located on the property. In November 1979, an employee of OCI 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. 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 the MDEQ directed OCI to conduct a hydrogeological study to determine the effect of past disposal practices on the groundwater. This study indicated the groundwater was contaminated with volatile organic compounds (VOCs). OCI closed the seepage pond in 1980 and installed a 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 OCI on the National Priorities List in September 1983.

In 1986, the MDNR investigated a complaint that OCI personnel were illegally disposing of hazardous wastes at the facility. As a result of this investigation, the EPA cited OCI as being in violation of the Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA), which regulates, in part, the handling and disposal of hazardous wastes, and fined the company for the violations. In 1987 OCI, in cooperation with the MDEQ, 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. OCI was not able to obtain a RCRA permit, and went bankrupt before the RCRA closure could be performed. OCI was never decommissioned or properly closed and subsequently abandoned.

The EPA, in cooperation with the MDEQ, began a 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 also identified the key contaminants of concern, determined the extent of this

contamination in the upper groundwater system, and assessed the risks associated with these contaminants.

On September 30, 1991, the EPA issued a Record of Decision (ROD) for an interim groundwater extraction and treatment system. The potentially responsible party (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 the MDEQ, Surface Water Quality Division, informing them that their discharge failed effluent toxicity tests and was out of compliance, the PRPs turned the extraction system off and to date, it has not been reactivated.

The EPA drafted an Explanation of Significant Difference (ESD) and the Preliminary Close Out Report, both of which were signed on September 30, 2003. The MDEQ had not received these documents for review until October 2003. A Five-Year Review was also conducted and signed September 30, 2004. The MDEQ's review of the EPA Five-Year Review found that the report did not accurately describe the remaining contamination problems at the site. Contamination still exists on-site above health based risk criteria. During 2005, 2006, 2007, and 2008 the groundwater monitoring continued to show contamination above the health based criteria. The MDEQ sampled the Pretreatment facility and found listed and characteristically hazardous sludge and liquids. The PRPs removed the hazardous waste from the pre-treatment lagoons in June 2006. The site has been sold by the bankruptcy trustee to a third party, JJ Trucking. The pretreatment facility was not properly closed because JJ Trucking pulled the pre-treatment facility concrete sidewalls out of the ground.

The upper glacial and possibly lower bedrock groundwater aquifers beneath OCI are contaminated with VOCs, base neutral acids, and metals. Surface and sub-surface soils contain contaminants similar to those found in the groundwater including petroleum constituents, pesticides, polychlorinated biphenyls, high concentrations of polynuclear aromatic hydrocarbons, VOCs, dioxin, and furans. These contaminants are present in sub-surface soils at and above the water table and continue to be released into the groundwater.

The site is zoned for industrial use. The site has been sold to JJ Trucking and redeveloped. The soils' Restrictive Covenants are not in place. Commercial development has been active in the immediate areas and most of the adjacent land has commercial buildings.

The EPA has negotiated an Alternate Point of Compliance (relying on monitored natural attenuation) groundwater remedy with the PRPs. The site has collected eight rounds of quarterly groundwater samples during the years 2002 and 2003 to determine if an Alternate Point of Compliance is appropriate for evaluating the site. As part of the Alternate Point of Compliance evaluation, the PRP group performed an additional limited groundwater contamination investigation on the western adjacent property. This investigation determined that monitored natural attenuation would achieve groundwater performance standards before the Alternate Point of Compliance is reached and that active extraction and treatment of the contaminated site groundwater was not necessary.

The PRPs completed their Remedial Action (RA) for contaminated soil at the site. The soils' RA permitted excavation of contaminated soils, without verification that the contaminated soil was part of the excavation. After excavation, the site-wide risk was recalculated. This does not follow state of Michigan guidance. This RA did not address the high organic chemical contamination found in the soils of the site, since VOCs were not Chemicals of Concern for

soils. Nor did the PRPs address the numerous OCI Facility pipes containing RCRA hazardous waste or the pre-treatment facility that contains heavily contaminated water and sludge. The MDEQ received, during October 2003, the EPA drafted ESD and Preliminary Close Out Report for the site. The ESD and Preliminary Close Out Report had been signed by the EPA on September 30, 2003. The MDEQ review of these documents indicates that there was basic disagreement with the EPA over the levels of contamination remaining at this site and the level of risk associated with these contaminants. The EPA has not required the PRPs to conduct the necessary additional remediation of the site even though risks to human health and the environment remain at the site.

SITE STATUS

Groundwater continues to exceed the required cleanup objectives and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), criteria at the Alternate Point of Compliance. The PRPs are not monitoring the groundwater for all the contamination emanating from the former OCI facility. In an attempt to accelerate the groundwater remediation, the PRPs responsible for the groundwater remedy implemented an in-situ enhanced biodegradation Groundwater Pilot Study in May 2010. An emulsified oil was injected into the shallow groundwater aquifer.

MDEQ Superfund staff has documented to the EPA numerous technical concerns and compliance issues at the former OCI facility. The most immediate concerns are the direct contact and indoor air human health exposures that are occurring at the former OCI facility which has been redeveloped by JJ Trucking, and the contaminated groundwater flowing beneath the building located on the adjacent property.

ENFORCEMENT STATUS

On January 6, 1992, the EPA issued a Unilateral Administrative Order (Order). The Order required the PRPs to institute the remedial action (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 liable party group stopped implementing the groundwater purge and treatment interim action. The EPA completed the RI and feasibility study (FS). The liable party group will 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 March 1, 1996, under Part 201, of the NREPA.

The MDEQ may eventually need to require the PRPs to remediate the site to a level that complies with Part 201, of the NREPA, cleanup requirements if the RAs pursuant to Superfund are not adequate.

SPECIAL CONSIDERATIONS

The OCI 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 OCI site has existing piping from the production of pharmaceutical intermediates and solvent recovery. OCI facility piping exists throughout the facility connecting the chemical buildings, former aboveground storage tanks, solvent recovery buildings, and 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/FS

were indicating hot spots in the soils throughout the site. The EPA has not required the OCI Soils 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 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 OCI facility. To address oil related contamination at the site, the state notified Total Petroleum of their liability at OCI under Part 201, of the NREPA. Total Petroleum removed and backfilled four seepage lagoons near the OCI 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 piping is also in existence at and around the OCI facility.

OPERABLE UNITS

00	Entire Site
01	Interim Action, Contaminated Groundwater
02	Final Remedy, Contaminated Groundwater & Soil Remedy

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA conducted a Five-Year Review 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 Operable Unit 2 ROD.

Start Date: 03/01/1999 Primary Cost: $0 Source: Federal
End Date: 09/15/1999 Secondary Cost: $0 Source:

5 Year Review A Second Five-Year Review was conducted by the EPA in Fiscal Year (FY) 2004, and signed September 30, 2004. The Second Five-Year Review 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."

Start Date: 11/03/2003 Primary Cost: $0 Source: Federal
End Date: 09/30/2004 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

A Third Five-Year Review was conducted by the EPA in FY 2009, and signed September 25, 2009. The Third Five-Year Review 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 institutional controls, specifically for the soils. The MDEQ does not agree with the EPA's conclusion that the remedy is functioning as intended by the OU2 ROD, as modified by the 2003 ESD because of vinyl chloride and benzene exceedances above the Maximum Contaminant Levels at the Alternate Point of Compliance. Additionally, RA objectives used at the time of the remedy selection many no longer be valid because of the allowance of a monitored natural attenuation remedy in replacement of the hydraulic containment, pump and treat groundwater remedy. The MDEQ also disagrees with the EPA regarding additional information coming to light that calls into question the protectiveness of the remedy. The new site owner is altering the ground surface of the site and interfering with planned voluntary remediation of the pre-treatment facility tanks. The existing paved and concrete surfaces have been left in place as a part of the soil remediation remedy and the appropriate institutional controls have not been placed to safeguard against removal or altering the paved and concrete surfaces.

Start Date: 07/16/2009	Primary Cost:	$0	Source:
End Date: 09/25/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

Long-term monitoring of groundwater Alternate Point of Compliance and groundwater/surface water interface. Costs are estimated at $7,000/year. Vinyl chloride and benzene exceedances have been documented during the operation and maintenance period greater than Maximum Contaminant Levels at the Alternate Point of Compliance.

Start Date: 10/01/2002	Primary Cost:	$35,000	Source: Private
End Date: 09/30/2015	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Remedial Action

Additional work is needed to correctly remediate the site which includes building demolition, removal of the concrete slabs, removal of the pre-treatment facility and contaminated water, removal and off-site disposal of contaminated soils and addition of clean backfill.

Start Date: 01/01/2009	Primary Cost:	$4,000,000	Source: State
End Date: 12/31/2010	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

5 Year Review The EPA will conduct a Five-Year Review.

Start Date: 01/01/2014	Primary Cost:	$0	Source:
End Date: 09/25/2014	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Interim Action, Contaminated Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1991**

The Operable Unit 1 ROD required the capture and treatment of the on-site contaminated groundwater.

Response Accomplishments: Cancelled

Remedial Action The PRPs designed, constructed, and operated the groundwater pump and treat system from 1995 through 1997. They aborted operation of the groundwater pump and treat system in 1997 due to high effluent toxicity which was in violation of the state of Michigan water quality standards.

Start Date: 05/09/1995	Primary Cost:	$20,000	Source: Private
End Date: 07/11/1997	Secondary Cost:	$0	Source:

Response Accomplishments: Completed

Interim Response Excavation and removal of 150 buried drums.

Start Date: 04/22/1988	Primary Cost:	$0	Source: Private
End Date: 09/30/1991	Secondary Cost:	$0	Source:

Remedial Investigation Initial investigation of soil and groundwater contamination.

Start Date: 04/22/1988	Primary Cost:	$822,000	Source: Federal
End Date: 09/30/1991	Secondary Cost:	$0	Source:

Remedial Design Design of the on-site groundwater pump and treat 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.

Start Date: 05/01/1992	Primary Cost:	$60,000	Source: Private
End Date: 02/09/1994	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Final Remedy, Contaminated Groundwater & Soil Remedy

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 01/17/1997**

Excavation of contaminated site soils, continuation and expansion of groundwater extraction and treatment.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/30/2003**

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 Accomplishments: Completed

Remedial Investigation Investigation of the extent of soil contamination and the nature and extent of groundwater contamination.

Start Date: 04/22/1988 Primary Cost: $1,357,000 Source: Federal
End Date: 02/05/1997 Secondary Cost: $0 Source:

Remedial Design

Start Date: 01/01/1998 Primary Cost: $250,000 Source: Private
End Date: 10/01/2001 Secondary Cost: $0 Source:

Remedial Action 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.

Start Date: 10/01/2001 Primary Cost: $96,000 Source: Private
End Date: 06/30/2003 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Action As a response to the continuing exceedance of vinyl chloride and benzene at the Alternate Point of Compliance, the PRP's consultant has proposed a pilot study for enhancing remediation of source area (former seepage lagoon) groundwater and capillarity fringe soils. The proposed pilot study consists of injection of an emulsified soy-lactate solution by low pressure pumping or gravity using direct push probing. A detailed work plan has been requested by the EPA and MDEQ for evaluation of the pilot study.

Start Date: Primary Cost: $0 Source:
End Date: Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02: Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$25,492	$0	$13,444	$25,492	$18,837

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$11,997	$0	$0	$11,997	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$75,000	$0	$0	$75,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$82,065	$0	$0	$81,697	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$23,588	$0	$0	$23,587	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,000	$0	$0	$8,317	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$127,000	$0	$0	$126,106	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$62,887	$0	$0	$62,887	$0
Totals:	$418,029	$0	$13,444	$415,084	$18,837

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Sparta Landfill
10322 Alpine Avenue
Sparta , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 3N
State Site ID#: 41000060
State Site Score: 28

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.

SITE 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 the MDEQ. 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 Department of Public Works (DPW) under the direction of the MDEQ.

The EPA has identified the Kent County DPW 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 the MDEQ negotiated an Administrative Order by Consent (Order) 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 Order 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 action" remedy for the site but required long-term groundwater monitoring. The MDEQ 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 groundwater contaminant 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 Kent County DPW signed an Administrative Order of Consent on September 26, 2002, for implementation of the long-term monitoring program. The Kent County DPW submitted a revised "Draft Work Plan " for implementation of the long-term monitoring in May 2003. MDEQ staff submitted comments to this plan to the EPA. The EPA approved the plan without addressing many of the state's concerns. Kent County installed some new monitoring wells in 2003.

The first Five-Year Review for this site was completed and signed by the EPA in September 2007. The Five-Year Review recommended implementation of institutional controls and development of a landfill gas monitoring plan and a contingency plan for the site.

SITE STATUS
Currently, the groundwater at the site is being monitored quarterly and the landfill cap is being maintained by Kent County DPW. The County has developed a long-term monitoring plan for the site. The County has also submitted a revised sampling schedule based on MDEQ staff recommendation. The state is continuing to fund monitoring of the nearby residential wells at a cost of approximately $3,600 per year.

We are currently reviewing quarterly groundwater monitoring reports compiled by the PRPs and providing comments as necessary.

The EPA has identified Sparta Landfill as a site that is "ready for anticipated use". Apparently, a local AMA (Association of Modern Aeronautics) group is interested in acquiring and developing this site. A contractor is assigned by the EPA to conduct a "Situation Assessment" of the site in the coming months to determine the suitability of the site for the proposed venture.

ENFORCEMENT STATUS
Kent County completed the capping activities under an Order with the state of Michigan. The groundwater RI was conducted under a Consent Order with the EPA. The state had attempted to take enforcement action lead to implement the selected remedy. The MDEQ began negotiations with Kent County for implementation of a remedial action (RA) that meets the requirements of the ROD and the requirements of Part 201. However, these negotiations were not successful. Subsequently, the EPA and Kent County DPW signed an Order on September 26, 2002.

SPECIAL CONSIDERATIONS
Kent County received a total of $364,417.35 under the Municipal Landfill Cost-Share Grant Program, which represents 50 percent of the eligible response activities (operation and maintenance [O & M] and RI/FS) costs incurred from fiscal year (FY) 1996 through FY 2002. Kent County also received an insurance settlement of $3,125,000 for response activities at this site. As a result, Kent County repaid the $364,417.35 in grant funds to the state in March 2005.

OPERABLE UNITS

00	Entire Site
1	Soil, Design, and Installation of Landfill Cap
2	Groundwater

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/27/2000**

The EPA issued a "No Action" ROD, with groundwater monitoring remedy, without state concurrence.

Response Accomplishments: Completed

5 Year Review The first Five-Year Review for this site was completed and signed by the EPA in September 2007. The Five-Year Review recommended implementation of institutional controls, development of a landfill gas monitoring plan and completion of a contingency plan for the site.

Start Date: 09/30/2006	Primary Cost:	$0	Source: Federal
End Date: 09/30/2007	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review Next Five-Year Review is due in 2012.

Start Date: 01/02/2012	Primary Cost:	$0	Source:
End Date: 09/28/2012	Secondary Cost:	$0	Source:

OPERABLE UNIT 1 : Soil, Design, and Installation of Landfill Cap

Response Accomplishments: Completed

Remedial Action Kent County installed the landfill cap as a presumptive remedy for the landfill.

Start Date: 09/30/1995	Primary Cost:	$1,779,738	Source: Private
End Date: 09/30/1996	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: Completed

Remedial Investigation Kent County implemented the RI pursuant to the 1993 Consent Order.

Start Date: 09/30/1996	Primary Cost:	$770,070	Source: Private
End Date: 09/30/2000	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: Completed

Remedial Design Kent County conducted the design of the long term groundwater monitoring system.

Start Date: 10/30/2002 Primary Cost: $0 Source:

End Date: 09/30/2004 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Kent County continues to monitor the groundwater at the site. The MDEQ continues to review and provide written comments on the groundwater monitoring reports.

Start Date: 09/30/2003 Primary Cost: $300,000 Source: Private

End Date: 09/30/2020 Secondary Cost: $3,600 Source: State

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,765	$0	$602	$2,765	$1,791

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$47,587	$0	$0	$47,587	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,405	$0	$0	$12,405	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$40,000	$0	$0	$38,212	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$75,000	$0	$0	$74,943	$0
Totals:	$177,757	$0	$602	$175,913	$1,791

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Spartan Chemical
2539 28th Street SW
Wyoming , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: EP
State Site ID#: 41000119
State Site Score: 43

LOCATION
The Spartan Chemical Company is located at 2539 28th Street 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. A school is also located adjacent to the property.

SITE HISTORY
The Spartan Chemical Company was a bulk chemical 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 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, the MDEQ 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.

The MDEQ 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 the MDEQ in June 1993. The MDEQ

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 the MDEQ in April 1998.

The MDEQ 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. More than 20,000 pounds of volatile organic compounds (VOCs) have been removed by the SVE and treatment system as of November 2006. However, there still remains a large source area that will continue to impact the groundwater at the facility.

The MDEQ 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. After review of the technical memorandum, it was discovered that the contractor had not followed the work plan, quality assurance project plan, nor standard operating procedures to complete all the required investigatory work. Additional sampling to support the RI was completed by the MDEQ in April 2003. The MDEQ also collected an additional round of groundwater samples in June and July 2005.

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. The MDEQ 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. The MDEQ 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. The 2006 soil gas study across the former plant site indicated that remaining VOC levels present inhalation risks. Elevated VOC concentrations in the soil, groundwater, and soil vapor continue to provide the potential for volatilization to indoor air and ambient air.

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 Soil Vapor Extraction (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.

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 principle 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 MDEQ agreed in late 2009 on an approach to address the remedial design.

SITE STATUS

Actual design of the Remedial Action (RA) began in 2010 and is expected to be completed in late 2012, although several of the remedy design components, like the source area excavation, are expected to be completed before that date.

As the MDEQ has not received full funding for the remedial design (RD) due to the current EPA budget issues; the EPA and MDEQ have agreed to modify the approach to the RD. The new approach will include completing individual design components as separate design reports in the order that they will be implemented at the facility. This will allow implementation of several of the RD components prior to the completion of the full design. This will not hinder the implementation of the RA as the design components are stand alone and not dependent upon other design components. Therefore, implementation of individual remedial activities are expected to begin in early 2012.

ENFORCEMENT STATUS

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. The MDEQ 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 the MDEQ.

SPECIAL CONSIDERATIONS
Technologies for the groundwater remedy include in-situ chemical oxidation, groundwater extraction and treatment, air sparging with SVE, enhanced in-situ bioremediation, monitored natural attenuation and surfactant-flushing with groundwater treatment. Pilot testing to be conducted once federal grant funding is received and we determine the actual technology to be used in the RA.

OPERABLE UNITS

00	Entire Site
1	Plant Property Soils
2	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/26/2007**
This ROD selects the final cleanup plan for the site, which includes both soil and groundwater cleanup actions.

Response Accomplishments: In Progress

Remedial Design Federal funding has been revceived for the RD for the entire site including soil and groundwater. This federal funed RD began in 2010.

Start Date: 02/01/2010 Primary Cost: $1,250,000 Source: Federal
End Date: 12/31/2012 Secondary Cost: $0 Source:

OPERABLE UNIT 1 : Plant Property Soils

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 04/09/1998**
This was an interim action ROD to remediate contaminated soils using SVE.

OPERABLE UNIT 1 : Plant Property Soils

Response Accomplishments: Completed

Remedial Investigation State lead.

Start Date: 10/01/1992 Primary Cost: $691,000 Source: Federal
End Date: 04/09/1998 Secondary Cost: $0 Source:

Remedial Design This was a state lead RD.

Start Date: 09/30/1998 Primary Cost: $100,245 Source: Federal
End Date: 03/31/2000 Secondary Cost: $0 Source:

Remedial Action State lead operation of the SVE system.

Start Date: 06/30/2000 Primary Cost: $1,626,300 Source: Federal
End Date: 03/01/2005 Secondary Cost: $180,700 Source: State

Operation and Maintenance State lead operation of soil SVE system. The SVE system is currently off until additional evaluation of source material is completed as part of the 2007 ROD.

Start Date: 03/01/2005 Primary Cost: $144,000 Source: State
End Date: 02/28/2006 Secondary Cost: $0 Source: Federal

Remedial Design Preliminay RD work and an investigation was completed by the state Level of Effort in 2009. Final RA design will be completed in 2012.

Start Date: 12/03/2007 Primary Cost: $150,000 Source: State
End Date: 01/31/2010 Secondary Cost: $100,000 Source: Federal

Response Accomplishments: Future Need

Remedial Action Excavation of source material and installation of redesigned SVE System.

Start Date: 10/01/2011 Primary Cost: $1,350,000 Source: Federal
End Date: 01/01/2013 Secondary Cost: $150,000 Source: State

Operation and Maintenance Three years operation of SVE system to complete soil remediation (three years at $150,000 for a total of $450,000).

Start Date: 08/01/2013 Primary Cost: $150,000 Source: State
End Date: 08/01/2016 Secondary Cost: $0 Source:

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 06/29/1993**

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 O & M cost was estimated at $6,000 per month.

Record of Decision *Amendment:* 00 *ESD:* 1 **Effective 07/11/1995**

This Explanation of Significant Difference 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.

Response Accomplishments: Completed

Remedial Investigation State lead RI.

Start Date: *10/01/1992*	Primary Cost:	$1,245,905	Source: Federal
End Date: *04/01/2007*	Secondary Cost:	$80,000	Source: State

Remedial Design Preliminary RD work done by DLZ; work revisited as part of the 2007 ROD.

Start Date: *09/26/1993*	Primary Cost:	$500,000	Source: Federal
End Date: *12/31/2007*	Secondary Cost:	$0	Source: State

Response Accomplishments: Future Need

Remedial Action Install and implement remedial activities including air sparging with ozone and chemical injection.

Start Date: *08/01/2012*	Primary Cost:	$2,970,000	Source: Federal
End Date: *08/01/2013*	Secondary Cost:	$330,000	Source: State

Long Term Remedial Action O & M of the groundwater sparge system and monitoring groundwater concentrations.

Start Date: *08/01/2013*	Primary Cost:	$900,000	Source: Federal
End Date: *08/01/2023*	Secondary Cost:	$100,000	Source: State

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: Future Need

Operation and Maintenance O & M estimated at $80,000 per year.

Start Date: 02/01/2023	Primary Cost:	$800,000	Source: State
End Date: 02/01/2033	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995884-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$1,807,000	$180,700	$0	$1,802,698	$48,961
Remedial Design	$190,245	$0	$0	$186,659	$16,078
Remedial Investigation	$1,936,905	$0	$0	$1,898,648	$0

Cooperative Agreement Number V995884-02 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$850,000	$0	$850,000	$185,608	$185,608
Totals:	$4,784,150	$180,700	$850,000	$4,073,613	$250,647

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: State Disposal Landfill, Inc.
3954 East Beltline Avenue
Grand Rapids , MI

County: Kent
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: BS
State Site ID#: 41000062
State Site Score: 31

LOCATION
The State Disposal Landfill, Inc. site is located at 3954 East Beltline Avenue in a mixed residential and agricultural zoned area.

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 the MDEQ files. Contaminants were detected 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. VOCs were detected in one or more of the landfill gas samples. Chemicals detected at elevated concentrations include lead, zinc, iron, thallium, trichloroethene, vinyl chloride, and benzene.

The site presented an acute public health concern because the groundwater was contaminated above acceptable state standards in downgradient residential wells and the Plainfield Township municipal water supply wells. 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 and is currently using the contaminated wells only during peak demand times and is treating it prior to distribution. In 1994 the potentially responsible party (PRP) began cost-sharing this treatment with the township.

The landfill is currently owned by S.C. Holdings, Inc., a subsidiary of Waste Management of North America. Waste Management submitted several versions of a Remedial Action Plan (RAP) that the MDEQ determined was not administratively complete. After several years of negotiations failed to result in an approvable RAP, Waste Management notified the MDEQ that they no longer wished to negotiate an Administrative Order by Consent under which to implement response actions at the site. In the summer of 2005, the PRPs implemented a voluntary interim response which resulted in the capping of the site and installing gas vents and a leachate collection system. The PRPs elected to replace several wells in late 2005 using PVC instead of stainless steel. The reason this was done is that the PRPs believed that the stainless steel used in the original wells may be leaching metals and influencing the analytical results.

Reports summarizing all of the 2005 activities were submitted to the MDEQ during the spring and summer of 2006. The 2006 Annual Groundwater Monitoring Report was submitted in April 2007.

Beginning in 2008, and continuing through 2010, the MDEQ and the PRP have been negotiating a strategy designed to achieve progress toward a RAP for the site. Prior to this

time, negotiations have been unsuccessful in attaining an administratively complete RAP. The MDEQ and the PRPs have tentatively identified four areas of concern for which resolution and a schedule will be developed and memorialized in a letter agreement. The schedule will extend for a period of two to five years. The general areas of concern identified are: the presence of methane emanating from the landfill in both the vadose zone and dissolved in groundwater; a satisfactory groundwater-to-surface water monitoring program; implementation of groundwater use restrictions; and additional information to supplement the Construction Documentation Report for the Landfill Cap and Leachate Collection System.

SITE STATUS

In August 2010, the MDEQ sent a counterproposal to Waste Management outlining the steps that would need to be implemented to make progress on the site. The MDEQ met with Waste Management in November 2010 to discuss the counterproposal. A subsequent work session occured in December 2010 during which staff discussed in detail the work that Waste Management has completed during the last year. Additional work sessions have shown progress and are continuing in 2011 to discuss work to be performed.

ENFORCEMENT STATUS

S.C. Holdings, Inc. is a liable party 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 Order with the PRPs in August 1994 to conduct a remedial investigation/feasibility study (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. has continued to pay the state's oversight costs for review of RAP submittals.

The PRP indicated they are interested in resuming negotiations with the state toward the development of an administratively complete RAP, or a letter agreement designed to resolve outstanding areas of concern. The initial meeting took place in March 2008. Negotiations continue as of June 2009.

The MDEQ is exploring other enforcement options in the event negotiations do not prove to be successful in making progress toward an approvable RAP.

SPECIAL CONSIDERATIONS

One residential well near the landfill is being sampled quarterly because low concentrations of site contaminants are detectable in the well water. The sampling is being done quarterly by the Kent County Health Department through a contract with the MDEQ, Water Bureau.

The township would like to see the landfill turned into a walking park or a soccer field and has expressed a willingness to maintain the site. The site has the potential for this redevelopment if air monitoring results from gas vents indicate no health threat to the public. No formal redevelopment plans have been submitted by either the township or the PRP at this time. Waste Management reimburses the MDEQ for the cost of monitoring this well.

OPERABLE UNITS

00	Entire Site
01	Landfill
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Cancelled PRP

Negotiations Waste Management advised the MDEQ that they no longer wished to pursue an Administrative Order by Consent under which to perform remedial actions at the site.

Start Date: 01/30/2003	Primary Cost:	$30,000	Source: State
End Date: 10/01/2004	Secondary Cost:	$0	Source:

Response Accomplishments: Completed

Bottled Water See "alternative water" comments for cost estimates.

Start Date: 01/15/1990	Primary Cost:	$0	Source: State
End Date: 12/30/1992	Secondary Cost:	$0	Source:

Remedial Design 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.

Start Date: 06/01/2004	Primary Cost:	$0	Source: Private
End Date: 01/02/2005	Secondary Cost:	$0	Source:

Remedial Action Having ended negotiations on an Administrative Order by Consent with the MDEQ, 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. The MDEQ and the PRP met in March 2008 and have resumed negotiations toward resolution of areas of concern.

Start Date: 01/02/2005	Primary Cost:	$0	Source: Private
End Date: 03/06/2006	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Negotiations

Start Date: 03/12/2008	Primary Cost:	$0	Source:
End Date:	Secondary Cost:	$0	Source:

Operation and Maintenance After a RAP is executed with this PRP, Operation and Maintenance will begin.

Start Date: 01/13/2010	Primary Cost:	$0	Source: Private
End Date: 01/12/2039	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Landfill

Response Accomplishments: Completed

Remedial Investigation The state provided oversight of the RI/FS performed by the PRPs. Secondary costs were state contractual oversight costs.

Start Date: 04/30/1992	Primary Cost:	$0	Source: Private
End Date: 08/30/1995	Secondary Cost:	$81,000	Source: State

OPERABLE UNIT 01: Landfill

Response Accomplishments: Completed

Interim Response Removal of three buried drums found during test pitting.

Start Date: 07/01/1994 Primary Cost: $0 Source: Private
End Date: 07/03/1994 Secondary Cost: $0 Source:

Interim Response The PRP completed a voluntary interim response which included installation of a landfill cap, gas venting, and leachate collection system.

Start Date: 04/01/2005 Primary Cost: $0 Source: Private
End Date: 09/30/2005 Secondary Cost: $0 Source:

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Completed

Remedial Investigation

Start Date: 04/15/1989 Primary Cost: $0 Source: Private
End Date: 11/30/1996 Secondary Cost: $0 Source:

Alternate Water $100,000 in bond funding used for both bottled water and municipal water connections.

Start Date: 04/15/1992 Primary Cost: $100,000 Source: State
End Date: 12/30/1993 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Interim Response The PRPs signed an agreement with the township to cost-share for the treatment of contaminated groundwater at the township well field.

Start Date: 08/15/1994 Primary Cost: $0 Source: Private
End Date: 08/15/2014 Secondary Cost: $0 Source:

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Wash King Laundry
M-37
Baldwin , MI

County: Lake
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: B3
State Site ID#: 43000007
State Site Score: 29

LOCATION
The former Wash King Laundry property 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 Wash King Laundry building has been dismantled. Current site boundaries are generally defined by the presence of contaminated soil and/or groundwater and the soil and groundwater treatment systems. Site boundaries can be described as extending to 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. There are a few small businesses and residences along M-37 in the vicinity of the former Wash King Laundry building, and approximately 123 residential lots within the Pere Marquette Subdivision Plat which comprises the Site.

SITE HISTORY
The Wash King Laundry was a small, privately-owned laundromat in operation between 1962 and 1991. Beginning in 1962, the Wash King Laundry discharged laundry wastes to four nearby seepage lagoons located about 200 yards west of the laundry facility. As part of the laundry operations/services, dry cleaning was conducted, which included the use of Perchloroethene, or Tetrachloroethene (PCE). Consequently, PCE was also discharged to the unlined lagoons. The lagoons are a source of groundwater contamination; however, additional source(s) with high PCE concentrations are located near the location of the former Wash King Laundry building. Businesses, residences, and the Pere Marquette River are located down-gradient from the known contamination.

In 1973, detergent contamination was detected in residential wells located in the vicinity of the lagoons. In 1976, further contamination (PCE) of groundwater was discovered, and the state of Michigan issued a Notice of Noncompliance and Order to Comply to the Wash King Laundry owner. In 1977, concentrations of PCE up to 6,000 parts per billion (ppb) were recorded in the Wash King Laundry well, and up to 20,000 ppb in the adjacent restaurant well, located directly down-gradient of the former Wash King Laundry building. In 1978, the Wash King Laundry agreed to cease all dry cleaning operations.

In 1979, a preliminary hydrogeologic investigation was initiated to obtain information related to groundwater contamination and flow, and soil types at the Site. Monitoring wells were installed and sampled along with residential wells. Results indicated significant PCE contamination in the groundwater. Subsequent investigations and analysis indicate contaminated groundwater is migrating toward the Pere Marquette River. Approximately 30 private domestic wells have been contaminated with PCE, and an alternate water supply was offered to affected residents. Wash King Laundry was added to the National Priorities List in September 1983.

The majority of the Remedial Investigation (RI) was completed in 1988 with supplemental sampling conducted by the MDEQ in 1991 to facilitate completion of the Feasibility Study (FS). The RI was approved in March 1991, and the FS report and Baseline Risk Assessment were approved in May 1992. The Record of Decision (ROD), which called for off-site disposal of contaminated lagoon sediments and groundwater treatment, was signed

by the EPA and the MDEQ in March 1993. The design contract was issued in February 1994.

Predesign sampling of soils in the lagoon area and of the groundwater was completed during fiscal year 1995. The design for the lagoon excavation was completed; however, following additional soil sampling of the sediments it was concluded by the MDEQ, in conjunction with the EPA, that remediation of the lagoons was neither necessary nor an appropriate expenditure of state and federal funds.

An Explanation of Significant Difference (ESD) was signed by the EPA with concurrence of the MDEQ in the summer of 1996. The ESD incorporates use of the residential cleanup criteria under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and includes the following: no excavation of the lagoons; use of soil vapor extraction (SVE) for treatment of contaminated soils under and around the Wash King Laundry building; groundwater extraction with treatment for organic contaminants only (not metals); no deed restrictions on the area to be remediated; and drainage and removal of sumps in the Wash King Laundry building, along with demolition of the building, if deemed necessary.

The MDEQ completed design activities for the groundwater treatment system during 1996. Construction of the treatment system was put on hold pending receipt of federal funding. The groundwater treatment system was completed and was deemed operational and functional in April 2002.

In 2006, the MDEQ assisted the EPA in conducting a Long-Term Monitoring Network Optimization Evaluation (Optimization Evaluation). On September 29, 2006, the MDEQ authored the First Five-Year Review, wherein many of the recommendations from the Optimization Evaluation were added. Both the optimization report and the Five-Year Review recommended additional activities to ensure protectiveness. Those activities include 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 an additional PCE source area, and installing additional groundwater extraction wells if deemed appropriate.

The MDEQ proposed a grant amendment in 2007 and was awarded additional funds from the EPA for the Long-Term Response Action. The delineation of the additional source area(s) near the former Wash King Laundry building was conducted in 2008 and 2009, revealing PCE concentrations as high as 37,000 ppb in soil and 23,000 ppb in groundwater. These elevated PCE concentrations indicate an intermediate, underlying till unit from approximately 30 to 60 feet below ground surface is a significant, ongoing, and infinite source of PCE. The SVE system was not designed to remediate this vertical extent of PCE contamination. Fifteen additional monitoring wells, 1 extraction well, and 67 injection wells for an in-situ technology and source control were installed. The in-situ technology is now being implemented. The MDEQ and EPA have substantially completed and/or implemented the recommendations and follow-up actions. In the spring of 2010, additional funds were awarded from the EPA for additional in-situ work, an additional extraction well, as well as routine and non-routine operation and maintenance (O & M).

SITE STATUS

Annual costs for O & M of the SVE and groundwater pump and treat remedy system are approximately $150,000. In-situ injections of a biological solution are planned periodically over the remaining long-term remedial action period, which ends in April 2012. The MDEQ continues to monitor groundwater contaminant concentrations twice a year from select monitoring locations to confirm the plume is not expanding, to evaluate the effectiveness of the current treatment system, and to ensure treated groundwater discharge does not have an impact on groundwater resources. Performance monitoring of groundwater will be conducted at select locations on a quarterly basis during the in-situ injection of the biological

solution to evaluate effectiveness. Soil samples from the till source unit will be collected twice from early 2011 and then early 2012 to determine the effectiveness of the bacteria in destroying PCE source material.

The MDEQ and EPA are completing a Remedial System Evaluation. Remedial System Evaluations are conducted at some pump and treat remedy sites across the nation, spearheaded by EPA headquarters. Planning for the next Five-Year Review, due in the fall of 2011 has begun, and drafting the report is scheduled to begin in early spring.

ENFORCEMENT STATUS
In October 1991 Wash King Laundry filed for bankruptcy. There are no other known liable parties.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/31/1993**

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 07/01/1996**

Operation & Maintenance costs were not provided in the ESD. The overall change in remedy included adding SVE for treatment of soils at the Wash King 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 building.

Response Accomplishments: Completed

Alternate Water The potentially responsible party provided a municipal-type water supply for the affected homes and businesses.

Start Date: 01/01/1983 Primary Cost: $35,000 Source: Private

End Date: 01/01/1984 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation State lead RI/FS.

Start Date: 09/10/1987 Primary Cost: $555,813 Source: Federal

End Date: 03/31/1993 Secondary Cost: $0 Source:

Remedial Design State lead Remedial Design.

Start Date: 09/21/1993 Primary Cost: $692,487 Source: Federal

End Date: 01/14/1998 Secondary Cost: $0 Source:

Remedial Action The Remedial Action work is complete and the Remedial Action Report was received by the MDEQ in July 2003.

Start Date: 09/28/1998 Primary Cost: $2,131,773 Source: Federal

End Date: 08/30/2003 Secondary Cost: $236,864 Source: State

5 Year Review The state received funding from the EPA to conduct the Five-Year Review. On September 29, 2006, the MDEQ authored the First Five-Year Review, wherein many of the recommendations from the Optimization Evaluation were added. Both the optimization report and the Five-Year Review 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.

Start Date: 03/28/2006 Primary Cost: $10,000 Source: Federal

End Date: 09/29/2006 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Long Term Remedial Action

The SVE system has reduced concentrations in shallow soil (ground surface to 30 feet below grade) in the vicinity of the former Wash King property and adjacent restaurant property, and now is being operated on an intermittent basis to maximize effectiveness and efficiency. The groundwater pump and treat also continues to operate. The extraction wells utilized for pumping and treating groundwater were rehabilitated in the fall of 2010 in an attempt to restore their maximum effectiveness/zone of capture. Extraction Well EW-5 did not recover as hoped, and additional "jetting" efforts were conducted in February 2011. An evaluation will be conducted in April to determine how effective that effort was. PCE contamination is locked into an intermediate till layer near the former Wash King Laundry and restaurant buildings, approximately 30 to 60 feet below ground surface in what is described as an intermediate till unit. The till unit is an ongoing source that is contaminating groundwater with very high concentrations of PCE; and this source can be viewed as infinite without implementing a more aggressive remedial action. Therefore, in addition to the pump and treat technology, an in-situ technology is being implemented, consisting of a pressurized injection of a biological solution, through a closely spaced grid of 67 injection points. Baseline monitoring data have been collected, and performance monitoring is being conducted to evaluate the effectiveness of the technology utilized.

An additional extraction well (EW-7) was installed in the fall of 2010 with the objective of either supplementing or, if needed, replacing Extraction Well EW-2, which has very limited capture. A current site-wide capture zone analysis will be conducted in the spring of 2011 to evaluate the effective range of the current pump and treat system.

Start Date: 04/17/2002	Primary Cost:	$1,170,000	Source: Federal
End Date: 12/31/2012	Secondary Cost:	$130,000	Source: State

Response Accomplishments: Future Need

5 Year Review

The cost for completing the Five-Year Review is funded by a grant from the EPA.

Start Date: 03/28/2011	Primary Cost:	$0	Source: Federal
End Date: 09/29/2011	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005950-01 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Long Term Remedial Action	$2,111,955	$231,955	$356,400	$1,802,982	$484,930
Remedial Action	$2,368,637	$236,864	$0	$2,370,417	$0
Remedial Design	$692,487	$0	$0	$692,487	$0
Remedial Investigation	$555,813	$0	$0	$555,813	$0
Totals:	$5,728,892	$468,819	$356,400	$5,421,700	$484,930

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E192-01 : Open

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$20,000	$0	$20,000	$0	$0

Cooperative Agreement Number V965855-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$10,000	$0	$0	$9,885	$0
Totals:	$30,000	$0	$20,000	$9,885	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Metamora Landfill
1811 Dryden Road
Metamora , MI

County: Lapeer
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: H9
State Site ID#: 44000005
State Site Score: 36

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 down-gradient) of the site. Some additional development is taking place.

SITE HISTORY
The Metamora Landfill proper is about 25 acres in size. The site was closed in 1980 for failure to meet landfill 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 were also disposed of at the site. Remediation at the site has been handled through two discrete actions called operable units. Operable Unit 1 addresses the remediation of drummed waste and contaminated soils in Drum Area 1 and Drum Area 4. Operable Unit 2 addresses the remediation of the landfill and contaminated groundwater.

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.

A limited hydrogeological investigation funded by the Michigan Environmental Response Act, 1982 PA 307, as amended, was conducted in the mid-1980s. A federally funded remedial investigation (RI) for the site was completed and the report released in the spring of 1989. The feasibility study (FS) was completed in July 1990. A phased FS to evaluate the need for more immediate action on the known and suspected drum disposal areas was also completed. This study recommended the removal and incineration of drummed waste and contaminated soils from the suspected drum disposal areas. In September 1986, the EPA signed a Record of Decision (ROD) requiring remediation of two of five detected drum disposal areas. This removal action, known as Operable Unit 1, began in May 1989.

Operable Unit 1 removal activity entailed the excavation and off-site incineration of drummed waste and contaminated soils from Drum Areas 1 and 4. These two areas were located outside the general refuse areas of the landfill. All associated waste and contaminated soils were also to be transported off-site for incineration. During the course of Operable Unit 1, 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. The state's excavation activity was terminated in December 1990 due to a funding shortfall, which resulted from the increased scope of the project. In addition, as a result of difficulties encountered in finding incineration capacity for the types of wastes uncovered at the Metamora Landfill, approximately 9,600 85-gallon overpacked 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 Defendants Group, entered into a Consent Decree

(Decree) with the EPA to complete the Operable Unit 1 drum removal remedial action (RA), and to perform the Operable Unit 2 landfill and groundwater RA.

In September 1991 an Explanation of Significant Difference (ESD), which allowed incineration of drummed waste and contaminated soils from Drum Area 1, was appended to the ROD but was never implemented. The work in Drum Area 4 had been completed. The PRPs completed the RA for the Drum Areas in the summer and fall of 1994 and shipped excavated drums and only the most heavily contaminated soils to off-site Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA), 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. Approximately 13,000 drums of waste staged on the drum storage pad and hundreds of tons of stockpiled soils were shipped off-site for incineration. In addition, approximately 4,300 drums were excavated from Drum Area 1 during the completion of Operable Unit 1 and disposed of in the same manner. By December 1993 some 11,620 drums, 1,000 tons of polychlorinated biphenyl-contaminated soils, 9,600 tons of otherwise contaminated soils, and 15,000 gallons of hazardous liquid wastes had been shipped off-site for incineration and/or proper disposal.

Approximately $4,133,087 of state funds and $29,742,834 in federal funds were allocated to this project as of December 1993. These funds supported preliminary hydrogeologic investigations, full scale RI activities, the phased FS which led to the decision to perform Operable Unit 1 removal action, a risk assessment and FS to select a final remedy, and the Operable Unit 1 partial removal action. The state completed its cost-recovery actions against the PRPs in 1999 and has recovered $3,101,583 of past state expenditures.

Groundwater contamination is present in multiple aquifers, including the bedrock aquifer in which nearby residential wells are installed. The contamination generally extends from under the landfill to the north. However, the full extent of contaminated groundwater has not been defined. Various industrial-type organic chemicals and heavy metals have been detected and it is expected that the buried industrial waste is acting as a continual source of contamination. A ROD for Operable Unit 2 to install a landfill cap and to address the groundwater contamination was signed in September 1990. The remedy includes a landfill cap compliant with the Hazardous Waste Management Act, PA 64 of 1979, as amended, and installing a groundwater pump and treat system. The ROD also calls for managing landfill gas. The design of the landfill cap was completed in early 2001. A ROD Amendment for the landfill and groundwater operable unit was signed in 2001 calling for monitored natural attenuation as the selected remedial alternative for groundwater, rather than pump and treat, and maintained that landfill gas must be controlled. In April 2002 the MDEQ 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 monitored natural attenuation remedy. Nearby residential wells have been sampled annually by the Lapeer County Health Department and more recently by the MDEQ. In the fall of 2007, 1,4-dioxane was detected in a residential well located north of the northeast portion of the landfill. In the fall of 2009, 1,4-dioxane was detected in three additional residential wells that are sampled on an annual basis. Landfill gas is migrating beyond the property landfill boundaries above the lower explosive limits.

The MDEQ has submitted numerous documents and conducted several meetings and conference calls with the EPA over the past few years in an effort to ensure the ROD and ROD Amendment for Operable Unit 2 were implemented, and to encourage implementation of the Five-Year Review recommendations.

SITE STATUS

The MDEQ strongly believes that an adequate long-term groundwater monitoring network is not in place and the extent of groundwater contamination is not defined. This is inconsistent with the selected monitored natural attenuation remedy and the MDEQ continues to express

those concerns to the EPA. Methane has also migrated beyond the landfill boundary, and that is inconsistent with the ROD and ROD Amendment; however, based on the results from the network of gas probes near the outside of the landfill, the extent of migration appears to be limited to within approximately 100 feet of the landfill. Also, the number of residential wells sampled as part of the annual residential well sampling program that show landfill related contamination in the water supply continues to increase. Sample results from 2006 showed no 1,4-dioxane in the water supply; the number of positive detections has since increased to one, then four, and currently to seven. Indicator parameters that may suggest continued migration or expansion of the contamination are present in even more samples. The selection of monitored natural attenuation as a stand-alone remedy should be reconsidered.

The last Five-Year Review completed by the EPA recognized that long-term protectiveness cannot be demonstrated. The EPA has not yet required the PRPs to fully define the extent of groundwater or methane despite the overwhelming data and decision documents recognizing the additional need for RA and to ensure protectiveness. The issues and recommendations of the Third Five-Year Review, completed in 2004, still have not been implemented; while the Fourth Five-Year Review was completed in 2009, and the MDEQ was unable to concur with that report due to the ongoing issues stated above. The EPA did include MDEQ comments to the Fourth Five-Year Review as an attachment to that document.

Institutional controls have not yet been executed for adjacent properties to prevent unacceptable exposure.

ENFORCEMENT STATUS
In May 1991 a group of PRPs, known as the Metamora Landfill Settling Defendants Group, liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended, entered into a Consent Decree with the EPA to complete RA for Operable Unit 1 (source control) and for Operable Unit 2 (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.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
01	Drummed Waste and Contaminated Soil
02	Landfill Capping & Monitored Groundwater Natural Attenuation

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The initial Five-Year Review concluded that the remedies selected were protective of human health and the environment.

Start Date: 06/15/1993	Primary Cost:	$0	Source:
End Date: 08/24/1993	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The Second Five-Year Review Report was completed on September 14, 1999.

Start Date: 06/15/1999 Primary Cost: $0 Source:
End Date: 09/14/1999 Secondary Cost: $0 Source:

5 Year Review The Third Five-Year Review report concludes that the remedies are protective of human health and the environment, but recognizes that there are outstanding issues relating to installing an adequate groundwater monitoring network and delineating the extent of elevated concentrations of methane.

Start Date: 05/13/2004 Primary Cost: $0 Source:
End Date: 09/27/2004 Secondary Cost: $0 Source:

5 Year Review The MDEQ documented its disagreement with where the site stands for this Fourth Five-Year Review in a letter dated August 17, 2009.

Start Date: 01/30/2009 Primary Cost: $0 Source:
End Date: 09/23/2009 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review Future date for Fifth Five-Year Review of site.

Start Date: 01/01/2014 Primary Cost: $0 Source:
End Date: 09/23/2014 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Drummed Waste and Contaminated Soil

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/02/1986**

In September 1986 the EPA signed a ROD requiring remediation of two of five detected drum disposal areas. This removal action, known as Operable Unit 1, 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 RCRA incinerator.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 09/05/1991**

This 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 08/28/1996**

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 Operable Unit 2 landfill cap. This remedy includes installation of a groundwater collection and treatment system as well as long-term groundwater monitoring.

OPERABLE UNIT 01: Drummed Waste and Contaminated Soil

Response Accomplishments: Completed

Remedial Action In 1986 the EPA signed a ROD (Operable Unit 1 ROD) requiring remediation of two of the detected drum areas. This removal action, known as Operable Unit 1, 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. These two areas were located outside the general refuse areas of the landfill. By December 1990 approximately 25,000 drums and 12,500 tons of contaminated soils had been excavated. The excavation activity at Operable Unit 1 was terminated in December 1990 due to a funding shortfall. In addition, as a result of difficulties encountered finding incineration capacity for the types of wastes uncovered at the landfill, 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.

Start Date: 01/01/1982	Primary Cost:	$28,702,704	Source: Federal
End Date: 10/28/1994	Secondary Cost:	$2,874,382	Source: State

Remedial Investigation Remedial Investigation to determine the nature of the drummed wastes and contaminated soils.

Start Date: 03/15/1985	Primary Cost:	$1,258,705	Source: State
End Date: 07/15/1990	Secondary Cost:	$927,563	Source: Federal

Remedial Design 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 RCRA incinerator.

Start Date: 01/15/1987	Primary Cost:	$625,678	Source: Federal
End Date: 01/15/1988	Secondary Cost:	$0	Source:

Remedial Action In May 1991 a group of PRPs, known as the Metamora Landfill Settling Defendants Group, entered into a Decree with the EPA to complete Operable Unit 1 and perform Operable Unit 2. The PRPs completed Operable Unit 1 in 1994 and shipped excavated drums and the most heavily contaminated soils off-site to a RCRA licensed incinerator.

Start Date: 05/01/1991	Primary Cost:	$0	Source:
End Date: 12/31/1994	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Landfill Capping & Monitored Groundwater Natural Atten

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/28/1990**

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.

OPERABLE UNIT 02: Landfill Capping & Monitored Groundwater Natural Atten

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 09/27/2001**

The ROD amendment includes a monitored natural attenuation alternative to groundwater remediation. The MDEQ concurrence is contingent upon an adequate groundwater monitoring network being installed. Well installation to complete the network will start in late summer of 2002.

Response Accomplishments: In Progress

Remedial Design A final long-term groundwater monitoring network has not yet been installed and additional groundwater monitoring wells are needed to delineate the plume and to ensure contaminated groundwater does not affect residents. In addition, the extent of methane migrating away from the landfill has not been determined and enhancement to the landfill cap system is necessary.

Start Date: *05/01/1991* Primary Cost: $0 Source: Private

End Date: *09/14/2010* Secondary Cost: $0 Source:

Remedial Action Construction of the landfill cap is complete. Landfill gas monitoring is being conducted on a quarterly basis; however, the agencies have discussed the inability of the passive gas system in reducing landfill gas concentrations, and there is some agreement that a more active gas management system is necessary. Additional gas probes are required to delineate the extent of elevated methane levels. The extent of impacted groundwater has not been delineated and an adequate long-term groundwater monitoring network is still being developed.

Start Date: *05/01/1998* Primary Cost: $0 Source: Private

End Date: *01/31/2010* Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance 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 nonetheless being conducted on a quarterly basis for both methane and groundwater. The state was not able to concur with the O & M plan being implemented. Annual sampling of residential wells in the area is also conducted. In the fall of 2007, 1,4-dioxane was detected in a residential well during the annual sampling event, and in 2009 three additional residences had 1,4-dioxane detected in their drinking water supply, further supporting ongoing migration of contaminated groundwater.

Start Date: *10/01/2002* Primary Cost: $0 Source: Private

End Date: *10/01/2032* Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005836-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$31,553,785	$2,874,382	$0	$31,553,785	$0
Remedial Design	$62,541	$0	$0	$62,541	$0
Remedial Investigation	$2,209,551	$1,258,705	$0	$1,262,216	$0
Totals:	$33,825,877	$4,133,087	$0	$32,878,542	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$31,235	$0	$20,185	$31,235	$20,185

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$95,756	$0	$0	$94,501	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,635	$0	$0	$8,634	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$21,462	$0	$0	$21,462	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$13,735	$0	$0	$13,735	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$200,000	$0	$0	$199,884	$0
Totals:	$370,823	$0	$20,185	$369,451	$20,185

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Grand Traverse Overall Supply
10725 Cherry Bend Road
Greilickville , MI

County: Leelanau
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: 3G
State Site ID#: 45000004
State Site Score: 41

LOCATION
The Grand Traverse Overall Supply Company site is located in Greilickville, Michigan, approximately one and one-half miles north of the city limits of Traverse City just west of Highway M-22, on the north side of Cherry Bend Road and south of Cedar Creek. The area surrounding the Grand Traverse Overall Supply Company facility is primarily residential. The 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.

SITE HISTORY
The facility, originally known as Pick Wick Wipers, began operating in 1948 and, in 1950, became Grand Traverse Overall Supply Company. Dry cleaning operations began around 1968. Until December 1977, the laundry and process wastes 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. Dry cleaning was discontinued in 1987. When perchloroethylene (PCE), trichloroethylene (TCE), and 1,2-dichloroethene were detected in the water supply of Norris Elementary School in 1978, the likely source was traced to the Grand Traverse Overall Supply Company.

Follow-up investigation revealed that ten private drinking water wells were impacted. The contaminated private wells were replaced by new wells that extended into a deeper uncontaminated semi-confined aquifer. The Michigan Department of Natural Resources (MDNR) performed some investigative work during the 1980s and 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. The concentrations of TCE and PCE detected in residential wells near the site had dropped sharply since the initial sampling in 1978. For example, the maximum concentrations of TCE and PCE detected in residential wells sampled in 1978 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 PCE. The MDNR was concerned that the RI did not adequately characterize the extent of contamination at the site. Of particular concern to the MDNR was the absence of samples to evaluate possible vertical stratification of contamination within the aquifer. When no resolution of the MDNR's concerns was achieved, the MDNR declined to concur with the EPA Record of Decision (ROD), signed in February 1992, which determined that no-action with limited monitoring was the appropriate response to contamination at the site.

A Baseline Environmental Assessment was performed in 1996 prior to the sale of the site. Significant concentrations of PCE were detected in soil samples collected from beneath the Grand Traverse Overall Supply Company 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, the MDEQ received a citizen's inquiry regarding the quality of drinking water in the vicinity of the Grand Traverse Overall Supply Company site. The local health department sampled area residential wells but no contaminants from Grand Traverse Overall Supply Company were found.

In 1998, the MDEQ obtained funds from the EPA to perform the Five-Year Review at the site to determine the effectiveness of the selected remedy. Determining that additional information was needed for the Review, the MDEQ obtained $250,000 from the state to conduct an RI at the Grand Traverse Overall Supply site in conjunction with the Five-Year Review. The RI was initiated in January 2001 with the selection of a Level of Effort Contractor. Phase I of the RI was undertaken from October 2001 into early December 2001. The Phase I investigation included collection of groundwater samples from the existing monitoring wells and vertical aquifer sampling from up to 21 locations around the former Grand Traverse Overall Supply Company facility and the Norris Elementary School. The groundwater samples were analyzed for volatile organic compounds 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 1980's. However, a second groundwater plume of volatile organic compounds, at concentrations which exceed current 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, the MDEQ obtained an extension from the EPA to complete the Five-Year Review.

In August 2002, a state-funded Phase II investigation was conducted at the site. Phase II involved additional vertical aquifer sampling via the Geoprobe in an attempt to delineate the plume width, and collection of soil gas samples along the shoreline where Geoprobe access was not feasible. The final portion of Phase II was completed in January 2003. This involved the installation of three permanent monitoring wells, the collection of residential well samples from properties adjoining and downgradient of the site, and collection of soil/gas samples from the condominium complex located at the edge of the bay. All of this information was included in a Phase II Technical Memorandum document.

The Five-Year Review report was completed in June 2004 and submitted to the EPA. The Five-Year Review report stated the current No Action remedy was not protective of the human health and environment and recommended 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 NREPA. The EPA declined to accept the final report as written by the MDEQ.

The EPA decided, based upon the information gathered from the MDEQ's 2001 and 2002 investigations, to undertake and continue remedial activity at the site. The EPA's initial response was to conduct indoor air sampling at the Grand Traverse Overall Supply facility in early March 2005. A second and third air sampling investigation were conducted at the adjacent 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 Grand Traverse Overall Supply Company building and the school exceed indoor air screening criteria and represent 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 Grand Traverse Overall Supply Company building to the school, the EPA installed a Soil Vapor Extraction (SVE) treatment system in November 2005. The EPA operated and maintained

the SVE system for one year. In April 2007, the MDEQ took over the operation and maintenance (O&M) of the SVE system until August 2008.

During the summer of 2005, the EPA conducted vertical aquifer sampling with a Geoprobe unit to complete the delineation of the groundwater plume from the Grand Traverse Overall Supply Company 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. Monitoring well installation was completed in December 2005 and the EPA conducted a round of groundwater sampling. The MDEQ undertook groundwater sampling in October 2006, May 2007, November 2007, and May 2008. In October 2006, the EPA conducted additional indoor air investigation in the West Bay Covenant Church, located south of the Grand Traverse Overall Supply Company site. The EPA conducted a limited indoor air investigation in several condominium buildings located east and downgradient of the Grand Traverse Overall Supply Company site in early 2007, as well as a second indoor air sampling event at the church.

In June 2007, the EPA decided to undertake a remedial action to remediate the Grand Traverse Overall Supply Company 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 Proposed Plan in November 2007. Both were presented to the public in a public meeting held at the end of November.

A draft ROD was developed in January 2008 and was finaled and signed in March 2008. The selected remedy included the following to be undertaken by the EPA Emergency Removal Program: demolition of the Grand Traverse Overall Supply Company building (completed in late December 2007) with installation of a security fence around the site and excavation of contamination source soils. A partial excavation was completed in the spring of 2008. Operation of the current SVE system was maintained by the MDEQ through July 2008 and was resumed by the EPA in August 2008.

The initial round of groundwater sampling of the contamination plume and air sampling for buildings located over the plume was conducted by the EPA in June 2009. Additional source area soil sampling was also conducted in June 2009 to assist the Petition to Delist Hazardous Waste review process.

SITE STATUS

In June 2009, the EPA submitted a Petition to Delist Hazardous Waste (Petition) to the MDEQ to determine if the remaining on-site source contamination soils are not considered a hazardous waste and can be excavated and disposed in a local landfill. The MDEQ review of the information provided in the petition was completed and approval of the Petition was granted in June 2010. With MDEQ approval of the Petition, the EPA began development of a ROD Amendment to address the remaining on-site contaminated source area soils. The ROD Amendment is anticipated to be signed in early 2011 and the excavation of the remaining contaminated soils is also anticipated to be completed in 2011.

The EPA continued the quarterly groundwater and air vapor monitoring and operation of the SVE system through 2010.

The remaining 2008 ROD remedy to be addressed is the installation of a groundwater pump and treatment system, which is anticipated to begin in mid 2011. Funding for the ROD actions will be provided in a State Superfund Contract, with the State providing a ten percent match for ten years.

SPECIAL CONSIDERATIONS
During 2007, the Grand Traverse Overall Supply Company reverted to the township due to non-payment of property taxes.

OPERABLE UNITS

00	Entire Site
01	Off-Site Groundwater Plume

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/01/2008**

The EPA has developed a new ROD for the Grand Traverse Overall Supply site. The remedy includes the following: demolition of the Grand Traverse Overall Supply 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.

Response Accomplishments: Completed

5 Year Review The state prepared a Five-Year Review that concluded that the site remedy was not protective of human health and the environment. The EPA disagreed and did not accept the report.

Start Date: 01/31/2003 Primary Cost: $30,000 Source: Federal
End Date: 06/18/2004 Secondary Cost: $0 Source:

Interim Response 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.

Start Date: 10/10/2005 Primary Cost: $2,754,000 Source: Federal
End Date: 04/01/2007 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response 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.

Start Date: *09/01/2007* Primary Cost: $0 Source: Federal

End Date: *07/15/2008* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Off-Site Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 02/03/1992**

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 Accomplishments: Completed

Alternate Water Former owner/operator of Grand Traverse Overall Supply Company 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. No state funding was involved.

Start Date: *01/01/1979* Primary Cost: $0 Source: Private

End Date: *12/01/1979* Secondary Cost: $0 Source:

Remedial Investigation The EPA conducted an RI/FS.

Start Date: *04/09/1987* Primary Cost: $1,340,000 Source: Federal

End Date: *02/03/1992* Secondary Cost: $0 Source:

Remedial Investigation Sampled all existing monitor wells, vertical aquifer sampling, installation of three additional monitoring wells, soil gas survey, and residential well sampling.

Start Date: *01/01/2001* Primary Cost: $250,000 Source: State

End Date: *01/31/2003* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Off-Site Groundwater Plume

Response Accomplishments: Completed

Remedial Investigation

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.

Start Date: 01/02/2005	Primary Cost:	$0	Source: Federal
End Date: 12/30/2006	Secondary Cost:	$0	Source:

Remedial Investigation

After one year of groundwater monitoring and sampling by the EPA, the MDEQ 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.

Start Date: 10/01/2006	Primary Cost:	$100,000	Source: State
End Date: 09/30/2008	Secondary Cost:	$0	Source:

Operation and Maintenance

The MDEQ took over the O&M of the treatment system after the EPA completed installation. The MDEQ operated the SVE system until August 1, 2008, when the EPA resumed O&M under the new ROD remedy for the site.

Start Date: 04/01/2007	Primary Cost:	$200,000	Source: State
End Date: 08/01/2008	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Action

As part of the ROD remedy, the EPA resumed O&M of the SVE system in August 2008. Future ROD requirements to be completed include the following: installation of a pump and treat system to remediate the groundwater contamination plume and excavate 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 required state match will be provided through a Superfund State Contract.

Start Date: 08/01/2008	Primary Cost:	$2,245,860	Source: Federal
End Date: 08/01/2018	Secondary Cost:	$249,540	Source: State

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$30,000	$0	$0	$29,993	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,000	$0	$0	$20,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$59,925	$0	$0	$58,670	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$15,839	$0	$0	$15,839	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,580	$0	$6,233	$8,580	$6,233

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$4,995	$0	$0	$4,995	$0
Totals:	$139,339	$0	$6,233	$138,077	$6,233

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$2,495,400	$249,540	$23,047	$0
Totals:	$2,495,400	$249,540	$23,047	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Rasmussen's Dump Site
9040 Spicer Road
Brighton , MI

County: Livingston
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: B4
State Site ID#: 47000025
State Site Score: 32

LOCATION
The Rasmussen's Dump site (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 property is located immediately east of the adjacent Spiegelberg Landfill Superfund site.

SITE HISTORY
The Rasmussen 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. Drummed and other industrial wastes were also disposed of at other locations on-site as well. 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 was detected in a 1981 study conducted by the Michigan Department of Natural Resources (MDNR; now known as the Michigan Department of Environmental Quality). The EPA's Field Investigation Team conducted a site inspection in 1982 and the site was scored and placed on the Federal National Priorities List of hazardous waste sites in 1983. The EPA and MDNR commenced a remedial investigation (RI) and feasibility study (FS) at the site in 1984.

In October and November 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. Some of the common chemical contaminants found at the site include: chlorobenzene, 1,2-dichloroethylene, 1,1,1-trichloroethane, toluene, ethylbenzene, trichloroethylene, benzene, vinyl chloride, and methylene chloride.

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 Record of Decision (ROD) for the site was issued in March 1991. The final remedy required installation of a cap on the site, groundwater purging

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. Construction was completed in September 1995. The construction of the groundwater treatment system began in July 1995 and was completed in September of that same year; operation and maintenance (O & M) of those systems is ongoing. The final inspection for the site was conducted in February 1996. Residential well monitoring by the PRPs was discontinued in 1997. However, the Livingston County Health Department 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 vinyl chloride was present at a location and depth not previously identified.

A ROD amendment was signed in 2001. In general, this amendment called for shutting down the groundwater extraction/treatment system and replacing it with an in-situ ozone/oxygen oxidation system to more effectively treat remaining contamination. Groundwater samples are collected on a quarterly basis to evaluate the effectiveness of the remedy being implemented.

There are two known areas of groundwater contamination, and they are generally referred to as the northern plume and the southern plume. Groundwater analytical results indicated that additional investigation was necessary, for both plumes. In 2002, additional wells and sparge points were installed to supplement the existing network for the northern groundwater contaminant plume. In August 2004, groundwater was vertically profiled at four locations near the southern groundwater plume, and monitor wells were installed at two of those locations with the intent to better delineate the western extent of groundwater contamination; however, one of the wells was screened some 20 feet above the zone of contamination and results from that well are not considered representative. Additional borings were also conducted to better define the downgradient extent of the northern groundwater contaminant plume. The treatment system monitoring program and location and number of sparging points needs to be evaluated for each plume, and modified as appropriate to assure the system's adequacy in remediating the contaminated groundwater. Due to some expansion of the northern plume, a new Rasmussen residential well at another location cross-gradient from groundwater flow direction was necessary.

The First Five-Year Review process was completed on August 28, 2000. The findings indicated that groundwater contamination was not being fully captured by the pump and treat system. Between the first and second reviews, the site was in transition. Additional investigation was conducted to better define the extent of conamination and the treatment system was changed from pump and treat to sparging. The Second Five-Year Review was completed on August 28, 2005. That report indicated an Institutional Control study was needed, and that groundwater monitoring was necessary to determine if either the monitoring network or sparging systems needed to be modified.

SITE STATUS

The Third Five-Year Review Report (Report) was completed in 2010. MDEQ comments were included with the document as an attachment. It is expected that the issues and recommendations detailed in the Report will be addressed in a timely manner. The MDEQ is involved in discussion with the EPA in an effort to schedule a meeting with the PRPs to begin addressing the migrating groundwater contamination and potential treatment system deficiencies.

ENFORCEMENT STATUS

The PRPs for this site are completing the work at the site pursuant to the amended ROD.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
1	RI/FS Soil/Groundwater
2	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/28/1991**

Michigan Act 64 clay cap. Deed restrictions. Soil costs: Capital $2,940,247. Annual O & M for soil: $53,043. Estimated capital expenditure for groundwater remedy is estimated at $2,740,000. The present worth for annual O & M for groundwater pump and treat system is $4,580,000.

Response Accomplishments: Completed

Remedial Investigation

A 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 the MDNR, which provided $249,482 in advance match.

Start Date: 05/30/1984	Primary Cost:	$866,000	Source: Federal
End Date: 03/28/1991	Secondary Cost:	$409,962	Source: State

Interim Response

In January 1985 the EPA conducted a removal of approximately 3,000 drums of solid and liquid waste and 270 cubic yards of PCB-contaminated soils. A fence was constructed by the state in 1986.

Start Date: 01/15/1985	Primary Cost:	$506,000	Source: Federal
End Date: 06/15/1986	Secondary Cost:	$52,150	Source: State

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Completed

Remedial Design The RD for soil remediation conducted by the PRPs. The response actions were divided into two phases. The first phase was soil remediation. The federal RD expenditures for the Operable Unit 1 were estimated at one-half of the $145,000 expended.

Start Date: 06/30/1992	Primary Cost:	$0	Source: Private
End Date: 06/30/1994	Secondary Cost:	$72,500	Source: Federal

Remedial Action The remedial action 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.

Start Date: 03/16/1995	Primary Cost:	$0	Source: Private
End Date: 11/27/1996	Secondary Cost:	$56,000	Source: Federal

5 Year Review

Start Date: 01/01/2000	Primary Cost:	$0	Source: Federal
End Date: 08/28/2000	Secondary Cost:	$0	Source:

5 Year Review A Second Five-Year Review report was completed August 28, 2005. The MDEQ identified concerns with groundwater monitoring at the site, including concerns about plume migration onto the Spiegelberg Landfill Superfund Site. The EPA has yet to make follow-up on these issues a priority.

Start Date: 10/01/2004	Primary Cost:	$0	Source:
End Date: 08/28/2005	Secondary Cost:	$0	Source:

OPERABLE UNIT 1 : RI/FS Soil/Groundwater

Response Accomplishments: Completed

Remedial Design The RD for groundwater pump and treat was conducted by the PRPs. The pump and treat phase was conducted following Operable Unit 1 for the soil. The federal expenditures for the Operable Unit 2 RD were estimated to be one-half of the $145,000 expended by the EPA.

Start Date: 02/14/1992	Primary Cost:	$0	Source: Private
End Date: 03/31/1995	Secondary Cost:	$72,500	Source: Federal

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 07/20/2001**

Original extraction/treatment system was not effective. In-situ ozone/oxygen oxidation sparging replaces pump and treat system from original ROD. Additional monitor wells and sparge points were added in 2002/2003 to supplement the monitoring and treatment systems. Groundwater samples continue to be collected on a quarterly basis to evaluate the effectiveness of the treatment system.

Response Accomplishments: Completed

Remedial Investigation

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.

Start Date: *10/01/1999*	Primary Cost:	$0	Source: Private
End Date: *01/14/2006*	Secondary Cost:	$0	Source:

5 Year Review

Start Date: *10/20/2009*	Primary Cost:	$0	Source:
End Date: *03/18/2010*	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Groundwater

Response Accomplishments: In Progress

Remedial Action The PRPs initiated installation of the oxygen/ozone oxidation treatment system in the summer of 2000. The first phase of the system was operating in early 2001. The public comment period on the ROD amendment was not held until May 2001. Agencies concurred on the new technology. The system was supplemented in 2003 based on analytical results obtained from existing and new monitor wells and vertical aquifer sampling sample locations. Two additional monitor wells were installed in 2004 to delineate the western extent of the southern groundwater plume.

Results from recent sampling events indicate that the extent of groundwater contamination has not been defined and that it is continuing to migrate beyond the property boundary. The southern treatment system, in particular, has shown that it is not effectively halting migration or destroying contamination. Although the agencies met with the potentially liable parties in February 2007 to discuss the installation of additional monitor wells and expanding the sparging system to address data gaps and concerns about effectiveness of the treatment system, no progress has been made to date.

Start Date: 07/15/2000	Primary Cost:	$0	Source: Private
End Date: 03/01/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance The O & M of the landfill cap is being conducted by the PRPs and maintenance will be needed in perpetuity.

Start Date: 01/01/1995	Primary Cost:	$0	Source: Private
End Date: 01/01/2025	Secondary Cost:	$0	Source:

Operation and Maintenance The O & M of the groundwater treatment system is being conducted by the PRPs. The ROD estimated that it could take up to 30 years to remediate the groundwater contamination. It is unknown at this time exactly how long the groundwater treatment system will need to be operated. Because groundwater contamination is known to be migrating, the MDEQ is waiting for and encouraging a response from the PRPs and EPA in how to modify the sparge system.

Start Date: 11/28/1996	Primary Cost:	$0	Source: Private
End Date: 11/28/2026	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005777-02 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$1,133,847	$249,482	$0	$1,100,132	$0
Totals:	$1,133,847	$249,482	$0	$1,100,132	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$41,738	$0	$0	$41,403	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,555	$0	$0	$7,555	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$1,545	$0	$616	$1,545	$1,545

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$125,000	$0	$0	$121,428	$0
Totals:	$175,838	$0	$616	$171,930	$1,545

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Shiawassee River
M59 to State Road
Howell , MI

County: Livingston
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: 1D
State Site ID#: 47000027
State Site Score: 41

LOCATION
The Shiawassee River Superfund site includes the former Cast Forge Company (CFC) 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 ten miles to Steinacker Road. The site includes the plant property, polychlorinated biphenyl (PCB) contaminated riverbed sediments, as well as associated floodplain and wetland soils and sediments.

SITE HISTORY
Since 1969, CFC (now Hayes Lemmerz, International) manufactured aluminum cast wheels at the facility. Until 1973, wastewater contaminated by hydraulic fluids containing PCBs was discharged by CFC 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 CFC 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 CFC 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. Although sampling in recent years shows declining levels of PCB in fish, concentrations in some species are still above acceptable federal Food and Drug Administration levels. Advisories issued by state health officials against 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 the MDEQ in May 2000. The MDEQ 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 the MDEQ 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 "hotspots."

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 September 28, 2001. The ROD called for the excavation and disposal of PCB-contaminated soil at the former CFC facility, within the river, and within the floodplain.

The MDEQ 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 are 5.0 parts per million (ppm) within the river and 10 ppm within the floodplain; whereas the MDEQ levels are 0.33 ppm and 5.0 ppm, respectively. 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 at #25 within the next half mile.

During May 2003, the EPA, via their potentially responsible party's (PRP's) contractor, began identifying the "hotspots" 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 (Judgement) which placed responsibility on the MDEQ 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 MDEQ for incurred costs. The initial results of the sampling indicates that the "hotspot" areas are more extensive than previously identified, and new "hotspots" 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, the MDEQ, with a Level of Effort contractor, completed sampling from the 1.5 mile point downstream to the Shiawasseetown Dam. A total of 349 samples, including 37 duplicate samples were collected. Of the samples, 104 sediment samples were above the preliminary remediation goal (PRG) of 0.33 ppm and 26 floodplain samples were detected above the PRG 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 Residential and Commerial 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 hotspots was completed within 6 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 hotspot at transect #25 within the next half mile. Post remediation monitoring is planned to ensure that natural recovery of the

river is occurring.

The MDEQ 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 onsite within the area of the EPA removal. Current state funding has been used to further delineate those spots around the facility, and the first mile downstream from the facility. Sampling began 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 contamination. A report of the findings was submitted for review in February 2007. Additional removal was determined necessary by the MDEQ.

Due to a lack of sufficient funding, the MDEQ is not able to proceed with the proposed removal action that would go above-and-beyond the EPA's action for the first reach of the Shiawassee River. Future considerations will be made pending the re-establishment of stable long-term funding for cleanup projects in Michigan.

SITE STATUS

The EPA concluded the site's first Five-Year Review on August 27, 2009. Results of that review are documented in a Five-Year Review Report available on the EPA's website. 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 in fact occurring. The MDEQ has consistently taken the position that natural attenuation is not occurring, even after the additional removal activities that occurred in 2004 and 2005. The EPA did not take steps necessary to confirm or have the PRPs confirm that fish being caught from the Shiawassee River are not being consumed. The MDEQ will continue to press for more detailed monitoring activities on the river to assist the EPA in making a determination on whether additional remedial activities are necessary.

ENFORCEMENT STATUS

A Consent Judgment, between the state of Michigan and the CFC, 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 refused to commence the remedial action (RA) because the Consent Judgment issued in 1981, by the MDEQ, accepted responsibility for cleanup at the site after the initial cleanup at the site occurred. The EPA, through counsel, ordered the PRPs to complete the RA, then seek cost recovery from the MDEQ.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/28/2001**

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 CFC 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 CFC facility. The MDEQ submitted a ROD non-concurrence letter to the EPA in 2003.

Response Accomplishments: Cancelled

Remedial Action Plans to actually begin removal activities in the first stretch of the river cancelled due to depletion of remaining state funding for cleanup work in Michigan.

Start Date: *03/31/2005* Primary Cost: $0 Source: State
End Date: *01/30/2009* Secondary Cost: $0 Source:

Response Accomplishments: Completed

Interim Response Removal of lagoons, soils and some contaminated sediments.

Start Date: *01/01/1982* Primary Cost: $750,000 Source: Private
End Date: *12/30/1982* Secondary Cost: $0 Source:

Remedial Investigation State lead.

Start Date: *01/01/1987* Primary Cost: $1,294,760 Source: Federal
End Date: *12/30/1997* Secondary Cost: $0 Source:

Remedial Investigation EPA lead supplemental RI.

Start Date: *01/01/1999* Primary Cost: $20,240 Source: Federal
End Date: *09/28/2001* Secondary Cost: $0 Source:

Remedial Design

Start Date: *05/01/2002* Primary Cost: $0 Source: Private
End Date: *09/01/2003* Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Action Investigation and removal of contaminated soils and sediments from selected "hotspots" for 1.5 miles from plant site downstream. The PRPs provided funding to EPA to conduct the removal.

Start Date: 09/01/2002 Primary Cost: $594,000 Source: Private

End Date: 09/25/2005 Secondary Cost: $0 Source:

Remedial Investigation 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.

Start Date: 07/01/2003 Primary Cost: $906,000 Source: State

End Date: 03/31/2005 Secondary Cost: $0 Source:

5 Year Review First Five-Year Review 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.

Start Date: 10/30/2008 Primary Cost: $0 Source:

End Date: 08/27/2009 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Action Identification and removal of contaminated sediments from the plant site through mile 8 downstream of the facility (may be able to rely on state investigation if too much time has not elapsed from initial plan to conduct removal). Project may be reinitiated if future stable funding source for cleanups in Michigan is identified.

Start Date: 10/01/2011 Primary Cost: $12,000,000 Source: State

End Date: 09/30/2013 Secondary Cost: $0 Source:

5 Year Review Second Five-Year Review scheduled.

Start Date: 10/30/2013 Primary Cost: $0 Source:

End Date: 08/27/2014 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005933-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$1,294,760	$0	$0	$1,294,760	$0
Totals:	$1,294,760	$0	$0	$1,294,760	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$32,796	$0	$0	$32,109	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,000	$0	$0	$2,840	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$41,900	$0	$0	$41,861	$0
Totals:	$84,696	$0	$0	$76,810	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Spiegelberg Landfill
Spicer Road
Hamburg , MI

County: Livingston
MDEQ District Location: Lansing
Managed By: RRD-Superfund

Federal Site Code: A6
State Site ID#: 47000035
State Site Score: 26

LOCATION
The privately owned Spiegelberg property consists of approximately 114 acres and is located on Spicer Road about 40 miles west of Detroit and 5 miles south of Brighton, in Green Oak Township, Livingston County, Michigan. The property is surrounded by woods, open fields, and rural residences. The Rasmussen Dump Superfund Site is located immediately adjacent and east of the Site.

SITE HISTORY
Gravel mining at the Spiegelberg property predated 1940. Both domestic and paint sludge wastes were disposed of on the property as early as 1966 and at least through 1977. The paint sludge disposal area covered a section of about one-half acre in the northern third of the property at the base of a sand and gravel quarry, which contaminated groundwater beneath the Site. The paint sludge area and contaminated groundwater became the Spiegelberg Landfill Superfund Site (Site). Gravel mining continues at the Site in areas away from contaminant sources.

The Spiegelberg Site was placed on the National Priorities List in December 1982. A remedial investigation (RI), initiated in December 1984, was performed by the Michigan Department of Natural Resources (MDNR). The RI identified one source of contamination on-site: a paint sludge disposal area with impacted underlying soils. Sampling and analysis of soils indicated high concentrations of organic and inorganic compounds. The detection of organic constituents in downgradient groundwater monitor wells and mobility characteristics of the compounds found indicated that transport via groundwater was the major exposure pathway at the Site.

Paint Sludge Area: 1986 Source Control Record of Decision (ROD)

A phased feasibility study was prepared for the remedy selection process and in September 1986, a ROD was signed, which called for the removal and off-site treatment of wastes and contaminated soils in the Paint Sludge Area. The EPA had conducted a search for ptotentially responsible parties (PRPs) and on December 12, 1985, the Ford Motor Company, James Spiegelberg, and Al Pearson were sent Special Notice Letters. On December 28, 1988, a Consent Decree for the source-control operable unit was entered into between the state of Michigan, EPA, and Ford Motor Company. The Ford Motor Company proposed to fund the removal of wastes and all soils down to groundwater in the Paint Sludge Area, a remedy that exceeded the ROD requirements.

Groundwater: 1990 Remedial Action ROD

Public comment on the Proposed Plan for the groundwater pump and strip remedy extended from August 31, 1989, through October 31, 1989 (at the request of the PRPs). The remedial action (RA) selected by the EPA was embodied in the June 29, 1990 ROD, for which the state of Michigan gave its concurrence. The EPA entered into negotiations with the PRPs in January 1991, for the performance of the remedial design (RD)/RA. Negotiations were extended at the PRP's request twice but failed to achieve a consent decree. On July 8,

1991, the EPA issued a 106 Unilateral Order to the Ford Motor Company and James Spiegelberg to finance and undertake the cleanup of contaminated groundwater at the Site. The Ford Motor Company and James Spiegelberg agreed to perform the RD and RA.

The response action selected in the 1990 ROD is a treatment remedy which addressed the threat posed by the groundwater contamination beneath the Site and included the following components:

a. Procurement and implementation of institutional controls/deed restrictions prohibiting the use of groundwater underlying the Site; any residential or commercial use of the property that may interfere with the remedy at the Site; and any other activity which may damage any RA component of the remedy.

b. Implementation of a RD Data Collection Program to confirm the hydrogeologic site characterization and chemical characterization of groundwater, and to conduct field tests and treatability studies for the purpose of RD. The results of the RD Data Collection Program were to supplement the existing data and be used to design the treatment system and extraction/injection well networks.

c. Construction of a groundwater extraction system to capture and extract groundwater for treatment from the affected groundwater zones.

d. Construction of a groundwater treatment plant to treat the extracted groundwater prior to reinjection.

e. Construction of a groundwater injection system to discharge the treated groundwater. The injection system was to provide for a "closed loop" system and enhance movement of the affected groundwater towards the extraction wells.

f. Construction of fencing to secure the constructed treatment plant.

g. Implementation of all operation, maintenance and monitoring activities for the completed RA activities including, but not limited to, operation and maintenance of the groundwater treatment plant and monitoring the progress of groundwater remediation.

h. Implementation of a residential well monitoring program.

Remedy Implementation: 1986 Source Control ROD

Excavation commenced on August 10, 1989. The waste paint area was excavated to the surveyed groundwater level and to the visual lateral extent of the waste. Clean soil from the cutback around the periphery of the waste pit was placed on the soil storage cell and used for backfill at the completion of the source control activities. Between September 20, 1989, and November 15, 1989, a total of 2,459 loads of paint sludge and debris totaling 58,500 tons were transported and disposed of at either the Wayne Disposal or CID waste facilities. Project closeout activities consisted of backfilling operations, final grading, disposal of decontamination wash waters and the removal of all Site facilities including all concrete pads, construction trailers and fencing. The final inspection of the Site was completed by the MDNR and EPA on February 8, 1990. Twelve private wells near the Site have been monitored periodically by the Livingston County Health Department. There has been no migration of contaminated groundwater to these wells.

Remedy Implementation: 1990 Groundwater ROD

Following an on-site pump and strip treatment pilot plant the RA construction activities began in November 1994. Construction included installation of an extraction and reinjection system and construction of a process building and groundwater treatment equipment. The

treatment facility was fenced. The pre-final construction inspection conducted by the MDNR and EPA on June 9, 1995, concluded that the extraction, reinjection, and treatment systems were constructed as designed and were operational.

In March 1998, the PRPs petitioned the EPA to adopt intermittent pumping for the treatment system because monitoring showed that groundwater contaminant concentrations were below applicable criteria. An explanation of significant differences for intermittent pumping and semiannual sampling was issued in October 1998, based on the monitoring results that indicated only trace contamination was present in the groundwater plume, and that the contaminant plume had not migrated beyond the Spiegelberg property limits. Intermittent operation of the groundwater remediation system commenced on September 20, 1998. The EPA requested additional monitoring wells be included downgradient of the plume centerline to further confirm that the plume was being contained as specified in the ROD. The EPA approved the PRP's Operating Plan on September 14, 1998. This Plan called for confirmatory hydraulic monitoring, additional hydrogeologic investigations (including vertical aquifer sampling), installation of additional monitoring wells, and a contingency plan. The confirmatory sampling report was submitted in January 1999, and the hydraulic investigation results were submitted in April 1999. The results of volatile organic compound (VOC) analysis from all groundwater monitoring events post-intermittent-pumping mode have shown no exceedences of contaminant concentrations in either the upper or lower aquifers that would trigger contingency requirements.

Twelve groundwater monitoring events were conducted since 1998 during a "confirmation monitoring period" to demonstrate compliance with the 1998 Cleanup Standards. Demonstration monitoring was completed in 2004 and the results show that the 1998 Cleanup Standards have been achieved. The pump and treat system is being maintained in a state of readiness to be restarted in the event of an increase in groundwater contamination.

A Second Five-Year Review was completed in January 2005. Results of the Second Five-Year Review indicated that it may be appropriate to consider deletion of this Site from the National Priorities List once an Institutional Control study is completed and necessary Institutional Controls are in place.

SITE STATUS
The Second Five-Year Review report completed in 2005 was the last review for this Site. A Final Close Out Report was completed in July 2010. The Site is being proposed for deletion from the National Priorities List.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
01	Source Control
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA completed the initial Five-Year Review report for the Spiegelberg Site on August 28, 2000.

Start Date: *10/05/1999* Primary Cost: $0 Source: Federal
End Date: *08/28/2000* Secondary Cost: $0 Source:

5 Year Review The EPA has completed the Second Five-Year Review. A completion of an Institutional Control Study and implementation of appropriate Institutional Controls is a prerequisite for considering deletion of the Site. The PRPs, the EPA, and the MDEQ have been discussing this issue and it was expected that the task could be completed in 2008; however, in spite of the MDEQ continuing to encourage implementation of apppropriate Institutional Controls, there has been little to no progress.

Start Date: *10/14/2004* Primary Cost: $0 Source: Federal
End Date: *01/31/2005* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Source Control

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1986**

The ROD called for removal and off-site treatment of wastes and contaminated soils from the area containing paint sludges and other industrial wastes and an evaluation of the soils remaining beneath the Paint Sludge Area.

Response Accomplishments: Completed

Remedial Investigation (State lead) Source and Soil contamination. The RI tasks revealed the presence of source material and contaminated soil. The decision was made to conduct a phased feasibility study (FS) for source/soil operable unit and address the groundwater separately.

Start Date: *05/30/1984* Primary Cost: $596,000 Source: Federal
End Date: *09/30/1986* Secondary Cost: $0 Source:

Remedial Design RD plans and specifications were prepared by the MDNR when negotiations with the PRP failed.

Start Date: *04/03/1987* Primary Cost: $109,000 Source: Federal
End Date: *06/30/1988* Secondary Cost: $0 Source:

Remedial Action The PRP implemented the remedy selected in the ROD. Total amount expended by the PRP for the RA is not known.

Start Date: *05/30/1989* Primary Cost: $384,000 Source: Private
End Date: *03/13/1992* Secondary Cost: $157,248 Source: Federal

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 06/29/1990**

A proposed plan for the final remedy was issued on January 16, 1990. Public comment was taken, and a ROD and Responsiveness Summary developed by the MDNR were issued in August 1990. The final remedy involved cleanup of the groundwater plume, the only remaining contaminated resource at the Site. The EPA issued an Order and the Ford Motor Company consented to implement the final remedy.

Response Accomplishments: Completed

Remedial Investigation

State lead. Operable Unit 2 consisted of completion of RI, Baseline Risk Assessment, and FS. Monitoring wells on-site detected groundwater contamination. The FS report for groundwater was completed in January 1990.

Start Date: 06/27/1987	Primary Cost:	$212,000	Source: Federal
End Date: 06/29/1990	Secondary Cost:	$0	Source:

Remedial Design

Field data were collected starting in 1991 and the RD Data Collection Program report was completed in 1993. The RD report for the groundwater treatment system was completed in August 1994. All design work on this operable unit was funded by the PRPs.

Start Date: 08/22/1990	Primary Cost:	$197,000	Source: Private
End Date: 07/17/1994	Secondary Cost:	$0	Source:

Remedial Action

Construction of the groundwater treatment system. The final inspection was conducted by the MDEQ and the EPA on February 21, 1996. The RA was funded by the PRPs.

Start Date: 07/17/1994	Primary Cost:	$75,000	Source: Private
End Date: 09/09/1996	Secondary Cost:	$0	Source:

Operation and Maintenance

The treatment system was being operated by the PRPs. The ROD estimated that the remedy would take approximately 30 years to complete. Annual groundwater monitoring indicates that contamination levels have greatly decreased. In 1998 the MDEQ and the EPA approved the intermittent pump and treat operation plan for the Site which maintains the pump and treat system in a standby mode to be operated if the groundwater contamination levels increase. Groundwater analytical results generated from the past few years indicate there are no exceedances of the applicable trigger criteria for VOCs or lead. Therefore, no contingency evaluations or modifications to the Long-Term Monitoring Plan were required. Pending the results of an Institutional Control Study, and having permanent, legally enforceable Institutional Controls in place, the Site will be considered for deletion from the National Priorities List. At this time, no additional monitoring is planned.

Start Date: 09/09/1996	Primary Cost:	$0	Source: Private
End Date: 01/01/2006	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005777-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$157,248	$0	$0	$157,248	$0
Remedial Design	$99,857	$0	$0	$99,857	$0
Remedial Investigation	$916,155	$0	$0	$916,155	$0
Totals:	$1,173,260	$0	$0	$1,173,260	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,656	$0	$66	$7,656	$4,071

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$24,643	$0	$0	$24,643	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,807	$0	$0	$2,807	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$2,035	$0	$0	$2,035	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$95,000	$0	$0	$82,345	$0
Totals:	$132,141	$0	$66	$119,486	$4,071

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: G & H Landfill
3160 23 Mile Rd. and Ryan Rd.
Utica , MI

County: Macomb
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: 70
State Site ID#: 50000009
State Site Score: 33

LOCATION
The G & H Landfill is located on the southwest corner of 23 Mile and Ryan Roads. The 70-acre landfill is situated approximately 1/4 mile to the north and east of the nearby Clinton River. The former Rochester Utica State Recreation Area is located approximately 1/2 mile south of the site.

SITE HISTORY
Operation at the G & H Landfill, owned and operated by Mr. Leonard Forester, began in the mid-1930s. The site accepted both municipal refuse and liquid and solid industrial wastes. From approximately 1955 to 1967, the G & H Industrial Fill Company operated a waste oil recovery system at the site. Industrial wastes were disposed of in pits and lagoons and consisted of solvents, paints, oils, and process sludges. Some floatable oils were recovered for reuse from two waste disposal lagoons. Disposal of industrial wastes in the landfill continued until 1967 at which time the company was prohibited by the state of Michigan from accepting 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.

A layer of contaminated waste oil was present at the top of the groundwater aquifer. The oil migrated under the landfill and seeped into wetland areas south of the landfill.

Emergency actions were taken in 1982, 1983, 1986, and in 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 (RI) 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. Many organic contaminants were detected in the soil. 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. Many inorganic analytes were detected above background concentrations. Groundwater contamination on the property consists of BTEX, PNAs, and chlorinated volatile organic compounds (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.

Representative compounds were chosen as indicator chemicals based on their relative concentration, frequency of detection, and toxic effects. The representative compounds are the noncarcinogens: naphthalene, xylene, ethylbenzene, and lead, and the carcinogens: benzene, arsenic, trichloroethene, tetrachloroethene, 1,2-dichloroethene, vinyl chloride, and PCBs. These compounds were found at the site above federal and unrestricted residential

state standards in on-property soils and groundwater and in off-property groundwater. If unabated, the contamination could cause health problems for persons drinking the contaminated groundwater over a lifetime or coming into direct contact with the soils, surface water, or leachate.

A Record of Decision (ROD) was signed in December 1990. The selected remedy consists of a hazardous waste landfill cap and a partial 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.

In 1992, the EPA issued an Explanation of Significant Difference (ESD) which: 1) reduced thickness in frost protection; 2) reduction in slurry wall design; and 3) revisions of some cleanup standards.

In 1996 the potentially responsible party (PRP) steering group initiated construction activities at the site including 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.

The site tax reverted to the state. The ongoing operation and maintenance (O & M) phase began in the fall of 1999.

Semiannual monitoring reports continue to be submitted by the PRP steering group. These monitoring reports are reviewed by both the EPA and the MDEQ which results in technical meetings concerning corrective action and continued monitoring. In 2004, the MDEQ requested renewed consideration of past sampling recommendations that were not yet implemented that are viewed as appropriate and necessary to bring the site into compliance with Michigan standards. The second Five-Year Review was completed by the EPA on September 27, 2006. MDEQ staff had previously prepared a detailed letter of issues and concerns for inclusion in the Five-Year Review. Concerns over potential leaching to the Clinton River and an unexplained water level discrepancy inside and outside of the slurry wall remain.

The MDEQ visited the site in April 2009 and reviewed the overall performance of the remedy. The MDEQ summarized its observations and recommendations in a letter to the EPA dated August 20, 2009. The letter summarized that the PRP's consultants are not completing all required performance and operational evaluations as outlined in the O & M Plan and the source area hydraulic controls (slurry wall and leachate extraction system) are not meeting performance standards identified in the Scope of Work to the 1993 Consent Decree and the ROD.

The MDEQ recommended that the EPA request that the PRPs prepare and implement a corrective action plan to bring the source containment system back into compliance, execute contingency plans to achieve required performance standards and hydraulic containment at all phases of the landfill, expand the groundwater cleanup standards lists to include additional contaminants of concern, and review acceptable recreational uses of the Holland Ponds Recreational area (receiving water body for treated effluent from the G & H Landfill site).

SITE STATUS

The MDEQ visited the site in April 2010 and observed conditions to be similar to those observed in April 2009. Representatives from the EPA, MDEQ, and PRPs visited the site in May 2010 for the Five-Year Review site inspection and also met to discuss the recommendation for follow-up actions from the last Five-Year Review (2006). The PRPs prepared a summary of follow-up actions completed. The EPA and MDEQ are currently reviewing the summary in preparation for the EPA to draft the third Five-Year Review.

The MDEQ is still requesting that the EPA require the PRPs to prepare and implement a corrective action plan to bring the source containment system back into compliance, execute contingency plans to achieve required performance standards and hydraulic containment at all phases of the landfill, expand the groundwater cleanup standards lists to include additional contaminants of concern, and review acceptable recreational uses of the Holland Ponds Recreational area (receiving water body for treated effluent from the G & H Landfill site). To date this request has not been addressed by the EPA, but will likely be addressed in the third Five-Year Review Report.

ENFORCEMENT STATUS
The EPA signed a Consent Decree (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.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 12/21/1990**

The selected remedy consists of a hazardous waste landfill cap and a partial 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.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 03/13/1992**

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.

The ESD document did not identify changes in remedy costs.

Response Accomplishments: Completed

Bottled Water Provision of bottled water until municipal water extension was completed.

Start Date: 01/30/1982	Primary Cost:	$0	Source: Federal
End Date: 08/11/1982	Secondary Cost:	$0	Source: Private

Interim Response 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.

Start Date: 04/15/1982	Primary Cost:	$7,000	Source: Federal
End Date: 06/30/1982	Secondary Cost:	$0	Source:

Interim Response 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.

Start Date: 06/20/1983	Primary Cost:	$40,000	Source: Federal
End Date: 07/18/1983	Secondary Cost:	$0	Source:

Remedial Investigation RI/feasibility study.

Start Date: 07/27/1983	Primary Cost:	$2,908,000	Source: Federal
End Date: 12/21/1990	Secondary Cost:	$411,490	Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

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.

Start Date:	*05/12/1986*	Primary Cost:	$231,000	Source: Federal
End Date:	*09/30/1986*	Secondary Cost:	$0	Source:

Interim Response

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.

Start Date:	*03/18/1987*	Primary Cost:	$764,000	Source: Federal
End Date:	*03/15/1991*	Secondary Cost:	$0	Source:

Remedial Design

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.

Start Date:	*09/10/1992*	Primary Cost:	$0	Source: Private
End Date:	*06/20/1995*	Secondary Cost:	$275,000	Source: Federal

Alternate Water

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.

Start Date:	*01/15/1996*	Primary Cost:	$0	Source: Private
End Date:	*12/30/1996*	Secondary Cost:	$0	Source:

Remedial Action

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.

Start Date:	*08/19/1996*	Primary Cost:	$29,000,000	Source: Private
End Date:	*06/21/2000*	Secondary Cost:	$378,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The EPA performed the first Five-Year Review in 2001.

Start Date: 07/01/2001	Primary Cost:	$25,000	Source: Federal
End Date: 09/05/2001	Secondary Cost:	$0	Source:

5 Year Review The EPA conducted a second Five-Year Review in 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 listed in the Consent Decree, and will be subject to an institutional controls study and Institutional Control Plan to ensure they are adequately implemented, maintained, and monitored.

Start Date: 01/15/2006	Primary Cost:	$25,000	Source: Federal
End Date: 09/27/2006	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

5 Year Review The next Five-Year Review is due by September 27, 2011. The Five-Year review site inspection was completed on May 26, 2010 and attended by the EPA, PRPs, and MDEQ.

Start Date: 05/26/2010	Primary Cost:	$0	Source:
End Date: 09/27/2011	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance 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 EPA.

Start Date: 09/15/1999	Primary Cost:	$10,800,000	Source: Private
End Date: 09/30/2079	Secondary Cost:	$750,000	Source: Federal

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$140,000	$0	$0	$140,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$19,319	$0	$0	$18,916	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$130,000	$0	$0	$128,462	$0
Totals:	$289,319	$0	$0	$287,378	$0

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Investigation	$0	$0	$700,000	($700,001)
Totals:	$0	$0	$700,000	($700,001)

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Liquid Disposal, Inc.
3901 Hamlin Road
Utica , MI

County: Macomb
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: 62
State Site ID#: 50000015
State Site Score: 31

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 automotive junkyard to the south and west. The RV storage area is directly west of the site and overlies an old unlined landfill.

SITE HISTORY
The site was owned by Ms. June Morgan of Morgan & McClarty, P.C. (receivership owner) 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 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 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 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 (source area) 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 potentially responsible party (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 ten 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 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 two-foot inward hydraulic head around the slurry wall, and it appears that the slurry wall is failing on the northeast corner. The EPA/MDEQ 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 contaminant of concern, was detected in a downgradient well along with high concentrations of chloride. Additional work is needed to close all of the data gaps and make a recommendation for repairing/correcting the problem with the wall.

In September 2002, the relationship between the groundwater plume and groundwater/surface water interface 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. There is no evidence of major migration of contaminants of concern through the wall and beyond the site boundary at this time, except possibly at Monitor Well 111. Such migration could occur in the future at the points of hydraulic connection. The Agencies recommended that the PRP steering group perform additional work including enhancement of the extraction system, increase the number of wells into the monitoring system, and include a spatial pattern of sampling points to measure contamination inside the wall. Also, concerns regarding the effectiveness of the current groundwater extraction system will be addressed by the removal of additional groundwater to help attain the two-foot inward hydraulic gradient.

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 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. The MDEQ 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 PRPs continue to collect quarterly groundwater samples with no measurable change in previously noted items. The most recent Operation & Maintenance report indicates 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 the corrective actions necessary.

The third Five-Year Review was completed September 26, 2008. The review concluded that the protectiveness statement could not be made at this time. Futher information will be obtained by evaluating the impacts of the lack of an inward gradient at the site, re-evaluate the current list of chemicals of concern, and evaluating the risks associated with a potential upgradient source identified at the site.

SITE STATUS

The MDEQ continues to work with the EPA to begin implementing the recommendations for follow-up actions from the 2008 Five-Year Review. The review concluded that the protectiveness statement could not be made at the time of the Five-Year Review. 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 chemicals of concern, and evaluating the risks associated with a potential upgradient source identified at the site.

The MDEQ received a draft ESD for the site that required institutional controls 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. The MDEQ issued a concurrence letter for the ESD in September 2010.

ENFORCEMENT STATUS

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 Decree with the EPA to implement the remedial design and remedial actions and to perform operation and maintenance activities at the site. The state signed an 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 Department of Natural Resources (DNR) Land Bank, the property owner, to secure the site. The DNR sent notice letters to the adjacent property owner for the removal of the debris. The DNR has referred the case to the DNR Law Division seeking enforcement action. The problem was corrected by the new adjacent property owner.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1987**

The cleanup remedy consisted of on-property land disposal of debris, on-property perimeter solidification/fixation of soil/waste, treatment of groundwater, and slurry wall and cap containment.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 08/28/1995**

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 maximum contaminant levels in 1987. Barium changed from 1,000 ppm to 2,000 ppm and benzene was changed from 0.2 ppm to 5.0 ppm.

Record of Decision *Amendment:* 0 *ESD:* 2 **Effective 09/10/2010**

The EPA drafted an ESD to add institutional controls 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 Accomplishments: Completed

Interim Response

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.

Start Date: *05/01/1982* Primary Cost: $64,000 Source: Federal
End Date: *06/01/1982* Secondary Cost: $0 Source:

Interim Response

Site stabilization for safety and security. A leachate collection system was constructed to prevent lagoon leachate from migrating off-site.

Start Date: *07/26/1982* Primary Cost: $249,000 Source: Federal
End Date: *09/10/1982* Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response An extensive surface cleanup was undertaken. The waste liquid lagoon was solidified and scrubber lagoons were drained, and 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.

Start Date: 04/21/1983	Primary Cost:	$2,066,000	Source: Federal
End Date: 04/25/1984	Secondary Cost:	$0	Source:

Remedial Investigation State lead.

Start Date: 04/22/1983	Primary Cost:	$724,173	Source: Federal
End Date: 09/30/1987	Secondary Cost:	$0	Source:

Interim Response 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.

Start Date: 07/08/1985	Primary Cost:	$1,675,000	Source: Federal
End Date: 04/18/1986	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 01/01/1988	Primary Cost:	$0	Source: Private
End Date: 09/30/1992	Secondary Cost:	$212,000	Source: Federal

Remedial Action Landfill cap, slurry wall, and on-site groundwater extraction.

Start Date: 01/01/1993	Primary Cost:	$22,000,000	Source: Private
End Date: 01/01/1996	Secondary Cost:	$435,000	Source: Federal

5 Year Review

Start Date: 05/01/2003	Primary Cost:	$0	Source: Federal
End Date: 09/30/2003	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The third Five-Year Review found that the EPA was not able to make the protectiveness statement 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 chemicals of concern, and evaluating the risks associated with potential upgradient source identified at the site. These actions will only take one year to complete.

Start Date: 01/11/2008 Primary Cost: $0 Source:
End Date: 09/26/2008 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Groundwater and landfill cap monitoring.

Start Date: 01/01/1996 Primary Cost: $0 Source: Private
End Date: 01/01/2010 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review The site is scheduled for its next Five-Year Review in 2012. It is anticipated that the undetermined protectiveness statement and components of the remedy not meeting performance standards will be addressed before the 2012 Five-Year Review.

Start Date: 01/01/2012 Primary Cost: $0 Source:
End Date: 08/26/2012 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005785-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$27,298	$0	$0	$27,298	$0
Remedial Investigation	$724,173	$0	$0	$724,173	$0
Totals:	$751,471	$0	$0	$751,471	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$21,443	$0	$0	$21,443	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$437	$0	$0	$436	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$75,502	$0	$0	$67,117	$0
Totals:	$97,382	$0	$0	$88,996	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: South Macomb Disp (LF 9 & 9A
21290 24-Mile Road
Macomb Twp , MI

County: Macomb
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: S4
State Site ID#: 50000032
State Site Score: 27

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.

SITE HISTORY
The South Macomb Disposal (Landfills 9 & 9A) site is comprised of two adjacent municipal landfills, sites 9 & 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 twelve 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 South Macomb Disposal Authority extended the 9A Landfill's existing leachate collection system. Additionally, under court order, the South Macomb Disposal Authority 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 remedial action for the site. The court-ordered remedy included: construction of a slurry wall completely around Landfills 9 & 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 South Macomb Disposal Authority 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 put off the 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 South Macomb Disposal Authority 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 South Macomb Disposal Authority 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, the MDEQ performed sampling and other field activities to aid in the assessment of remedial alternatives. Per a directive of the court, the South Macomb Disposal Authority and the MDEQ held discussions in an attempt to develop an acceptable remedy for the site.

The South Macomb Disposal Authority and the state discussed options for a settlement with the EPA. However, in it's January 1998 letter, the EPA declined a federal cost-share settlement at the South Macomb Disposal (Landfills 9 & 9A) site. In July 1998, the South Macomb Disposal Authority 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 South Macomb Disposal Authority entered into a preliminary agreement on July 9, 1999, regarding remediation of the South Macomb Disposal (Landfills 9 & 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 South Macomb Disposal Authority to enter into a Consent Decree for implementation of a RAP.

A draft RAP was submitted by South Macomb Disposal Authority's new consultant, Petro Environmental Technologies, on November 30, 2000. Several revisions to the draft RAP were subsequently submitted.

The state of Michigan and the South Macomb Disposal Authority entered into a Consent Decree on June 26, 2002, which requires 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 requires 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. The leachate is pumped to an on-site treatment facility before being discharged to the sanitary sewer. The treatment system primarily consists of a clarifier to treat the water to the pre-treatment standards set by the Detroit Water and Sewerage Department (DWSD). The treated water is then discharged to the sewer system where it

flows to the DWSD facilities for further treatment. The water is monitored prior to discharge to the sewer, as required by the permit issued by the DWSD.

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. Samples are collected on a quarterly basis to assess progress. The currently available monitoring data indicates little change from earlier monitoring data, and it is difficult to draw definitive conclusions about the ability of the system to achieve the cleanup goals. However, there was a problem identified with the leachate collector being too shallow on the east side of the landfill 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 Site 9 in February 2003. Since that time the landfill gas probes have been monitored on a monthly basis. 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 Site 9 and Site 9A. A gas venting trench was installed north of Site 9 and additional gas vents were installed north of Site 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. There were intermittent detections of methane in the perimeter gas probes in 2006. The MDEQ will continue to closely monitor the landfill gas situation to ensure all necessary steps are taken to prevent the off-site migration of landfill gases.

The RAP requires that a groundwater extraction well system be installed. Construction of an extraction well system was completed in May 2005. The extraction well system consists of two extraction wells northeast of the landfills. Water from the extraction wells is pumped to the east collection sump and then pumped back to the existing pre-treatment system on-site before discharging to the sanitary sewer.

The landfill cap continues to be maintained. Significant settlement has occurred in several areas of the cap. 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.

In 2006, Petro made some significant modifications to the groundwater and leachate extraction system. 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.

SITE STATUS

The leachate collection system continues to operate. The November 2009 monitoring report, indicates that the remediation system has removed more than 154 million gallons of impacted water to date.

Per the consent decree, the South Macomb Disposal Authority 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. Furthermore, the potential risks associated with methane in groundwater has not been fully resolved. Petro 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 was disapproved. 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 MDEQ on May 28, 2008. Petro has not yet submitted an approvable Corrective Action Plan and, therefore, the South Macomb Disposal Authority remains in violation of the 2002 Consent Decree. The state continues working with the South Macomb Disposal Authority to try and resolve this situation.

ENFORCEMENT STATUS

In April 1991, the Macomb County Circuit Court ordered the South Macomb Disposal Authority to perform the remedial action, 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 South Macomb Disposal Authority 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. The MDEQ is currently monitoring the progress of the South Macomb Disposal Authority in cleaning up the site. The South Macomb Disposal Authority 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.

SPECIAL CONSIDERATIONS

Under the Municipal Landfill Cost-Share Grant Program, the state has provided $5,716,956 to the South Macomb Disposal Authority for response activities from 1997 through 2001. The South Macomb Disposal Authority also received $8,900,000 in 2000 and $34,381,670 from several insurance companies for costs it incurred related to this site. On May 4, 2005, the Macomb County Circuit Court ruled that the South Macomb Disposal Authority must repay to the state the $5,716,956 of grant funds awarded as a result of recovering the funds from the insurance companies. The South Macomb Disposal Authority repaid the full grant amount plus interest (a total of $6,693,057.80) on November 3, 2008.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 08/13/1991**

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 immediate vicinity to municipal water. The South Macomb Disposal Authority is not implementing the ROD remedy but is implementing the remedy outlined in the RAP attached to the June 26, 2002, Consent Decree.

Response Accomplishments: Completed

Alternate Water 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. Since the fall of 1995, bond contingency funds were authorized for monitoring of residential wells near the site.

Start Date: 01/01/1983	Primary Cost:	$552,893	Source: State
End Date: 01/01/1988	Secondary Cost:	$0	Source:

Interim Response The potentially responsible party (PRP) installed a leachate collection system and partial slurry wall, which was funded in part by a $500,000 grant from the state.

Start Date: 01/01/1987	Primary Cost:	$93,722	Source: Private
End Date: 01/01/1988	Secondary Cost:	$500,000	Source: State

Remedial Investigation The Remedial Investigation and Feasiblity Study were performed by the EPA.

Start Date: 09/01/1987	Primary Cost:	$1,242,000	Source: Federal
End Date: 08/13/1991	Secondary Cost:	$0	Source:

Remedial Design 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. Since November 1993, the PRPs have conducted an additional investigation to support design and have prepared draft remediation plans.

Start Date: 04/01/1992	Primary Cost:	$4,000,000	Source: Private
End Date: 06/26/2002	Secondary Cost:	$290,000	Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: In Progress

Remedial Action The remedial action 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 remedial action was estimated at $16 million over 30 years (including operation and maintenance [O & M]).

Start Date: 02/01/2001 Primary Cost: $16,000,000 Source: Private

End Date: 12/31/2011 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance This includes the operation of the leachate and groundwater collection, treatment and disposal systems. It also inlcudes maintenance of the landfill cap and gas venting system, and long-term monitoring. The South Macomb Disposal Authority spent approximately $1,013,000 for maintaining the leachate collection system and disposing of leachate from July 23, 1996, through September 30, 2001. It is unknown what the recent O & M costs have been or what the future O & M costs will be; however, the $16 million cost estimate for remedial action includes future O & M costs for approximately 30 years.

Start Date: 10/01/1988 Primary Cost: $0 Source: Private

End Date: 02/01/2031 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,000	$0	$0	$30,000	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$640	$0	$0	$640	$0
Totals:	$30,640	$0	$0	$30,640	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Packaging Corp. of America (PC
East Lake Road
Manistee , MI

County: Manistee
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: 90
State Site ID#: 51000058
State Site Score: 33

LOCATION
The Packaging Corporation of America 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.

SITE HISTORY
The Packaging Corporation of America owns the pulp mill in Manistee, which over the years released contaminated wastewater that resulted in the Packaging Corporation of America 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 (NSSC) process, which produced much more contaminated wastewater. From 1949 to 1950, this wastewater was discharged directly to Manistee Lake. This NSSC 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 NSSC 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 responsible party 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.

The site was placed on the National Priorities List on September 8, 1983. The Packaging Corporation of America performed a Remedial Investigation/Feasibility Study (RI/FS) under

an April 1984 Administrative Order by Consent (Order) 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, the Michigan Department of Natural Resources (MDNR) 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 (GSI) 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 MDEQ, wherein the potentially responsible party (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.

SITE STATUS

The MDEQ had set aside funds to conduct investigative work to evaluate the conclusions of EPA's ROD. The MDEQ planned and scoped an investigation at and around the PCA property to determine if the basis by which a no-action ROD was selected is accurate. The MDEQ's investigative work is 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 the MDEQ not to pursue a new environmental cleanup/brownfields bond, this project was suspended in July 2008. The MDEQ may reinitiate this project when a new funding source is identified.

Funding for oversight of the liable party study of fate and impact of toxic groundwater plume will be needed if the additional investigative work demonstrates a need for further plume definition, and that either the liable party agrees to the work, or we can compel them in court to do so, or EPA compels them. Our consent decree with the liable party includes a provision to seek additional work of the PRP if our studies determine the need.

ENFORCEMENT STATUS

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 toward Manistee Lake and possibly Lake Michigan.

In April 2005, Pactiv's attorneys filed suit against the director of the MDEQ 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 was preempted

by federal law (CERCLA), 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 Record of Decision (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 the MDEQ 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.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/24/1993**

This is a "No-Action" ROD with monitoring.

Response Accomplishments: Cancelled

Remedial Investigation The MDEQ had set aside funds to conduct investigative work to evaluate the basis of 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. Therefore, this investigative work is suspended until future long-term funding is identified and may be reinitiated at a later date.

Start Date: 05/01/2007 Primary Cost: $0 Source: <None>

End Date: 09/15/2008 Secondary Cost: $0 Source: <None>

Response Accomplishments: Completed

Negotiations RI/FS negotiations

Start Date: 02/15/1984 Primary Cost: $0 Source:

End Date: 02/15/1985 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation Secondary costs include supplemental investigative work done by MDEQ.

Start Date: 05/02/1985 Primary Cost: $2,000,000 Source: Private

End Date: 09/24/1993 Secondary Cost: $540,000 Source: State

Interim Response 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 Corp.) and the MDEQ.

Start Date: 03/23/1993 Primary Cost: $0 Source: Private

End Date: 12/31/1999 Secondary Cost: $0 Source: State

Negotiations O&M negotiations.

Start Date: 12/31/1993 Primary Cost: $0 Source:

End Date: 10/01/1994 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance Monitoring

Start Date: 06/30/1995 Primary Cost: $0 Source:

End Date: 12/31/2060 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Investigation The state may reinitiate work to perform additional Remedial Investigation work to evaluate the basis for EPA's selection of a no-action ROD after future long-term funding is identified.

Start Date: 04/02/2012 Primary Cost: $1,500,000 Source: State

End Date: 09/30/2012 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,917	$0	$0	$5,917	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$112,920	$0	$0	$95,706	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$369	$0	$0	$369	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$50,885	$0	$0	$50,885	$0
Totals:	$170,091	$0	$0	$152,877	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Mason County Landfill
Inman Road
Ludington , MI

County: Mason
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: E3
State Site ID#: 53000013
State Site Score: 31

LOCATION
The Mason County Landfill is located three miles south of the city of Ludington and one 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 a 1/4 mile to the north. All residences use private wells for their drinking water supply. The Ludington pump storage facility is located 1/2 mile to the south.

SITE HISTORY
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 landfilled. 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.

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 funds 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 ROD was split into two operable units: the landfill contents (operable unit 1) and the site groundwater (operable unit 2). These were acted upon separately in order to properly cap the landfill prior to completion of the groundwater portion of the remedial investigation.

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 operable unit 2 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 had been implemented. The MDEQ 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, the MDEQ 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 MDEQ 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 (done), 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) sending a recent aerial photograph to the MDEQ, and 7) change some formatting and content in the annual reports (done).

In February 2006, the county provided a copy of its 2005 annual monitoring report, prepared by Westshore Consulting, to the MDEQ. County and Westshore staff completed field sampling and other measurements in October and November 2005, and used the data in this report. Staff of the MDEQ reviewed the report in March 2006 and provided its comments to the county via e-mail. The MDEQ recommended the following: 1) to provide an electronic copy of the report (done), 2) to keep some deep aquifer monitoring wells that were scheduled for deletion (they serve as sentry wells for potentially affected residential water wells)-resolved, 3) to resolve some water level measurement deficiencies (resolved), and 4) to address mislabeled figures in the report.

In January 2006, the MDEQ received a report from the county titled, Landfill Gas Monitoring Plan, Mason County Landfill, with later communications occurring through May 2006. The report was prepared pursuant to an agreement reached between the county and the MDEQ in August 2005 regarding methane concerns . Some of the recommendations from the August meeting were included in the work plan. The MDEQ provided comments to the county in February. The same month, the MDEQ completed a conference call with county staff and e-mailed gas monitoring recommendations to the county. The county made some revisions to the work plan, which it shared with the MDEQ. The MDEQ reviewed the revised plan in March and offered some recommendations. On behalf of the county, Westshore sent a letter in April 2006 that explained a proposed phased approach to the methane monitoring issue. It included sampling for dissolved methane in select groundwater monitoring wells, and also sampling for methane in the shallow subsurface soil. Westshore shared some groundwater methane sampling results with the MDEQ in May. Results ranged from less than 1.0 micrograms per liter (ug/L) to 41 ug/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 07 and January of 08 and quarterly since then."

The third Five-Year Review 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. The MDEQ 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 November 2007, the MDEQ received the 2007 Annual Monitoring Report and provided comments to Mason County in January 2008. In September 2008, the MDEQ received the 2008 Annual Monitoring report and, in November 2008, indicated it had no comments on the report. In October 2009, MDEQ received the 2009 Annual Monitoring Report and made the recommendation that Mason County resample residential well RW-10 for lead which the county agreed to do. All of the prior comments on the site have been resolved.

SITE STATUS

Mason County still owns the site as the result of a settlement in a suit filed by two property owners in 1981. It monitors and maintains the site on a regular basis.

In FY07, state funds were approved to treat or 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. Given site conditions and available monitoring wells, it is not possible to ensure that drilling deeper replacemnt wells will guarantee water quality below aesthetic criteria. Water Bureau staff have recommended further monitoring prior to replacement of the residential well because, while concentrations are above aesthetic criteria, concentrations are below cleanup criteria. It is anticipated that at least one well will be replaced in 2011.

In October 2009, the MDEQ received the 2009 Annual Monitoring Report and made the recommendation that Mason County resample residential well RW-10 for lead which the county agreed to do. Based on the MDEQ's review of the 2010 Annual Monitoring Report, apparently the county did not sample this well for lead in 2010. The MDEQ recommended that Mason County resample residential well RW-10 for lead due to prior detections of lead in this well.

The fourth Five Year Review 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 operation & maintenance of Site property, ICs, and monitoring systems." MDEQ disagrees with the EPA's statement that there has not been migration of contaminated groundwater off-site and plans to provide a written response to the EPA.

ENFORCEMENT STATUS

In April 1989 the EPA, 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 (CERCLA) for completion of the landfill contents operable unit. 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.

SPECIAL CONSIDERATIONS

As of May 20, 2004, Mason County has been awarded $122,643 in Municipal Landfill Cost-Share Grants.

OPERABLE UNITS

00	Entire Site
01	Landfill Contents
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The Five-Year Review was prepared by Tom Williams, the EPA Project Manager for the site at that time.

Start Date: 06/15/1997 Primary Cost: $0 Source: Federal
End Date: 11/13/1997 Secondary Cost: $0 Source:

5 Year Review The Five-Year Review was prepared by the EPA.

Start Date: 01/15/2001 Primary Cost: $3,000 Source: Federal
End Date: 02/27/2001 Secondary Cost: $0 Source:

5 Year Review The third Five-Year Review 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. The MDEQ and Mason County are continuing to discuss the monitoring program and are working toward resolving these issues through modification of the Site monitoring program.

Start Date: 10/05/2005 Primary Cost: $0 Source: Federal
End Date: 02/13/2006 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review The Five-Year Review was prepared by Jeff Gore, the EPA remedial project manager at the time of the report.

Start Date: 09/01/2010 Primary Cost: $0 Source: Federal
End Date: 02/13/2011 Secondary Cost: $0 Source:

5 Year Review Anticipated date of this Five-Year Review (based on signature date of the January 24, 2011 Five-Year Review).

Start Date: 07/24/2015 Primary Cost: $0 Source:
End Date: 01/24/2016 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Landfill Contents

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/28/1988**

Selected remedy is a soil/clay Resource Conservation and Recovery Act, 1976 PA 94-580, as amended (RCRA) 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).

Costs taken from 1988 ROD; Operation & Maintenance (O&M) costs were listed as present worth of O&M costs (for 30 years).

Response Accomplishments: Completed

Interim Response The Mason County Department of Public Works received a $92,000 grant for improvements to the landfill.

Start Date: *06/15/1983*	Primary Cost:	$92,000	Source: State
End Date: *12/15/1986*	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: *09/30/1985*	Primary Cost:	$882,000	Source: Federal
End Date: *09/28/1988*	Secondary Cost:	$0	Source:

Remedial Design Design of hazardous waste landfill cap. Private costs reflect Mason County costs per January 29, 2004, information from Mason County.

Start Date: *01/15/1989*	Primary Cost:	$179,384	Source: Private
End Date: *06/29/1990*	Secondary Cost:	$150,000	Source: Federal

Remedial Action An upgraded landfill cap was constructed using PRP and State grant funds.

Start Date: *01/15/1990*	Primary Cost:	$0	Source: Private
End Date: *09/01/1992*	Secondary Cost:	$600,000	Source: State

OPERABLE UNIT 01: Landfill Contents

Response Accomplishments: Ongoing

Operation and Maintenance

Monitoring and maintenance: The PRPs are responsible for monitoring groundwater, surface water/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. Costs listed are actual (through September 9, 2007, and include $19,979 for 2009).

Per January 29, 2004, information from Mason County, Mason County costs through FY 2003 were $1,386,357. According to the Mason County Department of Public Works, 2004 costs for O&M were $17,438, 2005 O&M costs were $20,125, and 2006 costs were $39,811.

Start Date: *12/16/1989*	Primary Cost:	$1,541,872	Source: Private
End Date: *12/16/2019*	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 06/15/1993**

The selected remedy is "No-Action" with monitoring of groundwater, surface water, and residential wells.

Response Accomplishments: Completed

Alternate Water

Alternate Water: Residents were placed on bottled water until their wells were replaced.

Start Date: *01/15/1983*	Primary Cost:	$0	Source: Private
End Date: *12/15/1984*	Secondary Cost:	$0	Source:

Interim Response

Two residential drinking-water wells were replaced.

Start Date: *01/15/1984*	Primary Cost:	$16,000	Source: State
End Date: *12/15/1984*	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: *09/28/1988*	Primary Cost:	$275,000	Source: Federal
End Date: *09/27/1993*	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$228	$0	$228	$228	$228

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$313	$0	$0	$312	$0

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$35,000	$0	$0	$21,962	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$23,910	$0	$0	$23,910	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$690	$0	$0	$690	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$11,828	$0	$0	$11,828	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$7,316	$0	$0	$7,316	$0
Totals:	$79,286	$0	$228	$66,247	$228

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Bofors Nobel, Inc.
5025 Evanston Avenue
Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 34
State Site ID#: 61000005
State Site Score: 45

LOCATION
The Bofors Nobel, Inc. site is located 6 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 an operating 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.

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 (MDNR) 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 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 activities. 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 96-510, 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 (3,3'-DCB). Concentrations of benzidene and 3,3'-DCB 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 direct human 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'-DCB. The relevant soils criteria are also exceeded for a number of other volatile and semi-volatile compounds. Concentrations of benzidene and 3,3'-DCB in groundwater range up to 1,200 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'-DCB. There are also a number of volatile organic compounds and semivolatile organic compounds 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 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 remedial action was provided to EPA through a Superfund State Contract. 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 potentially responsible party (PRP) group.

The EPA, United States Department of Justice, MDEQ, and MDAG began negotiations with the PRP 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 direct contact human health threat posed by the contaminated soil. Concurrently, the MDEQ was also negotiating with LOMAC on the development of an interim remedial action 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 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 the MDEQ, 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

the MDEQ for natural resource damages.

A consent decree for implementation of the containment remedy was signed by the Group, LOMAC, and the EPA in December 1999. A separate consent 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, MDEQ staff reviewed the "Remedial Design Work Plan" and the "Pre-Design Data Acquisition and Treatability Study Work Plan" (PDAR) 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 MDEQ. 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 Five-Year Review Report was completed by the EPA with input from the MDEQ 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 TIC remedy design, construction of the designed TIC remedy, issuance of an operable unit #2 ROD, continued short and long-term monitoring of the TIC remedy, and operation and maintenance of the TIC remedy to achieve and maintain remedy cleanup goals.

Implementation of the containment remedy was broken down into two phases. The first phase (Phase I) primarily involves construction of the barrier wall and the second phase (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.

Construction of the barrier wall (Phase I) started in October 2004 and was completed in December 2005. 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 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 have been replaced with new durable steel structures with new electrical wiring. The removal and offsite 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, MDEQ 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 and submitted to the Agencies in April 2008. The MDEQ will continue to assess upcoming groundwater data to determine possible installation of new monitoring wells where data gaps exist and monitor those wells for a two-year period to ensure contamination is not entering the Big Black Creek. The operation and maintenance (O & M) of the plant and groundwater pumping and treatment systems continues.

In early 2009, the PRPs submitted a request to 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.

The EPA has drafted a restrictive covenant for this site. This restrictive covenant is currently being reviewed by the MDEQ and the EPA staff.

The third 5-Year Review was signed on August 7, 2008. The site inspection was carried out on November 14, 2007 and February 27, 2008. This 5-Year Review concluded that the current groundwater containment and extraction system may be capturing contaminated groundwater before reaching Big Black Creek. The 5-Year Review 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 Remedial Action Plan, and implement Contingent Actions if extraction well's capture is ineffective.

SITE STATUS
The groundwater extraction and treatment system continues to operate. The MDEQ is currently negotiating the location of the monitoring wells in relation to the slurry wall with the EPA and the Performing Settling Defendants. Major issues such as the location of the compliance monitoring wells in the vicinity of the Big Black Creek are being discussed and negotiated. These details will be included in a Performance Standards Verification Plan to be submitted some time in 2011. A series of conference calls are scheduled over the coming months to discuss and provide technical input on the most recent Performance Standard Verification Plan submitted by the responsible parties.

ENFORCEMENT STATUS
Enforcement action was performed under the CERCLA/SARA with the EPA as the lead agency for enforcement. A Consent Decree for implementation of the containment remedy was signed by the Group, LOMAC, and the EPA in December 1999. A separate Consent Decree for implementation of the interim response at the plant site was signed by LOMAC and the state on December 13, 1999.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
01	Groundwater/Lagoon Soil and Sludge
02	Contaminated Soil on the LOMAC Operating Plant Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The first Five-Year Review was completed by the EPA on September 30, 1998.

Start Date: 05/05/1998	Primary Cost:	$0	Source: Federal
End Date: 09/30/1998	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The assessment of the second "Five Year Review Report" found that the completed Plant Phase of the OU#1 remedy has been constructed in accordance with the requirements of the ROD, and that operation and maintenance of the GWTP and extraction wells is controlling groundwater that discharges to the Big Black Creek.

Start Date: *04/07/2003* Primary Cost: $0 Source: Federal

End Date: *08/07/2003* Secondary Cost: $0 Source:

5 Year Review The third 5-Year Review was signed on August 7, 2008. The site inspection was carried out on November 14, 2007, and February 27, 2008. This 5-Year Review concluded that the current groundwater containment and extraction system may be capturing contaminated groundwater before reaching Big Black Creek. The 5-Year Review 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 Remedial Action Plan, and implement Contingent Actions if extraction well's capture is ineffective.

Start Date: *01/02/2008* Primary Cost: $0 Source: Federal

End Date: *08/07/2008* Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review Since hazardous substances remain on site, there will be another 5-Year Review in 2013.

Start Date: *08/07/2012* Primary Cost: $0 Source:

End Date: *08/07/2013* Secondary Cost: $0 Source:

OPERABLE UNIT 01: Groundwater/Lagoon Soil and Sludge

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/17/1990**

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 5 years. The present worth is estimated at $70,874,000.

Record of Decision *Amendment:* 01 *ESD:* 0 **Effective 07/22/1992**

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:* 02 *ESD:* 0 **Effective 07/16/1999**

The ROD was amended for a second time in 1999 to change the remedy to the PRP proposed total in situ containment remedy.

OPERABLE UNIT 01: Groundwater/Lagoon Soil and Sludge

Response Accomplishments: Completed

Interim Response

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.

Start Date: 09/30/1987	Primary Cost:	$7,000,000	Source: Private
End Date: 09/30/1988	Secondary Cost:	$1,620,000	Source: State

Remedial Investigation

Note: the Primary Estimated Cost indicated consists of state and escrow funding sources.
To facilitate investigation, the Site was divided into operable unit 1-Lagoon Area and operable unit 2-Plant Area.

Start Date: 09/30/1988	Primary Cost:	$5,100,000	Source: Private
End Date: 09/30/1990	Secondary Cost:	$0	Source:

Remedial Design

The RD consisted of the Plant and Landfill. Both designs were completed in 1993. No state funds were used.

Start Date: 09/30/1991	Primary Cost:	$1,000,000	Source: Federal
End Date: 09/30/1993	Secondary Cost:	$0	Source:

Remedial Action

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 Superfund State Contract between the state and EPA.

Start Date: 07/30/1993	Primary Cost:	$14,672,700	Source: Federal
End Date: 09/30/1997	Secondary Cost:	$1,630,300	Source: State

Long Term Remedial Action

The state oversaw the Plant operation until the PRPs took over in February 2000. This is the LTRA of the Plant performed by the MDEQ.

Start Date: 09/30/1997	Primary Cost:	$1,547,501	Source: Federal
End Date: 02/28/2000	Secondary Cost:	$174,943	Source: State

Remedial Action

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 operation and maintenance (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.

Start Date: 10/01/2004	Primary Cost:	$14,784,530	Source: Private
End Date: 12/15/2007	Secondary Cost:	$348,000	Source: Federal

OPERABLE UNIT 01: Groundwater/Lagoon Soil and Sludge

Response Accomplishments: Ongoing

Operation and Maintenance 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.

Start Date: 03/01/2000 Primary Cost: $15,639,990 Source: Private

End Date: 09/30/2051 Secondary Cost: $0 Source:

OPERABLE UNIT 02: Contaminated Soil on the LOMAC Operating Plant Site

Response Accomplishments: Completed

Interim Response LOMAC took several steps to reduce existing contamination on the plant property and covered contaminated soils to reduce direct contact threats.

Start Date: 01/30/1999 Primary Cost: $500,000 Source: Private

End Date: 10/30/1999 Secondary Cost: $0 Source:

Response Accomplishments: In Progress

Interim Response LOMAC is implementing the interim RA Plant soil remedy which includes covering of some soils and implementation of deed restrictions. The ROD for the final RA is yet to be developed.

Start Date: 12/31/1999 Primary Cost: $0 Source:

End Date: 09/30/2011 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Remedial Action The ROD selecting the remedy for the plant site operable unit has not yet been developed. The EPA will be performing investigations and evaluations in 2011 with the hope of implementing necessary cleanup actions starting in 2012.

Start Date: 01/01/2012 Primary Cost: $0 Source:

End Date: 12/31/2016 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985232-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Long Term Remedial Action	$1,749,444	$174,945	$0	$1,749,444	$0
Management Assistance	$99,982	$9,998	$0	$99,982	$0
Totals:	$1,849,426	$184,943	$0	$1,849,426	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$59,060	$0	$0	$59,060	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$121,987	$0	$0	$121,987	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$44,480	$0	$33,581	$44,480	$33,581

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$73,066	$0	$0	$67,159	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$65,000	$0	$0	$64,947	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$66,667	$6,667	$0	$66,626	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$48,696	$0	$0	$48,696	$0
Totals:	$478,957	$6,667	$33,581	$472,956	$33,581

STATE SUPERFUND CONTRACTS

For Operable Unit 01 : Groundwater/Lagoon Soil and Sludge : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$15,020,875	$1,502,087	$1,502,087	($1,282,125)
Totals:	$15,020,875	$1,502,087	$1,502,087	($1,282,125)

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Duell & Gardner Landfill
1285 East Bard Road
Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: C3
State Site ID#: 61000016
State Site Score: 33

LOCATION
The Duell & Gardner Landfill site is located at 1285 E. Bard Road in Dalton Township, approximately five 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 one-mile radius and 1,200 people live within a two-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.

SITE 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 Priorities List 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 crystal violet, aniline, dimethylaniline, and pesticides. Groundwater contaminants include carbon tetrachloride, chloroform, and dimethylaniline. These contaminants were found at concentrations above unrestricted residential cleanup standards. If left unabated, these contaminants could pose health risks to potential future on-site residents that consume the water over a lifetime or regularly come into contact with the soil. 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.

The state 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 one company 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 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 the MDEQ have 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 for Remedial Action" at the Duell & Gardner site was signed by both the state and the EPA in September 2000. The cost of the RA is $2,500,000. The state's cost for the RA under this Superfund State Contract is $250,000.

The final design of the remedy was completed in 2000 using federal funds. Construction of the final remedy at the site was completed in August 2001. The RA consisted of construction of a landfill cap and a groundwater treatment system. The landfill cap was constructed between October 2000 and April 2001. During 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 remedial investigation (RI) were exhumed and consolidated onto the four-acre rectangular landfill. Approximately 2000 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 Manual were completed by the U.S. Army Corps of Engineers (ACOE) contractors in 2002. The system will operate, and groundwater monitoring will continue, until appropriate cleanup standards are achieved and maintained.

The Record of Decision (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 system; and requires long-term groundwater monitoring to ensure that contaminated groundwater does not pose a threat to any potential receptors.

The site was surveyed and restrictive covenants put in place as of 2007.

The first five-year review for this site was signed by the EPA in September 2005. The five-year review 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 need to be put in place to prevent exposure to contaminated groundwater and soils. In comments on the five-year review the MDEQ also 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. The MDEQ did not approve of the plan as it did not include metals as part of the monitoring plan. Consequently, the MDEQ proceeded to split samples for groundwater during the annual groundwater monitoring event in September 2006.

In 2006, the MDEQ staff identified 21 private wells 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 the MDEQ Water Bureau. The samples thus collected were submitted to the MDEQ 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, the MDEQ installed multi-level temporary wells in suspect areas for 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 a depth of 20 feet and 50 feet. These two chemicals are not listed as contaminants of concern in the ROD. In 2008, MDEQ 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. MDEQ 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.

SITE STATUS

Currently, the groundwater extraction and treatment system is not operating. However, the landfill cap is being inspected and maintained on a regular basis. Analysis of collected groundwater samples indicates that there has been a general decrease in concentration of contaminants of concern at this site.

The second Five-Year Review was signed on March 8, 2010. The Five-Year Review 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 Institutional Controls 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 well. If the groundwater extraction and treatment system needs to be restarted and if it needs to operate beyond August 2012, the state would need to fund the operation of the system as part of our O & M obligations. The state will also need to perform the O & M of the landfill cap.

On June 8, 2010 the EPA Remedial Project Manager wrote a letter to the MDEQ regarding the transition of the groundwater cleanup activities at the Duell & Gardner site from Long Term Remedial Action to state-funded Operation and Maintenance effective July 11, 2011. The MDEQ responded indicating the inaccuracy of the date of transition as well as issues that need to be addressed before the transition. The MDEQ is questioning the efficiency of the current treatment system in terms of capture. Recent data concerning the vertical and horizontal plume extent indicates the need for additional investigation, requiring new monitoring points, to determine the degree of threat and the possible need for remedy enhancement. The exact date of site transition to the state is still undetermined.

Permanent Markers will be placed at the main entrance of the site sometime in 2011.

ENFORCEMENT STATUS
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 at the Duell & Gardner Landfill originated at the Ott/Story Cordova site).

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/07/1993**

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:* 01 *ESD:* 0 **Effective 06/29/2001**

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 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 offsite soil disposal and groundwater monitoring. The Total Present Worth Cost for 30 years is estimated at $2,436,698.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response Removal of drums, laboratory bottles, and soil by the EPA.

Start Date: 09/30/1985 Primary Cost: $129,000 Source: Federal

End Date: 03/30/1986 Secondary Cost: $0 Source:

Remedial Investigation 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.

Start Date: 04/01/1987 Primary Cost: $874,120 Source: Federal

End Date: 03/30/1993 Secondary Cost: $465,461 Source: State

Remedial Design 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.

Start Date: 07/01/1994 Primary Cost: $0 Source: Private

End Date: 07/30/1996 Secondary Cost: $0 Source:

Remedial Design The RD was completed by the ACOE Rapid Response Team. The design consisted of the landfill cap and extraction and treatment system for the contaminated groundwater.

Start Date: 09/01/2000 Primary Cost: $291,000 Source: Federal

End Date: 10/12/2000 Secondary Cost: $0 Source:

5 Year Review The EPA signed the Five-Year Review report on September 2, 2005. The Five-Year Review 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, institutional controls have been put in place since 2008 to prevent exposure to contaminated groundwater and soils.

Start Date: 06/23/2005 Primary Cost: $0 Source:

End Date: 09/02/2005 Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

This Five-Year Review was signed on March 8, 2010. The Five-Year Review 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 4-acre landfill and covered with an impermeable cover; impacted groundwater is currently being recovered and treated on site; and Institutional Controls 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.

Start Date: 11/02/2009	Primary Cost:	$0	Source: Federal
End Date: 03/08/2010	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action

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 July 20, 2001. The groundwater treatment and extraction system construction started in April 2001 and was completed on July 20, 2001. The state's ten percent match of $250,000 is covered by the advance match the state paid during the RI.

Start Date: 10/12/2000	Primary Cost:	$2,500,000	Source: Federal
End Date: 07/20/2001	Secondary Cost:	$0	Source: State

Response Accomplishments: In Progress

Long Term Remedial Action

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 will cover any state funding match necessary for this activity being conducted under a Superfund State Contract.

Start Date: 07/21/2001	Primary Cost:	$558,000	Source: Federal
End Date: 07/21/2011	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance The state conducted analysis of split samples for metals during the annual groundwater monitoring event in 2006. The state will perhaps be installing additional monitoring wells where data gaps exist in 2011. A restrictive covenant was put in place in 2007. A permanent marker will be installed at the site in late 2011.

Start Date: 07/21/2006 Primary Cost: $200,000 Source: State

End Date: 07/21/2011 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

Operation and Maintenance State will assume responsibility for landfill cap maintenance and groundwater treatment system after 10 years of Long Term Remedial Action at an estimated cost of $58,000 per year for thirty years.

Start Date: 07/21/2011 Primary Cost: $58,000 Source: State

End Date: 07/21/2041 Secondary Cost: $0 Source:

5 Year Review The next 5 Year Review will be conducted in 2015.

Start Date: 03/08/2014 Primary Cost: $0 Source:

End Date: 03/08/2015 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985568-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$56,359	$0	$0	$56,072	$0

Cooperative Agreement Number V005922-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$1,402,857	$528,450	$0	$1,283,509	$0
Totals:	$1,459,216	$528,450	$0	$1,339,582	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$40,535	$0	$0	$40,535	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$23,101	$0	$12,342	$23,101	$12,342

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$29,843	$0	$0	$29,843	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$10,919	$0	$0	$10,919	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$28,758	$0	$0	$28,758	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$38,889	$3,889	$0	$38,803	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$44,444	$4,444	$0	$44,432	$0
Totals:	$216,490	$8,333	$12,342	$216,392	$12,342

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$2,500,000	$250,000	$0	$0
Totals:	$2,500,000	$250,000	$0	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Kaydon Corp.
2860 McCracken Street
Norton Shores , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: AD
State Site ID#: 61000023
State Site Score: 30

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, to the east by Estes Street, and to the south by residential properties. The site is approximately 600 feet from Ruddiman Creek, which discharges into Muskegon Lake, which in turn discharges into Lake Michigan.

SITE 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 volatile organic compounds, metals, cyanide, and polynuclear aromatic hydrocarbons. These contaminants impacted the on-site soils, the groundwater on and off the site, and the surface water and sediments of Ruddiman Creek. Currently the groundwater contaminant concentrations on-site and off-site exceed 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 leaving the Kaydon facility.

In 1986, Kaydon excavated the lagoon area, removing 1,500 cubic yards of contaminated soil and sludges, which were taken off-site for disposal in an approved landfill. In 1987, they installed and began operation of two groundwater purge wells to capture contaminants leaving the site property. The site was added to the National Priorities List in February 1990.

In November 1992, the EPA published a Site Analysis Report. This report was an analysis to assess and document past activities that may have contributed to the groundwater, surface water, or soil contamination associated with the site. 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 are below the NREPA criteria for limited industrial use.

Kaydon submitted a Remedial Action Plan (RAP) for the remaining on-site soil and groundwater contamination to the MDEQ for review in 1997. 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. At the request of the potentially responsible parties, the RAP for the remaining on-site contamination was withdrawn pending response actions in the Dumpster and Sludge area.

An interim response was conducted on this area in July 1998. The interim response consisted of removal and disposal of contaminated soils, as well as extraction of visually impacted groundwater (after the soil removal, the groundwater in the excavation had a visible oil sheen). A report on the interim response activities for this area was submitted to the MDEQ for review in October 1998. The MDEQ provided comments on the Interim Action Report, which required further investigation of the area. Kaydon submitted a report to the MDEQ on January 21, 1999, addressing the MDEQ's comments on the original interim response document, and identified another area of known contamination, the Used Oil Vault area.

The Used Oil Vault area included a 20,000-gallon concrete vault originally used as a settling basin for process waters. In July 1998, the vault housed a used 10,000-gallon steel oil tank that had been used to store machine coolant oils. This tank had formerly been located east of the manufacturing plant building. Kaydon identified this area and conducted an investigation and removal action without notification to the MDEQ prior to reporting their findings in the January 21, 1999, report. The MDEQ reviewed the report and provided comments to Kaydon.

Kaydon performed further investigatory work in both the Dumpster and Sludge and Used Oil Vault areas on-site. Based on the results of this work, Kaydon submitted a work plan in December 2000 proposing a change in the design of the on-site groundwater extraction system. Kaydon proposed to install an additional groundwater purge well near the location of the former dumpster area. The proposal would be incorporated into the RAP for the on-site soil and groundwater contamination.

All on-site investigation work was believed to be completed, and a draft revised RAP for the on-site soil and groundwater contamination was submitted in November 2001. The MDEQ provided comments on the draft revised RAP, which was expected to be submitted for approval as an Interim RAP in August 2002. The 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, the MDEQ 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 the MDEQ. The indoor air investigation was conducted in July 2003. The report of this investigation was submitted and approved by the MDEQ in 2004.

Kaydon submitted a work plan in December 2000 for investigation of the off-site groundwater contamination. The MDEQ provided comments on the work plan, and the off-site investigation was conducted from 2001 through 2003. A report on this groundwater investigation which included both on-site and the off-site groundwater contamination plume, was submitted to the MDEQ in 2004.

Discussions between Kaydon and the MDEQ in 2005 determined that an additional extraction well was not needed. The MDEQ proposed installation of one additional monitoring well and several piezometers on-site to complete the on-site monitoring network. The installation of the additional monitoring well and piezometers was completed in late 2006.

The EPA developed and finaled a Preliminary Close-Out Report, which states that all of the on-site construction for the remedy had been completed. The Preliminary Close-Out Report, a requirement in the Superfund process, was signed in June 2006.

A prospective buyer for the Kaydon Building Three initiated the process to purchase this

building in 2007. Historical information and data collected indicated contamination was not located on this portion of the site in or around Building Three. Purchase of the building was completed in 2007.

In June 2008, both the MDEQ and Kaydon agreed to perform a two-year Pilot Test Shutdown of the Pump and Treat System. If during the pilot test, groundwater monitoring determines that contamination in operable unit 1 remained at or below Part 201 criteria, the pump and treat system can be shut down permanently and the Operation and Maintenance of both operable unit 1 and operable unit 2 will continue under a Monitored Natural Attenuation remedy with on-going quarterly groundwater sampling. The Pilot Test Shutdown ended in June 2010.

SITE STATUS

Based upon discussions held between the MDEQ and Kaydon throughout 2010, a list of documents to be submitted for Operable Unit 2 (OU2) for the RAP was developed. In 2011, Kaydon is expected to submit the following documents for OU2: a Remedial Investigation/Feasibility Study (RI/FS) for OU2 to address the location of the Kaydon facility boundary, document groundwater uses within the area of the plume and determine receptors, migration and exposure pathways, and Groundwater Surface Water Interface (GSI) issues for Ruddiman Creek. When these plans are finaled, Kaydon will submit a RAP encompassing all the remedial work that has been completed on the site. The final RAP will also include a groundwater ordinance, Financial Assurance Mechanism, and a Consent Decree. This draft RAP submittal could be delivered to the MDEQ for review by the end of 2011.

The Two Year Pilot Test ended in June 2010. Based on the groundwater data collected during the pilot test, only one on-site monitoring well detected contamination exceeding criteria. It was agreed by MDEQ and Kaydon, to continue the Pilot Test for one additional year with continued quarterly groundwater monitoring of this well. If contamination concentrations increase, the groundwater extraction system may be reactivated. However, if during this extended pilot test period, groundwater monitoring determines that contamination in OU1 remained at or below Part 201 criteria, the pump and treat system can be shut down permanently and the Operation and Maintenance of both OU1 and OU2 will continue under a Monitored Natural Attenuation remedy with on-going quarterly groundwater sampling.

Quarterly groundwater sampling for both OU1 and OU2 continued through 2010.

ENFORCEMENT STATUS

Kaydon is the only party identified as liable under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended and NREPA. Kaydon is prepared to enter into a Consent Agreement with the state to implement the approved RAP. The Consent Agreement will be negotiated after the completion and approval of the RAP.

SPECIAL CONSIDERATIONS

Purchase of Building Three from Kaydon by Seed America was completed in 2007. This building, located on the Kaydon site, had been vacant for many years. Seed America purchased the building to use for storage. Seed America conducted a Baseline Environmental Assessment (BEA) prior to completing the purchase but did not submit the BEA to the MDEQ. Based upon historical information for the Kaydon site, no contamination related to Kaydon was ever found in, around, or under Building Three. However, Seed America filed for bankruptcy in 2008 and vacated the building. Current ownership of the building is unknown and it remained unoccupied throughout 2010.

OPERABLE UNITS

00	Entire Site
1	On-Property Soils and Groundwater
2	Off-Property Groundwater

OPERABLE UNIT 1 : On-Property Soils and Groundwater

Response Accomplishments: Completed

Remedial Investigation Investigations of lagoon areas.

Start Date: *04/01/1986* Primary Cost: $0 Source: Private
End Date: *12/01/1986* Secondary Cost: $0 Source:

Interim Response 1,500 cubic yards of contaminated soil from the lagoon areas were excavated and disposed of off-site.

Start Date: *07/01/1986* Primary Cost: $0 Source: Private
End Date: *12/01/1986* Secondary Cost: $0 Source:

Interim Response Install and begin operation of on-property groundwater capture system. Completed the on-site monitoring network by the end of 2006.

Start Date: *08/17/1987* Primary Cost: $0 Source: Private
End Date: *12/30/2006* Secondary Cost: $0 Source:

Remedial Investigation Investigation of dumpster disposal and used oil vault areas.

Start Date: *05/30/1997* Primary Cost: $0 Source: Private
End Date: *04/01/1998* Secondary Cost: $0 Source:

Interim Response Soil excavation and disposal from dumpster and used oil vault areas.

Start Date: *07/01/1997* Primary Cost: $0 Source: Private
End Date: *09/30/1997* Secondary Cost: $0 Source:

Interim Response Indoor air investigation. The sampling was completed in 2003 and the report was submitted in 2004.

Start Date: *07/01/2003* Primary Cost: $0 Source:
End Date: *12/30/2003* Secondary Cost: $0 Source:

OPERABLE UNIT 1 : On-Property Soils and Groundwater

Response Accomplishments: Ongoing

Operation and Maintenance

Continue operation of on-site groundwater extraction system, sending effluent to city sanitary sewer for treatment and quarterly groundwater sampling under the 2008 Operation and Maintenance (O&M) plan. In June 2008, both the MDEQ 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. Based on the groundwater data collected during the pilot test, only one on-site monitoring well detected contamination exceeding criteria. It was agreed by the MDEQ and Kaydon, to continue the Pilot Test for one additional year with continued quarterly groundwater monitoring of this well. If contamination concentrations increase, the groundwater extraction system may be reactivated. If during the pilot test, groundwater monitoring determines that contamination in operable unit 1 remained at or below Part 201 criteria, the Pump and Treat System can be shut down permanently and the O&M of both operable unit 1 and operable unit 2 will continue under a Monitored Natural Attenuation remedy with on-going quarterly groundwater sampling.

Start Date: *08/17/1987*	Primary Cost:	$0	Source: Private
End Date: *09/30/2017*	Secondary Cost:	$0	Source:

OPERABLE UNIT 2 : Off-Property Groundwater

Response Accomplishments: Completed

Remedial Investigation

Investigate off-site groundwater contamination. Report of the three years of monitoring was submitted in 2004.

Start Date: *01/01/2001*	Primary Cost:	$0	Source: Private
End Date: *12/30/2003*	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Negotiations

The state and Kaydon are in negotiations to determine if there is a need to develop and submit an RI/FS plan to address the following issues for operable unit 2: determine the Kaydon facility boundary; establish the off-site groundwater plume boundary; determine groundwater uses within the plume boundary; determine the migration exposure pathway and GSI issues for Ruddiman Creek, if any.

Start Date:	Primary Cost:	$0	Source:
End Date: *09/17/2011*	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

Operation and Maintenance

The off-site operable unit 2 groundwater plume monitoring plan has yet to be developed. However, on-going quarterly sampling of the operable unit 2 monitoring wells continued through 2010.

Start Date: *06/07/2009*	Primary Cost:	$0	Source: Private
End Date: *06/30/2018*	Secondary Cost:	$0	Source:

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Muskegon Chemical
1725 Warner Street
Whitehall , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: DL
State Site ID#: 61000029
State Site Score: 37

LOCATION
The Muskegon Chemical Company site (the 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.

SITE 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, the MDEQ 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 the MDEQ entered a consent agreement, which approved the existing purge well system and established a seven-year period of operation.

A March 1989 report by the MDEQ documented continued impact on Mill Pond Creek by the Whitehall facility groundwater contamination plume.

On February 21, 1990, the site was placed on the National Priorities List, requiring that contamination at the site be investigated and cleaned up according to the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended.

On February 25, 1991, Koch and the MDEQ signed an Administrative Order by Consent, that required Koch to conduct an interim response action and a remedial investigation/feasibility study (RI/FS) under direction of the MDEQ. 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, the MDEQ 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 finaled 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 the Muskegon County ordinance in place of the deed restrictions not able to be attained from Howmet Corporation.

In 2002, Koch Chemical Company requested a mixing zone determination from the MDEQ's Water Division. Subsequent to the request, the MDEQ's Water Division 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 the MDEQ allow Koch to shut down the groundwater extraction system while Koch and the MDEQ negotiated an amendment to the RAP. The amended RAP would incorporate the mixing zone based groundwater discharge criteria as the cleanup criteria for groundwater at the site. The MDEQ approved an interim shutdown of the groundwater extraction system in April 2002.

Active soil remediation was concluded in 1999. There was a small area of groundwater that remained contaminated with elevated levels of tetrachloroethylene that, while still protective of Mill Pond Creek, needed to be addressed. Koch decided to remediate this contamination through air sparging. The air sparging system was installed on the plant property in the summer of 2003 and was operated until 2006.

In 2006, Koch petitioned the MDEQ to cease, on an interim basis, operation of the air sparging system. The purpose of the shutdown was to evaluate whether or not the perchloroethylene (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.

Koch proposed a conceptual RAP revision to the MDEQ in 2003. Internal review of the document resulted in the identification of certain items that required resolution before the MDEQ 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, remove the possibility of drawing site related contaminated groundwater to a city well, and change 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.

In May 2005, Koch submitted a draft RAP to the MDEQ. 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 the MDEQ in October 2006. This submittal, and the subsequent discussions with Koch have resolved nearly all of the issues earlier raised by the MDEQ. One outstanding issue was determining and establishing appropriate permanent shutdown

criteria for the air sparge system. Through discussion, this issue was resolved to the satisfaction of each party involved. Revised draft RAP amendments were submitted to the MDEQ in December 2008 and May 2009 for agency review.

The existing RAP requires 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.

On April 4, 2008, the EPA signed the third Five-Year Review for the site. The third Five-Year Review 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. Effective Insitutional Controls 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 vapor intrusion pathway, review and potentially modify use restrictions, along with long-term stewardship procedures, potential modification of cleanup criteria, and define shut down criteria for the Air Sparge system. Each of these items were brought to resolution in the months following release of the five-year review document.

The RAP Amendment was approved by the MDEQ in January 2010.

SITE STATUS
Koch continues to conduct groundwater monitoring at the site under the Consent Decree and the RAP Amendment between Koch and the State of Michigan.

ENFORCEMENT STATUS
In 1997, Koch signed a Consent Decree with the MDEQ to implement the remedy and reimburse state costs. The Decree required Koch to have restrictive covenants placed on off-site properties that are affected by the groundwater plume to prevent groundwater usage. A restrictive covenant has been placed on all affected parcels except one. Since this restrictive covenant could not be negotiated, the MDEQ and Koch negotiated changes to the RAP that allow the Muskegon County well permitting ordinance to serve as an institutional control for this parcel of property.

A RAP Amendment was approved by the MDEQ 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.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 03/10/1993**

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.

Remedial Action Plan Identifier: Muskegon Chemical **Effective 07/02/1995**

Final Determination: Technically Approved

Response Accomplishments: Completed

Remedial Investigation

Under several different orders, Koch Chemical Company 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.

Start Date: *06/15/1981* Primary Cost: $750,000 Source: Private

End Date: *06/15/1996* Secondary Cost: $0 Source:

Interim Response

Koch Chemical Company, under a Consent Agreement with the MDEQ, 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.

Start Date: *06/15/1983* Primary Cost: $750,000 Source: Private

End Date: *06/01/1996* Secondary Cost: $0 Source:

Remedial Action

The RA 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.

Start Date: *06/01/1996* Primary Cost: $2,000,000 Source: Private

End Date: *06/01/1999* Secondary Cost: $0 Source:

5 Year Review

The first Five-Year Review reaffirmed the cleanup goals from the Remedial Action Plan and identified no new issues that required resolution.

Start Date: *01/01/1998* Primary Cost: $0 Source:

End Date: *03/13/1998* Secondary Cost: $0 Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

The second Five-Year Review identified a number of followup actions, including the resolution of drinking water issues with the city of Whitehall, resolution of institutional control issues, and resolution of a proposed modification to the RAP to allow for new groundwater cleanup criteria.

Start Date: 01/01/2003	Primary Cost:	$0	Source:
End Date: 04/04/2003	Secondary Cost:	$0	Source:

5 Year Review

The third Five-Year Review 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 Instituitonal Controls. Effective Institutional Controls must be monitored and maintained. Some additional follow-up actions were recommended to help ensure long-term protectiveness is maintained. These actions are to evaluate the vapor intrusion pathway, review and potentially modify use restrictions, along with long-term stewardship procedures, potential modification of cleanup criteria and define shutdown criteria for the Air Sparge system.

Start Date: 10/01/2007	Primary Cost:	$10,000	Source: Private
End Date: 04/04/2008	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

Operation and maintenance activities at this site are conducted by Koch Chemical Company, and consist of groundwater monitoring and landfill cap maintenance. Costs shown are estimated.

Start Date: 06/15/1983	Primary Cost:	$1,500,000	Source: Private
End Date: 01/01/2020	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: 04/04/2012	Primary Cost:	$0	Source:
End Date: 04/04/2013	Secondary Cost:	$0	Source:

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Ott/Story/Cordova Chemical Co
500 Agard Road
North Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 02
State Site ID#: 61000051
State Site Score: 43

LOCATION
The Ott/Story/Cordova Superfund site (the 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.

SITE HISTORY
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 the Michigan Department of Environmental Quality (MDEQ), 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.

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. According to the EPA Risk Assessment published in 1989, cancer risks for ingestion of the most severely contaminated groundwater was 1:1. Many residents were provided with bottled drinking water in the 1970s, and in 1982 a municipal water supply line was installed. A former owner of the site and federal and state grants funded the water line construction. 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. Public health warning signs were posted along the creek since shortly after the health risks from exposure to the creek were identified. 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.

To address the groundwater contamination, construction of a $36.7 million groundwater-extraction system and treatment plant began in the summer of 1994, and was completed in early 1996. The purpose of the groundwater remedy is to stop the discharge of contaminated groundwater to the creek and to remediate the groundwater contaminant plume. 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 1 and 2. The treatment system consists of air strippers, powdered activated sludge tanks, tertiary

filtration, and granular activated carbon steps. 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 (NPDES) permit. The construction work was performed by the EPA, with the state providing the requisite 10 percent match through a Superfund State Contract (SSC). The pump and treat system was designated operational and functional August 9, 2000. Treatment plant operation and maintenance (O & M) costs were estimated at $3.0 million per year initially, but have dropped, and beginning in 2006 were $2.0 million per year. The state is responsible for 10 percent of the O & M costs during the first 10 years of operation, provided to EPA through another SSC. At the end of the ten-year term, the state becomes responsible for 100 percent of the plant's operation costs. 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.

The RI also revealed that soil contamination was restricted to the operating plant site with the exception of a waste burial area just east of the plant. The contaminant levels, including carbon tetrachloride and various pesticides, appear to have naturally degraded since 1977. Only a few isolated locations remain with exceedances above acceptable industrial worker direct contact criteria. Low levels of dioxins have also been detected in the area where a former drum incinerator was located. A low- temperature thermal destruction soil treatment technology was identified in the third ROD, known as Operable Unit 3, to address the site soil. However, it was subsequently determined that the volume of soil needing remediation was not significant enough to make on-site treatment cost effective. The original Operable Unit 3 ROD was amended to change the soils remedy to excavation and disposal at a licensed landfill. It was estimated that about 4,000 cubic yards of contaminated soil would need to be excavated from the former plant property in order to attain safe industrial worker direct contact cleanup standards. The volume of soils requiring excavation increased during the cleanup due to verification sampling from beneath numerous concrete foundations and slabs. These areas had not been sampled during previous RI work. The MDEQ removed specified concrete slabs and foundations during soil excavation to facilitate the anticipated Muskegon County site redevelopment plans. Excavation of the discrete areas known to be contaminated with disposal in a licensed landfill, began in October 2001 and was completed in June 2002.

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.

SSC Amendment Number 1 for Long-Term Response Action (LTRA) activities was signed in June 2007. This SSC Amendment will cover the costs of operating the water treatment plant through 2010 when the MDEQ is scheduled to assume responsibility for its operation.

Application for renewal of the NPDES permit was made in 2007. The permit was issued in May 2008.

The third Five-Year Review was written in 2007 and signed on September 19, 2007. The Five-Year Review identified several issues remaining to be addressed. First, the "extent-of-contamination" investigation of the semi-confined (confined) aquifer stipulated in the Operable Unit 2 ROD had not been conducted. Second, a capture zone analysis that includes hydraulic and chemical evaluations needed to be done to confirm complete capture of the groundwater contaminant plume. Third, a deep (bedrock) well in the former production area must be dealt with. Once the confined aquifer and capture analysis work was completed, a determination could be made regarding what, if any, institutional controls need to be implemented to prevent exposure to site contaminants. Steps to address these

issues were initiated in late 2007; however, initiation of the investigation did not begin until 2009.

In November 2008, with the approval of the agencies, plant personnel began another variable operations plan to assess whether operation of the Thermal Oxidation Unit continues to be necessary to meet air emission standards. A significant operational cost savings could be effected, if it is determined that the air strippers and Thermal Oxidation Unit can be discontinued while maintaining compliance with air emission limits.

The EPA arranged for a groundwater capture analysis to be performed in 2007. The results of this analysis indicate that complete capture in some areas is not confirmed.

A Scope of Work for investigation of the (semi) confined aquifer, using vertical aquifer sampling techniques as well as other investigative work, was finalized in August 2009. The first phase of the investigation, performed by Black & Veatch, was initiated in September 2009, with a final report summarizing the phase one results being submitted in April 2010. The second phase of investigation was initiated in June 2010. A draft report for phase two of the investigation was submitted by the contractor in November 2010. Another component of the contract with Black & Veatch was to identify potential remediation enhancement technologies to reduce the mass of contamination in the shallow aquifer which may shorten the duration of treatment necessary to reach cleanup goals that may be viable at the Ott/Story/Cordova site. Black & Veatch submitted a technical memorandum preliminarily screening potential technologies in October 2010. Other tentative tasks contained in the Scope of Work, but yet to be performed, include a task installation of permanent monitoring wells in key locations to monitor the contaminant plume in the confined aquifer, and a task to evaluate the extent of impact from a deep (bedrock) well that remains at the former plant. Federal funding for the bedrock aquifer study is not currently available.

SITE STATUS

In anticipation of the transition from LTRA to O & M when the state becomes responsible for 100 percent of treatment plant operations, the MDEQ retained an engineering firm to perform an independent treatment plant assessment to identify any major upgrades or repairs that may be appropriate prior to management transition. In addition, this firm was tasked with evaluating the capability of the Muskegon County Water Management System (the Muskegon County Publicly Owned Treatment Works [POTW]) to accept raw, or pre-treated site groundwater and to assess whether this would effect significant cost savings to the state. The engineering firm, Malcolm Pirnie, submitted a series of technical memoranda summarizing detailed assessment of the existing groundwater extraction system and groundwater treatment plant as well as a list of repairs and upgrades to the facility that they recommended take place prior to transition from LTRA to O & M. Malcolm Pirnie further advised the MDEQ that their assessment indicated that the POTW was capable of treating the raw groundwater from the extraction well system and maintaining compliance with applicable limits. Whether or not direct discharge to the POTW would effect a cost savings for the state of Michigan could not be assured.

The MDEQ took the following additional actions during the remainder of 2010: The Water Resources Division evaluated the technical memoranda from Malcolm Pirnie relative to the direct discharge to the POTW and reached the conclusion that the MDEQ should submit an application to the POTW for direct discharge of the Ott/Story/Cordova groundwater. Depending upon the POTW's acceptance of the water and the price for accepting the water, the MDEQ can evaluate whether it should proceed to design the infrastructure necessary to begin direct discharge of extracted groundwater during the next year. Simultaneously, the MDEQ identified additional improvements to the groundwater extraction system and treatment plant that needed to be made prior to transition and submitted these along with the repairs identified by Malcolm Pirnie to the EPA in May 2010. The Air Quality Division of the MDEQ issued a new Substantive Requirements Document for the Ott/Story/Cordova facility

after their evaluation of the data from the variable operations study on the air strippers and Thermal Oxidation Unit, which determined that it was not necessary to operate the strippers or the Thermal Oxidation Unit to meet emissions limits. Finally, the MDEQ petitioned the EPA headquarters in Washington D.C. to recalculate the LTRA period for this site because the EPA did not implement all of the components of the RODs. The EPA headquarters determined that while it was unfortunate that the entire remedy has not been implemented, this did not justify recalculation of the LTRA period. As a result, the MDEQ continued working with the Department of Technology, Management and Budget toward hiring a contractor to perform O & M of the Ott/Story/Cordova facility at 100 percent cost to be borne by the state of Michigan. The EPA did agree to extend the LTRA time period beyond October 2010 to provide sufficient time for the MDEQ and Department of Technology, Management and Budget to develop and implement the procurement process to retain a qualified contractor for O & M of the facility. The contract will be for a term of one year with the possibility of two additional years to provide opportunity for the MDEQ to determine whether the groundwater can be more cost effectively treated by discharge to the POTW. The O & M contract commenced on February 1, 2011.

ENFORCEMENT STATUS

In the past there has been ongoing litigation to determine the liability of the potentially responsible parties (PRPs) at the Ott/Story/Cordova site. 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 the

MDEQ to perform or fund the remedy for Operable Unit 3. The state paid the Aerojet Defendants $1.5 million to resolve all claims for indemnification.

The groundwater capture and treatment Remedial Action (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 MDEQ implemented the soils remedy and additional work to facilitate redevelopment. The remedy and additional work to facilitate redevelopment was completed by June 2002.

SPECIAL CONSIDERATIONS
Muskegon County initiated redevelopment efforts at the former chemical plant site in 2007 with the installation of utilities and roads to facilitate use as an industrial park. As of December 2010, there do not appear to be any tenants in the industrial park.

OPERABLE UNITS

00	Entire Site
01	Groundwater Containment
02	Groundwater Contain/Restore
03	Soils/Sediment

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Bottled Water Residents whose private water wells were contaminated by the migrating plume were placed on bottled water.

Start Date: 01/15/1975 Primary Cost: $0 Source: Federal
End Date: 12/15/1982 Secondary Cost: $0 Source:

Interim Response The EPA conducted a preliminary site investigation to assess the nature of the pollutants and extent of contamination at the site.

Start Date: 01/15/1977 Primary Cost: $500,000 Source: Federal
End Date: 12/15/1978 Secondary Cost: $0 Source:

Interim Response Removal of 8,700, fifty-five-gallon drums of chemical waste and excavation of lagoon sludge was performed as a joint action between the MDEQ and the Cordova Chemical Company as part of the agreement for the Cordova Chemical Company to assume ownership of the site.

Start Date: 01/15/1977 Primary Cost: $670,000 Source: State
End Date: 12/15/1978 Secondary Cost: $600,000 Source: Private

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Alternate Water 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 PRP group also contributed $100,000.

Start Date: 01/15/1981	Primary Cost:	$1,000,000	Source: Federal
End Date: 12/15/1982	Secondary Cost:	$130,000	Source: State

5 Year Review

Start Date: 07/15/2002	Primary Cost:	$0	Source: Federal
End Date: 09/19/2002	Secondary Cost:	$0	Source:

5 Year Review

Start Date: 05/01/2007	Primary Cost:	$25,000	Source: Federal
End Date: 09/19/2007	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review

Start Date: 03/01/2012	Primary Cost:	$0	Source:
End Date: 09/19/2012	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Groundwater Containment

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1989**

Groundwater extraction and treatment. The RI/feasibility study (FS), Design, and RA for this operable unit were combined with Operable Unit 2.

Response Accomplishments: Completed

Remedial Design This remedial design was combined with Operable Unit 2 after determining that it was more cost-effective to address the entire site groundwater remediation with one overall action.

Start Date: 06/05/1990	Primary Cost:	$500,000	Source: Federal
End Date: 09/25/1991	Secondary Cost:	$0	Source:

Remedial Action This RA was later combined with the Operable Unit 2 RA.

Start Date: 09/25/1991	Primary Cost:	$471,600	Source: Federal
End Date: 09/28/1992	Secondary Cost:	$52,400	Source: State

OPERABLE UNIT 02: Groundwater Contain/Restore

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1990**

Groundwater extraction and treatment.

Response Accomplishments: Completed

Remedial Investigation The EPA conducted the RI/FS.

Start Date: 08/19/1983	Primary Cost:	$1,136,000	Source: Federal
End Date: 09/29/1990	Secondary Cost:	$0	Source:

Remedial Design The EPA conducted groundwater treatability studies to determine the appropriate treatment for the groundwater. The Army Corps of Engineers, through an interagency agreement with the EPA, contracted out the groundwater-system design work to a private design firm (Operable Unit 1 objectives were incorporated into this design.).

Start Date: 01/31/1990	Primary Cost:	$1,526,000	Source: Federal
End Date: 09/27/1993	Secondary Cost:	$0	Source:

Long Term Remedial Action The ten-year period, prior to the time when the state assumes full responsibility for the remedy, is known as LTRA. The state has entered into a SSC with the EPA for $25 million which commits the state's 10 percent match funding of $2.5 million for the ten years of LTRA.

Start Date: 08/09/2000	Primary Cost:	$22,500,000	Source: Federal
End Date: 01/31/2011	Secondary Cost:	$2,500,000	Source: State

OPERABLE UNIT 02: Groundwater Contain/Restore

Response Accomplishments: Construction Complete

Remedial Action

Note: Operable Units 1 and 2 are combined since both are handled with one groundwater treatment plant. The groundwater treatment plant consists of a diffused air stripper, with vapors run through a thermal oxidation unit, followed by powdered activated carbon treatment, then tertiary filtration and granular activated carbon polishing.

Construction of the groundwater extraction and treatment system has been completed and the plant began operating on February 12, 1996. The purpose of the system is to stop discharge of contaminated groundwater into Little Bear Creek and to remediate the aquifer.

Installation and construction costs for the redesigned effluent pipeline, which was completed in September 1999, added additional costs of $900,000 for the federal government and $100,000 to the state of Michigan. The state provided its 10 percent match to the EPA through a SSC.

Start Date: 09/28/1992	Primary Cost:	$33,055,200	Source: Federal
End Date: 08/09/2000	Secondary Cost:	$3,672,800	Source: State

Response Accomplishments: In Progress

Operation and Maintenance

Engineering review of the existing Ott/Story/Cordova wastewater treatment plant (WWTP) prior to state assumption of 100 percent O & M. Also, evaluation of the Muskegon County POTW to handle pre-treated groundwater from Ott/Story/Cordova. 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.

Start Date: 10/02/2008	Primary Cost:	$188,888	Source: State
End Date: 08/14/2011	Secondary Cost:	$0	Source:

Remedial Investigation

This activity is the investigation of the semi-confined aquifer which was stipulated in the second ROD for the site. The EPA has secured a bid from a consulting firm and the work is underway. Two phases of field work have been completed. A draft report summarizing the last phase of field work is currently under review of the EPA and MDEQ.

Start Date: 02/09/2009	Primary Cost:	$0	Source:
End Date: 08/31/2011	Secondary Cost:	$0	Source:

Operation and Maintenance

Estimated O & M cost of $2,000,000 per year in 2007 dollars, over 60 years, for an aggregate cost of $120,000,000. The MDEQ executed a contract with Fishbeck, Thompson, Carr, & Huber Inc. for one year of O & M with two one-year optional extensions.

Start Date: 02/01/2011	Primary Cost:	$2,000,000	Source: State
End Date: 01/31/2071	Secondary Cost:	$0	Source:

OPERABLE UNIT 03: Soils/Sediment

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/27/1993**

Excavation and treatment on-site with low-temperature thermal desorption.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 02/26/1998**

Excavation of site soils with off-site disposal.

Response Accomplishments: Completed

Remedial Investigation

Operable Unit 3 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.

Start Date: 09/19/1990	Primary Cost:	$269,000	Source: Federal
End Date: 09/27/1993	Secondary Cost:	$0	Source:

Remedial Design

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.

Start Date: 01/12/1994	Primary Cost:	$699,000	Source: Federal
End Date: 03/06/1995	Secondary Cost:	$0	Source:

Remedial Action

The original remedy called for low-temperature thermal desorption treatment of contaminated soils. The 1995 changes in state cleanup criteria and higher than projected costs for low-temperature thermal desorption treatment caused the EPA to issue a stop work order to re-evaluate the remedy selection. An amendment to the ROD changing the remedy to excavation and landfilling of soils was approved in February 1998.

Monitoring of Little Bear Creek sediments and surface water. Monitoring was extended for one additional year from December 2001 through December 2002.

This work was done under a SSC between the EPA and the state, assuring a 90/10 percent cost share. The contract was amended to reflect the remedy change, and included the monitoring of Little Bear Creek.

Start Date: 04/04/1995	Primary Cost:	$3,195,000	Source: Federal
End Date: 12/30/2002	Secondary Cost:	$355,000	Source: State

Remedial Action

Implementation of the Operable Unit 3 design of building demolition, and soil excavation with off-site disposal.

Start Date: 10/01/2001	Primary Cost:	$2,843,852	Source: State
End Date: 06/15/2002	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$33,337	$0	$0	$33,337	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$32,907	$0	$0	$32,472	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$55,131	$0	$7,444	$55,131	$38,352

Cooperative Agreement Number V005851-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$165,000	$0	$0	$163,889	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$20,000	$0	$0	$49	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$55,555	$5,555	$0	$55,555	$0

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$200,333	$20,033	$0	$200,296	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$79,046	$0	$0	$53,539	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$11,060	$0	$0	$11,060	$0
Totals:	$652,370	$25,588	$7,444	$605,328	$38,352

STATE SUPERFUND CONTRACTS

For Operable Unit 01 : Groundwater Containment : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$524,000	$52,400	$52,400	$0

For Operable Unit 02 : Groundwater Contain/Restore : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Long Term Remedial Action	$25,000,000	$2,500,000	$2,262,454	$0
Remedial Action	$36,728,000	$3,672,800	$3,668,218	$0

For Operable Unit 03 : Soils/Sediment : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$3,301,113	$330,111	$330,111	$0
Totals:	$65,553,113	$6,555,311	$6,313,184	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Peerless Plating
2554 Getty Avenue
Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: G2
State Site ID#: 61000039
State Site Score: 39

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 boundry 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.

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 construction of proper treatment facilities. These repeated regulatory efforts culminated in 1983 when the Michigan Department of Natural Resources (MDNR) 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 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. The MDNR requested the EPA Region V 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 failed. The final RI report was completed in September 1991, the FS 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, 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. The MDEQ concurred with the ROD.

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 the 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. The MDEQ concurred with this ESD.

The building was demolished in April 1993. The sampling of the soils beneath the building was completed in August 1993. The preliminary remedial design (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 remedial actions became available late in 1996.

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 contaminant 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 ten percent match funding for the LTRA ten year period.

The first Five-Year Review 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 December 2002, review of the toxicity test results dated November 19, 2002, indicated that the mortality/reproductive rate for Ceriodaphnia dubia exceeded the allowable limits specified in the SRD. The decision was made by the MDEQ that since the discharge limits exceeded the requirements of the discharge permit for Ceroidaphnia dubia that the facility discontinue pumping until the toxicity problem was resolved. The discharge commenced again on January 3, 2003, after being shut down for seven days. The flocculent was changed, which seemed to resolve the problem. A modification of the extraction and pumping system assisted in stabilizing the discharge limits to meet the SRD.

The 2003 quarterly reports indicated that the extraction wells were not completely capturing the plume. The MDEQ and the EPA met at the site to conduct further investigation of the plume. This involved the addition of 4-5 monitoring wells along the Little Black Creek and 5-10 vertical aquifer wells along the south and east sides of the site. The State began work in late spring 2004, and installed most of the wells. Staff installed an additional eleven monitoring wells in late 2004 and early 2005. One additional well was installed inside the adjacent Hardware Distributors Incorporated building. Sampling of the groundwater monitoring wells continued on a regular basis.

The city of Muskegon contacted the MDEQ 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 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 county 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 the 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, the MDEQ, in June 2005, performed additional studies of the Little Black Creek to determine the source and extent of any cadmium in the Creek. The MDEQ collected sediment samples all along the 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 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 the Little Black Creek to the Muskegon Waste Water Treatment Plant.

A second Five-Year Review Report was initiated by the EPA on October 25, 2006, and was completed on July 12, 2007. The report 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 have been implemented and maintained.

In 2008, the analytical data for the sediment samples collected from Little Black Creek was 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 would be required for Little Black Creek. The Ecological Risk Assessment was completed in March 2010, however a determination of the need for a remedial action has yet to be made.

SITE STATUS

The pump and treat remedy continued on the site in 2010. The EPA oversaw the site remedy O&M and performed the groundwater sampling every six months. The MDEQ is developing easements for the monitoring well network and a Restrictive Covenant for the site to act as the Institutional Controls required in the 2008 Five-Year Review. The LTRA process is scheduled to end in September 2013. At that time, O&M of the site remedy will be the responsibility of the State.

ENFORCEMENT STATUS

The responsible party declared bankruptcy in 1983 and there are no other viable liable parties. Therefore, no enforcement action is planned.

SPECIAL CONSIDERATIONS

In 2007, the owner of Hardware Distributors Incorporated expressed an interest in purchasing the Peerless Plating site to allow for expansion of his business. Talks between the Hardware Distributors Incorporated owner, his attorney, the EPA, and the MDEQ to complete the property transaction continued into 2008. However, in mid 2008, the Hardware Distributors Incorporated owner decided not to pursue the purchase of the Peerless Plating site.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/21/1992**

The ROD required demolition of the building, removal and off-site disposal of contaminated soils, construction and operation of a groundwater pump and treat 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 the MDEQ will acquire responsibility for the system O&M.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 07/24/1997**

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 04/05/2001**

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. Excavation of the contaminant 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.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 3 **Effective 03/15/2006**

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 pump and treat system to address contaminated groundwater. An air stripper was selected to reduce the volatile organic compounds detected in the groundwater followed by the precipitation of organic compounds. The treated groundwater was then discharged into the 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 the Little Black Creek to the Muskegon Waste Water Treatment Plant.

Response Accomplishments: Completed

Emergency Removal of cyanide and plating wastes in building.

Start Date: 09/01/1983	Primary Cost:	$131,000	Source: Federal
End Date: 10/31/1983	Secondary Cost:	$0	Source:

Remedial Investigation The RI/FS was conducted to determine the extent of heavy metals contamination on the site.

Start Date: 06/01/1989	Primary Cost:	$514,000	Source: Federal
End Date: 09/21/1992	Secondary Cost:	$0	Source:

Interim Response The EPA removal and disposal of liquids and sludges contained in an enclosed aboveground tank.

Start Date: 01/15/1991	Primary Cost:	$49,000	Source: Federal
End Date: 03/13/1991	Secondary Cost:	$0	Source:

Remedial Design The EPA-conducted design activities included the demolition and disposal of the Peerless Plating Company building with additional soil sampling beneath the building.

Start Date: 07/01/1992	Primary Cost:	$893,000	Source: Federal
End Date: 09/30/1996	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Action Soil excavation in lagoons and the Peerless Plating Company building areas. Construction of groundwater Pump and Treat System. Initial start-up and operation of groundwater treatment system. System determined to be operational and functional on September 10, 2002.

Start Date: 07/31/1996	Primary Cost:	$5,864,400	Source: Federal
End Date: 09/10/2002	Secondary Cost:	$651,600	Source: State

5 Year Review The second Five-Year Review 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.

Start Date: 10/01/2001	Primary Cost:	$0	Source: Federal
End Date: 09/25/2002	Secondary Cost:	$0	Source:

Remedial Investigation Funding was provided by the State to perform investigation of contaminated sediments in Little Black Creek. The MDEQ gathered all of the sediment analytical data and forwarded it to the EPA for review and inclusion in a perspective Risk Assessment report.

Start Date: 02/02/2005	Primary Cost:	$100,000	Source: State
End Date: 10/01/2005	Secondary Cost:	$0	Source:

5 Year Review The Five-Year Review 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.

Start Date: 10/25/2006	Primary Cost:	$20,000	Source: Federal
End Date: 07/12/2007	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Long Term Remedial Action O&M of treatment system for ten years. The SSC was amended in FY 2006 to provide funding for all ten years of LTRA. Quarterly groundwater sampling is on-going.

Start Date: 09/11/2002	Primary Cost:	$5,959,970	Source: Federal
End Date: 10/01/2013	Secondary Cost:	$662,219	Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

Remedial Action Contaminated sediment removal within Little Black Creek adjacent to the site to the first crossroad, Sherman Boulevard, which is approximately 50 yards, or 150 feet, may be necessary depending on the conclusion of the to be developed Risk Assessment report.

Start Date: 01/01/2011 Primary Cost: $450,000 Source: Federal

End Date: 01/10/2012 Secondary Cost: $50,000 Source: State

5 Year Review The next Five-Year Review is due on July 12, 2012.

Start Date: 10/25/2011 Primary Cost: $0 Source:

End Date: 07/12/2012 Secondary Cost: $0 Source:

Operation and Maintenance The MDEQ is scheduled to take over the O&M of the site from the EPA in September 2013. It is estimated that at least $15 million dollars will be needed by the State to perform the O&M for twenty years (approximately $750,000 per year).

Start Date: 10/01/2013 Primary Cost: $750,000 Source: State

End Date: 09/30/2033 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$19,810	$0	$0	$19,810	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$18,282	$0	$0	$18,282	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$30,000	$0	$0	$30,000	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,621	$0	$3,213	$12,621	$8,939

Cooperative Agreement Number V995261-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$133,333	$13,333	$0	$133,198	$0

Cooperative Agreement Number V995261-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Action	$11,111	$1,111	$0	$11,089	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$25,000	$0	$0	$25,000	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$6,457	$0	$0	$4,275	$0
Totals:	$256,614	$14,444	$3,213	$254,274	$8,939

STATE SUPERFUND CONTRACTS

For Operable Unit 00 : Entire Site : Open

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$13,138,189	$1,313,819	$1,168,054	$0
Totals:	$13,138,189	$1,313,819	$1,168,054	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: SCA Independent Landfill
4010 East Broadway
Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: 4A
State Site ID#: 61000047
State Site Score: 34

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.

SITE HISTORY
The SCA Independent Landfill 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 three 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 potentially responsible party (PRP) for the site, executed an Administrative Order by Consent (Order) with the MDNR in September 1993. In this Order 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 just upgradient from residential property.

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, does exceeded the GSI criterion at downgradient monitoring points.

It is unclear which properties to the northwest of the landfill have manganese, ammonia, or total nitrogen (from the landfill) in the groundwater at concentrations which exceed aesthetic and/or health based drinking water criteria. 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 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 found these improvements complete enough to warrant a Construction Completion, which was accepted on September 26, 2001.

It is anticipated that the completed source control measures, including future efforts to draw down perched leachate in the landfill, will bring the groundwater into compliance with GSI criteria by reducing the amount of leachate released to the groundwater and wetlands. However, it is unlikely that contamination will be reduced enough to comply with residential criteria off-property, so deed restrictions or notices of groundwater impact will likely be necessary.

Five-Year Reviews are to be performed subsequent to construction completion, with the first one completed by the MDEQ 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 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. One permanent monitoring well was installed to continue monitoring groundwater contamination toward the adjacent private properties. The remaining portion of the proposed supplemental investigation includes a transect of direct push borings at the western property boundary of the second adjacent privately owned parcel.

On October 22, 2009, the leachate holding tank at the site experienced a high level tank indicator failure and an undetermined volume of leachate overflowed the tank and spilled onto the surrounding ground. The PRPs responded to the spill by replacing the failed tank level indicator, installing a back-up level indicator in the tank, and removing and disposing of approximately 18 cubic yards of contaminated soil. Post removal soil sampling in the area of the excavation indicated that all soils exceeding applicable criteria had been removed. The PRPs have evaluated the operation and maintenance procedures for the site and have implemented some additional procedures to reduce the chances of spill reoccurrence.

SITE STATUS

The PRPs determined the additional transect of borings on the privately owned parcels were not necessary. Recommendations and conclusions from the investigation will be presented in a feasibility study for the site projected for completion by the end of February 2011.

The PRPs have continued voluntary operation and maintenance of the site although an approvable feasibility study has not been submitted. Additionally, the site will require a Remedial Action Plan after a feasibility study has been approved.

ENFORCEMENT STATUS
The site is a state-lead enforcement site. The state has a legal agreement with Waste Management, Inc., committing them to complete an RI/FS. This agreement also provides for payment of state costs incurred for oversight. Upon approval of an eventual Remedial Action Plan, a new agreement will be sought for the Remedial Design, Remedial Action, and Operation and Maintenance. The EPA is kept apprised of site activities and schedule.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Cancelled

Remedial Investigation

This is an investigation of the manganese and ammonia plumes migrating off landfill property, potentially requiring deed restrictions or notices of aesthetic impact. This investigation included a transect of direct push borings to sample groundwater on the first adjacent privately owned parcel. The investigation found exceedances of manganese and arsenic greater than residential drinking water criteria.

The summary report of this investigation has not yet been finalized. The MDEQ has provided comments to the PRPs. However, unresolved issues remain regarding conclusions drawn from this investigation.

Start Date: 01/01/2001	Primary Cost:	$400,000	Source: Private
End Date:	Secondary Cost:	$60,000	Source: State

Response Accomplishments: Completed

Negotiations

RI/FS negotiations.

Start Date: 03/25/1993	Primary Cost:	$0	Source:
End Date: 10/20/1993	Secondary Cost:	$0	Source:

Remedial Investigation

Start Date: 10/20/1993	Primary Cost:	$3,000,000	Source: Private
End Date: 12/31/2001	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response

The interim response consisted of landfill cap repairs, leachate extraction, and runoff water control.

Start Date: 05/01/2000	Primary Cost:	$2,000,000	Source: Private
End Date: 06/01/2001	Secondary Cost:	$0	Source:

5 Year Review

The MDEQ conducted the first Five-Year Review, concluding that the remedy is expected to be protective of human health and the environment upon completion of all remedial components.

Start Date: 10/01/2004	Primary Cost:	$0	Source: State
End Date: 05/13/2005	Secondary Cost:	$0	Source:

Remedial Action

On October 22, 2009, the leachate holding tank at the site experienced a high level tank indicator failure and an undetermined volume of leachate overflowed the tank and spilled onto the surrounding ground. The PRPs responded to the spill by replacing the failed tank level indicator, installing a back-up level indicator in the tank, and removing and disposing of approximately 18 cubic yards of contaminated soil. Post removal soil sampling in the area of the excavation indicated that all soils exceeding applicable criteria had been removed. The PRPs have evaluated the operation and maintenance procedures for the site and have implemented some additional procedures to reduce the chances of spill reoccurrence.

Start Date: 10/22/2009	Primary Cost:	$0	Source:
End Date: 02/11/2010	Secondary Cost:	$0	Source:

Response Accomplishments: In Progress

Remedial Investigation

In October 2009, the PRPs voluntarily completed a portion of a proposed supplemental investigation to determine the extent of volatile organic compound 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. One permanent monitoring well was installed to continue monitoring groundwater contamination toward the adjacent private properties. The remaining portion of the proposed supplemental investigation includes a transect of direct push borings at the western property boundary of the second adjacent privately owned parcel. The PRPs determined it was not necessary to complete additional transects of borings on the privately owned parcels. The results and conclusions of this work are anticipated to be summarized within the feasibility study submittal in late February 2011.

Start Date: 10/19/2009	Primary Cost:	$0	Source:
End Date: 02/25/2011	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Ongoing

Operation and Maintenance Operation and maintenance 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.

Start Date: 12/01/2001 Primary Cost: $1,500,000 Source: Private

End Date: 10/01/2011 Secondary Cost: $100,000 Source: State

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995340-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$33,244	$0	$0	$33,150	$0
Totals:	$33,244	$0	$0	$33,150	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Thermo-Chem, Inc
4331 Evanston Road
Muskegon , MI

County: Muskegon
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: W1
State Site ID#: 61000056
State Site Score: 34

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 two 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.

SITE HISTORY
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. Waste sludges and residues were incinerated on-site, and wastewater was discharged to a clay-lined lagoon and two seepage lagoons. The Thomas Solvent Company sold both reprocessed and virgin solvents. The site includes both the Thermo-Chem, Inc. and the Thomas Solvent Company properties and the area of the groundwater contaminant plume, which flows south to Black Creek.

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 potentially responsible parties (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 original 1997 Substantive Requirements Document (SRD) for the Phase lll In-Situ Vapor Extraction/Air Sparging System has been modified twice by the MDEQ Air Quality Division, Permits Section, at the request of the PRPs. The SRD was modified in November 2001 and again in February 2002 . The air discharge SRD for the Phase lll In-Situ Vapor Extraction/Air Sparging System was modified in 2004 by the MDEQ Air Quality Division to reduce the monitoring requirements at the request of the PRPs.

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 2001, the PRPs conducted vertical profiling and collected groundwater samples at three different locations in their continued effort to delineate the western extent of the plume. The results of these samples were compiled in a technical memorandum that was issued in April 2002.

In September 2002, the EPA issued an Explanation of Significant Differences (ESD) to modify the original ROD which identified two Operable Units. 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 unit 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 system may be necessary if complete capture of the contaminant plume is not demonstrated.

There was an on-going discussion between the PRP attorney and an MDEQ representative concerning individual deed restrictions to restrict groundwater use on neighboring properties. It appears that these discussions have been discontinued.

Pursuant to the 2002 ESD, a modeling evaluation was conducted by the EPA and MDEQ staff in 2003 to determine whether the existing extraction well system at the site is sufficient to hydraulically capture the contaminant plume going towards the 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 was initiated in August 2003 and began operating in September 2003. Biweekly sulfate and nitrate injections began in early September and were completed by mid-December 2004.

The first Five-Year Review 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.

SITE STATUS
The PRPs continue to operate the In-Situ Vapor Extraction/Air Sparging System and the groundwater extraction and treatment system. It is anticipated the groundwater extraction system may have to run for up to 30 years to achieve cleanup standards. Monitoring of groundwater continues. Based on the MDEQ's recommendation, the PRPs switched from "diffusion bag" groundwater sampling method to "low-flow sampling" effective the November 2010 quarterly round of sampling. The MDEQ continues to review the groundwater monitoring reports generated by the PRPs. The MDEQ will also continue to provide oversight of on-site activities. We anticipate participating in routine conference calls with the EPA and the PRPs to discuss outstanding issues on this site.

In August 2010, the PRPs submitted to the Agencies an "Enhanced 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 the MDEQ internal review team and approved in September 2010 with certain conditions.

ENFORCEMENT STATUS
The Thermo-Chem, Inc. PRP group is conducting the RA under an Order issued by the EPA.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
01	Soil and Groundwater North of Black Creek
02	Groundwater South of Black Creek

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review Staff of the EPA and the MDEQ conducted a site inspection for the Five-Year Review in November 2004. The EPA signed the Five-Year Review 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.

Start Date: 11/17/2004	Primary Cost:	$0	Source:
End Date: 05/10/2005	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review The second Five-Year Review 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.

Start Date: *10/01/2009*	Primary Cost:	$0	Source:
End Date: *05/05/2010*	Secondary Cost:	$0	Source:

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is projected to be conducted in May 2015.

Start Date: *10/01/2014*	Primary Cost:	$0	Source:
End Date: *05/05/2015*	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Soil and Groundwater North of Black Creek

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/30/1991**

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 Operable Unit 2 area (i.e., the area south of the Black Creek and the floodplain).

Record of Decision *Amendment:* 00 *ESD:* 1 **Effective 09/17/2002**

On September 17, 2002, the EPA issued an ESD to modify the original 1991 ROD which identified two Operable Units. This ESD combines the requirements of Operable Unit 1 and Operable Unit 2 into the Operable Unit 1 ROD. It was deemed unnecessary by the EPA to maintain two Operable Unit 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.

Response Accomplishments: Completed

Remedial Investigation The RI/FS was conducted by a group of PRPs.

Start Date: *09/30/1987*	Primary Cost:	$1,200,000	Source: Private
End Date: *09/30/1991*	Secondary Cost:	$0	Source:

Interim Response The EPA removed laboratory chemicals.

Start Date: *09/30/1988*	Primary Cost:	$50,000	Source: Federal
End Date: *12/30/1988*	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Soil and Groundwater North of Black Creek

Response Accomplishments: Completed

Interim Response The EPA removed buried tanks at Thomas Solvent's property.

Start Date: *04/30/1991* Primary Cost: $150,000 Source: Federal
End Date: *09/30/1991* Secondary Cost: $0 Source:

Remedial Design 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.

Start Date: *10/30/1994* Primary Cost: $2,517,000 Source: Federal
End Date: *07/30/1997* Secondary Cost: $0 Source: Private

Remedial Action The primary estimated cost indicated is for implementation of Phases II and III of the design (off-site incineration of contaminated soils and SVE system installation, respectively) per the ROD.

Start Date: *09/30/1995* Primary Cost: $8,020,000 Source: Private
End Date: *12/30/1999* Secondary Cost: $435,000 Source: Federal

Response Accomplishments: Ongoing

Operation and Maintenance Treatment and extraction of the groundwater at this site will perhaps continue for 30 years from the start of the pump and treat system. The cost estimate is based on the ROD annual Operation and Maintenance of $1,091,000 with a total expected cost of $32,730,000.00.

Start Date: *06/30/1999* Primary Cost: $1,091,000 Source: Private
End Date: *06/30/2029* Secondary Cost: $0 Source:

OPERABLE UNIT 02: Groundwater South of Black Creek

Response Accomplishments: Completed

Remedial Investigation The western extent of the plume has been delineated. An ESD to the Operable Unit 1 ROD was signed in September 2002. This ESD combined the Operable Unit 2 into the Operable Unit 1 ROD.

Start Date: *06/30/1999* Primary Cost: $700,000 Source: Private
End Date: *12/30/2002* Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$31,094	$0	$25,335	$31,094	$28,419

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$17,773	$0	$0	$17,773	$0

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$35,000	$0	$0	$22,338	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$58,628	$0	$0	$58,343	$0

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$17,662	$0	$0	$17,662	$0

Cooperative Agreement Number V995259-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$1,984	$0	$0	$1,983	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$30,000	$0	$0	$11,110	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$175,000	$0	$0	$174,761	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$80,108	$0	$0	$80,108	$0
Totals:	$447,250	$0	$25,335	$415,171	$28,419

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Hi-Mill Manufacturing Co.
1704 Highland Road
Highland , MI

County: Oakland
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: 9Q
State Site ID#: 63000025
State Site Score: 41

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.

SITE HISTORY
Since it's inception in 1945, the Hi-Mill Manufacturing Company has fabricated copper, aluminum, and brass tubing parts and fittings. Operations still include 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. Trichloroethylene (TCE) was used in the degreasing process for many years. The Hi-Mill Manufacturing Company switched to detergent degreasing in July 1996.

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 Hi-Mill Manufacturing Company reports they were unaware of this spill until 1992. 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-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 third full year of groundwater monitoring was completed in October 1998. Since the first sampling event in October 1995, one particular well has had high concentrations of TCE every time it has been sampled. The MDEQ believes that, since this high concentration of TCE was not detected during the RI, it is likely that a new release has occurred. The MDEQ recommended that the EPA direct the potentially responsible party (PRP) to investigate the source and extent of the TCE release. In addition, the MDEQ recommended that the PRP determine whether the current monitoring plan is adequate to detect possible migration of the TCE associated with this release that could impact human health or the environment. As the date of the end of three years of sampling approached, Conestoga-Rovers & Associates, the Hi-Mill Manufacturing Company's consultant, advised the EPA that they would petition for a reduced monitoring plan at the completion of the third year, as provided for in the final construction report.

In January 1999 Conestoga-Rovers & Associates, on behalf of the Hi-Mill Manufacturing Company, submitted a proposal to modify the monitoring plan. The MDEQ and the EPA reviewed their proposal and, together, determined that another year of quarterly monitoring, as stipulated in the current plan, was appropriate prior to considering a reduction in the monitoring frequency or number of wells sampled.

In late 1999 Conestoga-Rovers & Associates advised the EPA that they would again petition the EPA for a reduction in monitoring upon completion of the October 1999 sampling report. In anticipation of this petition, the MDEQ and the EPA discussed various options for modifying the monitoring program in conjunction with pursuing some limited investigation at the site to determine the source and extent of the "new" TCE release described above. The MDEQ provided the EPA with some suggestions on the type of investigation that could be conducted at the Hi-Mill Manufacturing Company to determine the source and extent of the TCE and to determine whether the current monitoring wells are adequate to detect a threat to human health or the environment.

Three separate, but related, developments of significance occurred in fiscal year 2000 for the Hi-Mill Manufacturing Company site. First, the Hi-Mill Manufacturing Company, through their contractor, Conestoga-Rovers & Associates, requested once again to have the scope of their long-term monitoring program drastically reduced. Second, the first statutory Five-Year Review for this site became due. Finally, the Hi-Mill Manufacturing Company submitted a voluntary proposal to address the TCE contamination at the site using a treatment methodology known as chemical oxidation.

The EPA approved Conestoga-Rovers & Associates' request to reduce the frequency of groundwater monitoring from quarterly to annually for all but five wells. In addition, as part of the Five-Year Review, the EPA made the determination that the current remedy, monitoring, was sufficient to conclude that no migration of contamination was occurring and that it continued to be protective of human health and the environment. The MDEQ did not support the decision to modify the long-term monitoring program so drastically. Rather, the department recommended that, because the Hi-Mill Manufacturing Company would soon be implementing the voluntary remedial action at the site, a more prudent decision would have been to await the completion of the chemical oxidation remediation, evaluate its effectiveness, and evaluate the monitoring program at that time.

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. If chlorinated solvents come into contact with the potassium permanganate solution, the solvents would hopefully be oxidized and ultimately reduced to carbon dioxide and water.

Conestoga-Rovers & Associates advised the MDEQ, in late 2002, that a detailed report on

the treatment program's results had been written. This report was finally received August 19, 2003. Unfortunately, the report concludes that "no change in concentration was observed for TCE before, during, or after the treatment period." Because the MDEQ did not concur with the EPA's ROD, nor with the first-requested reduced groundwater monitoring program for this site, the EPA did not approve a second request for a further reduced groundwater monitoring program in 2004.

During 2005, the EPA and the MDEQ conducted Hi-Mill's Second Five-Year Review. A Five-Year Review is conducted to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Because the site is a federal lead, the EPA staff authored the report with the MDEQ providing comment. The main points of the second Five-Year Review report are as follows:
*The lack of institutional controls 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. While the MDEQ has been commenting through the years about the need to address off-site migration issues, the existence of more formal construction plans along M-59 elevated this issue for the EPA.
*Since the ROD, there has been installation of community wells close enough to Hi-Mill requiring an assessment of whether these wells could be impacted by contaminated groundwater from the Hi-Mill property.
*Data confirmation of free product on Hi-Mill property requires that the no-action remedy, as selected by the ROD, be re-evaluated to determine if the ROD needs to be amended.

The EPA and the MDEQ began following up on the 2005 Five-Year Review 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.

SITE STATUS

MDEQ and EPA staff conducted an annual inspection of the site in July 2010. The Third Five-Year review was completed in September 2010. The conclusions of the Five-Year Review were that the no-action remedy is currently protective of human health and the environment in the short term. Groundwater monitoring will continue so that the EPA and MDEQ can be sure that the remedy remains protective. There are some issues that impact long-term protectiveness at the site. The groundwater monitoring program needs a revised sampling regimen implemented that includes the newer intermediate monitoring wells. There also remains a concern for the potential that contaminated groundwater emanating from the site may intersect with the Wellhead Protection Area for the two nearby community wells west of the site in the future. As a precautionary measure, sampling of the community wells should also be performed to confirm that the Wellhead Protection Area is not impacted by the site. In addition, long-term protectiveness at the site requires continued compliance with use restrictions to assure that the remedy continues to function as intended. To assure proper maintenance, monitoring, and enforcement of effective institutional controls, long-term stewardship procedures will be reviewed and a plan developed.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/28/1993**

This is a no-action ROD with long-term groundwater monitoring. The MDEQ did not concur with the ROD.

Response Accomplishments: Completed

Remedial Investigation PRP-funded 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.

Start Date: *10/15/1988*	Primary Cost:	$0	Source: Private
End Date: *06/15/1993*	Secondary Cost:	$234,000	Source: Federal

Remedial Design

Start Date: *03/15/1994*	Primary Cost:	$0	Source: Private
End Date: *09/30/1995*	Secondary Cost:	$71,000	Source: Federal

5 Year Review The EPA determined that the No-Action With Monitoring and Deed Restriction remedy was protective.

Start Date: *01/01/2000*	Primary Cost:	$0	Source: Federal
End Date: *08/25/2000*	Secondary Cost:	$0	Source:

Remedial Action The PRP is voluntarily implementing a groundwater treatment effort of oxidation of chlorinated solvents using potassium permanganate injection.

Start Date: *08/15/2000*	Primary Cost:	$0	Source: Private
End Date: *01/31/2001*	Secondary Cost:	$0	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

Findings: lack of institutional controls 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. Follow-up to these issues in progress and should be discussed in 2010 review.

Start Date: 01/31/2005	Primary Cost:	$0	Source: Federal
End Date: 08/25/2005	Secondary Cost:	$0	Source:

Remedial Investigation

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 are added to the site's overall monitoring program.

Start Date: 02/18/2008	Primary Cost:	$0	Source: Private
End Date: 06/12/2008	Secondary Cost:	$0	Source:

5 Year Review

Start Date: 01/25/2010	Primary Cost:	$0	Source: Federal
End Date: 09/27/2010	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

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 PRP's 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 may impact the current monitoring program for the site.

Start Date: 10/01/1995	Primary Cost:	$0	Source: Private
End Date: 01/01/2025	Secondary Cost:	$62,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

5 Year Review

Start Date: 06/01/2014	Primary Cost:	$0	Source:
End Date: 09/27/2015	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$9,172	$0	$0	$9,172	$9,172

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$95,000	$0	$0	$95,000	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$5,370	$0	$0	$5,370	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$405	$0	$0	$404	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$93	$0	$0	$93	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$45,000	$0	$0	$36,781	$0
Totals:	$155,040	$0	$0	$146,820	$9,172

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: J & L Landfill
Hamlin Road
Rochester Hills , MI

County: Oakland
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: 2P
State Site ID#: 63000007
State Site Score: 29

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. Residential areas exist adjacent to and within 1,000 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-mile downgradient.

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 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.

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. The MDEQ 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) is 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 downgradient 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 during 2002.

In September 2001, the EPA completed a Five-Year Review of the landfill cap remedy wherein the EPA determined that the remedy is protective with the following actions recommended. Continue O & M including, monitoring of the landfill cap, continued institutional controls, completion of the alternate water supply plan, and implementation of a deed restriction for site land use and associated contaminated groundwater.

In August 2002, LTV Steel completed abandoning adjacent residential wells and installed municipal water for the adjacent property owners. 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 was placed with the EPA due to the bankruptcy issue. Upon review of the plume, the private wells being abandoned and plugged, and connection of private residences to municipal water, the EPA has determined that deed restrictions on affected properties will no longer be necessary.

The EPA and LTV Steel reached a settlement based on the bankruptcy filing wherein funding will be available to continue the monitoring at the site. The state and the EPA agreed to enter into a cooperative agreement to enable the MDEQ to conduct yearly monitoring and maintenance of the site. The cooperative agreement was signed in September 2005 and will continue until September 2010. The first round of sampling occurred in December 2005. Samples were collected in May 2006 and April 2007. The results of these events were compiled in one report.

A Five-Year Review was completed by the EPA on August 23, 2006. The report concluded that the remedy was still protective, and recommended some follow-up actions that primarily involved well maintenance which is noted above.

For several years the MDEQ has been aware of methane in monitoring wells throughout the general area surrounding and including the J & L Landfill. In July 2007, the J & L Landfill groundwater was sampled for methane. There were some detections of methane in some site wells. It is not known whether the J & L Landfill is a source of methane.

All site wells were sampled in May 2008 with the exception of several that are damaged or have a pump stuck in them above the water table. Results of the 2008 sampling are compiled in a December 2008 report.

Also in 2008, samples of soil vapor were collected from areas contiguous to the J & L Landfill to look for the presence of methane in soil gas that may be migrating toward homes in the area. No methane was detected in any of these samples.

In 2009, the MDEQ submitted a grant application to obtain funds to continue with the site O & M. The grant will provide annual funding for O & M of the site through March 2013. The MDEQ received the initial funding under this grant in June 2009. An additional grant application will be submitted requesting funding to install replacement wells or to repair damaged wells.

SITE STATUS

Site wells were sampled in December 2009 and May 2010. Results of the 2009 and 2010 sampling are compiled in a December 2010 report. Analytical results indicate conditions are similar to the 2006, 2007, and 2008 groundwater results with a couple exceptions where vanadium and tetrahydrofuran appear to be increasing over time. The next round of groundwater sampling is tentatively scheduled for May 2011.

During a site inspection conducted in 2010, the MDEQ found that the landfill cap appears to have shifted as evidenced by tilted landfill gas vents. Due to the shifting of the landfill gas vents, the MDEQ conducted a limited methane investigation at the southern boundary of the site, which is the closest border to the nearby residential area, to determine if the landfill is venting properly. The investigation found methane in the soils in excess of recommendations found in the Resource Conservation and Recovery Act, 1976 PA 94-580, as amended, and above standards cited in Michigan's Part 115, Solid Waste Management, of the NREPA. The MDEQ recommends that the extent of the off-site methane should be determined and monitored to make sure that no receptors are impacted. A proposal with anticipated cost ramifications for repairing well casings, repairing and replacing wells, as well as additional methane investigation, will be addressed through a grant application for the EPA's review and approval.

ENFORCEMENT STATUS

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, Compenstation, 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

00	Entire Site
01	Landfill Cap
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

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 Remediation Action Plan followed.

Start Date: 04/05/1989	Primary Cost:	$803,000	Source: Federal
End Date: 06/30/1994	Secondary Cost:	$0	Source:

Operation and Maintenance

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.

Start Date: 01/01/2002	Primary Cost:	$460,000	Source: Federal
End Date: 01/25/2003	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance

Through a grant with the EPA the state will conduct yearly groundwater sampling and report the findings to the EPA through 2010.

Start Date: 09/25/2005	Primary Cost:	$98,000	Source: Federal
End Date: 09/25/2010	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Landfill Cap

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 06/30/1994**

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.

Response Accomplishments: Completed

Remedial Design

Start Date: 06/27/1995	Primary Cost:	$0	Source: Private
End Date: 05/19/1996	Secondary Cost:	$83,000	Source: Federal

OPERABLE UNIT 01: Landfill Cap

Response Accomplishments: Completed

5 Year Review The EPA completed a Five-Year Review 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 institutional controls and completion of the alternate water supply plan, implementing a deed restriction for site land use and associated contaminated groundwater.

Start Date: 09/01/2001	Primary Cost:	$0	Source: Federal
End Date: 09/28/2001	Secondary Cost:	$0	Source:

5 Year Review Second Five-Year Review conducted by the EPA concluded that the remedy was still protective.

Start Date: 01/01/2005	Primary Cost:	$0	Source: <None>
End Date: 08/23/2006	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action Landfill cap construction.

Start Date: 05/19/1996	Primary Cost:	$0	Source: Private
End Date: 12/16/1997	Secondary Cost:	$112,000	Source: Federal

Response Accomplishments: Ongoing

5 Year Review

Start Date: 11/01/2010	Primary Cost:	$0	Source:
End Date: 06/23/2011	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1997**

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.

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Completed

Remedial Investigation Supplemental groundwater investigation (in addition to the December 30, 1990, Remedial Investigation Report) to evaluate conditions and how to address the groundwater contamination. Results of additional investigation led to September 30, 1997 ROD.

Start Date: 07/12/1994 Primary Cost: $28,000 Source: Federal

End Date: 09/30/1997 Secondary Cost: $0 Source:

Remedial Design 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.

Start Date: 01/01/1999 Primary Cost: $0 Source: Private

End Date: 02/01/2003 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V965853-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$98,500	$0	$0	$98,500	$0

Cooperative Agreement Number V965853-02 : Open

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Operation and Maintenance	$76,000	$0	$38,000	$42,203	$30,533
Totals:	$174,500	$0	$38,000	$140,703	$30,533

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$680	$0	$0	$678	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$11,833	$0	$0	$11,694	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$44,200	$0	$0	$43,970	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$15,000	$0	$0	$3,407	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$55,000	$0	$0	$50,031	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$32,925	$0	$0	$32,925	$0
Totals:	$159,638	$0	$0	$142,704	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Rose Township Dump
1065 Demode Road
Rose Township , MI

County: Oakland
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: 82
State Site ID#: 63000057
State Site Score: 45

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.

SITE HISTORY
Dumping of industrial waste at this 110-acre site took place between 1966 and 1968. The Dorsey family owned the property at the time. 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. PCBs were detected in soils at concentrations as high as 74,000 parts per billion (ppb) and trichloroethylene (TCE) as high as 10,000 ppb, both far in excess of the current soil cleanup standards under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Concentrations as high as 4,800 ppb for PCBs, 1,200 ppb for TCE, and 1,400 ppb for vinyl chloride were also detected in the groundwater in excess of Part 201 groundwater cleanup standards. However, residential wells near the site have been tested, and that water has been deemed safe for continued human consumption, with the exception of two nearby residences. Concentrations of vinyl chloride in one drinking water well gradually increased then exceeded the regulatory limit of 2.0 ug/L. That residence was supplied a temporary mini groundwater treatment system in the basement then, in 2008, received a replacement drinking water well. After several months of trouble with that well, the new well was replaced and the residents were provided replacement fixtures and as well as some appliances to replace damaged items. The potentially responsible parties (PRPs) agreed to promptly replace the second well when the detections reached 2.0 ug/L vinyl chloride. That well was replaced in early 2009.

The groundwater treatment system continues to operate on-site and is regularly monitored for effectiveness. The Soil Vapor Extraction (SVE) System has since been turned off due to non-detect concentrations in soil vapors. The PRPs proposed an SVE Spike Testing and Optimization plan. The sample results and pulsing of the system proved that no significant amount of contaminant was being extracted by the SVE system. The SVE system has attained cleanup goals and was shut down January 12, 2006. The groundwater system may need to be operated for as long as 20 to 30 years and additional plume characterization may prove additional treatment to be necessary.

The PRPs agreed to take over neighborhood residential well sampling from the Oakland County Health Department in 2005 and replaced the first contaminated well, since it was above regulatory drinking water limits. They replaced a second residential well. The Oakland County Health Department performed a one-time sampling event to confirm that four selected upgradient residential wells in the immediate area were not contaminated. Residential wells in the immediate vicinity or downgradient of the Rose Township site are sampled on a quarterly basis.

In 1979, the Michigan Toxic Substances Control Commission declared a toxic substance emergency at the site. 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 purge 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 the MDEQ determined that enhancements to the groundwater treatment system were needed in order to more effectively address the 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 on July 18, 1997. The only recommendation of the review was to continue operating the SVE and groundwater extraction and treatment systems until final soil and groundwater cleanup levels, as set forth in the ROD and Consent Decree, are achieved. The review concluded that with the continued operation of these systems, the remedy selected for the Rose site, remains protective of human health and the environment.

Additional monitoring wells were installed in January 2002 which indicated that the pumping system was not capturing the entire groundwater plume. The PRPs prepared a "Pumping Well Optimization Evaluation" in 2002.

The EPA completed a second Five-Year Review on June 28, 2002. This Five-Year Review 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 has been verified.

Additional monitoring wells were installed in late 2003 and 2004 to better characterize the extent of the groundwater contamination. Additional monitoring wells were installed in 2005 and 2006 to fully define the extent of contamination. Modifications to the groundwater extraction operations were made along with a treatment system optimization plan in 2007 and 2008 in an attempt to fully capture the groundwater contaminant plume.

In-Situ Chemical Oxidation was performed as a pilot study with mixed results. The vinyl

chloride is migrating off-site in groundwater at levels above drinking water criteria, and the plume needs better characterization. The stratigraphy is extremely complex in the area and adequate characterization has proven to be very challenging. It has been determined that the plume is likely very narrow and the focus has been split between source control, treatment system optimization, and a biostimulation/bioaugmentation pilot study effort. Numerous groundwater monitoring wells were installed in 2006 and 2007 in an effort to better characterize the plume. This effort was abandoned after the pumps were shut down for three weeks in July 2009 when Chrysler filed for bankruptcy and walked from all liabilities.

The plume concentrations exceeded criteria in a second residential drinking water well and both wells have been replaced. Significant work has been done in treatment system optimization. Pumps were upgraded in some wells and electrical systems were upgraded accordingly. A pilot study for enhanced dechlorination at the site was implemented in early 2008. The biostimulation probably should have been a bioaugmentation program for optimal success. The success was very limited and it was not maintained after the representative PRP (Chrysler Corp.) filed for bankruptcy in June 2009 and walked from liabilities. The other signatory PRPs have been contacted, but are slow to respond. The EPA has utilized the Special Account money for this site to hire Weston as an interim contractor for the site. It has been discovered that the treatment system and site maintenance issues have been let go quite a bit in the past couple of years. The system has sustained damages, wear and tear that may or may not be repaired. Alternative treatments and possible replacements are being explored at this time.

The EPA completed the third Five-Year Review of the protectiveness of the remedy at the site in 2007. The Five-Year Review concluded that a protectiveness determination of the remedy at the Rose Township Superfund site could not be made until further information was obtained. Further information was obtained by completing a capture zone evaluation for recently increased extraction pumping rates at the eastern-most edge of the VOC plume. Additional analytical data was needed to provide conclusive evidence that the entire VOC plume was being captured at the new extraction rates. Additional monitoring wells may need to be installed to better evaluate hydraulic capture of the VOC plume and to determine if an additional extraction well(s) is necessary to achieve complete plume capture, however, the pumps were shut down for three weeks when Chrysler left without warning and cut the power to the system. As a result, the data was useless and continued efforts were terminated until the system was up and running and repairs made. The Five-Year Review Addendum for protectiveness was completed in 2009. The long-term protectiveness determination states that the system is thought to be functioning as designed and specifies several studies that had been done prior to Chrysler shutting the system down and walking away.

SITE STATUS

MDEQ Staff worked with Oakland University and Consumers Energy staff to determine the best way to proceed with the installation of an additional gas main parallel to the one currently in the easement through the site. Due to the Chrylser bankruptcy, which occurred between the planning and implementation stages, MDEQ staff spent a significant amount of time in 2010 working with Consumers Energy to attain access and to provide a safe working environment for the workers as well as maximum safety for nearby residents.

As of late fall 2010, the new PRP group was securing final access plans and ready to take control of the site. They collected a round of samples from the monitoring wells and the residential wells. They are also evaluating and working on the site repair/to do/punch list provided to them by the EPA and Weston.

ENFORCEMENT STATUS

Chrysler Corporation (now Chrysler LLC) filed for bankruptcy in 2009, and walked away from

their liabilities. A group of PRPs has been notified and EPA has hired a contractor (Weston) to take over on an interim basis until the PRPs again resume site activities under an EPA Consent Decree. Other PRPs are Azko 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 nonviable party.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
1	State emergency source control.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1987**
The selected remedy called for groundwater extraction and treatment via air strippers. Surficial soils were incinerated.

Record of Decision *Amendment:* 1 *ESD:* 0 **Effective 01/18/1989**
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 (RD) or remedial action (RA).

Record of Decision *Amendment:* 2 *ESD:* 0 **Effective 08/25/1995**
The remedy of soil vapor extraction of remaining soils on-site was selected.

Response Accomplishments: Completed

Remedial Investigation An EPA funded, state-lead remedial investigation/feasibility study (RI/FS) took place. State funds are advance match to be credited against future RA match requirements.

Start Date: 09/01/1985 Primary Cost: $963,475 Source: Federal
End Date: 07/31/1987 Secondary Cost: $94,860 Source: State

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Design 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.

Start Date: 04/01/1988	Primary Cost:	$0	Source: Private
End Date: 09/30/1995	Secondary Cost:	$279,000	Source: Federal

Remedial Action The PRPs installed a groundwater extraction system with air stripper treatment. The 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.

Start Date: 03/01/1992	Primary Cost:	$32,547,000	Source: Private
End Date: 11/30/1996	Secondary Cost:	$260,000	Source: Federal

5 Year Review The EPA conducted a Five-Year Review.

Start Date: 06/15/1997	Primary Cost:	$0	Source: Federal
End Date: 07/18/1997	Secondary Cost:	$0	Source:

5 Year Review The EPA completed a second Five-Year Review.

Start Date: 03/07/2002	Primary Cost:	$0	Source:
End Date: 06/28/2002	Secondary Cost:	$0	Source:

5 Year Review Third Five-Year Review was completed June 2007, and concluded that a protectiveness determination could not be made without additional information. The addendum with that determination was completed in 2009.

Start Date: 11/06/2006	Primary Cost:	$0	Source:
End Date: 06/21/2007	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance The PRPs conduct operation and maintenance of SVE soils treatment and groundwater extraction treatment systems. Costs have been estimated from the ROD/Amendment.

Start Date: 10/15/1995	Primary Cost:	$1,537,000	Source: Private
End Date: 10/15/2028	Secondary Cost:	$0	Source:

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Future Need

5 Year Review The fourth Five-Year Review will be due by June 21, 2012, five years from the final date of the previous Five-Year Review.

Start Date: 06/21/2011 Primary Cost: $0 Source:

End Date: 06/21/2012 Secondary Cost: $0 Source:

OPERABLE UNIT 1 : State emergency source control.

Response Accomplishments: Completed

Interim Response Removal of 5,000 barrels of liquid waste and 1,500 tons of contaminated soils.

Start Date: 06/30/1979 Primary Cost: $416,487 Source: State

End Date: 06/30/1983 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005787-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$1,058,339	$94,860	$0	$1,043,816	$0
Totals:	$1,058,339	$94,860	$0	$1,043,816	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$94,744	$0	$0	$94,387	$0

Cooperative Agreement Number V995260-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$8,588	$0	$0	$8,588	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-03 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$20,791	$0	$0	$20,791	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$51,962	$0	$0	$51,962	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$27,792	$0	$2,664	$27,792	$16,180

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$147,703	$0	$0	$147,690	$0
Totals:	$351,581	$0	$2,664	$351,210	$16,180

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Springfield Twp. Dump
Woodland Trail
Davisburg , MI

County: Oakland
MDEQ District Location: Southeast MI
Managed By: RRD-Superfund

Federal Site Code: A7
State Site ID#: 63000061
State Site Score: 35

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.

SITE HISTORY
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 below the site is contaminated with organics and inorganics. Sampling of nearby residential wells has shown no contamination; however, the wells appear to be downgradient of contaminated groundwater.

In 1979 and 1980, in response to the declaration of a toxic substances emergency by the Toxic Substances Control Commission, 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, with a follow-up phase in 1986. RI/feasibility study (FS) reports were prepared by the MDEQ in 1987. The lead was turned back to the EPA in February 1988. The EPA opted to revise the reports prior to initiation of a public comment period. The RI report was finalized and released in July 1989. 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 purging, treatment, and on-site discharge of contaminated groundwater.

The EPA rejected the potentially responsible parties' (PRPs') proposal for the remedial design (RD) as inadequate and began design work in April 1991. Pre-design fieldwork in June, July, and August 1991 documented a much larger volume of contaminated soil on the site than indicated by 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 purge and treat system and the SVE system. In March 1992, the PRPs agreed to implement the design for the groundwater purge and treat system and the SVE system. In August 1992, the PRPs began fieldwork on the predesign 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.

In December 1993, the Michigan Department of Natural Resources (MDNR), through discussions with the PRPs, the EPA, and the Michigan Legislature, removed itself 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 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 incineration to one or more of the following treatment methods: (1) soil washing, (2) solvent extraction, or (3) low temperature thermal desorption. The EPA estimated that 11,500 cubic yards of PCB-laden soils would need to be excavated and treated by the PRPs.

The PRPs began the PCB-cleanup in 1999. Beginning in the summer of 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. Several batches did not achieve the cleanup goal and were either re-treated or disposed of in an off-site licensed facility. The PRPs treated and/or disposed of an estimated total 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 installation of the SVE equipment in May 2000. In addition, the PRPs decided to construct and operate an air sparging system to augment the groundwater pump and treat system in an effort to speed up the restoration of the groundwater quality at the site. The SVE and air sparging equipment installation was completed in early August 2000 and the PRPs began operating the systems shortly thereafter. The EPA conducted an inspection of the SVE and air sparging systems on August 22, 2000, and determined that the systems were operating as designed, thus the Springfield Township Dump site RA qualifies as construction complete. 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 is no longer necessary as volatile organic compound (VOC) concentrations have dropped and post treatment is no longer needed. The sparge system was being operated on an intermittent basis until the PRPs walked and shut down all treatment systems in June 2009.

From 1993 until late 2002, the MDEQ was not actively involved in this project. In 2002, the EPA asked for the MDEQ to provide input regarding a PRP proposal to perform In-Situ Chemical Oxidation with Potassium Permanganate to help expedite groundwater cleanup at the site. The MDEQ became involved in that review and has continued active participation in the site since that time. The In-Situ Chemical Oxidation treatment was installed in October 2005; but the treatment was very limited in success and was not continued or repeated.

The PRPs prepared and submitted workplans for field work between 2005 and 2009, but a final useable draft was not completed before Chrysler filed for banruptcy and walked from their liabilities. The EPA has notified the other signatories to the ROD, but the signatories have been slow to respond to the notice of liability.

A second Five-Year Review was completed in September 2004. The second Five-Year Review 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 dependant on the effectiveness of the treatment systems. The MDEQ expressed concerns regarding the incomplete plume characterization and resulting uncertainty of short term protectiveness. The Five-Year Review also identified a number of issues with the O&M of the remedy. Issues were as follows:

1) Approval for and implementation of the In-Situ Chemical Oxidation proposal
2) Extraction well fouling and pumping rate
3) Inadequate site characterization
4) The potential need for additional monitoring wells
5) The need for contaminant capture analysis
6) Concentrations of trichloroethylene (TCE) above cleanup standards at monitoring well MW4SR
7) The need for verification sampling

The Five-Year Review was completed September 14, 2009, and noted that long term protectiveness was unknown based on lack of activity of responsible parties on site.

SITE STATUS
Chrylser LLC filed for bankruptcy in June 2009 and was relieved of all environmental liabilities. As a result, the Pump and Treat and SVE systems were shut down. The EPA negotiated with the other signatories to the Consent Decree and a new PRP group has agreed to take over site activites. Initial site familiarity and sampling have begun as well as initiation of the previously agreed upon enhanced characterization workplan. A system review revealed that the system was not effectively removing the contaminants during the treatment, even prior to the shutdown. The system is in need of repair and troubleshooting. The new PRP group has proposed that they implement the work plan and evaluate the need for the start up of the pumps once the data has been evaluated. The MDEQ has expressed concern that leaving the treatment system shut down may violate the terms of the ROD.

ENFORCEMENT STATUS
The PRPs have been identified at this site and have installed the RA pursuant to legal agreements with the EPA. The Lead PRP (Chrysler, LLC) has filed for bankruptcy and walked from liabilities. There are several other signatories to the consent decree. The signatories have been notified of their liabilities, but have been slow to respond.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 00 *ESD:* 0 **Effective 09/29/1990**

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 pump and treat system.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 11/18/1993**

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:* 01 *ESD:* 0 **Effective 06/18/1998**

The ROD amendment allows for soil washing, solvent extraction, or low temperature thermal desorption rather than incineration. It also allows PCB treatment residuals below 5 ppm to be backfilled on-site with a 1-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 Accomplishments: Completed

Interim Response

In 1979, 1,500 barrels and some contaminated soil were removed using state funds. In January 1983, an additional 711 tons of PCB-contaminated soil was removed from the site.

Start Date: 01/01/1979	Primary Cost:	$500,000	Source: State
End Date: 03/01/1983	Secondary Cost:	$0	Source:

Remedial Investigation

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.

Start Date: 01/01/1985	Primary Cost:	$670,000	Source: Federal
End Date: 09/01/1985	Secondary Cost:	$0	Source:

Remedial Design

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.

Start Date: 04/01/1991	Primary Cost:	$0	Source: Private
End Date: 01/01/1999	Secondary Cost:	$1,261,000	Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

5 Year Review

The 1999 Five-Year Review outlined the Remedial Objectives, QA/QC, 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 the the PCB-laden soil and SVE remedial actions will be inplemented August 1999 through Sept 2000 (it lasted until June 13, 2001).

Start Date: *04/01/1999*	Primary Cost:	$0	Source:
End Date: *07/02/1999*	Secondary Cost:	$0	Source:

5 Year Review

The second Five-Year Review was completed in 2004, and determined that the remedy was protective in the short term. Long-term protectiveness is dependant on effectiveness of the remedy. The MDEQ expressed concerns regarding the incomplete plume characterization and resulting uncertainty of short term protectiveness. The Five-Year Review also identified a number of issues with the operation and maintenance of the remedy. Issues were as follows:

1) Approval for and implementation of the In-Situ Chemical Oxidation proposal
2) Extraction well fouling and pumping rate
3) Inadequate site characterization
4) The potential need for additional monitoring wells
5) The need for contaminant capture analysis
6) Concentrations of TCE above cleanup standards at monitoring well MW4SR
7) The need for verification sampling

Start Date: *03/01/2004*	Primary Cost:	$0	Source:
End Date: *07/02/2004*	Secondary Cost:	$0	Source:

5 Year Review

The third Five-Year Review was completed on September 14, 2009. The EPA determined that short-term protectiveness was acceptable because there are no known receptors. The long-term protectiveness was uncertain because Chrysler, the primary PRP, filed bankruptcy and walked away from their liabilities without warning. The pump and treat system has been shut down since June 2009. The other signatories to the Consent Decree have been contacted, but have not yet implemented any actions pursuant to the EPA requests.

Start Date: *08/25/2008*	Primary Cost:	$0	Source:
End Date: *09/14/2009*	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Construction Complete

Remedial Action 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.

Start Date: 05/10/1999 Primary Cost: $3,300,000 Source: Private

End Date: 06/13/2001 Secondary Cost: $304,000 Source: Federal

Response Accomplishments: Ongoing

Operation and Maintenance O&M will be needed for the maintenance of the groundwater system and the cap. Once established, deed restrictions will remain indefinitely to prevent future contact with residual soil contamination that will remain on-site.

Start Date: 06/13/2001 Primary Cost: $138,000 Source: Private

End Date: 12/31/2025 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review is due September 14, 2014.

Start Date: 09/14/2013 Primary Cost: $0 Source: Federal

End Date: 09/14/2014 Secondary Cost: $0 Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005776-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$547,373	$0	$0	$547,373	$0
Totals:	$547,373	$0	$0	$547,373	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,880	$0	$163	$7,880	$568

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$110,000	$0	$0	$108,019	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$36,788	$0	$0	$36,788	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$4,114	$0	$0	$3,835	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$11,402	$0	$0	$11,402	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$30,000	$0	$0	$30,000	$0
Totals:	$200,184	$0	$163	$197,924	$568

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Southwest Ottawa County Land
2901 N. 160th Ave
Holland , MI

County: Ottawa
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: EH
State Site ID#: 70000024
State Site Score: 41

LOCATION
The Southwest Ottawa County Landfill (the site) is located on 160th Avenue between James and Riley Streets in a mixed residential and agricultural area. Lake Michigan is approximately one and one-half miles to the west, and Lake Macatawa is located approximately one and one-half miles to the south.

SITE 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 include: 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 (NPL) 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 an adjacent downgradient NPL site (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 in Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201). These contaminants are: 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.

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 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 1990-1992, additional purge wells and monitoring wells were installed to close possible gaps in the purge system and to determine the effectiveness of the groundwater extraction and treatment system. In 1993, an additional sand filter was installed to handle the increased

iron loading. In 1994, additional monitoring wells were installed to further monitor the overall effectiveness of the system. All of the improvements to the groundwater extraction and treatment system were done by the Ottawa County Road Commission. Also 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 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 Five-Year Review was also written by the EPA in 1997. This Five-Year Review 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 2003, pursuant to federal statute, the MDEQ conducted a third Five-Year Review to evaluate the success of the selected remedy. The MDEQ provided funding to conduct a remedial investigation of the site. This remedial investigation was conducted and completed from April through May 2003. Based upon the data obtained during the investigation, the Five-Year Review report was drafted by the MDEQ. The data indicated contaminant concentrations exceeding criteria were bypassing the treatment system in two locations. The draft report was submitted to the EPA for review in September 2003. The MDEQ 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 finaled the report in September 2003. The MDEQ's investigation report was finaled in October 2004.

Ottawa County had completed the installation of the municipal water supply line throughout the downgradient area within the groundwater plume boundary. The 2003 MDEQ investigation confirmed that the contaminants which were detected in downgradient residential wells since the late 1980's were migrating from the landfill.

The settlement of the lawsuit between the State and Ottawa County was resolved on March 31, 2005, with the signing of the Stipulation and Order of Dismissal (Order). Per terms of the Order, Ottawa County had until March 14, 2008, 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 are completed, the county had one year to provide information to the MDEQ which supports that the new enhanced remedy is functional and capturing and treating the groundwater contamination plume before it migrates 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. Throughout 2008 and into 2009, Ottawa County continued to develop the land use restrictions and groundwater ordinance. Per the Order, the county provided to the MDEQ design documents and bid packages for the installation of four new extraction wells in early 2008. Installation of these new extraction wells was completed at the end of 2008. Discussions between the MDEQ and Ottawa County on development of the monitoring plan, a requirement of the Order, began in 2008 and will continue into 2009. Ottawa County continues to operate the downgradient treatment system.

With funding provided by the EPA, the MDEQ developed and wrote the fourth Five-Year Review 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 are being controlled.

When all of the required remedial actions under the Order have been completed and groundwater data collected and compiled in quarterly groundwater reports, the evaluation of the effectiveness of the remedy will commence.

Ottawa County finaled an MDEQ approved areawide Groundwater and Land Use Restriction Ordinance in March 2009. The County completed the installation of the four new extraction Well system around the landfill as well as expansion to the treatment building. The new system has been operating since mid-2009.

SITE STATUS

Discussions between the MDEQ and Ottawa County on development of the monitoring plan, a requirement of the Order, began in 2008 and continued throughout 2010. The final monitoring plan is expected by the end of 2011. Ottawa County continues to operate both the new extraction well system around the landfill as well as the older downgradient treatment system.

ENFORCEMENT STATUS

Ottawa County was the liable party both under the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL96-510, as amended and Part 201, and was operating and maintaining the groundwater pump and treat system established under the 1985 Groundwater Restoration Agreement.

The state's litigation with Ottawa County to enforce and update the 1985 Groundwater Restoration Agreement in light of new state standards, the questionable effectiveness of the extraction and treatment system, and the additional contaminants in the groundwater not covered by the original agreement, was concluded 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 four new extraction wells along the west and south boundary of the landfill, connection of all residences within the groundwater plume into the expanded municipal water supply, develop land use restrictions and a groundwater ordinance, replace the landfill cap, and continue to operate the current downgradient treatment system.

OPERABLE UNITS

00	Entire Site
01	Groundwater Plume
02	Landfill Cap

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Design 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 four new extraction wells was completed in late 2008.

Start Date: 01/01/2005	Primary Cost:	$2,000,000	Source: Private
End Date: 12/31/2008	Secondary Cost:	$0	Source:

Remedial Action Ottawa County completed the remedial actions 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 remedial actions were completed in 2009.

Start Date: 04/01/2005	Primary Cost:	$4,500,000	Source: Private
End Date: 03/31/2009	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance All of the remedial actions required under the Order were completed in 2009. The County is developing a monitoring and operation and maintenance (O&M) plan for the new extraction system. Within one year of operation of the new system, the County is to provide information to the MDEQ to support the effectiveness of the remedy. The estimated cost of this O&M is not yet known.

Start Date: 03/31/2009	Primary Cost:	$0	Source: Private
End Date:	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 01/09/1985**

Groundwater Restoration Agreement to implement a groundwater extraction and treatment system.

Response Accomplishments: Completed

Remedial Investigation A groundwater investigation was conducted by the Ottawa County Road Commission under the direction of the MDNR.

Start Date: 01/01/1979	Primary Cost:	$0	Source: Private
End Date: 12/31/1981	Secondary Cost:	$0	Source:

Remedial Design

Start Date: 08/30/1980	Primary Cost:	$0	Source: Private
End Date: 07/30/1986	Secondary Cost:	$0	Source:

OPERABLE UNIT 01: Groundwater Plume

Response Accomplishments: Completed

Remedial Action Landfill cap. Groundwater extraction and treatment system. Extend water main to provide municipal water to residences affected, or potentially affected, by the groundwater contamination.

Start Date: *01/01/1986* Primary Cost: $0 Source: Private
End Date: *09/22/1994* Secondary Cost: $0 Source:

Alternate Water Bottled water was provided to residents affected by groundwater contamination coming from the site.

Start Date: *01/01/1993* Primary Cost: $170,000 Source: State
End Date: *04/20/1993* Secondary Cost: $0 Source:

5 Year Review The Five-Year Review recommended improvements were needed for the pump and treat system in order to adequately capture and treat the groundwater contamination plume.

Start Date: *01/01/1995* Primary Cost: $0 Source: Federal
End Date: *09/25/1995* Secondary Cost: $0 Source:

5 Year Review The second Five-Year Review was also written by the EPA in 1997. This Five-Year Review 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.

Start Date: *01/01/1997* Primary Cost: $10,000 Source: Federal
End Date: *10/27/1997* Secondary Cost: $0 Source:

Remedial Investigation The state provided funding to conduct a remedial investigation (RI) at the site to meet the requirements of the Five-Year Review. The sampling was performed in April and May of 2003. The RI report was finaled in October 2004.

Start Date: *06/01/2002* Primary Cost: $280,000 Source: State
End Date: *10/30/2004* Secondary Cost: $0 Source:

5 Year Review The third Five-Year Review report was finaled 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.

Start Date: *01/01/2003* Primary Cost: $0 Source: Federal
End Date: *09/29/2003* Secondary Cost: $0 Source:

Remedial Design 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.

Start Date: *03/31/2005* Primary Cost: $4,500,000 Source: Private
End Date: *03/31/2009* Secondary Cost: $0 Source:

OPERABLE UNIT 01 : Groundwater Plume

Response Accomplishments: Completed

5 Year Review

With funding provided by the EPA, the MDEQ developed and wrote the fourth Five-Year Review 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 are being controlled. Further information on the effectiveness of the revised remedy, via groundwater monitoring, will be obtained once the new four well extraction treatment system has been installed and begun operation and the implementation of the Institutional Controls has been completed. When all of the required remedial actions under the Order have been completed and groundwater data collected and compiled in quarterly groundwater reports, the evaluation of the effectiveness of the remedy will commence.

Start Date: 10/01/2007 Primary Cost: $20,000 Source: Federal

End Date: 09/30/2008 Secondary Cost: $0 Source:

Response Accomplishments: Ongoing

Operation and Maintenance

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 continues under the Groundwater Restoration Agreement until a new monitoring plan, required by the Order, is developed and approved by the MDEQ.

Start Date: 10/17/1984 Primary Cost: $77,293 Source: Private

End Date: 10/17/2024 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E192-01 : Open

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$20,000	$0	$0	$19,826	$0

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$19,283	$0	$0	$19,243	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$35,647	$0	$0	$35,647	$0

Cooperative Agreement Number V995339-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Investigation	$2,874	$0	$0	$2,798	$0
Totals:	$77,804	$0	$0	$77,514	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Waste Management-Holland La
2700 N. 168th Avenue
Holland , MI

County: Ottawa
MDEQ District Location: Grand Rapids
Managed By: RRD-Superfund

Federal Site Code: S3
State Site ID#: 70000010
State Site Score: 28

LOCATION
The Waste Management Holland Lagoons site is located at 2700 N. 168th Avenue in a mixed residential and agricultural area. Lake Michigan is approximately 1 1/4 miles to the west and Lake Macatawa is located approximately 1 1/2 miles to the south. The site is currently owned by SC Holdings, Inc., a subsidiary of Waste Management of North America, Inc. The site is fenced to prevent trespassers and/or all terrain vehicles from entering the site. A new business leased the building on the site in 2002 which is located in an uncontaminated area next to 168th Avenue. The business is restricted to use of the building and driveway area only. There is a potential for redevelopment of the property with a restriction on groundwater use. Waste Management of Michigan has indicated it has an interest in redeveloping the property but has not yet decided on a course of action.

SITE HISTORY
Jacobusse's Refuse Service, later purchased by Waste Management of Michigan, operated the site from 1945 to 1981 and was involved in dewatering liquid industrial wastes, including aluminum and metal hydroxide wastes and wastewater treatment plant sludge at the site. In 1970, one residential well, located due west of the site, was contaminated with trichloroethylene (TCE) that was suspected to have migrated from the site. This residence was connected to the municipal water supply shortly after the discovery of the TCE contamination. The site was added to the National Priorities List (NPL) in June 1986.

General degradation of the groundwater in the area had occurred from another upgradient NPL site, the Southwest Ottawa County Landfill, as well as from dewatering and dumping activities at this site. Groundwater contamination above the Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) residential groundwater criteria included volatile compounds such as benzene, ethyl benzene, xylene, TCE, chlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, methylene chloride, and iron. Inorganic contamination in the groundwater above the State's generic residential criteria included aluminum, antimony, beryllium, cadmium, lead, manganese, vanadium, and zinc.

During the remedial investigation in 1995, conducted by Waste Management of Michigan, the site was fenced, obviously contaminated soils from the six identified source areas were sampled and excavated, drums and other surface debris were removed to prevent dermal contact hazards, and a monitoring well network was installed. The soil excavations were completed by the end of 2000. Additional soil sampling was conducted on the site in 2001. Sample analytical data indicated no contaminants remained in the six source areas in concentrations exceeding NREPA direct contact criteria.

The State signed an Administrative Order by Consent (1994 Order) with Waste Management of Michigan (also known as SC Holdings, Inc.) in August 1994 for a Remedial Investigation/Feasibility Study (RI/FS), and development of a Remedial Action Plan (RAP). The 1994 Order provided for payment of past as well as future state oversight costs through the review of the RAP.

The initial RAP was submitted to the MDEQ for review in April 1997. Review of the document determined that it was not sufficient. An Acknowledgement of Receipt of an Administratively Incomplete Remedial Action Plan letter was sent to Waste Management Incorporated, listing the items required, in April 1997. Subsequent RAP submittals were received in January 1998 and July 2001. Upon review, both documents were determined not to be sufficient. Administratively Incomplete Remedial Action Plan Letters were sent for both documents, the latter in October 2001. Waste Management of Michigan notified the MDEQ they intended to complete the RAP once the current litigation, between the MDEQ and Ottawa County, for the Southwest Ottawa County Landfill was settled. Waste Management of Michigan was a co-defendant with Ottawa County in the lawsuit. The lawsuit was settled in March 2005 with the signing of the Stipulation and Order of Dismissal (2005 Order). Waste Management of Michigan was responsible for the cost recovery portion of the 2005 Order.

Waste Management of Michigan developed and submitted a RAP and Closure Report in June 2006. After review, the MDEQ determined that the RAP as submitted was incomplete and an Acknowledgement of Receipt of an Administratively Incomplete Remedial Action Plan Letter was sent from the MDEQ on September 6, 2007.

The first Five-Year Review, which was written by the MDEQ, was signed September 26, 2006. It concluded: "The remedy is protective in the short-term. There is no evidence of exposure to site-related contaminants. Furthermore, interim ICs [Institutional Controls] which serve to notify the public of the areas which do not allow for unlimited use and unrestricted exposure exist until the final RAP is complete. Long-term protectiveness is dependent upon effective ICs, or additional remedial actions, if they are required by the final RAP."

Waste Management of Michigan submitted a new Final Close Out Report and Remedial Action Plan in February 2008. This submittal included a soil and groundwater investigation report conducted beneath the building slab at the end of 2007 and a plug and abandonment report of monitoring wells not needed by Ottawa County for the Southwest Ottawa County Landfill monitoring network. The MDEQ reviewed the submittal and sent a response letter in October 2008. In the letter, the MDEQ determined that all of the response actions undertaken at the site by Waste Management of Michigan, from the mid 1990's through 2008, were adequate response activities to allow for the protection of the human health, safety, and the environment. This letter also served as the MDEQ's Certificate of Completion of the RI/FS under the 1994 Order. Waste Management of Michigan, however, is responsible for maintaining the restrictive covenant on the site, until such time as an area wide groundwater restriction for the adjacent Southwest Ottawa County Landfill site, which will include the Waste Management-Holland Lagoons site, is implemented by Ottawa County. In addition, Waste Management of Michigan will be responsible for any future remedial actions if it is determined that the site is no longer protective of the public health, safety, welfare, and the environment.

SITE STATUS

No remedial actions were required on the site in 2010.

In October or 2010, Waste Management of Michigan contacted the MDEQ with a request to rescind the site specific Restrictive Covenant since Ottawa County had implemented the area wide Groundwater Ordinance for the Southwest Ottawa County Landfill in March of 2009. The MDEQ provided Waste Management of Michigan with the documents necessary to complete this task. The documents are anticipated to be returned to the MDEQ in early 2011 for review.

Concurrent with the above request, the EPA expressed an interest in proceeding with deletion of this site from the National Priorities List. In December of 2010, EPA developed a draft Final Close Out Report and submitted it to the MDEQ for review. That review is

anticipated to be completed in 2011.

Until the recision process for the site specific Restrictive Covenant is completed, Waste Management of Michigan continues to maintain the site and monitor the Restrictive Covenant.

ENFORCEMENT STATUS
The state signed a 1994 Order with Waste Management of Michigan (also known as SC Holdings, Inc.) in August 1994 for a RI/FS and development of a RAP. The 1994 agreement provided for payment of past as well as future State oversight costs through the review of the RAP.

The MDEQ's October 2008 letter to Waste Management of Michigan served as the MDEQ's Certificate of Completion of the RI/FS and relinquishment of the Surety Bond issued by the Evergreen National Indemnity Company pursuant to the 1994 Order. Waste Management of Michigan, however, remains responsible for maintaining the restrictive covenant on the site, until such time as an area wide groundwater restriction for the adjacent Southwest Ottawa County Landfill site, which will include the WMHL site, is implemented by Ottawa County. In addition, Waste Management of Michigan will be responsible for any future remedial actions if it is determined that the site is no longer protective of the public health, safety, and welfare, and the environment.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Interim Response Excavation of lagoons, sludges, and backfilling with clean soil.

Start Date: *01/01/1980* Primary Cost: $0 Source: Private
End Date: *12/31/1980* Secondary Cost: $0 Source:

Interim Response Excavation and off-site disposal of 43 buried drums of chloral hydrate. Drums were in good shape and intact, with no apparent leaks. Unable to locate funding amount.

Start Date: *01/01/1980* Primary Cost: $0 Source: State
End Date: *12/31/1980* Secondary Cost: $0 Source:

Interim Response Excavation and disposal of contaminated soil and six empty buried drums found during test pitting during the RI.

Start Date: *01/01/1995* Primary Cost: $0 Source: Private
End Date: *12/31/2000* Secondary Cost: $0 Source:

OPERABLE UNIT 00 : Entire Site

Response Accomplishments: Completed

Remedial Investigation This remedial investigation consisted of enclosing the site with a security fence, excavation and removal of contaminated soils, and removal of drums and other surface debris.

Start Date: 01/01/1995 Primary Cost: $0 Source: Private

End Date: 12/31/1997 Secondary Cost: $0 Source:

5 Year Review The MDEQ wrote and completed the Five-Year Review, concluding that the remedy is protective. The EPA provided $10,000 to fund the review.

Start Date: 03/01/2006 Primary Cost: $10,000 Source: Federal

End Date: 09/30/2006 Secondary Cost: $0 Source:

Remedial Design As part of a complete RAP, Waste Managment of Michigan was required to submit a workplan and conduct an investigation of soils and groundwater beneath the building and to properly plug and abandon any on-site monitoring wells not needed by Ottawa County for the Southwest Ottawa County Landfill monitoring network. This investigation and monitoring well abandonment was completed at the end of 2007 and included February 2008 submittal.

Start Date: 09/11/2007 Primary Cost: $0 Source: Private

End Date: 02/01/2008 Secondary Cost: $0 Source: Private

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V965855-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$10,000	$0	$0	$9,929	$0
Totals:	$10,000	$0	$0	$9,929	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Sturgis Municipal Wells
309 N. Prospect
Sturgis , MI

County: Saint Joseph
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: J1
State Site ID#: 75000016
State Site Score: 37

LOCATION
The Sturgis Municipal Wells site (the site) is located in the city of Sturgis, St. Joseph County, Michigan, approximately two miles north of the Indiana state line.

SITE 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 trichloroethylene (TCE) and tetrachloroethylene (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, and 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. The MDEQ undertook a remedial investigation/feasibility study (RI/FS) 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 and Wade 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, soil vapor extraction (SVE) of the contaminated on-site soils, and excavation of the remaining contaminated soils that cannot be treated by SVE.

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 potentially responsible party (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, was completed in May 1994.

In early 1993, the EPA and the MDEQ entered into settlement negotiations with the PRPs for the remedial design (RD)/RA of the ROD remedies. Because these negotiations were not successful, the EPA decided to fund the RD/RA. The MDEQ was chosen as the lead agency and began the design in 1994.

During the fall of 1994, the MDEQ s consultants conducted a predesign investigation at the site to determine the exact nature and extent of soil contamination at the Kirsch and Wade 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 predesign 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 the MDEQ. In late summer an agreement was reached and a Consent Decree (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 (NREPA). The Decree was entered by the court on October 25, 1996.

Also 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 (PAHs) 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 is capturing and removing the entire groundwater contaminant plume and whether or not it could be designated the final groundwater remedy for the site. In early fall of 1998, a report was submitted to the MDEQ detailing the results of the investigation. In early 1999, the MDEQ 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 Rubbermaid, Inc. (the successor to Kirsch) 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, 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 the MDEQ. The report advocated no further remedial action in the Kirsch source area. Subsequent discussions with Rubbermaid resulted in an agreement to install a groundwater extraction well immediately downgradient of the Kirsch source area to remove highly contaminated water in the shallow aquifer beneath the source area. Construction of the shallow aquifer extraction well, designated EW-3, began in August 2003. Construction was completed in November 2003.

During 2006, the MDEQ was approached by the PRP with a proposal to shut down extraction well 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 extraction well 2 and potentially additional soil and groundwater remediation at the Wade Electric source area. Extraction well 1 was shut down in January 2007. The MDEQ 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 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 the MDEQ 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, the MDEQ required Newell Rubbermaid to undertake a year long study of water levels in targeted monitoring wells, while extraction well 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 the MDEQ.

In the summer of 2007, Newell Rubbermaid conducted a limited soil and groundwater investigation at the Wade Electric source area. Results of this investigation demonstrate the existance 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. The MDEQ is involved in reviewing workplans and overseeing the work to ensure that it complies with all applicable environmental regulations. This project will be completed in phases and will be in progress for the forseeable future. 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. The MDEQ requested that Newell Rubbermaid 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 indicates that widespread TCE contamination still exists on both properties.

The MDEQ completed the third Five-Year Review for the site June 2010. The Five-Year Review 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. Recommendations included addressing contamination in soils at both the Kirsch and Wade Electric source areas, installation of restrictive covenants, placement of additional groundwater monitoring points and a need for determination on whether or not an expansion of the deep aquifer pump and treat system is needed to address far western TCE impacts.

SITE STATUS

The PRP, Newell Rubbermaid, is currently operating the groundwater extraction and treatment systems in accordance with the Decree.

An expanded soil and groundwater pre-design investigation is needed at the Wade Electric source area. Newell Rubbermaid claims no liability for this part of the site. The MDEQ needs to evaluate this issue and determine if we agree with Newell Rubbermaid, and if so, decide if the use of public funds are warranted to address this site. If we do not agree with Newell Rubbermaid we need to determine if further efforts need to be made to convince Newell Rubbermaid to conduct the work, or if it should be conducted as a Superfund financed response.

Newell Rubbermaid is currently evaluating potential remedies to address soil contamination on the former Kirsch Company Plant #1 properties on the east and west sides of Prospect Street. Major work related to the redevelopment project is on hold until a determination is made with regard to how to proceed with addressing the soil contamination.

Newell Rubbermaid has constructed a new plant to treat contaminated groundwater from extraction well EW-3. The old EW-1/EW-3 treatment plant will be demolished in 2011 or 2012.

ENFORCEMENT STATUS
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, Environmental Remediation, of the NREPA) in accordance with the 1996 Decree.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1991**

The soil remedy consists of SVE and PAH excavation at the Wade Electric and Kirsch 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 09/10/1996**

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 PAH contaminated soil at the Kirsch source area. The amendment also changes the cleanup standards for the volatile organic compound cleanup in both soils at the Kirsch source area as well as groundwater throughout the site.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation

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.

Start Date: 09/01/1987	Primary Cost:	$2,264,087	Source: Federal
End Date: 05/01/1991	Secondary Cost:	$0	Source:

Interim Response

Interim groundwater extraction and treatment was conducted by a PRP pursuant to an EPA Order and later pursuant to a Decree with the MDEQ. The estimated private party costs shown include capital and annual operating costs of the interim response.

Start Date: 10/01/1993	Primary Cost:	$10,000,000	Source: Private
End Date: 12/31/2001	Secondary Cost:	$0	Source: <None>

Remedial Design

This design was for a SVE system at the Kirsch source area and supplemental groundwater investigation. It was originally conducted by state consultants but was subsequently taken over by PRPs pursuant to a Decree between the state and Kirsch. Design costs incurred by the PRP are estimated at approximately $120,000.

Start Date: 10/01/1994	Primary Cost:	$840,970	Source: Federal
End Date: 01/01/1996	Secondary Cost:	$120,000	Source: Private

Remedial Action

This RA consisted of the construction and operation of the Kirsch SVE system. Costs associated with this portion of the project were incurred entirely by the PRP and are unknown to the state.

Start Date: 12/01/1996	Primary Cost:	$0	Source: Private
End Date: 03/01/1997	Secondary Cost:	$0	Source:

5 Year Review

The first Five-Year Review for the site was conducted in 1999 and reaffirmed the remedial decisions made in the amended ROD.

Start Date: 01/01/1999	Primary Cost:	$0	Source: <None>
End Date: 10/15/1999	Secondary Cost:	$0	Source:

Remedial Design

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.

Start Date: 01/20/1999	Primary Cost:	$100,000	Source: Private
End Date: 04/01/2001	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Action This subsequent RA was for the construction and operation of the second groundwater extraction and treatment system. Extraction well 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.

Start Date: *06/18/2001*	Primary Cost:	$4,000,000	Source: Private
End Date: *05/13/2002*	Secondary Cost:	$0	Source:

Remedial Action 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.

Start Date: *08/28/2003*	Primary Cost:	$250,000	Source: Private
End Date: *11/21/2003*	Secondary Cost:	$0	Source:

5 Year Review The second Five-Year Review started on September 1, 2004. The document was signed by the EPA on June 30, 2005. The Five-Year Review concluded that the remedy is protective in the short term. All expenditures of state funds have been recovered from PRPs, in accordance with the Decree.

Start Date: *09/01/2004*	Primary Cost:	$0	Source: <None>
End Date: *06/30/2005*	Secondary Cost:	$0	Source:

5 Year Review The third Five-Year Review started on June 1, 2009. The document was signed by the EPA on June 30, 2010. The Five-Year Review 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.

Start Date: *06/01/2009*	Primary Cost:	$0	Source: State
End Date: *06/30/2010*	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance This includes the operation of the pump and treat systems until cleanup standards are reached. This is expected to take an estimated 20 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.

Start Date: *05/13/2002*	Primary Cost:	$600,000	Source: Private
End Date: *01/01/2022*	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

Remedial Design Conduct pre-design soil and groundwater at the Wade Electric source area. Design remediation system to address this contamination. Costs shown below are estimates.

Start Date: 10/01/2010	Primary Cost:	$300,000	Source: Private
End Date: 09/30/2011	Secondary Cost:	$0	Source:

Remedial Design 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.

Start Date: 04/01/2011	Primary Cost:	$200,000	Source: Private
End Date: 03/31/2012	Secondary Cost:	$0	Source:

Remedial Action Implement RA to address soil and groundwater contamination at the Wade Electric source area. Costs shown below are estimates.

Start Date: 10/01/2011	Primary Cost:	$1,500,000	Source: Private
End Date: 09/30/2031	Secondary Cost:	$0	Source:

Remedial Action Implement RA to address soil contamination at the Kirsch Company Plant #1 on both the east and west sides of Prospect Street.

Start Date: 04/01/2012	Primary Cost:	$2,000,000	Source: Private
End Date: 09/30/2014	Secondary Cost:	$0	Source:

Remedial Design Engineering design of an expansion of the existing deep aquifer pump and treat system to address far downgradient TCE impacts.

Start Date: 10/01/2012	Primary Cost:	$250,000	Source: Private
End Date: 03/31/2013	Secondary Cost:	$0	Source:

Remedial Action Construction and one year of operation of an expansion to the deep aquifer pump and treat system to address far downgradient TCE impacts.

Start Date: 04/01/2013	Primary Cost:	$1,500,000	Source: Private
End Date: 09/30/2014	Secondary Cost:	$0	Source:

FEDERALLY FUNDED COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005932-01 : Closed

Lead Agency Activity	Activity Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$1,179,232	$0	$0	$840,970	$0
Remedial Investigation	$2,264,462	$0	$0	$2,264,087	$0
Totals:	$3,443,694	$0	$0	$3,105,057	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V985560-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
5 Year Review	$1,146	$0	$0	$1,146	$0

Cooperative Agreement Number V995260-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Negotiations	$42,790	$0	$0	$42,790	$0

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$50,640	$0	$0	$50,432	$0

Cooperative Agreement Number V995259-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Remedial Design	$1,175	$0	$0	$1,175	$0
Totals:	$95,751	$0	$0	$95,543	$0

LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Burrows Sanitation
54th Avenue
Hartford Twp. , MI

County: Van Buren
MDEQ District Location: Kalamazoo
Managed By: RRD-Superfund

Federal Site Code: 76
State Site ID#: 80000022
State Site Score: 23

LOCATION
The Burrows Sanitation site covers approximately 15 acres of land in a mostly rural area about 1 mile from Hartford, Michigan. The Paw Paw River is located about 3/4 mile south of the site. Two wetland areas and Doyle Drain are located adjacent to the site. Residential wells are located near the site.

SITE HISTORY
The Burrows Sanitation site was used for the dewatering site and disposal of metal hydroxide plating sludge. Waste coolant and soluble oil was also disposed of at the site. The site operated from 1970 to 1977. Wastes were disposed of into six unlined lagoons and onto three areas adjacent to the lagoons.

Between August and October 1984, 8,648 cubic yards of industrial waste sludges and contaminated soils were removed by a group of potentially responsible parties (PRPs) known as the "Burrows Group" under an Administrative Order by Consent (Order) issued by the EPA. The lagoons contained high concentrations of inorganic contaminants including cadmium, chromium, copper, nickel, lead, zinc, and cyanide which are indicative of plating wastes. The lagoons also contained several organic contaminants including xylenes, 1,2,4-trichlorobenzene, dieldrin, naphthalene, pyrene, chrysene, styrene, toluene, and trichloroethylene (TCE).

Monies, appropriated from the Michigan Environmental Response Act, 1982 PA 307, as amended during fiscal year (FY) 1984 to FY 1985, were expended to conduct groundwater sampling. At various sampling times, the groundwater in one or more of the monitoring wells contained elevated concentrations of various inorganic substances including total nickel, total lead, arsenic, cyanide, dissolved zinc, total chrome, and total copper. In addition, one or more of the monitoring wells contained organic contaminants including styrene, 1,1-dichloroethane, 1,1,1-trichloroethane, TCE, 1,2-dichloroethane, polychlorinated biphenyl (PCB) [Arochlor 1254], dieldrin, and lindane. The groundwater flows to the west with some seasonal variation in flow direction.

A Record of Decision (ROD) was issued on September 30, 1986, by the EPA that required: 1) purging and treatment of the contaminated groundwater; 2) drainage of the Northwest Wetland; and 3) removal and treatment of approximately 250 cubic yards of metal hydroxide sludge from Spill Area #2, a previously unknown waste source identified during the remedial investigation (RI) effort.

Further hydrogeologic work was necessary before implementing the groundwater purging portion of the selected remedy. Additional hydrogeological investigation commenced in November 1987 and was completed during 1988. Additional soil sampling for design of the remedy and treatability studies was also completed in November 1987. Partial drainage of the Northwest Wetland and removal of 315 cubic yards of contaminated soil was initiated by the EPA in November 1988 and completed in February 1989. This remedial action was done under a Superfund State Contract between the state and EPA which enabled the state to provide its required ten percent match for a fund financed remediation.

In 1991 the PRPs performed additional monitoring of the groundwater at the site to determine if contaminants still remain above cleanup levels stipulated in the ROD. Based on the above monitoring, it was determined that the extent and concentration of contaminants was much less than originally estimated. The EPA issued an Explanation of Significant Difference (ESD), which reduced the size of the groundwater extraction system and changed the location of the treatment system from on-site to off-site. The PRPs were required to operate the extraction system until the cleanup levels stipulated in the ROD were achieved. The PRPs operated the groundwater extraction and treatment system between August 1992 and December 1993.

The post-remedial action (RA) closure monitoring plan specified the parameters and frequency of the monitoring program. The final sampling event was completed in November 1998 when 31 monitoring wells and three residential wells were sampled and analyzed. All reported results were below the groundwater cleanup standards in the ROD. The MDEQ still had concerns with the concentrations of aluminum, boron, iron, and manganese in the groundwater. As a result, the MDEQ conducted additional sampling in May 1999. This data indicated that there were elevated concentrations of contaminants in groundwater that could pose a risk to use of the groundwater for drinking water purposes.

On October 4, 1999, the EPA issued a letter to the PRPs constituting the certification of completion of RA for this site. All site monitoring wells, the groundwater extraction well, and associated material were abandoned or removed from the site between January and March 2000.

Due to the elevated concentrations of some inorganics (listed above) at this site, the MDEQ had requested funding from the EPA to allow long-term monitoring of residential wells in the vicinity of the site. The EPA provided $10,000 in funding to the state in July 2000 to conduct residential well sampling. Some discussion was held internally to determine who would conduct the sampling. In August 2001, the MDEQ requested that the local health department conduct the sampling on an annual basis. The local health department in conjunction with the MDEQ continues to conduct sampling of these residential wells, using state funding. The presence of volatile hydrocarbons was not detected in any one of the residential wells.

Other than the residential well sampling, there are no other activities planned for the site. A Five-Year Review was completed by the EPA in March 2003. This review, like the first Five-Year Review in 1998, concluded that the Burrows site is protective of human health and the environment; however, it noted that monitoring data has shown a few inorganic parameters in the groundwater exceed the state's residential criteria for drinking water protection.

The EPA conducted a third Five-Year Review for this Site in February 2008 that concluded the remedy was protective of human health and the environment.

SITE STATUS

Other than the residential well sampling by Van Buren County, no other response activities are planned for the site.

The EPA has indicated that they considering the site as ready for deletion this site from the NPL. However, staff of the MDEQ have identified unaddressed concerns based on the 1999 data gathered by the MDEQ which indicates that vinyl chloride, iron, and aluminum in groundwater at levels exceeding exceed Part 201, generic residential drinking water health based criteria and aluminum, boron, iron, and manganese concentrations exceed the drinking water criteria based on aesthetic concerns. Staff of the MDEQ also have also raised concerns regarding the inadequacy of the site characterization. The 1999 data indicates that the localized groundwater flow is northerly, not to the west-southwest as

previously determined during the remedial investigation. These outstanding issues should be addressed before the site is deleted from the NPL.

At the request of the EPA Region 5, a consultant conducted a site visit of the Burrows Sanitation site in Hartford, Michigan on December 2, 2009 to determine site reuse potential and assess the need for reuse planning services. The consultant's site reuse recommendations were published in January, 2010, "Situation Report". The Situation Report noted that the current use of the property is recreational and the current owner's intended future use is for recreational purposes. The Situation Report states: "The Burrows Sanitation site does not pose any immediate reuse challenges. At this point, the desired future use of the site is compatible with the site remedy. The site could be used in the future to support active agriculture and forestry practices consistent with the historic land use in the area. The site could also be managed to provide the community with additional environmental and educational benefits."

ENFORCEMENT STATUS
In June 1989 the EPA and the PRPs for the Burrows Sanitation site reached a settlement for the PRPs to implement the remaining RA for groundwater contamination at the site. Since that time, the PRPs have installed and monitored a number of wells to determine the status of the groundwater contamination plume.

In April 1990, the Michigan Department of Attorney General reached an agreement with the PRPs to reimburse the state for past costs of $36,233.95.

SPECIAL CONSIDERATIONS
None.

OPERABLE UNITS

00	Entire Site
01	Soil Removal
02	Groundwater

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/30/1986**

This ROD consists of a groundwater purge and treatment system, wetland drainage, and excavation of sludge from the wetland area and Spill Area #2.

Record of Decision *Amendment:* 0 *ESD:* 1 **Effective 05/19/1991**

This ESD modified the original ROD from on-site treatment to off-site treatment, and reduced the size of the extraction system.

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Investigation The next Five-Year Review should be conducted in 2013 as hazardous substances still remain on site.

Start Date: 08/01/1985 Primary Cost: $541,000 Source: Federal

End Date: 09/30/1986 Secondary Cost: $0 Source:

5 Year Review The EPA prepared the Five-Year Review.

Start Date: 03/17/1998 Primary Cost: $0 Source: Federal

End Date: 03/17/1998 Secondary Cost: $0 Source:

5 Year Review The EPA prepared the second Five-Year Review with the MDEQ staff input.

Start Date: 10/31/2002 Primary Cost: $0 Source: Federal

End Date: 03/14/2003 Secondary Cost: $0 Source:

5 Year Review EPA conducted the third Five-Year Review for this Site. The site inspection was conducted in November 2007. The Five-Year Review was signed in February 2008. The EPA considers the Burrows Superfund Site to be eligible for deletion from the NPL. However, the MDEQ does not concur with the EPA based on data collected from the site by the MDEQ in 1998 and 1999. Since deletion from the NPL requires state concurrence, the Burrows Site cannot be removed from the NPL.

Start Date: 09/26/2007 Primary Cost: $0 Source:

End Date: 02/28/2008 Secondary Cost: $0 Source:

Response Accomplishments: Future Need

5 Year Review The next Five-Year Review should be conducted in 2013 as hazardous substances still remain on site.

Start Date: 09/26/2012 Primary Cost: $0 Source:

End Date: 02/18/2013 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Soil Removal

Response Accomplishments: Completed

Interim Response A group of PRPs excavated and disposed of approximately 8,648 cubic yards of lagoon sludge under an Administrative Order by Consent with the EPA.

Start Date:	*07/06/1984*	Primary Cost:	$0	Source:
End Date:	*03/15/1985*	Secondary Cost:	$0	Source:

Remedial Design

Start Date:	*05/04/1987*	Primary Cost:	$649,000	Source: Federal
End Date:	*09/30/1988*	Secondary Cost:	$0	Source:

Response Accomplishments: Construction Complete

Remedial Action Partial drainage of the Northwest Wetland and removal of 315 cubic yards of contaminated soil were performed by the EPA. State financial participation was implemented through a State Superfund Contract.

Start Date:	*09/30/1988*	Primary Cost:	$270,000	Source: Federal
End Date:	*06/02/1989*	Secondary Cost:	$30,000	Source: State

Response Accomplishments: Ongoing

Operation and Maintenance The state is currently funding the monitoring of five residential wells on an annual basis at a cost of approximately $1,300 per year.

Start Date:	*10/01/2001*	Primary Cost:	$1,300	Source: State
End Date:	*10/01/2013*	Secondary Cost:	$0	Source:

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Completed

Remedial Design

Start Date:	*10/13/1989*	Primary Cost:	$0	Source: Private
End Date:	*06/20/1991*	Secondary Cost:	$200,133	Source: Federal

OPERABLE UNIT 02: Groundwater

Response Accomplishments: Construction Complete

Remedial Action Groundwater extraction was initiated on August 17, 1992. Water was stored on-site in an above-ground tank and trucked to the Kalamazoo wastewater treatment plant for treatment. Groundwater extraction was terminated on December 17, 1993, after 2,600,000 gallons of groundwater had been extracted. Two monitoring wells that were used to monitor the progress of the extraction system were below the groundwater cleanup criteria in March 1993, at which time 1,300,000 gallons had been removed. They were required to remove an equal volume of water before the treatment system could be turned off.

Start Date: 06/20/1991	Primary Cost:	$0	Source: Private
End Date: 04/05/1993	Secondary Cost:	$0	Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V005843-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$53,148	$0	$0	$40,667	$0

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$12,327	$0	$0	$12,231	$0

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,275	$0	$0	$7,275	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$1,011	$0	$1,011	$1,011	$1,011

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$30,000	$0	$0	$25,354	$0
Totals:	$103,760	$0	$1,011	$86,538	$1,011

STATE SUPERFUND CONTRACTS

For Operable Unit 01 : Soil Removal : Closed

Activity	Total Contract Amount	State Share Of Contract	Total Amount Expended	Total Contracted In FY2010
Remedial Action	$122,316	$12,232	$12,232	$0
Totals:	$122,316	$12,232	$12,232	$0

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LEGISLATIVE REPORT
Fiscal Year 2010

Site Name: Kysor/Cadillac Area Groundwat
Cadillac Industrial Park
Cadillac , MI

County: Wexford
MDEQ District Location: Cadillac
Managed By: RRD-Superfund

Federal Site Code: 2W
State Site ID#: 83000001
State Site Score: 30

LOCATION
The Cadillac Industrial Park is in the north part of the city of Cadillac, Michigan, and extends into Haring Township across the north city border.

SITE HISTORY
Kysor/Cadillac Area Groundwater Contamination, a federal superfund site, consists of a large area of contaminated commingled groundwater located in the Cadillac Industrial Park. Seven separate facilities contributed to this groundwater contamination. These facilities include:

- 83000024 Northernaire Plating
- 83000102 Rexair
- 83000103 JoMarc/4 Star
- 83000121 Ingraham's Property
- 83000124 Four Winns Cruiser Plant
- 83000130 Four Winns Frisbie St.
- 83000131 Borg Warner (Former Kysor Properties)

The Cadillac Area Groundwater Contamination site is being addressed under a EPA Record of Decision (ROD), which includes an area wide groundwater extraction and treatment system.

Kysor Industrial Corporation manufactured automotive engine parts. The property is located at 1100 Wright Street in the Cadillac Industrial Park, and is now owned by Borg Warner. Prior to 1979 the company disposed of its old solvents and rags in a pit on their property and the groundwater of this area has been contaminated with the carcinogen trichloroethylene (TCE). The geology consists of beach sand deposits, which allowed for rapid transport of contaminants into the underlying aquifers. Twenty residential wells were contaminated with TCE and another 100 wells were threatened by this and six other sources of contamination (including Northernaire Plating, another Superfund site) in the same industrial park. The contaminants at this site pose a health risk through the routes of direct contact, inhalation or ingestion of contaminated soils, or contaminated groundwater from the affected wells.

During July 1981, approximately 700 cubic yards of contaminated soil, that also had buried buckets containing paint sludges, were removed from the Kysor Industrial Corporation site. A strong solvent odor emanated from the remaining soils. At that time all affected and threatened homes were connected to the municipal water supply. The Remedial Investigation/Feasibility Study (RI/FS) was completed by the state in 1989 and the EPA signed the ROD on September 29, 1989. Two Michigan Department of Natural Resources studies, conducted during October 1991 and October 1992, indicated that contaminated groundwater from this site continued to move downgradient and off-site where additional residential wells could become contaminated. One of the city of Cadillac's municipal wells had also been contaminated by this source. The well was removed from service. The final design for contaminated soil removal, a soil vapor extraction (SVE) system, and installation of a groundwater extraction and treatment system was approved by the EPA on March 9, 1995.

Drums of waste from Kysor Industrial Corporation were also discovered on the Ingraham property located one-quarter mile north of Kysor Industrial Corporation. Some of these drums had leaked and contaminated the soil at this property. Consequently, the EPA directed Kysor Industrial Corporation to remove 1,000 cubic yards of soil, which was completed during July 1996. This location was also identified as an additional source area to the widespread industrial park area groundwater contamination. A groundwater extraction and treatment system to address the entire area was completed during summer 1996.

The EPA has completed Five-Year Reviews of the remedy in 2000 and 2005. The second Five-Year review completed by the EPA in 2005 concluded that the groundwater extraction system was achieving performance standards but that the capture zone needs to be evaluated. The review also recommended that an Institutional Control Plan be prepared to evaluate the need for additional controls, that the SVE system performance be evaluated, and that a review be conducted of the air emission standards with verification of the pounds per hour of volatile organic compounds (VOCs) discharged from the treatment system.

SITE STATUS

On the plant property, an SVE system was installed operating to remediate the VOCs in the soil. The groundwater extraction and treatment system, consisting of air strippers and carbon filtration, went on-line in September 1996 to remediate the VOC and heavy metal groundwater contamination plume attributable to this site. The multiple VOC sources created a plume of various chlorinated and aromatic solvents, which commingled with a chromium plume from the nearby Northernaire Plating site which is part of the commingled industrial park area groundwater remediation. The first Five-Year Review was completed by the EPA in 2000 and concluded that the groundwater remedy was achieving performance standards. It called for continued operation of the extraction and treatment system.

The second Five-Year Review was completed by the EPA in 2005 and recommended that the area of groundwater capture be evaluated. A groundwater model is currently being conducted by EPA's contractor. A plume from another nearby site, Rexair, is believed to be commingling with the Kysor/Northernaire plume and being partially captured by the Kysor/Northernaire groundwater treatment system, which is operated by a Local Development Finance Authority. Monitoring data indicates that chromium contamination is now below cleanup criteria and direct discharge to surface water criteria, and has resulted in a shutdown of the separate chromium treatment system. All pumped water is now simply routed through air stripping towers for removal of VOCs prior to discharge to the Clam River. Groundwater use by residential well users was also identified as a problem during the 2005 Five-Year Review. A sampling and well abandonment program was undertaken by EPA in 2006. No current exposures to solvents above criteria were identified during this program.

The EPA completed a third Five-Year Review in August 2010. The Five-Year Review concluded that the cleanup plan continues to be protective of human health and the environment in the short term and is expected to be protective in the long term. The review noted that a more detailed evaluation of the intuitional controls are needed to ensure the groundwater use restrictions remain effective in preventing exposure to groundwater. The EPA expects to have an institutional controls plan developed by end of December 2011.

ENFORCEMENT STATUS

The potentially responsible parties (PRPs) are liable 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 PRPs have conducted remedial investigation work. The soil cleanup at the Jomarc/4 Star site was conducted by the State, and the city of Cadillac has created a Local Development Finance Authority which is operating and maintaining the remedial cleanup systems required by the ROD, using a Special Assessment District mechanism to distribute and recover costs. The remedial cleanup systems operated by the Local Development Finance Authority include the Kysor

source area soil remediation and the commingled groundwater contamination plume cleanup and treatment.

SPECIAL CONSIDERATIONS
The plume originating from the former Kysor Industrial Corporation property commingled with the Northernaire plume before the start of remediation. A separate piping and treatment system was created for treating groundwater contaminated with both VOCs and chromium from the Northernaire site. Additionally, the groundwater contamination plume from Rexair has now apparently commingled with the contaminant plume which was the subject of the ROD.

OPERABLE UNITS

00	Entire Site
01	Contamination in the Soils & Sewer Sediments
02	Contamination in the Groundwater Aquifers

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Decision Documents

Record of Decision *Amendment:* 0 *ESD:* 0 **Effective 09/29/1989**

ROD calls for off-site disposal of contaminated soils and operation and maintenance of a groundwater pump and treat system.

Response Accomplishments: Completed

Alternate Water All known affected homes were connected to the municipal water supply within the city limits. In the township subdivision, some but not all potentially affected homes were connected to the township water system. The EPA and local health department and DEQ have worked to identify those homes and have all wells abandoned. Current sampling reveals no home in the township is using water that is contaminated above residential criteria.

Start Date: *01/01/1989* Primary Cost: $400,000 Source: State
End Date: *12/01/1989* Secondary Cost: $0 Source:

Remedial Design The final design for contaminated soil removal, an SVE system, and installation of a groundwater extraction system and treatment system was approved by the EPA on March 9, 1995.

Start Date: *09/01/1989* Primary Cost: $0 Source: Private
End Date: *03/09/1995* Secondary Cost: $96,000 Source: Federal

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Completed

Remedial Action Installation and start-up of treatment system.

Start Date: 06/01/1995	Primary Cost:	$0	Source: Private
End Date: 09/01/1996	Secondary Cost:	$48,000	Source: Federal

5 Year Review Completed by the EPA with the conclusion that the groundwater extraction system was achieving performance standards.

Start Date: 01/01/1999	Primary Cost:	$0	Source: Federal
End Date: 07/26/2000	Secondary Cost:	$0	Source:

5 Year Review Second Five-Year Review completed by the EPA with the conclusion that the groundwater extraction system was achieving performance standards but that the capture zone needs to be evaluated. The review also recommended that an Institutional Control Plan be prepared to evaluate the need for additional controls, SVE system performance needs to be evaluated and review of the air emission standards with verification of the pounds per hour of VOC discharged from the treatment system.

Start Date: 12/01/2004	Primary Cost:	$0	Source: Federal
End Date: 09/30/2005	Secondary Cost:	$0	Source:

5 Year Review The EPA completed a third Five-Year Review in August 2010. The Five-Year Review concluded that the cleanup plan continues to be protective of human health and the environment in the short term and is expected to be protective in the long term. The review noted that a more detailed evaluation of the intuitional controls are needed to ensure the groundwater use restrictions remain effective in preventing exposure to groundwater. The EPA expects to have an institutional controls plan developed by end of December 2011.

Start Date: 10/01/2009	Primary Cost:	$15,000	Source: Federal
End Date: 08/31/2010	Secondary Cost:	$0	Source:

Response Accomplishments: Ongoing

Operation and Maintenance O & M of groundwater extraction system is `expected to be performed for approximately 64 years for a cumulative cost estimate of $16 million.

Start Date: 09/01/1996	Primary Cost:	$16,000,000	Source: Private
End Date: 01/01/2060	Secondary Cost:	$0	Source:

OPERABLE UNIT 00: Entire Site

Response Accomplishments: Future Need

5 Year Review

Start Date: 08/31/2014 Primary Cost: $0 Source:
End Date: 08/31/2015 Secondary Cost: $0 Source:

OPERABLE UNIT 01: Contamination in the Soils & Sewer Sediments

Response Accomplishments: Completed

Interim Response Removal of 700 cubic yards of contaminated soil containing buckets and paint sludges. A strong odor emanated from the remaining soils in the excavation area.

Start Date: 07/01/1981 Primary Cost: $0 Source: Private
End Date: 07/31/1981 Secondary Cost: $0 Source:

Interim Response Installation and operation of Soil Vapor Extraction system by State, and secondary limited soil removal by property owner.

Start Date: 11/10/1997 Primary Cost: $87,379 Source: State
End Date: 03/06/2003 Secondary Cost: $0 Source:

OPERABLE UNIT 02: Contamination in the Groundwater Aquifers

Response Accomplishments: Completed

Remedial Investigation Investigation into the massive groundwater contamination at the site was completed by the state. Note that this RI included other nearby sites such as Northernaire, Rexaire, and Cadillac Area Groundwater Contamination.

Start Date: 08/01/1981 Primary Cost: $1,500,000 Source: State
End Date: 03/01/1989 Secondary Cost: $0 Source:

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V975853-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$7,184	$0	$0	$7,184	$0

FEDERALLY FUNDED MULTI-SITE COOPERATIVE AGREEMENTS

Cooperative Agreement Number V00E183-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$671	$0	$0	$671	$0

Cooperative Agreement Number V00E183-02 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
Management Assistance	$2,473	$0	$917	$2,473	$917

Cooperative Agreement Number V995258-01 : Closed

Support Agency Activity	Total Amount Awarded	State Share Of Award	Amount Awarded In FY 2010	Amount Expended Through FY 2010	Amount Expended In FY 2010
PRP Oversight	$81,329	$0	$0	$78,076	$0
Totals:	$91,657	$0	$917	$88,404	$917

APPENDIX A
INDEX OF SUPERFUND SITE SUMMARIES

alphabetically by site name

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alphabetically by site name

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APPENDIX B
DEFINITION OF TERMS

10^{-06} Cancer Risk Level - The level of cancer risk posed by exposure to a contaminant(s) resulting in one additional cancer case in one million persons. (10^{-05} - one additional cancer case in one hundred thousand persons; 10^{-04} - one case in ten thousand persons.)

Absorption - The penetration of one substance into the inner structure of another caused by the attraction of molecules of gases, liquids, or ions to the molecular surface of solids in contact with them.

Action Level - A quantitative limit of a chemical, biological, or radiological agent at which actions are taken to prevent or reduce exposure or contact.

Administrative Order (AO) - Under the authority provided in Sections 104, 106, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 1980 PL 96-510, and amended by the Superfund Amendments and Reauthorization Act (SARA), 1986 PL 99-499, the EPA may issue an order that requires the Potentially Responsible Parties (PRPs) to perform removal and/or remedial actions at a site. The state has similar authority under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

Administrative Record (AR) - An official record comprised of all documents pertinent to the decision making process of selecting remedial action to be taken at a site.

Administrative Order on Consent (AOC) - A legal and enforceable agreement between the EPA and/or the state and the PRPs whereby the PRPs agree to perform or pay the cost of site investigation and/or cleanup. The agreement describes actions to be taken at a site and may be subject to a public comment period. It also defines the responsibilities of all parties, and the enforcement options in the event of non-compliance by the PRPs. Unlike a consent decree, an AOC does not have to be approved by a judge.

Adsorption - Adherence of the molecules of a gas or atoms, ions, or liquid in solution to the surface of solid substance.

Air Stripping - A process used to remove volatile organic compounds from leachate and contaminated groundwater by blowing air into the liquid.

Alternate Concentration Limit (ACL) - The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) allows the use of ACLs to those limits otherwise applicable for hazardous constituents in groundwater provided the conditions of CERCLA Section 121(d)(2)(B)(ii) are met and cleanup to maximum contaminant levels (MCLs) or other protective levels is not practicable.

Aquifer - A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs.

APPENDIX B
DEFINITION OF TERMS

ARARs - (Applicable or Relevant and Appropriate Requirements) Legal requirements promulgated under federal or state law that establish cleanup standards for contaminated sites.

Baseline Risk Assessment - An analysis of the current and future potential adverse health effects caused by the release of a hazardous substance(s) at a site, in the absence of any actions to control or mitigate the release(s).

Biological Treatment - An engineered method for treating contamination that relies on microorganisms, such as bacteria or fungi, to transform hazardous chemicals into less toxic or nontoxic compounds. This technology may be tailored to the pollutants at specific sites and in specific media (e.g., contaminated aquifers, waste lagoons, contaminated soils) by using organisms in the treatment system that break down a particular pollutant under specific conditions.

Carbon Adsorption - A treatment system where contaminants are removed from groundwater or surface water when the water is forced through tanks containing activated carbon, a specially treated material that attracts the contaminants.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 1980 PL 96-510 - A federal law passed in 1980, and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA), 1986 PL 99-499. The Acts created a special tax that goes into a Trust Fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

Chemical Precipitation - A treatment process used to separate out contaminants, in solid form, from water being treated.

Cleanup Level - The contaminant concentration level which achieves protection of human health and safety, i.e., the concentration of a groundwater or soil contaminant to be achieved through remedial action.

Clean Water Act, 1972 PL 92-500 - A federal law that addresses all forms of surface water pollution by limiting the concentrations of pollutants discharged to national waterways.

Consent Decree (CD) - A legal document, approved and issued by a judge, that formalizes an agreement reached between the EPA and/or the state and the PRPs, where PRPs will perform all or part of a cleanup. The CD describes actions that PRPs are required to perform and is subject to a public comment period.

Contaminant Plume - A column of contamination with measurable horizontal and vertical dimensions that is suspended in and often moves with groundwater.

Cooperative Agreement (CA) - An agreement, provided for in CERCLA, between a state and the EPA that allows that state to take primary responsibility for the management of a cleanup. Under a CA, the EPA provides funding to the state to perform all of the functions that the EPA would normally perform while managing a site cleanup.

APPENDIX B
DEFINITION OF TERMS

Dioxins - A class of 75 polychlorinated compounds which vary in the number and position of chlorine atoms attached to the two benzene rings. 2,3,7,8-Tetrachlorodibenzodioxin (TCDD) is the best studied and the most toxic of the compounds. TCDD is extremely toxic, causes tumors in lab animals and is very persistent in the environment.

Explanation of Significant Difference (ESD) - A document for the Administrative Record which explains changes in a Record of Decision (ROD) which are relatively minor adjustments to the remedy.

Extraction - Removal of contaminated groundwater through a well or a series of wells.

Focused Feasibility Study (FFS) - See Phased Feasibility Study.

Feasibility Study (FS) - A study which evaluates different methods to clean up contamination problems found in the Remedial Investigation (RI).

GAC - Granular Activated Carbon, a medium upon which organic contaminants are adsorbed in a treatment system.

Groundwater Sparging (GWS) - A method to remove volatile organic contaminants from groundwater by bubbling air or nitrogen through the aquifer.

In Situ Vitrification (ISV) - A treatment process which uses electricity to heat and melt contaminated soils and sludges to form a stable glass and crystalline structure with very low leaching characteristics.

In Situ Vapor Extraction (IVE) - See Soil Vapor Extraction (SVE).

Ketones - A class of liquid, volatile organic compounds containing the divalent carbonyl group, CO, in combination with two hydrocarbon radicals. Ketones are found in solvents, lacquers, and paints.

Leachate - Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

Level of Effort (LOE) - Contracts used to assign work for response action where a set of qualified contractors are assigned work as the need arises up to a certain dollar volume.

Maximum Contaminant Level (MCL) - The EPA's maximum allowable contaminant level for public water supply systems as set forth in the provisions of 40 CFR 141.

Method Detection Level - The minimum amount of a substance that an instrument can detect using a specific method of analysis.

APPENDIX B
DEFINITION OF TERMS

Michigan Department of Environmental Quality (MDEQ) - Effective October 1, 1995, the Department of Natural Resources underwent a reorganization to form a separate department known as the MDEQ. The MDEQ also acquired responsibility for Drinking Water and Radiological Protection from the former Michigan Department of Public Health.

Michigan Department of Natural Resources (MDNR) - The Michigan agency which, until October 1, 1995, was responsible for Environmental Protection as well as Natural Resource Management.

Michigan Department of Public Health (MDPH) - The Michigan agency which, until October 1, 1995, had responsibility for Public Health Protection.

Multi-Media Cap - A landfill cover designed to protect against infiltration of precipitation. The cap consists of an impermeable synthetic membrane overlain by a layer of compacted clay. It would also include a layer of topsoil and vegetative cover for stability and drainage.

Multi-Site Cooperative Agreements (MSCA) - Agreements whereby states receive federal funding to assist with management of site activities on EPA lead sites. These activities may include review of technical issues, community relations activities, legal assistance during negotiations with PRPs, or oversight of cleanup activities conducted by PRPs.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) - The federal regulation that guides the Superfund Program (40 CFR Part 300).

National Pollutant Discharge Elimination System (NPDES) - The National Permitting Program for regulating discharges to surface water which is delegated to Michigan to administer.

National Priorities List (NPL) - A federal roster of uncontrolled hazardous waste sites that actually or potentially threaten human health or the environment and are eligible for investigation and remediation under the Superfund Program.

Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended (Act 451) - Effective April 1, 1995, all state environmental laws were combined into this one public act.

Part 201, Environmental Remediation, of Act 451. The part of the state law that provides for the identification, evaluation, and cleanup of environmentally contaminated sites in the state.

Operable Unit (OU) - An action taken as one part of an overall site cleanup. For example, an extraction and carbon adsorption system could be installed to halt rapidly spreading groundwater contaminants while a more comprehensive and long-term RI/FS is underway. A number of OUs can be used in the course of a site cleanup.

Operation and Maintenance (O & M) - Activities conducted at a site after a response action occurs, to ensure that the cleanup or containment system is functioning properly.

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pH - A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity.

Parts per billion (ppb) - A concentration of contamination expressed in terms of the proportional unit weight of the contaminant to one billion units of medium such as groundwater or soils. [Often expressed as micrograms per kilograms (ug/kg) or micrograms per liter (ug/l).]

Parts per million (ppm) - A concentration of contamination expressed in terms of the proportional unit weight of the contaminant to one million units of a medium such as groundwater or soils. [Often expressed as milligrams per kilograms (mg/kg) or milligrams per liter (mg/l).]

Phased Feasibility Study (PFS) - In order to optimize the overall quality, scheduling, and cost for an RI/FS, the RI and FS are conducted concurrently. The data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects additional data needs and the scope of treatability studies and additional field investigations. Thus, the RI is driven to a significant extent by the needs of the FS, and the FS is driven to a significant extent by the findings of the RI. This interdependent approach can be called "phasing."

Pollution Emergency Alerting System (PEAS) - The Michigan system for reporting and responding to spills and other pollution emergencies using an 800 number and response and tracking system.

Polybrominated biphenyl (PBB) - A compound used as a fire retardant chemical which was involved in the first major statewide contamination emergency when it was accidentally mixed with animal feed in the 1970's.

Polychlorinated biphenyls (PCBs)- A family of compounds used since 1926 in electric transformers as insulators and coolants, in lubricants, adhesives, and caulking compounds. PCBs are extremely persistent in the environment because they do not break down into less harmful chemicals. They are highly toxic to the liver and skin if repeated exposure occurs, and are possible carcinogens (cancer-causing agent). The EPA banned the use of PCBs in 1976.

Potentially Responsible Parties (PRPs)/Responsible Parties (RP) - An individual, business, or government agency identified by the EPA or the state as potentially liable for the release or threatened release of contaminants at a Superfund site.

Preliminary Assessment (PA) - A "desk top" evaluation of existing information on a potential contamination site to determine whether there is adequate information to warrant evaluation and site inspection for entering the Superfund process.

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Presumptive Remedy - Certain types of sites have similar contaminants, for which the best cleanup technologies are already known from previous experience. In these cases, time and money can be saved by doing a limited feasibility study (FS). The EPA already uses the presumptive remedy process for a number of types of sites including landfills, wood treating sites, and sites contaminated with chlorinated solvents.

Proposed Plan - A document that describes the site, summarizes key findings of the Remedial Investigation and Feasibility Studies (RI/FS) provides a brief analysis of remedial alternatives under consideration, identifies the alternative preferred by the EPA and the state, and provides the public with information on how they can participate in the remedy selection process.

Public-Owned Treatment Works (POTW) - Municipally owned treatment plants for sewage discharges.

The Resource Conservation and Recovery Act (RCRA), 1976 PL 94-580, as amended - A federal law that established a regulatory system to track hazardous substances from the time of generation through disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances.

Record of Decision (ROD) - A public document that explains which cleanup alternative(s) will be used at National Priorities List (NPL) sites. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study (RI/FS) and consideration is given to public comments and community concerns.

Recovery Well - The wells through which extraction of groundwater contamination takes place.

Remedial Action (RA) - An action that is implemented to address a threat to human health or the environment.

Remedial Action Objectives - Cleanup goals that specify the level of cleanup, area of cleanup (area of attainment), and time required to achieve cleanup (restoration time frame).

Remedial Action Plan (RAP) - The remedy decision document under Part 201, Environmental Remediation, of Act 451, which is an enforceable document.

Remedial Design (RD) - The design for a remedy to be implemented pursuant to a remedial action plan (RAP) or a record of decision (ROD).

Remedial Investigation (RI) - A study which examines the nature and extent of contamination problems at the site.

Responsiveness Summary - The document in which the EPA/MDEQ address all comments received during the public comment period.

Risk Assessment - An evaluation performed as part of the remedial investigation (RI) to assess conditions at a site and determine the risk posed to public health and/or the environment.

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Seepage Lagoon - A lagoon designed to collect the discharge of treated waters and slowly discharge them through subsurface soils.

Semi-Volatile Organic Compounds (Semi-VOC, Semi-Volatile) - A group of chemical substances which evaporate in air at a slower rate than volatile organic compounds (VOCs). Some are suspected or known to cause cancer or other illnesses.

Soil Vapor Extraction (SVE) - A treatment process that applies a vacuum to a series of extraction wells to create air flow through the soil. As air moves through the system, volatile contaminants move from the soil to the air. The contaminated air is withdrawn and treated prior to discharge.

Source Control Action - An action which eliminates or slows the release of hazardous substances by removing or containing the known source of the contamination on site.

State-lead - A site where the state has the primary responsibility for conducting response actions. The EPA has lead responsibility under federal-leads.

Superfund Amendments and Reauthorization Act (SARA), 1986 PL 99-499 - Amendments to Comprehensive Environmental Response Compensation, and Liability Act, 1980 PL 96-510, as amended (CERCLA) passed in 1986. The amendments codified the state role in the program among other changes.

Site Inspection (SI) - The on-site inspection involving limited sampling to gather data to score a site using the Hazard Ranking System for proposal to the National Priorities List (NPL).

Support Agency - The support agency provides assistance such as, technical, community relations, and legal support as necessary to the lead agency (e.g., document review, fact sheets, applicable or relevant and appropriate requirements [ARAR] identification, etc.).

Trichloroethylene (TCE) - A volatile organic compound, chlorinated solvent which is heavier than water used frequently in degreasing operations.

Ultraviolet Radiation/Oxidation Process (UV/OX) - A method for treating contaminated air and water that uses UV radiation, ozone, and/or hydrogen peroxide to destroy toxic organic compounds.

Unilateral Administrative Order (UAO) - An order issued to a liable party by the EPA under the authority of CERCLA section 107 or by the state under the authority of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), Section 19 requiring the liable party to undertake specific response actions.

United States Environmental Protection Agency (EPA) - The federal agency charged with responsibility for implementation of CERCLA and other environmental laws.

Volatile Organic Compounds (VOCs) - An organic (carbon- containing) compound that evaporates (volatilizes) readily at room temperature.