FIFTH FIVE-YEAR REVIEW REPORT FOR LIQUID DISPOSAL, INC. SUPERFUND SITE MACOMB COUNTY, MICHIGAN

Prepared by

U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

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Douglas Ballotti, Director
Superfund & Emergency Management Divisi...
Signed by: DOUGLAS BALLOTTI

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
EGLE	Michigan Department of Environment, Great Lakes and Energy
EPA	United States Environmental Protection Agency
ERC	Environmental Restrictive Covenant
ESD	Explanation of Significant Differences
EW	Extraction Well
FYR	Five-Year Review
gpm	gallons per minute
HELP	Hydrologic Evaluation Landfill Performance model
ICs	Institutional Controls
LDI	Liquid Disposal Incorporated
LWMD	Land and Water Management Division
MCL	Maximum Contaminant Level
MDNR	Michigan Department of Natural Resources
MDEQ	Michigan Department of Environmental Quality
mg/kg	milligrams per kilogram
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NREPA	Natural Resources and Environmental Protection Act
O&M	Operation and Maintenance
OMFA	Operations and Maintenance Fund Agreement
PCBs	Polychlorinated biphenyls
PCOR	Preliminary Close-Out Report
ppb	parts per billion
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
Site	Liquid Disposal, Inc. Superfund Site
SWRAU	Site-Wide Ready for Anticipated Use
TBC	To be considered
TCE	Trichloroethene
TCL	Target Cleanup Levels
UCL	Upper Confidence Leve
µg/L	micrograms per liter
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the 5th FYR for the Liquid Disposal, Inc. (LDI) Superfund Site (site). The triggering action for this statutory review is the completion of the fourth FYR on September 23, 2013. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of 1 Site-wide Operable Unit (OU) which will be addressed in this FYR.

The Liquid Disposal, Inc. Superfund Site FYR was led by Stephanie Ross, EPA Remedial Project Manager (RPM). Wally Wagaw Project Manager, Michigan Department of Environment, Great Lakes, and Energy (EGLE, formerly the Michigan Department of Environmental Quality or MDEQ) has provided support during the FYR process. The relevant entities were notified of the initiation of the FYR. Notification letters were sent to the PRPs and EGLE on January 29, 2018.

Site Background

The LDI site is located near the northwest corner of the intersection of Ryan and Hamlin Roads in the City of Utica, Macomb County, Michigan. Ryan and Hamlin Roads intersect approximately 3 miles northwest of Utica and 20 miles north of Detroit. The site occupies approximately 6.8 acres of land and is bordered by the Clinton River floodplain 1/4 mile to the north, the Shadbush Tract Nature Study Area on the east, A&A Auto Salvage Yard to the south, and a vehicle storage area to the west (see Figures 1 and 2).

Current land uses in the site area, including the downgradient area between the site and the Clinton River, have not changed since the Remedial Investigation (RI). The area between the site and the Clinton River is a part of the Rochester-Utica State Recreation Area owned by the State of Michigan. The portion of the recreation area located downgradient of the LDI site is wetland and thus protected by laws regulating wetland development and use, so no shallow aquifer wells are located in this area. Private wells on adjacent parcels have been abandoned, and no other private uses of groundwater exist.

The site was first used for sand and gravel excavation and then as an unlined, uncontrolled landfill from 1964 to 1967. Liquid Disposal Inc. purchased the property from the original owners (Morgan & McClarty) 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 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.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Liquid Disposal, Inc.		
EPA ID: MID067340711		
Region: 5	**State:** MI	**City/County:** Utica/Macomb County

SITE STATUS	
NPL Status: Final	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA
Author name (Federal or State Project Manager): Stephanie Ross
Author affiliation: EPA
Review period: 1/29/2018 – 5/31/2019
Date of site inspection: 5/30/2019
Type of review: Statutory
Review number: 5
Triggering action date: 9/23/2013
Due date: 9/23/2018

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In April 1983, the Michigan Department of Natural Resources[1] (MDNR), through a cooperative agreement with EPA, initiated a Remedial Investigation/ Feasibility Study (RI/FS) at the site. The purpose of the RI/FS was to define the sources and extent of on- and off-site contamination, establish the human health and/or environmental risks posed by the site, and evaluate potential remedial action alternatives. The final RI Report was finalized in 1987.

The RI concluded that soils and other materials remaining on-site were contaminated with a wide variety of organic and inorganic chemicals. For example, in the former waste oil lagoon area, total organic

[1] Michigan Department of Natural Resources (MDNR) transferred environmental regulatory functions to Michigan Department of Environmental Quality (MDEQ) in 1995, and was renamed to Michigan Department of Environment, Great Lakes and Energy (EGLE) in 2019. Designations are used interchangeably within this document according to the agency relevant at the time of decision making.

compound concentrations reached 17,332 milligrams per kilogram (mg/kg), mainly comprised of volatile aromatics, with xylenes most prevalent. In the scrubber lagoon area, concentrations of arochlor-1254 (a PCB) reached 69 mg/kg, cadmium concentrations were as high as 83 mg/kg, and lead was as high as 9,910 mg/kg. Off-site groundwater was found to be contaminated with a similar variety of compounds. Nearly all individual organics in groundwater were found at levels less than 40 parts per billion (ppb). Exceptions included acetone at 490 ppb and 4-methyl-2-pentanone at 99 ppb. Of the inorganics, only barium significantly exceeded drinking water standards, at 3,900 ppb.

The RI Report listed the following chemicals as contaminants of concern (COCs) exceeding federal and state standards for soils or groundwater:

Table 1: COCs for the LDI site

Groundwater	Soils
Chloroform	Chloroform
Methylene chloride	Methylene chloride
Trichloroethylene (TCE)	Trichloroethylene (TCE)
2-butanone	2-butanone
Benzene	Benzene
Toluene	Toluene
Bis(2-ethylhexyl) phthalate	Bis(2-ethylhexyl) phthalate
Phenol	Phenol
Naphthalene	Naphthalene
Barium	Barium
Cadmium	Cadmium
Lead	Lead
	Tetrachloroethylene
	Benzo(a)pyrene
	Fluoranthene
	PCBs

Once the COCs were established, an exposure assessment was performed to determine the potential for receptors (human or environmental) to come into contact with these chemicals. The routes of exposure causing elevated public health risks were 1) direct contact with on-site surface and subsurface soil; 2) future ingestion of groundwater; and 3) direct contact with off-site soil and leachate. The only potential environmental risk to the Clinton River or its floodplain was acute or chronic toxicity to wetland organisms from iron and/or cyanide in groundwater.

Response Actions

The first documented release from the site was to State property in February 1969. This discharge was from a sewer line that collected runoff from the LDI site and discharged it to a marshy area east of Ryan Road. Several other surface discharges occurred while LDI was in operation that resulted in areas of dead vegetation (both onsite and offsite) and surface water contamination. MDNR received numerous complaints of smoke, odors, vibration, noise, and other possible health and safety hazards from nearby residents. From 1973 to 1981, MDNR sent several violation notices to LDI because the company was not in compliance with certain terms of their 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. In May 1982, the State referred the site to EPA for consideration as a Superfund site.

EPA proposed the site to the National Priorities List (NPL) on December 30, 1982 and finalized the site on the NPL on September 8, 1983. During the period from 1982 through 1986, EPA conducted four major removal actions at the site, at a total cost of approximately $7.5 million. The removal actions are summarized below:

- May-July 1982: A PCB-contaminated oil spill from the waste liquid lagoon occurred. The spill traveled along a small creek which fed into the Clinton River. Approximately 200 gallons of oil and 750 cubic yards of contaminated sediment and debris were recovered.
- July - September 1982: Site safety and security were improved, and action was taken to abate liquid losses from the overflowing waste liquid and scrubber lagoons. A leachate collection system was constructed to prevent scrubber lagoon leachate from migrating off-site.
- April 1983-April 1984: An extensive surface cleanup was undertaken. The waste liquid and scrubber lagoons were drained, 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.
- July 1985-April 1986: Flammable liquids and sludges in 22 above-ground and 8 below ground tanks were incinerated off-site, and the leachate collection system installed during the July 1982 removal action was repaired.

MDNR's Surface Water Quality Division conducted a study in 1986 to assess the impact of the site on the Clinton River. The results indicated no discernible impact on the aquatic life of the river. This was later confirmed when an ecological risk assessment concluded that off-site groundwater contamination levels were no longer high enough to produce a negative ecological impact at the site.

Remedy Selection

EPA selected the site remedy in a Record of Decision (ROD) dated September 30, 1987. The ROD included “response objectives”, which are now referred to as remedial action objectives. The remedial action objectives were:

- to minimize risks to public health and the environment from direct contact with contaminated materials such as on- and off-site soils and with PCBs, polynuclear aromatic hydrocarbons (PAHs), and inorganic chemicals in leachate,
- to minimize further migration of contaminants to groundwater and surface water,
- to control potential risks posed by use of groundwater as a drinking water source,
- to control risks due to inhalation of chemicals volatilizing from or adsorbed on soil, and
- to control future impacts of on-site groundwater migration to wetlands.

The 1987 ROD required the following remedy components:

- Demolition of structures and equipment on-site;
- Consolidation of soil and debris on-site;
- Removal of off-site soils above target cleanup levels and consolidation with onsite soils;

- Solidification using cement or a similar substance down to the water table to immobilize wastes in the soil;
- Construction of a slurry wall around the site keyed into the confining layer to restrict migration of groundwater onto or off of the site;
- Construction of an impermeable cap over the site to impede infiltration;
- Installation and operation of leachate extraction wells inside the slurry wall to create an inward gradient by removing groundwater trapped on-site under the cap and any potential groundwater entering the site through the cap or slurry wall in the future; and
- Extraction and treatment of off-site groundwater through the installation and operation of extraction wells just off site.

On August 28, 1995, EPA issued an Explanation of Significant Differences (ESD) to modify the remedy defined in the ROD. Those changes included the following:

- The original remedy called for the extraction and treatment of off-site groundwater. In accordance with the ESD, this component of the remedy would not be implemented unless EPA found that off-site groundwater quality had deteriorated as a result of site-related contamination.
- The ROD also called for solidification of all on-site soils down to the water table. The solidification remedy could not be implemented because there was too much subsurface debris. This debris damaged the field soil mixing equipment, therefore only the perimeter has solidified soils to the water table. EPA determined that this degree of solidification was not necessary because the site contamination would be adequately contained by means of a cap, slurry wall, and on-site groundwater extraction. Instead, in accordance with the ESD, a 20-foot-wide swath around the perimeter of the site would be solidified. This solidification would provide structural support for the slurry wall and would supplement the containment provided by the slurry wall. In addition to the perimeter solidification, all grossly contaminated soils and materials encountered during the remedial action were to be solidified.
- In addition, the target cleanup levels (TCLs) for barium and benzene were increased to meet the current Safe Drinking Water Act Maximum Contaminant Levels (MCLs). The barium MCL had changed from 1,000 ppb to 2,000 ppb; therefore, the TCL for barium became 2,000 ppb. Likewise, the TCL for benzene (0.2 ppb) had been based on risk calculations in 1987, because no MCL for benzene was available at that time. Subsequently, an MCL for benzene was set at 5 ppb, so the TCL for benzene became 5 ppb.

The 1987 ROD did not include an Institutional Controls (ICs) component for the site. However, as a result of the 2008 FYR, the need for requiring ICs at the site was further evaluated. Accordingly, EPA issued a second ESD on September 10, 2010, that required ICs to restrict the area of the site that contains the cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc.

Table 2: Target Cleanup Levels for the LDI Site

Groundwater		
Chemical	TCL (µg/L)	Source
Barium	2,000	MCL

Cadmium	10	MCL
Benzene	5	MCL
Methylene chloride	1	Risk Calculation
Trichloroethylene (TCE)	0.8	Risk Calculation
Soils		
Chemical	TCL (µg/g)	Source
Trichloroethylene (TCE)	77	Risk Calculation
Tetrachloroethylene (PCE)	16	Risk Calculation
Benzo(a)pyrene	0.4	Risk Calculation
PCBs	1	Risk Calculation
Lead	20	Risk Calculation

Notes:

1. µg/L = micrograms per liter (parts per billion)
2. µg/g = microgram per gram (parts per million)
3. MCL = maximum contaminant level
4. All risk calculations are for carcinogenic risk, except for lead.

Remedy Implementation

The Remedial Design (RD) and Remedial Action (RA) were performed by a PRP group pursuant to a Consent Decree, United States v. BASF Wyandotte Corp. et al., No. 89-CV- 71180-DT (E. Dist., So. Div. MI), entered on December 20, 1989. Under this Consent Decree, 41 major PRPs and 494 de minimis PRPs agreed to fund and perform the RD and RA. Additional funding for the RA came from another 325 de minimis parties who settled with the United States in a Consent Decree entitled United States v. A.N. Reitzloff Co., et al., No. 90-CV- 71414-DT (E. Dist., So. Div. MI), entered on August 30, 1990.

During the RD, the PRPs performed a number of discrete investigations to supplement the data upon which the RD would be based. One of these investigations, the Groundwater Quality Investigation, involved two rounds of groundwater sampling in April and July 1992. MDNR split samples from the first round and performed an independent analysis. The results of the PRPs' sampling showed drastically reduced levels of, or the absence of, many of the contaminants found during the RI. The results of the MDNR analysis were similar. The *Groundwater Quality Investigation Report* concluded that off-site groundwater extraction and treatment, as called for by the ROD, was no longer necessary.

The *Groundwater Quality Investigation Report* reasoned that the barium found at elevated levels in off-site groundwater was naturally occurring insoluble barium that had been solubilized as a result of elevated chloride levels. The report showed an association between elevated chloride and elevated barium levels and showed that the elevation of chloride was probably due to the biodegradation of site-related chlorinated solvents. The report argued that source control actions and natural attenuation mechanisms such as biodegradation and volatilization would result in attainment of MCLs for barium and benzene in off-site groundwater. The PRPs requested that EPA review the need for groundwater extraction and treatment off-site and reevaluate the need for total site solidification. Based upon the significance of the groundwater sampling results, EPA agreed to review the selected remedy to determine whether modifications were appropriate.

EPA concluded that the risks posed by site-related contaminants in off-site groundwater were no longer sufficient to necessitate off-site groundwater extraction and treatment. In addition, EPA concluded that

immobilization of on-site contaminants by total solidification of site soils was no longer necessary because the slurry wall and impermeable cap would eliminate the possibility of any future off-site migration of contaminants. The design envisioned a 20-foot wide solidified soil swath around the perimeter of the site that would provide structural support for the slurry wall and supplement the containment provided by the slurry wall. EPA issued a fact sheet and held a public meeting to give the public the opportunity to comment on the proposed changes to the remedy.

On August 28, 1995, EPA issued an ESD which documented the modifications made to the 1987 ROD. On-site construction work began on December 7, 1992.

Status of Implementation

The PRPs' contractor completed the remedial action construction work, and no additional areas of contamination were identified. The following activities were conducted:

Solidification

The perimeter of the site, including the area from approximately 2 feet inside the site fence to a distance approximately 22 feet inside the fence, was solidified to the top of the water table. The solidified material is a mixture of site soils, debris, fly ash, and Portland cement. Solidified materials were designed to have a minimum compressive strength of 500 pounds per square inch.

Slurry wall

A slurry wall with a minimum thickness of 24 inches was installed to restrict migration of groundwater into the confining zone created by the slurry wall. The slurry wall was required to be installed through the solidified material into the native confining layer by a minimum of 3 feet and is located approximately 10 feet inside the site fence around the entire perimeter. It is important to note that the slurry wall was not completely keyed into the confining layer around the entire site, as required by the ROD.

Cap

A cap comprised of clay, sand drainage layer, clean soil, and vegetative growth material was installed over the site. The cap was designed and constructed in accordance with the requirements of Michigan Act 64. The cap, as constructed, consists of the following layers:

- 36 inches of compacted clay which met the required compaction and permeability specifications;
- 12 inches of sand which met the specifications for drainage layer material;
- 12 inches of subsoil;
- 8 inches of soil capable of supporting vegetation; and
- 4 inches of topsoil which met the specifications for organic material to be considered topsoil, as determined by testing.

Groundwater Extraction System

Seven extraction wells (EW 1 through EW 7) were installed inside the solidified material and slurry wall as part of the remedy. Seven additional extraction wells (EW 8 through EW 14) were installed in 1997. Water is pumped through a pipeline header system to a storage tank in the groundwater storage building. The groundwater storage system consists of a 5,000-gallon fiberglass holding tank enclosed in a building with a secondary containment structure. The water is pumped to the holding tank from the extraction wells. The piping to the 5000-gallon tank uses EW 3 as a sump, and the leachate collection lines can fill with leachate until the 5000-gallon tank is pumped.

The extraction well pumping system is fully automated with remote monitoring and control capabilities. The extraction wells are each equipped with a pump that is automatically activated when the water level in the well reaches a high-level point. The pump then evacuates the water from the well until the pump is automatically shut off by a low-level switch. When the holding tank is 90 percent filled, a high-level switch shuts off all the extraction well pumps so that no additional water is delivered to the tank.

The site computer is equipped with software that presents the site data so that it can be accessed remotely. The site is monitored using this remote system approximately three times per week. When the tank reaches approximately 70 percent of capacity, a pickup time is scheduled to empty the tank and transport the water off-site for treatment and disposal. On average, approximately 19,000 gallons is transported off-site every month.

EPA and the State conducted a pre-final inspection on August 15, 1996, which included a description and schedule for correcting remedial action items by the contractor. These items included demonstrating start-up of the groundwater extraction system while monitoring for potential impacts to the slurry wall. These items were completed in August 1997 and EPA conducted a follow-up inspection on September 4, 1997.

EPA signed the Preliminary Close-out Report (PCOR) on September 15, 1997, concluding that the RA construction activities were completed. Follow-up items identified in the PCOR were:

- Submittal of the Construction Completion Report and final Operation and Maintenance (O&M) Plan by the PRP group; and
- Continued O&M by the PRP group, including cap maintenance, internal groundwater extraction and off-site disposal, on- and offsite groundwater monitoring, and monitoring of re-vegetated areas.

The PRPs transmitted the Construction Completion Report to EPA and the State on January 21, 1998.

Institutional Controls

ICs are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with ICs is required to assure long-term protectiveness for any areas which do not allow for UU/UE. The ESD issued on September 10, 2010, required ICs as part of the site remedy. Specifically, ICs are required to restrict the area of the site that contains the cap, slurry wall, solidification/fixation zone, the area of the groundwater plume and below the plume, extraction and treatment systems; monitoring wells, etc.

A Declaration of Restrictive Covenant was finalized and recorded with the Macomb County Recorder's Office on June 5, 2015, with the Michigan Land Bank First Track Authority being the Grantor and the MDEQ being the Grantee. The Grantor is the title holder of the real property. The purpose of the restrictive covenant and easement is to create restrictions that run with the land; to protect the public health, safety and welfare, and the environment; to prohibit or restrict activities that could result in unacceptable exposure to environmental contamination present at LDI; and to grant access to monitor and conduct response activities at the site.

There are two off-site monitoring wells (MW-109O and MW-111), which are located on the northern portion of the landfill property (see Figure 2). These offsite monitoring wells are covered under a Restrictive Covenant, recorded with the Macomb County Recorder's Office, October 24, 2003, for the G&H Landfill Superfund Site. EPA has determined that the IC is in place and effective for MW-109O and MW-111.

The site achieved Sitewide Ready for Anticipated Use (SWRAU) on September 21, 2015 based on the following requirements:

- All cleanup goals in the ROD or other decision document have been achieved for any media that may affect current and reasonable anticipated future land uses, so that there are no unacceptable risks;
- All institutional or other controls required in the ROD or identified as part of the response action to help ensure long-term protection have been put in place; and
- A review of the current Human Exposure Environmental Indication determined that the site is classified as "Current Human Exposure is Controlled and Protective Remedy in Place".

More information on the ICs and EPA's Recommendation for SWRAU are included as Appendix D. The table below describes the ICs at the LDI site.

Table 3: Summary of Implemented Institutional Controls

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcels	IC Objective	Title of IC Instrument Implemented and Date
Landfill cap	Yes	Yes	LDI Site with Tax ID: 23-07-30-200-016	Prohibit any on-site excavation that would disturb soils or the engineered remedy (cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc.) Prohibit installation of buildings or structures on the capped areas of the site. Prohibit any activities that could compromise the integrity of the cap, slurry wall, solidification/ fixation zone, extraction and treatment systems, monitoring wells, etc. Prohibit installation of wells through the cap or other components of the engineered remedy, except as necessary to operate and maintain the implement remedy and monitor the effectiveness of the remedy.	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015

				Prohibit operation of heavy equipment or vehicles on the cap. Prohibit any activity that could potentially disturb or interfere with the continued stability and integrity of the existing remedy.	
Slurry wall, solidification/ fixation zone, extraction and treatment systems, monitoring wells	Yes	Yes	LDI Site with Tax ID: 23-07-30-200-016 and adjacent site to the north with Tax ID: 23-07-19-400-005	Prohibit any on-site excavation that would disturb soils or the engineered remedy (cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc.) Prohibit any activities that could compromise the integrity of the cap, slurry wall, solidification/ fixation zone, extraction and treatment systems, monitoring wells, etc.	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015 Restrictive Covenant, recorded with the Macomb County Recorder's Office, October 24, 2003
Groundwater	Yes	Yes	LDI Site with Tax ID: 23-07-30-200-016	Prohibit any use of groundwater impacted by the site for any purpose other than as necessary to operate and maintain the implemented remedy and monitor the effectiveness of the remedy.	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015

A map showing the area in which the ICs apply is included in Appendix D.

Current Status of ICs

The State of Michigan currently owns the LDI site property through tax reversion. The PRPs prepared a Declaration of Restrictive Covenant (DRC) for the site property based on current EGLE guidance. The DRC was recorded on June 5, 2015. Two offsite wells (MW-109O and MW-111) are located on the northern portion of the landfill property. These off-site monitoring wells are covered under a Restrictive Covenant (recorded October 24, 2003) for the G&H Landfill Superfund Site.

Current Compliance

Based on inspections and interviews, EPA is not aware of site or media uses which are inconsistent with the stated objectives of the ICs. Due to a clerical error at the state, the final ICs were not delivered to the PRP group and as a result, permanent markers have not yet been erected.

Long Term Stewardship

Long-term protectiveness at the site requires implementation and compliance with use restrictions to assure the remedy continues to function as intended. To assure proper maintenance and monitoring of the ICs, long-term stewardship (LTS) procedures will be reviewed, and a plan developed. The plan will include regular inspection of the ICs and annual certification by the PRPs to EPA and EGLE that the ICs are in place and effective.

IC Follow-up Actions Needed

LTS procedures in the form of a revision to the O&M plan should be completed to ensure long-term effectiveness of ICs. LTS will include the current mechanisms and procedures undertaken to inspect and

monitor compliance with the ICs as well as communications procedures. In conjunction with O&M reports, an LTS report should be submitted to EPA to demonstrate that the Site was inspected to ensure no inconsistent uses have occurred; that ICs remain in place and are effective; and that any necessary contingency actions have been executed. Results of IC reviews should be provided to EPA as part of the O&M report. Installation of permanent markers is required per Section 3 of the Environmental Restrictive Covenant.

Systems Operations/Operation & Maintenance

Long-term O&M is being conducted by the PRPs who are signatories to the 1989 Consent Decree. The current O&M activities for the site are outlined in the Final Operation and Maintenance Plan (Revision 4) which was approved on March 30, 2000. Routine site inspections and groundwater monitoring is conducted, in accordance with the O&M Plan, to ensure that the components of the remedy are operating as designed and remain protective of human health and the environment.

Groundwater sampling events have been conducted in accordance with the O&M Plan, including monitoring well locations inside the slurry wall. All locations were sampled for volatile organic compounds and inorganics, and for some natural attenuation parameters at a reduced frequency.

Following construction of the remedy, quarterly groundwater quality monitoring was initially conducted. Sampling was conducted semi-annually in 2013 and 2014, and annually from 2015 to 2018. Modifications have been made to the monitoring plan over the years, particularly with respect to which wells are monitored, based on sampling results.

Currently, the groundwater quality monitoring program includes the following:

- Upgradient groundwater quality monitoring is performed at the following monitoring wells (see Figure 2):
    - MW-2S (off-site to south)
    - MW-113 (off-site near southwest corner of site)
- Groundwater quality is monitored within the confines of the slurry wall at the following monitoring wells (see Figure 2): MW-101I, MW-105I, MW-107I, MW-108I, MW-109I, MW-117-96, MW-128-96, MW-129-96
- Groundwater quality is monitored adjacent to (outside of) the slurry wall at the following monitoring wells (see Figure 2):
    - MW-103O (on-site near edge of landfill cap)
    - MW-105O (on-site near edge of landfill cap)
    - MW-109O (off-site but within area covered by landfill cap)
- Downgradient groundwater quality monitoring is performed at the following monitoring wells (see Figure 2):
    - MW-3S (off-site to east)
    - MW-4S (off-site to northeast)
    - MW-111 (off-site to north; near edge of landfill cap)
    - MW-112 (on-site near northeast corner of site)

Water level measurements for hydraulic monitoring purposes are currently collected at the following locations:

- Slurry wall monitoring well pairs MW-101I/O, MW-102I/O, MW103I/O, MW-104I/O, MW-105I/O, MW-106I/O, MW-107I/O, MW-108I/O, MW-109I/O, and MW-110I/O;
- Upgradient monitoring wells MW-2S, MW-5S, and MW-113;
- Downgradient monitoring wells MW-1S, MW-3S, MW-4S, MW-111, and MW-112; and
- Inside-slurry-wall monitoring wells MW-114-96, MW-115-96, MW-117-96, MW-126-96, MW-127-96, MW-128-96, MW-129-96, and MW-130-97.

Groundwater has been extracted and transported off-site for disposal since July 1998. Between 2013 and 2018, approximately 14,000 to 25,000 gallons were transported off-site every month on average.

The site is surrounded by a 6-foot high galvanized chain-link fence topped with three strands of barbed wire with two vehicle gates around the perimeter, which restricts unauthorized persons from entering the site. The fence at the south end of the site was modified by A&A Auto Salvage, and EGLE Superfund staff have been addressing the property ownership and trespass issues associated with the southern entrance to the site, including intermittent issues related to blockage and/or damage at or near this location. The O&M contractor for the PRPs performs maintenance of the fence and has attached signs and gate locks. In the past, several minor repairs were needed as a result of vandalism, but these appear to have been isolated incidents and have not occurred in recent years. The May 30, 2019 FYR site inspection confirmed the condition of the fencing and security measures in place. The O&M contractor performs inspections of the fence quarterly, using the "Inspection and Maintenance Log" contained in the O&M Plan. The O&M contractor repairs any breaches in security measures consistent with the O&M Plan provisions.

Routine inspections occur an average once per week by the PRPs' contractor. Routine inspections include observing the condition of the storage tank, valves and associated piping, air compressor and pneumatic wells, cap and adjacent areas for erosion, drainage swales, vegetation, slurry wall monitoring wells, electrical and heating systems, fence, gates, and locks. General preventive maintenance and minor repair work is also performed on remedial components. Routine maintenance has included the removal and cleaning of pumps within the extraction wells to optimize performance. The pumps for selected extraction wells are routinely cleaned and re-installed, and preventative maintenance has been performed on the system's air compressor. Water levels from the hydraulic monitoring wells are obtained monthly in conjunction with the routine site inspections.

Occasional issues related to cold weather have occurred, including frozen lines which necessitated the site technician to replace the air line on certain extraction wells. These events have had no long-term impacts on the overall system. The site's computer monitor was damaged during an electrical storm, necessitating replacement. Additionally, limited activity at the site associated with wildlife (such as raccoons, groundhogs, and red fox) has been observed. In these instances, the wildlife is trapped and removed/relocated from the site.

During this review, discussions have continued between EPA and the PRPs regarding the Operations and Maintenance Fund Agreement (OMFA) which was established pursuant to the 1989 Consent Decree. The fund was created through the PRPs investing in an annuity that matured on March 23, 2007 at $6.1 mil. EPA was the owner of the annuity. After maturity, and with consent and agreement by the PRPs, the Consent Decree was supplemented to allow the funds to be transferred into a special account held by EPA, in lieu of the defunct OMF custodian. The purpose of the fund was to be used for the effective O&M and oversight of all systems put in place by the Remedial Action Plan (RAP) after completion of sixteen years, or 27 pore volumes of groundwater extraction and treatment, whichever is

later. This initial estimate of 27 pore volumes represents the volume of contaminated groundwater, as calculated by the PRPs during the consent decree negotiations that would result in remediation of groundwater contamination at the site. EPA will continue discussions with the PRP group, as well as coordinate efforts with EGLE, as this process continues. Specifics of the ultimate transition of O&M responsibilities will be developed to ensure that long-term O&M activities will continue, and the remedy remains protective of human health and the environment.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 4: Protectiveness Determinations/Statements from the 2013 Five-Year Review

OU #	Protectiveness Determination	Protectiveness Statement
OU1 & Sitewide	Short-term Protective	The remedy currently-protects human health and the environment because there is no current human exposure to site-related groundwater contamination and because the landfill cap adequately provides protection against direct contact with unacceptable levels of site contaminants. However, for the remedy to be protective in the long term, the remedy needs to function as intended by the decision documents and effective ICs need to be implemented. Specifically, steps need to be taken to achieve and then maintain the two-foot inward hydraulic gradient required by the ROD. Additionally, site remedy components need to be maintained and long-term groundwater monitoring needs to continue, including sampling for a revised list of contaminants, and landfill seeps need to be monitored. Finally, comprehensive long-term ICs need to be implemented at the site, and long-term stewardship procedures need to be reviewed and a plan developed.

Table 5: Status of Recommendations from the 2013 Five-Year Review

Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Because the slurry wall is not completely keyed into the confining layer, there has been no significant progress toward achieving an inward hydraulic	A work plan should be developed that describes the specific steps that will be taken to achieve the two-foot inward gradient required by the ROD.	Completed	Work Plan for the Development of Extraction Wells EW-8 to EW-14 was submitted to EPA and MDEQ on June 4, 2015. Field activities were completed between June 29 and July 10, 2015. After a brief period of increased yield, extraction wells returned to	June 4, 2015

gradient as required by the ROD.			low/steady state conditions, and an inward gradient continues not to be established as required by the ROD.	
Due to lack of hydraulic control across the slurry wall, there appears to be seepage at the northern edge of the source area, and cleanup goal exceedances and increasing concentration trends are observed outside the barrier wall to the north and in the northeast corner of the barrier wall enclosure.	Additional groundwater monitoring should be conducted downgradient of the landfill, including seep sampling along the face of the escarpment on the northern landfill boundary.	Completed	Surface water accumulation was sampled in the northern ditch during the June and November 2014 sampling events. No sample could be collected during July 2015 or June 2016 events because the northern ditch was dry. The ditch was sampled again in May 2018.	June 3, 2014
Cleanup goal exceedances are observed in MW-105O located upgradient of the southern barrier wall section and groundwater flow pathlines show the potential for site contaminants to migrate around the southeast corner of the barrier wall.	Additional monitoring should be conducted to evaluate the fate of contaminants observed in samples from MW-105O.	Completed	2014 evaluation of gradient between MW-105I and MW-105O showed consistent inward gradient, reducing probability of contaminants migrating around slurry wall. Analysis of constituents in groundwater in MW-3 and MW-4 do not show similar concentration trends with MW-105O. However, because MW-106O is not screened in groundwater, the fate for these contaminants is still unknown. Discussion of these analyses are included in the Draft Tech Memo issued by GHD in March 2018.	March 8, 2018
Additional contaminants were identified by MDEQ sampling events in June 2004 and May 2006 at concentrations exceeding MCLs and/or Michigan Part 201 Generic Criteria.	The following list of chemicals should be added to the groundwater monitoring program: diethyl ether, tetrahydrofuran, naphthalene, 1,2,4-trimethylbenzene, arsenic, cyanide, lead, sodium, strontium and vanadium.	Completed	The following parameters were added to the monitoring program in 2014: 1,2,4-trimethylbenzene, ethyl ether, naphthalene, tetrahydrofuran, arsenic, cyanide, lead, sodium, strontium, vanadium. The following parameters were added to the monitoring program in 2017: 1,2,3-trichlorobenzene, cyclohexane dichlorodifluoromethane (CFC-12), isopropyl benzene, methyl tert butyl ether (MTBE), methyl cyclohexane, methyl acetate, trichlorofluoromethane (CFC-11), trifluorotrichloroethane (CFC-113), total metals	June 4, 2014

The COCs for the site need to be re-evaluated following implementation of the revised groundwater monitoring program.	Review the data from the revised groundwater monitoring program and decide whether additional contaminants need to be included on the list of COCs for the site.	In Progress	PRP has proposed a new monitoring plan. EPA and EGLE will review, provide comments, and PRP will revise the O&M Plan.	
Vapor intrusion may be an issue for the on-site building that houses the leachate tank.	The potential for vapor intrusion in the on-site building should be evaluated.	Completed	Methane sampling was conducted in wells MW-2S, MW-101I, MW-108I, and MW-129-96 in May 2018. Results were highly variable. This is further discussed later in Data Review. Installation of a methane monitor in the building occurred in early 2014 and was first described in the March 2015 Draft Current Conditions Report prepared by GHD.	March 17, 2015
Comprehensive long-term ICs need to be implemented at the site.	The environmental restrictive covenant for the site property needs to be finalized and recorded. Additionally, the agencies need to determine whether any additional ICs are needed at the site.	Completed	As required by the 2010 ESD, two Restrictive Covenants were finalized and recorded: - Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015 - Restrictive Covenant, recorded with the Macomb County Recorder's Office, October 24, 2003	June 5, 2015
Long-term stewardship procedures need to be put in place to assure proper maintenance and monitoring of ICs.	Long-term stewardship procedures need to be reviewed and a plan developed. The plan should include regular inspection of ICs at the site and annual certification to EPA and MDEQ that required ICs are in place and effective.	Ongoing	PRP shall develop LTS procedures and incorporate them in an update to the O&M Plan.	

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

Community Notification and Involvement

A public notice was made available in the Macomb Daily newspaper, on 2/9/2018, stating that there was a FYR and inviting the public to submit any comments to EPA (Appendix E). Except for correspondence from EGLE, no public comments regarding the FYR have been received. The results of the review and the report will be made available on the site profile page at epa.gov and at the Site information repository located at:

Shelby Township Library
51680 Van Dyke Avenue
Shelby Charter Township, MI 48316

The Administrative Record may also be reviewed at the Shelby Township Library and:

U.S. EPA, Region 5
Superfund Records Center, 7th Floor
77 West Jackson Boulevard
Chicago, Illinois 60604

Data Review

In March 2015, the LDI Executive Committee & CRA issued the Draft Report: Evaluation of Current (2014) Conditions Report. This report addressed follow-up items from the 2013 FYR and was subsequently updated in November 2015 and October 2016 (by GHD). The Report contains a description of current conditions as related to the three main issues identified in the FYR:

- Inward gradient across the slurry wall;
- Increased concentrations in monitoring wells outside the slurry wall; and
- Seepage (surface water accumulation) in the northern ditch.

Other items discussed in the reports include an evaluation of dissolved methane in groundwater data and the evaluation of potential vapor intrusion in the building which houses the controls for the groundwater extraction system. The report also included monitoring results for groundwater quality and groundwater elevation. The discussion below reflects the findings included in the most current draft of these reports, issued in 2016.

Enhancement of Groundwater Extraction Effectiveness
The 1987 ROD says an inward hydraulic gradient is required. Seven extraction wells (EW1 through EW7) were installed within the confines of the solidified material and slurry wall as part of the remedy but were not adequate to establish an inward hydraulic gradient. Therefore, an additional seven extraction wells (EW8 through EW14) were installed in 1997. Initially the modified extraction system was making satisfactory progress toward achieving the required inward hydraulic gradient. Since 1998, however, there has been no significant progress toward achieving the inward gradient.

In 2015, the PRP Group completed a Work Plan for the development of extraction wells EW-8 to EW-14 to improve the effectiveness of groundwater extraction. The Work Plan was submitted to EPA and MDEQ in June and field activities were completed between June 29 and July 10, 2015. Well development activities included pre- and post-development pumping tests to record improvements in well yields.

The extraction wells showed improved yields in five of the seven wells post-development and provided a significantly increased volume of groundwater recovered in August and September 2015 (33,123 and 47,703 gallons respectively). The volume of groundwater recovered remained high for approximately seven months, until May 2016 when it dropped to 14,444 gallons per month, which is similar to pre-development averages. Extraction rates are highly variable, with a minimum of 3,500 gallons and a maximum of 47,703 gallons extracted per month within the time period of January 2013 to May 2019 (Figure 3). The variability in gallons pumped and decreasing trend in gallons extracted per month reflect conditions governed by infiltration of precipitation through the cap.

GHD performed an estimation of percolation through the cap using the Hydrologic Evaluation Landfill Performance (HELP) model, included in Appendix E of the Report. The HELP model was run using assumptions for the site cover system developed in 1996 and updated with precipitation information for years 2010-2015. The model calculations resulted in a range of annual percolation rates from 0.31 to 0.37 gallons per minute (gpm), which is equivalent to 163,000-194,000 gallons per year, or a monthly extraction rate of 14,000-16,000 gallons per month. This is roughly equivalent to the monthly and annual averages for leachate extraction seen on the site. The cap appears to be leaking, and the extraction system appears to only be pumping infiltrated water.

Hydraulic Gradient Evaluation

LDI's remedy included the installation of a slurry wall though the solidified vadose zone soils at the perimeter of the site. The slurry wall was required to be installed into the native confining layer by a minimum of 3 feet but was not completely keyed into the confining layer – an area of about 250 ft^2 was found to occur at the bottom of the wall in the southwest portion during a 1996 investigation.

Groundwater contour maps and the Remedial Design as-built documentation indicate that the slurry wall is not keyed into the underlying confining layer as required by the ESD (Section IV. B.) and that there is hydraulic communication through the wall at several locations. In addition, some of the extraction wells are in poor hydraulic communication with the source area. As a result, the required inward hydraulic gradient cannot be established, and the source area leachate is not able to be fully extracted under current site conditions.

As of August 2016, consistent with historical conditions, an inward hydraulic gradient had been achieved along the south but had not been achieved along the west, north, or east sections of the slurry wall. The heterogeneity of fill materials within the walled area is the major contributing factor to inability to achieve an inward gradient. Hydrographs of well pairs show inward gradients at MW-104I/O and MW-105I/O, an oscillating gradient at MW-103I/O, and outward gradients at MW-101I/O, MW-102I/O, MW106I/O, MW-107I/O, MW-108I/O, MW-109I/O, and MW-110I/O.

Evaluation of Chemical Trends

GHD evaluated chemical trends for COCs and tetrahydrofuran within the slurry wall at locations with the most complete data sets: MW-101I, MW-105I, MW-107I, MW-108I, MW-109I, MW-117-96, MW-128-96, and MW-129-96. Increasing trends were identified for MW-105I (benzene), MW-107I (benzene), MW-108I (chloroform, ethylene chloride, tetrahydrofuran), MW-109I (barium), and MW-117-96 (benzene, tetrahydrofuran).

GHD analyzed trends outside the slurry wall at upgradient wells MW-2S, MW-105O, and MW-113; and at cross-gradient or downgradient wells MW-103O, MW-3S, MW-4S, MW-109O, MW-111, and MW-112. Increasing trends were identified for upgradient wells MW-2S (benzene), and MW-113 (barium, trichloroethylene), which suggests a potential upgradient source area. Increasing trends were also identified in cross-gradient and downgradient wells MW-103O (barium, benzene, trichloroethylene), MW-109O (benzene, methylene chloride), MW-111 (barium, benzene, methylene chloride, trichloroethylene), and MW-112 (trichloroethylene). Further downgradient, wells MW-3S and MW-4S had generally decreasing trends or were well below target cleanup levels for COCs. Potential seepage of leachate through the slurry wall has been identified as an issue and further analysis is included in the recommendations below.

Evaluation of Surface Water Accumulation in the Northern Ditch
A suspected seep was identified during site inspection for the 2013 FYR in November 2012. The PRP group sampled the water accumulating at that location in the northern ditch during the June and November 2014 sampling events. No sample could be collected during July 2015 or June 2016 events because the northern ditch was dry. Of the constituents sampled, the North Ditch exceeded EGLE residential criteria or the MCL for Arsenic (11.1µg/L in 6/14) and Lead (17.5µg/L and 5.8µg/L on 6/2014 and 11/2014 respectively).

Potential Vapor Intrusion/Dissolved Methane in Groundwater
Vapor intrusion in the on-site building was identified as a potential issue in the 2013 FYR. GHD evaluated the potential for vapor intrusion by reviewing historical methane data for wells MW-111 and MW-112 near the on-site building, and compared them with MW-113, an upgradient well. Methane results from sampling events between 1996 and 2006 were evaluated and GHD found that concentrations in each downgradient well were highly variable, ranging from 0.005 to 1,000 mg/L, with an average of 74 mg/L. Methane concentrations in MW-113 were similar, and GHD concluded that the magnitude and similarity of methane concentrations in each area showed limited exposure pathways to indoor air within the on-site building. As a precautionary measure, the PRP group has installed a gas monitor in the building.

In March 2018, GHD issued a Draft Technical Memorandum entitled, Additional Information Regarding Remedy Performance, which summarized the work done to address issues found in the 2013 FYR. Additional findings included in this memo include a discussion of the dissolved methane concentrations. GHD recognizes that research indicates that venting may be required if methane concentrations in groundwater are greater than 10,000 µg/L. In reviewing historical methane data from 1997-2006, GHD found that monitoring wells inside and outside the slurry wall have concentrations greater than 10,000 µg/L.

In response to EPA's concern that the contamination found at MW-105O was migrating around the southeast portion of the slurry wall, GHD reviewed site data to identify potential flow paths leading to downgradient wells MW-3S and MW-4S. Benzene, ethylbenzene and toluene were reviewed, because they are commonly found in MW-105O samples; barium was included as a site contaminant of concern; and potassium and sodium were included as conservative constituents which move with groundwater. The evaluation determined that constituents detected at elevated concentrations in MW-105O were non-detect in the downgradient wells and concluded that contamination is not migrating to these off-site wells.

At the request of EPA, the presence of localized high levels of tetrahydrofuran were evaluated. GHD found that wells MW-101I, MW-107I, MW-108I, MW-129-96 inside the slurry wall and well MW-111 outside the slurry wall had concentrations exceeding the EGLE drinking water standard of 95 µg/L. The source of the tetrahydrofuran is suspected to be related to historical site operations or an artifact of well installation.

Groundwater sampling data review – May 2013 to May 2018
The groundwater quality monitoring program includes sampling the following wells:

- Upgradient groundwater quality monitoring: MW-2S and MW-113;
- Groundwater quality within the confines of the slurry wall: MW-101I, MW-105I, MW-107I, MW-108I, MW-109I, MW-117-96, MW-128-96, and MW-129-96;

- Groundwater quality is monitored adjacent to the slurry wall: MW-103O, MW-105O, and MW-109O;
- Groundwater quality immediately downgradient from the slurry wall: MW-111, and MW-112; and
- Groundwater quality downgradient from the Site: MW-3S, MW-4S.

Since the last FYR, sampling was conducted semi-annually in 2013 and 2014, and annually from 2015 to 2018. Samples were collected for site COCs, and compared to TCLs, MCLs, or EGLE Residential Drinking Water Criteria. The following parameters were added to the monitoring program in 2014: 1,2,4-trimethylbenzene, ethyl ether, naphthalene, tetrahydrofuran, arsenic, cyanide, lead, sodium, strontium, and vanadium. The following parameters were added to the monitoring program in 2017: 1,2,3-trichlorobenzene, cyclohexane, dichlorodifluoromethane, isopropyl benzene, methyl tert butyl ether (MTBE), ethyl cyclohexane, methyl acetate, trichlorofluoromethane, trifluorotrichloroethane, and total metals.

Since 2013, the following constituents were found to exceed relevant criteria at least once:

Volatile Organic Compounds

- 1,2,4-Trimethylbenzene (EGLE Residential Criteria 63 µg/L): MW-108I
- 1,2-Dichloropropane (MCL & EGLE Residential Criteria 5 µg/L): MW-108I
- 4-Methyl-2-pentanone (Methyl isobutyl ketone) (EGLE Residential Criteria 1800 µg/L): MW-108I
- Acetone (EGLE Residential Criteria 730 µg/L): MW-105O, MW-108I
- Benzene (TCL 5 µg/L): MW-101I, MW-103O, MW-105I, MW-105O, MW-107I, MW-108I, MW-109I, MW-111, MW-128-96, MW-129-96
- Chloroform (TCL 0.1 µg/L): North Ditch
- Ethyl ether (EGLE Residential Criteria 10 µg/L): MW-101I, MW-103O, MW-107I, MW-108I, MW-111, MW-128-96, MW-129-96
- Ethyl benzene (MCL 700 µg/L, EGLE Residential Criteria 74 µg/L): MW-101I, MW-105O, MW-108I
- Methylene chloride (TCL 1 µg/L): MW-101I, MW-105I, MW-107I, MW-108I, MW-111
- o-Xylene (EGLE Residential Criteria 280 µg/L): MW-108I
- Tetrahydrofuran (EGLE Residential Criteria 95 µg/L): MW-101I, MW-103O, MW-105O, MW-107I, MW-108I, MW-111, MW-129-96
- Toluene (MCL 1000 µg/L, EGLE Residential Criteria 790 µg/L): MW-105O, MW-108I
- Trichloroethene (TCL 0.8 µg/L): MW-108I
- Vinyl chloride (MCL & EGLE Residential Criteria 2 µg/L): MW-108I

Metals

- Aluminum (EGLE Residential Criteria 50 µg/L): MW-2, MW-3S, MW-105I, MW-105O, MW-107I, MW-109O, MW-111, MW-112, MW-113, MW-128-96
- Antimony (MCL & EGLE Residential Criteria 6 µg/L): MW-107I, MW-109I

- Arsenic (MCL & EGLE Residential Criteria 10 µg/L): MW-2, MW-101I, MW-103O, MW-105I, MW-105O, MW-107I, MW-108I, MW-109I, MW-109O, MW-111, MW-112, MW-113, MW-128-96, MW-129-96, North Ditch
- Barium (TCL 2000 µg/L): MW-101I, MW-103O, MW-108I, MW-109I
- Cadmium (TCL 10 µg/L): MW-3S, MW-109I
- Chromium (MCL & EGLE Residential Criteria 100 µg/L): MW-4S
- Cyanide (MCL & EGLE Residential Criteria 200 µg/L): MW-105I, MW-108I
- Iron (EGLE Residential Criteria 300 µg/L): MW-2, MW-3S, MW-4S, MW-101I, MW-103O, MW-105I, MW-105O, MW-107I, MW-108I, MW-109I, MW-109O, MW-111, MW-112, MW-113, MW-128-96, MW-129-96, North Ditch
- Lead (MCL 15 µg/L, EGLE Residential Criteria 4 µg/L): MW-2, MW-3S, MW-4S, MW-105O, MW-111, MW-112, MW-113, MW-128-96, MW-129-96, North Ditch
- Manganese (EGLE Residential Criteria 50 µg/L): MW-2, MW-3, MW-4S, MW-101I, MW-103O, MW-105I, MW-107I, MW-108I, MW-109I, MW-109O, MW-111, MW-112, MW-113, MW-128-96, MW-129-96, North Ditch
- Silver (EGLE Residential Criteria 34 µg/L): MW-4S
- Sodium (EGLE Residential Criteria 230,000 µg/L): MW-3S, MW-101I, MW-103O, MW-105I, MW-107I, MW-108I, MW-109I, MW-111, MW-112, MW-129-96
- Strontium (EGLE Residential Criteria 4600 µg/L): MW-107I, MW-108I, MW-109I, MW-129-96
- Vanadium (EGLE Residential Criteria 4.5 µg/L): MW-3S, MW-105I, MW-105O, MW-111, MW-112, MW-128-96
- Zinc (EGLE Residential Criteria 2400 µg/L): MW-2, MW-3S, MW-4S

A review of these identified constituents for potential COCs has been included as a recommendation below.

Site Inspection

The inspection of the Site was conducted on 5/30/2019. In attendance were Stephanie Ross, RPM, EPA; and Wally Wagaw Project Manager, Barbara Vetort, Geologist, and Sydney Ruhala, Geologist, representing EGLE. Participants from the PRP Technical Committee Group included Michael Percival, Project Manager, *de maximus, inc*.; Gary Lagos, Technical Consultant, GHD; and Mohamed Zakkar, LDI Executive Committee Member, Ford Motor Company.

The purpose of the inspection was to assess the protectiveness of the remedy. Inspected areas included the vegetative cover and groundwater extraction system, including groundwater monitoring locations. The perimeter fence and areas surrounding the site were also observed.

The following conditions were noted during the inspections:

- The groundwater extraction system and associated building and monitoring locations were in good condition;
- The vegetative cover was in good condition;
- The perimeter fencing was intact and in good condition;
- Access gates to the fence were locked and secure;

- The access road on the salvage yard property to the south contained a variety of debris, thereby blocking access at that location. The PRPs indicated that they are in discussions with that property owner to ensure that access to the gate at the south end of the site is always available, but this remains an ongoing issue;
- Appropriate informational signs were posted although, permanent markers describing the ICs at the Site have not yet been installed;
- No evidence of trespassing was observed; and
- Mitigated wetland areas appeared to be vegetated with various tall grasses. However, EGLE noted that the mitigated wetland area was not functioning as required and had a large population of phragmites (an invasive species of vegetation) present.

A copy of EPA's Site Inspection Report, along with site photographs and map, are included in Appendix C.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

No. While the cap was designed and constructed in compliance with RCRA Subtitle C and 40 CFR Part 264, as well as the Michigan Hazardous Waste Management Act (Act 64), the slurry wall was not keyed into the confining layer as required by the ROD. Some of the extraction wells are also in poor hydraulic communication with the source area. As a result, the extraction wells are unable to establish and maintain an inward hydraulic gradient as required, and monitoring wells immediately downgradient of the slurry wall are exhibiting some exceedances of site-related contaminants. An evaluation of how to achieve the objectives related to maintaining an inward gradient and to support hydraulic control is needed. Further analysis of these contaminants and their potential association to the leachate is included in the issues and recommendations below.

EGLE has raised an issue with contamination identified at MW-105O. Groundwater flow path lines show the potential for site contaminant migration around the southeast corner of the barrier wall. This issue is currently being evaluated by both EPA and EGLE.

On the western side of the Site, impacted groundwater may be seeping into a surface water body that discharges into the Clinton River. EGLE staff recommend including wells MW-103O, MW-102O, and MW-101O as locations to determine if impacted groundwater is discharging into the surface water.

Cap integrity may be an issue. Modeling indicates a significant amount of precipitation is infiltrating the cap, and pumped volumes are comparable to estimated infiltration. However, pumping is still removing source area contamination as intended.

EPA and EGLE will coordinate to determine the specifics of the type of additional work that may be needed at the site to address the concerns described above. However, it should be noted that the cap does protect against direct contact with the remaining wastes, and because the two private wells formerly located adjacent to the site have been abandoned, there is no human exposure to the contaminated soil or groundwater at the site.

Appropriate and adequate site security is in place at the site. Based on inspections and interviews, EPA and EGLE are not aware of site or media uses which are inconsistent with the stated objectives of the ICs.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

No. The exposure assumptions and information on which the ROD was based require further evaluation, as outlined below.

As discussed earlier in this report, several contaminants currently not on the list of site COCs have been sporadically detected at the site: acetone, ethyl ether, ethyl benzene, tetrahydrofuran, naphthalene, o-xylene, methylene chloride, 1,2,4-trimethylbenzene, 1,2-dichloropropane, 4-methyl-2-pentanone, aluminum, antimony, arsenic, chromium, cyanide, iron, manganese, silver sodium, strontium, vanadium, and zinc. These contaminants are not amenable to natural attention. It is not yet known whether these contaminants should be considered as site COCs.

In addition, there is a family of man-made compounds known as polyfluoroalkyl substances (PFAS) that are emerging COCs to EPA and EGLE. While there is currently no data available that would suggest that per- and polyfluoroalkyl substances are at the Site, EPA believes that their potential presence as a pollutant or contaminant at the Site should be investigated in an abundance of caution. PFAS are used by a variety of industries, and they are not found naturally in the environment. Use and disposal patterns of PFAS generally result in a variety of release mechanisms to the environment and result in varied human exposures. Landfills can be a source of PFAS if waste containing PFAS was deposited in the landfill. PFAS may include perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), and other PFAS compounds. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body. They are widespread in part because of this persistence in the environment; that is, they do not break down easily when exposed to air, water, or sunlight.

Another emerging COC identified by EGLE is 1,4-dioxane. Found at many sites contaminated with chlorinated solvents, the potential presence of 1,4-dioxane should be investigated at the Site.

Changes in Risk Assessment Methods

- There have been no changes in standardized risk assessment (both human health and ecological) methods that could affect the assessment of the protectiveness of the remedy.

Changes in Exposure Pathways

- There have been no other land use changes at the site, nor are any expected in the near future.
- No new human health or ecological routes of exposure or receptors have been identified or changed in a way that could affect the protectiveness of the remedy

Expected Progress Towards Meeting RAOs

- Increasing concentration trends in multiple wells inside and outside of the slurry wall indicate that the remedy is not progressing as expected towards meeting RAOs.
- If the additional contaminants identified during recent sampling events are determined to be COCs, it may take longer for the site remedy to achieve long-term protectiveness.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

VI. ISSUES/RECOMMENDATIONS

Issues and Recommendations Identified in the Five-Year Review:

Sitewide	Issue Category: Remedy Performance			
	Issue: There has been no significant progress toward achieving an inward hydraulic gradient as required by the ROD.			
	Recommendation: Alternatives should be developed to achieve the remedial objectives despite the inability to create an inward gradient.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	9/1/2020

Sitewide	Issue Category: Remedy Performance			
	Issue: Infiltration of precipitation is occurring through the cap.			
	Recommendation: A work plan should be developed that describes the specific steps that will be taken to repair or replace the cap.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	9/1/2020

Sitewide	Issue Category: Remedy Performance			
	Issue: Due to lack of hydraulic control across the slurry wall, contaminants are detected in downgradient wells.			
	Recommendation: A work plan should be developed that describes the specific steps that will be taken to limit or decrease flow to downgradient wells.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	9/1/2020

Sitewide	**Issue Category: Monitoring**			
	Issue: Due to lack of hydraulic control across the slurry wall, there appears to be seepage in the northern edge of the source area.			
	Recommendation: A survey should be conducted to locate the precise area of water accumulation. This should be compared to the elevation of leachate within the slurry wall, the north drainage ditch, and any other construction or monitoring features that may be influencing water accumulation. Monitoring of the North Ditch should continue, and an analysis should be performed to compare the chemistry of MW-109I/O to the North Ditch to determine if the constituents identified are indicative of a seep from within the slurry wall.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	5/1/2020

Sitewide	**Issue Category: Monitoring**			
	Issue: Cleanup goal exceedances are observed in MW-105-O located upgradient of the southern barrier wall section and groundwater flow path lines show the potential for site contaminants to migrate around the southeast corner of the barrier wall.			
	Recommendation: A survey should be conducted to locate the precise location of surface water drainage on the south and east sides of the cap. Sampling of surface water in these areas should be conducted to evaluate the fate of contaminants observed in samples from MW-105O.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	5/1/2020

Sitewide	**Issue Category: Monitoring**
	Issue: On the western side of the site, impacted groundwater may be seeping into a surface water body that discharges into the Clinton River.
	Recommendation: Wells MW-103O, MW-102O, and MW-101O should be added to the sampling plan to determine if impacted groundwater is discharging into the surface water.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	3/1/2020

Sitewide	Issue Category: Monitoring			
	Issue: The COCs for the site need to be re-evaluated following implementation of the revised groundwater monitoring program**.**			
	Recommendation: Review the data from the revised groundwater monitoring program and decide whether additional contaminants need to be included on the list of COCs for the site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/1/20

Sitewide	Issue Category: Monitoring			
	Issue: Monitored natural attenuation parameters sampled are not complete or robust.			
	Recommendation: Revise the sampling plan to include annual sampling and reporting of the complete set of MNA parameters, including: ethene, ethane, methane, ammonia, nitrate, sulfate, chloride, iron, oxidation reduction potential, dissolved oxygen, total organic carbon, and pH.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/1/2020

Sitewide	Issue Category: Monitoring			
	Issue: Methane gas may be present at high levels within the capped area.			
	Recommendation: Methane sampling should occur within the capped area. The potential need for methane venting or other controls should be evaluated and implemented if needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**

No	Yes	PRP	EPA/State	9/1/2020

Sitewide	**Issue Category: Institutional Controls**			
	Issue: Long-term stewardship procedures need to be put in place to assure proper maintenance and monitoring of ICs.			
	Recommendation: Long-term stewardship procedures need to be developed and incorporated into a revision to the O&M plan. The plan should include regular inspection of ICs at the site and annual certification to EPA and EGLE that the required ICs are in place and effective.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/1/2020

Sitewide	**Issue Category: Operations and Maintenance**			
	Issue: The Site O&M Plan is out of date.			
	Recommendation: Revise the Site O&M Plan to reflect changes in groundwater monitoring schedule, constituents, COCs, field parameters, and IC monitoring requirements. The plan should include a proposal for evaluating pumping performance and abandoning wells no longer providing useful data.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/1/2020

OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR but do not affect current nor future protectiveness:

- *Emerging contaminants PFOS, PFOA and 1,4-dioxane have been identified by EPA and EGLE. PFAS and 1,4-dioxane should be added to the next annual sampling event.*

- *At the time of the site inspections, the mitigated wetland area had a large population of phragmites (an invasive species of vegetation) present. EGLE has indicated that a request to their Land and Water Management Division (LWMD) can be made to evaluate the wetlands to determine the adequacy of the mitigated area. LWMD can provide recommendations to further improve the condition of the area.*

VII. PROTECTIVENESS STATEMENT

OU1 & Sitewide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

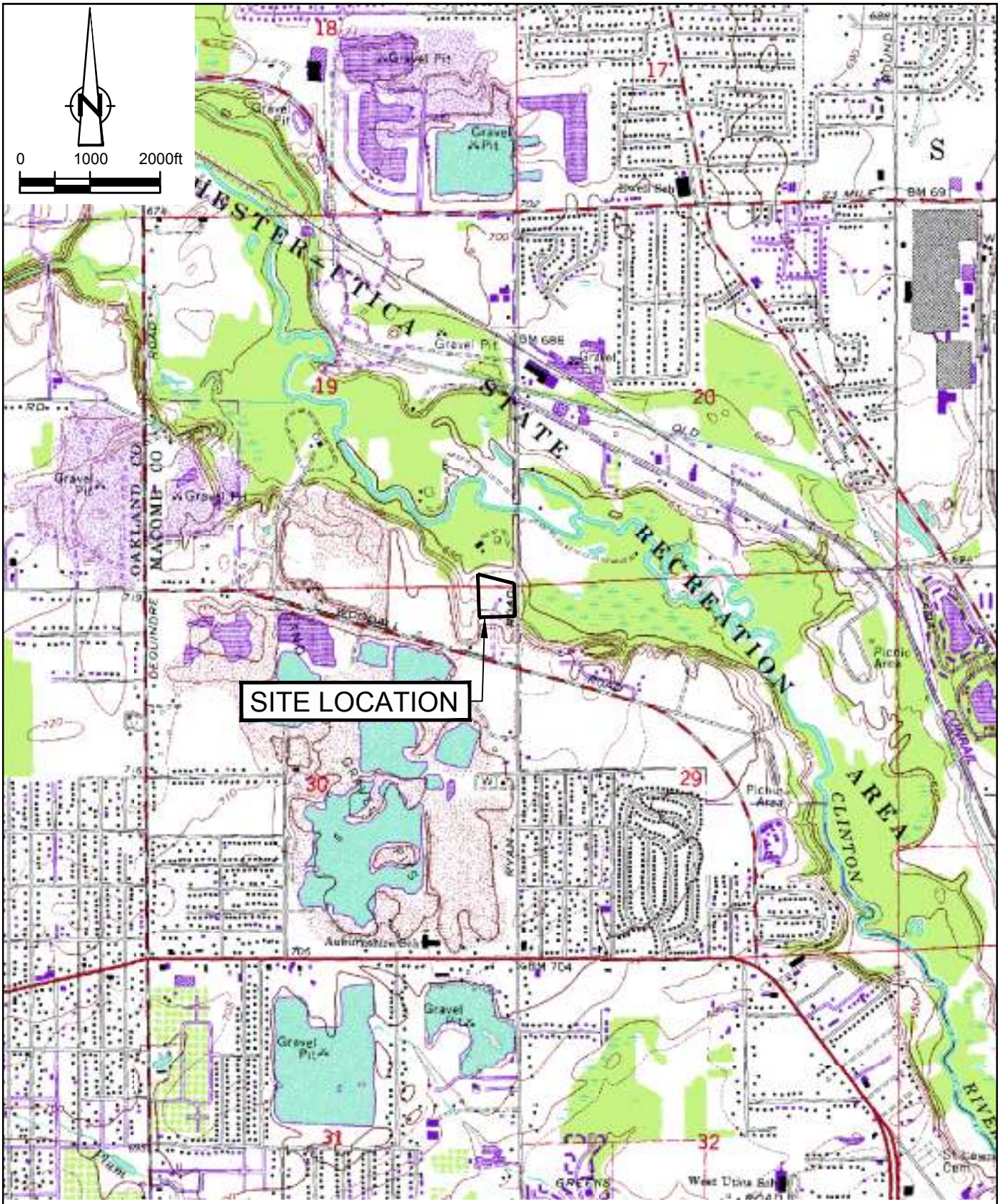
Protectiveness Statement:
The remedy currently protects human health and the environment because ICs are in place that prevent exposure to site-related groundwater contamination and because the landfill cap and site fence adequately provide protection against direct contact with unacceptable levels of site contaminants.

However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness:

- Alternatives should be developed to achieve the remedial objectives despite the inability to create an inward gradient;
- A work plan should be developed that describes:
  - The specific steps that will be taken to repair or replace the cap;
  - The specific steps that will be taken to limit or decrease flow to downgradient wells;
- A survey should be conducted to locate:
  - The precise area of water accumulation in the North Ditch;
  - The precise location of surface water drainage on the south and east sides of the cap;
- The Sampling Plan should be revised to include:
  - Wells MW-103O, MW-102O, and MW-101O to determine if impacted groundwater is discharging into the surface water;
  - Additional contaminants to the list of COCs for the site;
  - Annual sampling and reporting of the complete set of MNA parameters;
  - Methane sampling within the capped area;
- The potential need for methane venting or other controls should be evaluated and implemented if needed;
- The Site O&M Plan should be revised to include:
  - Long-term stewardship procedures;
  - Changes in groundwater monitoring schedule, constituents, COCs, field parameters, and IC monitoring requirements; and,
  - A proposal for evaluating pumping performance and abandoning wells no longer providing useful data.

VIII. NEXT REVIEW

The next FYR report for the Liquid Disposal, Inc. Superfund Site is required five years from the completion date of this review.



SOURCE: UTICA, MICHIGAN U.S.G.S. QUADRANGLE MAP

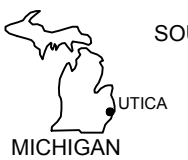


figure 1.1

SITE LOCATION
LDI SUPERFUND SITE
Utica, Michigan

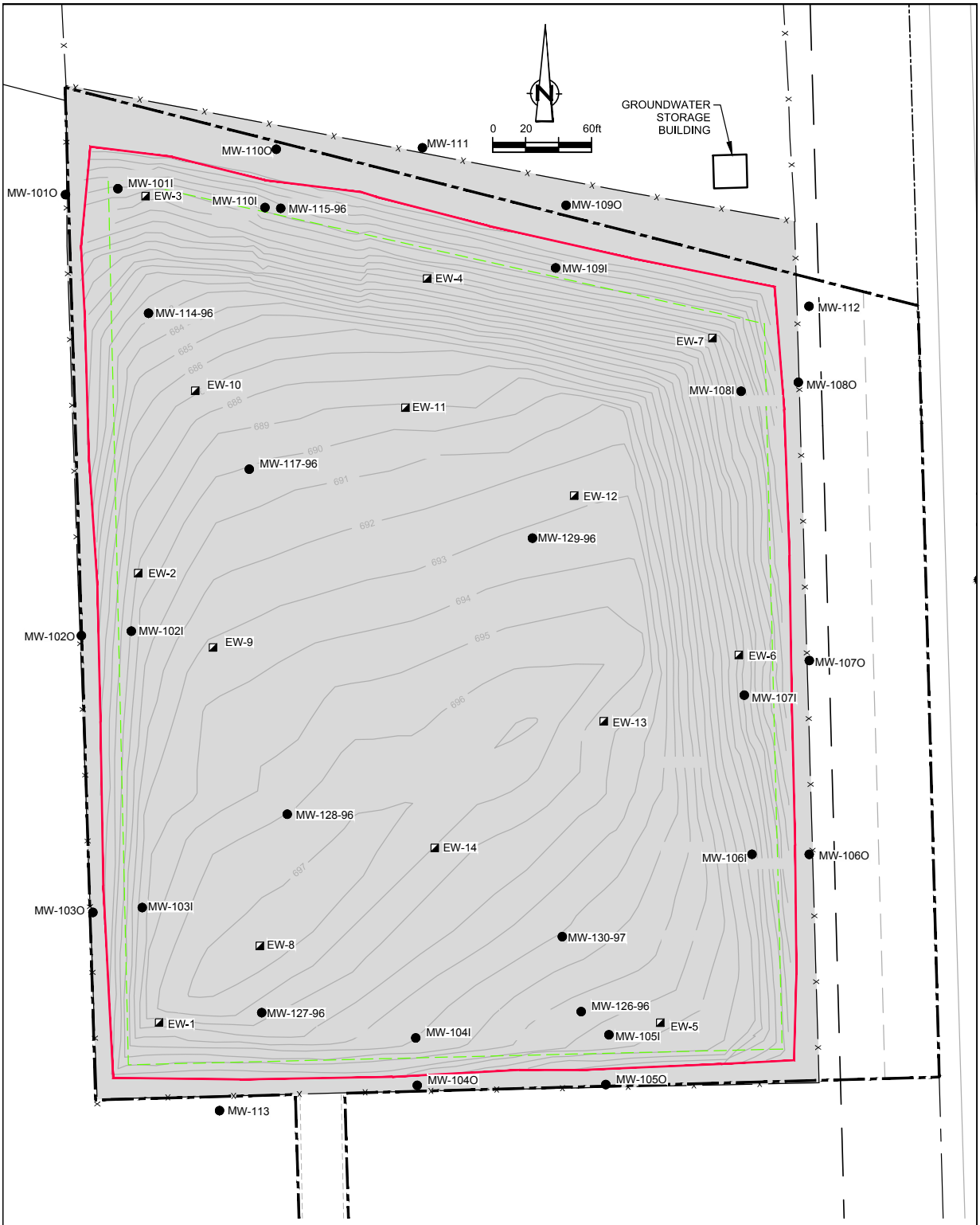
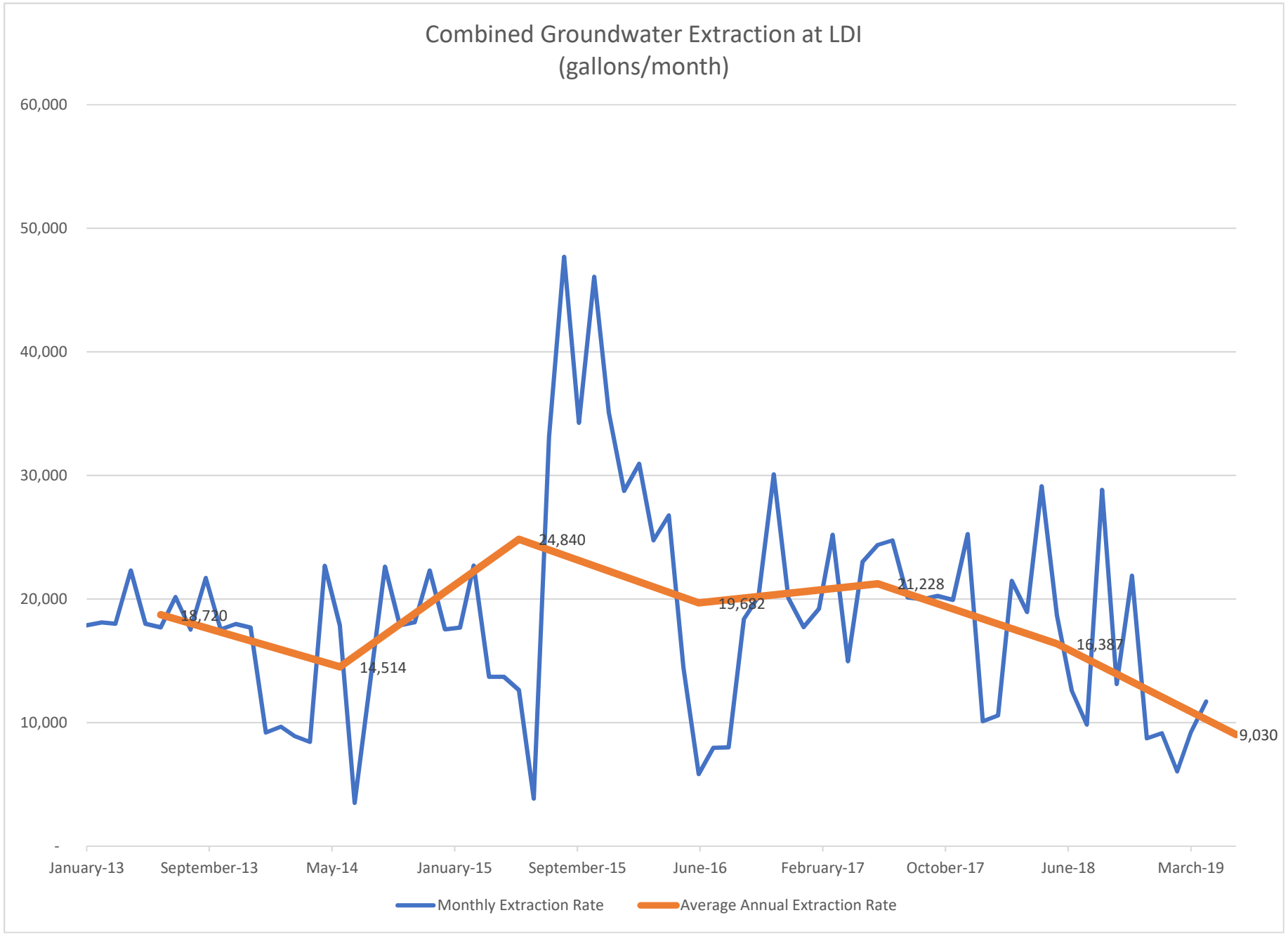


figure 1.2

SITE PLAN
LDI SUPERFUND SITE
Utica, Michigan

08627-00(018)GN-WA008 SEP 23, 2016


Combined Groundwater Extraction at LDI
(gallons/month)
60,000
50,000
40,000
30,000
20,000
10,000
-
January-13
September-13
May-14
January-15
September-15
June-16
February-17
October-17
June-18
March-19
18,720
14,514
24,840
19,682
21,228
16,387
9,030
Monthly Extraction Rate
Average Annual Extraction Rate

APPENDIX A – REFERENCE LIST

Record of Decision, Liquid Disposal Incorporated, U.S. EPA, September 30, 1987.

Groundwater Quality Investigation Report, prepared by Perland Environmental Technologies, Inc, April 9, 1992.

Explanation of Significant Difference, Liquid Disposal Incorporated, U.S. EPA, August 28, 1995.

Preliminary Close Out Report, Liquid Disposal, Inc. U.S. EPA, September 15, 1997.

Five-Year Review Report, Liquid Disposal Incorporated, U.S. EPA, February 23, 1998.

Post-Closure Monitoring and Maintenance Plan for the Liquid Disposal, Inc. (LDI) Superfund Site. Revision 4, prepared by O & M, Inc. on behalf of the LDI Executive Committee, March 2000.

Two-Year Performance Evaluation, CRA, October 25, 2000.

Vertical Aquifer Sampling (VAS) Report, prepared by Conestoga-Rovers & Associates, January 2002

Liquid Disposal. Inc., Statistical Analysis Report, U.S. Department of Transportation, VOLPE Center, September 2002. (Data from 4/28/1992 thru 3/28/2001).

Focused Groundwater Quality Investigation at MW-105 O, LDI Superfund Site, CRA, June 2003.

MW-111 Pumping Test Results, LDI Superfund Site, CRA, June 2003.

Second Five-Year Review Report, Liquid Disposal Incorporated, U.S. EPA, September 26, 2003.

2003/2004 Monitored Natural Attenuation Evaluation Report, prepared by CRA, November 2004

Evaluation of Enhanced Natural Attenuation Options, prepared by CRA, November 2004

Review Comments for the Reports Dated June and September 2004, "Groundwater Quality and Hydraulic Monitoring Reports, First and Second Quarters 2004", prepared by MDEQ, November 22,2004

Third Five-Year Review Report, Liquid Disposal Incorporated, U.S. EPA, September 26, 2008.

Explanation of Significant Differences, Liquid Disposal Incorporated Superfund Site, U.S. EPA, September 10, 2010.

GEOS Statistical Analysis of Groundwater Concentrations Technical Memorandum, prepared by S.S. Papadopoulos & Associates, July 20, 2012.

GEOS Water Level Mapping Technical Memorandum, prepared by S.S. Papadopoulos & Associates, July 20, 2012.

Fourth Five-Year Review Report, Liquid Disposal Incorporated Superfund Site, U.S. EPA, September 23, 2013

Draft Evaluation of Current (2014) Conditions and Status Update Report, prepared by CRA, March 2015

Draft Evaluation of Current (2015) Conditions and Status Update Report, prepared by GHD, November 19, 2015

Recommendations to Sign the Site-Wide Ready for Anticipated Use Determination for the Liquid Disposal, Inc. Superfund Site, Utica, Michigan, U.S. EPA September 17, 2015

Summary of Groundwater Extraction Upgrades to Achieve a 2-foot Inward Gradient, prepared by GHD, August 30, 2016.

Draft Evaluation of Current (2016) Conditions and Status Update Report, prepared by GHD, October 7, 2016.

Additional Information Regarding Remedy Performance, Liquid Disposal, Inc. Superfund Site, Technical Memo prepared by GHD, DRAFT March 8, 2018

Site Correspondence file for the Liquid Disposal Site

Monthly Progress Reports for the Liquid Disposal Site, prepared by de maximis, inc. July 2008-May 2019

APPENDIX B – SITE CHRONOLOGY

Date	Event
May 1982	State referred site to EPA for consideration as a Superfund site
December 30, 1982	Site proposed to the NPL
May – July 1982 July – September 1982	Pre-NPL response (removal actions)
September 8, 1983	Final NPL listing
April 1983 – April 1984 July 1985 – April 1986	Removal actions
April 1983 – September 1987	Remedial Investigation/Feasibility Study
September 30, 1987	Record of Decision Issued
August 1989 – September 1992	Remedial Design
December 20, 1989	Consent Decree signed
December 1992	Remedial Action start
August 28, 1995	Explanation of Significant Differences issued
September 15, 1997	Preliminary Close-Out Report/Construction Completion
February 23, 1998	First Five-Year Review Report signed
Spring 2000	Re-construction of wetlands
October 2000	Two-Year Performance Evaluation
2001 – 2003	Supplemental studies
September 26, 2003	Second Five-Year Review Report signed
September 26, 2008	Third Five-Year Review Report signed
September 10, 2010	Explanation of Significant Differences issued
September 23, 2013	Fourth Five-Year Review Report signed
June 5, 2015	Declaration of Restrictive Covenant recorded
September 21, 2015	Site Wide Ready for Anticipated Use achieved
May 30, 2019	Five-year review site inspection

APPENDIX C

Site Inspection Checklist

I. SITE INFORMATION	
Site name: **Liquid Disposal, Inc.**	**Date of inspection:** **5/30/2019**
Location and Region: **3901 Hamlin Road** **Utica, MI** **Region 5**	**EPA ID:** **MID067340711**
Agency, office, or company leading the FYR: US EPA	**Weather/temperature:** Light rain, 65 degrees

Remedy Includes: (Check all that apply)

☒ Landfill cover/containment	☐ Monitored natural attenuation
☒ Access controls	☒ Groundwater containment
☒ Institutional controls	☒ Vertical barrier walls
☐ Groundwater pump and treatment	☒ Other: Extracted groundwater shipped offsite for disposal
☐ Surface water collection and treatment	

Attachments:

☐ Inspection team roster attached	☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M Site Manager** **Michael Percival,** **Project Manager,** **5/30/2019**

   Interviewed: ☒ at site ☐ at office ☐ by phone Phone Number: 706-467-3362

   Problems, suggestions: ☐ Report attached

   Needs final ICs from state.

2. **O&M Staff** **Jim Kudela,** **Project Manager,** **5/30/2019**

   Interviewed: ☒ at site ☐ at office ☐ by phone Phone Number: 586-243-6664

   Problems, suggestions: ☐ Report attached

   None

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

   Agency: Michigan EGLE

   Contact: Wally Wagaw, Project Manager, 5/30/2019, P: 517-284-5165

   Problems, suggestions: ☐ Report attached

   Click or tap here to enter text.

   Agency: Michigan ELGE

   Contact: Barbara Vetort, Geologist, 5/30/2019, P: 517-284-5164

   Problems, suggestions: ☐ Report attached

   Click or tap here to enter text.

   Agency: Michigan EGLE

   Contact: Sydney Ruhala, Geologist, 5/30/2019, P: 517-242-1625

   Problems, suggestions: ☐ Report attached

   Click or tap here to enter text.

   Agency: Click or tap here to enter text.

   Contact: Name , Title , Click or tap to enter a date., P: Phone Number

   Problems, suggestions:

   Click or tap here to enter text.

4. **Other Interviews (optional):** ☐ Report attached

   Gary Lagos, contractor, GHD

   Mohamed Zakkar, representative, LDI Executive Group

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1. O&M Documents			
☒ O&M manual	☒ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
Remarks: **Maintenance logs kept online**			
2. Site-Specific Health and Safety Plan		☒ Readily available	
☒ Contingency Plan/Emergency Response Plan		☒ Readily available	
Remarks: Click or tap here to enter text.			
3. O&M and OSHA Training Records			
	☒ Readily available	☒ Up to date	☐ N/A
Remarks: Housed online with corporate office.			
4. Permits and Service Agreements			
☐ Air discharge permit	☐ Readily available	☐ Up to date	☐ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☐ N/A
☒ Waste disposal, POTW	☒ Readily available	☒ Up to date	☐ N/A
☐ Other permits: Click or tap here to enter text.			
Remarks: Waste manifests provided.			
5. Gas Generation Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			
6. Settlement Monument Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			
7. Groundwater Monitoring Records			
	☒ Readily available	☒ Up to date	☐ N/A
Remarks: Stored online			
8. Leachate Extraction Records			
	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Stored online

9. Discharge Compliance Records

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: Click or tap here to enter text.

10. Daily Access/Security Logs

☐ Readily available	☐ Up to date	☒ N/A

Remarks: Click or tap here to enter text.

IV. O&M COSTS

1. O&M Organization

☐ State in-house	☐ Contractor for State
☐ PRP in-house	☒ Contractor for PRP
☐ Federal Facility in-house	☐ Contractor for Federal Facility

Remarks: Click or tap here to enter text.

2. O&M Cost Records

☐Readily available ☐ Up to date ☐ Funding mechanism/agreement in place

Original O&M cost estimate Click or tap here to enter text. ☐ Breakdown attached

Total annual cost by year for review period if available

From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons:

None

V. ACCESS AND INSTITUTIONAL CONTROLS

☒ Applicable ☐ N/A

1. Fencing Damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Fencing in good repair

2. Other Access Restrictions ☐ Location shown on site map ☒ Gates secured

Remarks: Gates in good repair

3. Institutional Controls (ICs)

A. Implementation and Enforcement

Site conditions imply ICs not properly implemented	☐ Yes	☒ No	☐ N/A
Site conditions imply ICs not being fully enforced	☐ Yes	☒ No	☐ N/A
Type of monitoring (*e.g.*, self-reporting, drive by)	Click or tap here to enter text.		
Frequency	Click or tap here to enter text.		
Responsible party/agency	Click or tap here to enter text.		

Contact: Name , Title , Click or tap to enter a date., P: Phone Number

Reporting is up-to-date	☐ Yes	☐ No	☐ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☐ N/A
Specific requirements in deed or decision documents have been met	☐ Yes	☐ No	☐ N/A
Violations have been reported	☐ Yes	☐ No	☐ N/A

Other problems or suggestions:

Clerical error at state – PRP has not yet received finalized ICs. ICs not fully implemented.

B. Adequacy ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: Click or tap here to enter text.

4. General

A. Vandalism/Trespassing ☐ Location shown on site map ☒ No vandalism evident

Remarks: Click or tap here to enter text.

B. Land use changes on site ☒ N/A

Remarks: Click or tap here to enter text.

C. Land use changes off site ☒ N/A

Remarks: Click or tap here to enter text.

VI. GENERAL SITE CONDITIONS

1. Roads ☐ Applicable ☒ N/A

A. Roads damaged ☐ Location shown on site map ☐ Roads adequate ☒ N/A

Remarks: Click or tap here to enter text.

B. Other Site Conditions

Remarks: Recent gravel access ramp created on north side in lieu of use of southern gate.

VII. LANDFILL COVERS

1. Landfill Surface ☒ Applicable ☐ N/A

A. Settlement (Low Spots) ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: General site settling evident based on cement at base of well mounts. See Photo 4.

B. Cracks ☐ Location Shown on Site Map ☒ Cracking Not Evident

Lengths: Click or tap here to enter text. Widths: Click or tap here to enter text. Depths: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Fines found at base of southern access gates due to runoff associated with recent rains.

D. Holes ☐ Location Shown on Site Map ☒ Holes Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Spring groundhog activity is repaired once identified. No other holes present or recent.

E. Vegetative Cover ☒ Grass ☒ Cover Properly Established

☐ Tress/Shrubs (indicate size and locations on a diagram ☒ No Signs of Stress

Remarks: Click or tap here to enter text.

F. Alternative Cover (armored rock, concrete, etc.) ☒ N/A

Remarks: Click or tap here to enter text.

G. Bulges ☐ Location Shown on Site Map ☒ Bulges Not Evident

Areal Extent: Click or tap here to enter text. Height: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

H. Wet Areas/Water Damage ☐ Wet Areas/Water Damage Not Evident

☐ Wet Areas	☐ Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
☒ Ponding	☒ Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
☐ Seeps	☐ Location Shown on Site Map	Areal Extent: Click or tap here to enter text.
☐ Soft Subgrade	☐ Location Shown on Site Map	Areal Extent: Click or tap here to enter text.

Remarks: Ponded water in northern ditch suspected to be a seep. Evidence of reed grass suggests long term standing water. See Photos 3 and 14.

I. Slope Instability ☐ Location Shown on Site Map ☒ Slope Instability Not Evident

☐ Slides Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

2. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

A. Flows Bypass Bench ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

B. Bench Breached ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

C. Bench Overtopped ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

3. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

A. Settlement ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Material Degradation ☐ Location Shown on Site Map ☐ Degradation Not Evident

Material Type: Click or tap here to enter text. Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

Site Inspection Checklist

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Undercutting ☐ Location Shown on Site Map ☐ Undercutting Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

E. Obstructions ☐ Location Shown on Site Map ☐ Undercutting Not Evident

Type: Click or tap here to enter text.

Areal Extent: Click or tap here to enter text. Size: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

F. Excessive Vegetative Growth ☐ Location Shown on Site Map ☐ Excessive Growth Not Evident

Areal Extent: Click or tap here to enter text. ☐ Vegetation in channels does not obstruct flow

Remarks: Click or tap here to enter text.

4. Cover Penetrations ☒ Applicable ☐ N/A

A. Gas Vents ☐ Active ☐ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

B. Gas Monitoring Probes

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

C. Monitoring Wells

☐ Properly secured/locked ☒ Functioning ☒ Routinely sampled

☒ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Onsite monitoring wells in good condition

D. Leachate Extraction Wells

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled

☒ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

E. Settlement Monuments ☐ Located ☐ Routinely Surveyed ☒ N/A

Remarks: Click or tap here to enter text.

5. Gas Collection and Treatment ☐ Applicable ☒ N/A

A. Gas Treatment Facilities

☐ Flaring ☐ Thermal Destruction ☐ Collection for Reuse

☐ Good condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Gas Collection Wells, Manifolds, and Piping

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

C. Gas Monitoring Facilities (e.g. gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

6. Cover Drainage Layer ☒ Applicable ☐ N/A

A. Outlet Pipes Inspected ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

B. Outlet Rock Inspected ☒ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

7. Detention/Sediment Ponds ☐ Applicable ☒ N/A

A. Siltation ☐ Siltation Not Evident ☐ N/A

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Erosion ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Outlet Works	☐ Functioning	☐ N/A
Remarks: Click or tap here to enter text.		
D. Dam	☐ Functioning	☐ N/A
Remarks: Click or tap here to enter text.		
8. Retaining Walls	☐ Applicable	☒ N/A
A. Deformations	☐ Location Shown on Site Map	☐ Deformation Not Evident
Horizontal Displacement: Click or tap here to enter text.		
Vertical Displacement: Click or tap here to enter text.		
Rotational Displacement: Click or tap here to enter text.		
Remarks: Click or tap here to enter text.		
B. Degradation	☐ Location Shown on Site Map	☐ Deformation Not Evident
Remarks: Click or tap here to enter text.		
9. Perimeter Ditches/Off-Site Discharge	☒ Applicable	☐ N/A
A. Siltation	☐ Location Shown on Site Map	☐ Siltation Not Evident
Areal Extent: Click or tap here to enter text.	Depth: Click or tap here to enter text.	
Remarks: Surface water runoff results in fines collection at southern access area.		
B. Vegetative Growth	☐ Location Shown on Site Map	☐ N/A
☒ Vegetation Does Not Impede Flow		
Areal Extent: Click or tap here to enter text.	Type: Click or tap here to enter text.	
Remarks: Click or tap here to enter text.		
C. Erosion	☐ Location Shown on Site Map	☒ Erosion Not Evident
Areal Extent: Click or tap here to enter text.	Depth: Click or tap here to enter text.	
Remarks: Click or tap here to enter text.		
D. Discharge Structure	☐ Functioning	☒ N/A
Remarks: Click or tap here to enter text.		

VIII. VERTICAL BARRIER WALLS

☒ Applicable	☐ N/A

1. Settlement	☐ Location Shown on Site Map	☒ Settlement Not Evident
Areal Extent: Click or tap here to enter text.	Depth: Click or tap here to enter text.	
Remarks: Click or tap here to enter text.		

2. Performance Monitoring Type of Monitoring: Annual groundwater monitoring

☐ Performance Not Monitored ☒ Evidence of Breaching

Frequency: Annual Head Differential: Click or tap here to enter text.

Remarks: VOCs present in MW-111 may be evidence of leakage through slurry wall. No visual evidence onsite.

IX. GROUNDWATER/SURFACE WATER REMEDIES

☒ Applicable ☐ N/A

1. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

A. Pumps, Wellhead Plumbing, and Electrical ☐ N/A

☒ Good Condition ☒ All Required Wells Properly Operating ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good Condition ☒ Needs Maintenance

Remarks: Reduced volumes pumped may be result of clogged pipes or tubing.

C. Spare Parts and Equipment ☐ Needs to be Provided

☒ Readily Available ☒ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

2. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

A. Collection Structures, Pumps, and Electrical

☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Spare Parts and Equipment ☐ Needs to be Provided

☐ Readily Available ☐ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

3. Treatment System ☒ Applicable ☐ N/A

A. Treatment Train (Check components that apply)

☐ Metals removal ☐ Oil/Water Separation ☐ Bioremediation

☐ Air Stripping ☐ Carbon Absorbers

☐ Filters Click or tap here to enter text.

☐ Additive (e.g. chelation agent, flocculent) Click or tap here to enter text.

☒ Others Leachate extracted is pumped to tanks then trucked offsite for treatment.

☐ Good Condition ☐ Needs Maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually Click or tap here to enter text.

☐ Quantity of surface water treated annually Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Electrical Enclosures and Panels (properly rated and functional)

☐ N/A ☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Tanks, Vaults, Storage Vessels ☐ N/A

☒ Proper Secondary Containment ☒ Good Condition ☐ Needs Maintenance

Remarks: 5,000 gal tank within site building. 3,000 gal tank added recently for overflow.

D. Discharge Structure and Appurtenances

☒ N/A ☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

E. Treatment Building(s)

☒ N/A ☐ Good condition (esp. roof and doorways)

☐ Needs repair ☐ Chemicals and equipment properly stored

Remarks Click or tap here to enter text.

F. Monitoring Wells (Pump and Treatment Remedy) ☐ N/A

☐ Properly secured/locked ☐ Functioning

☒ Routinely sampled ☐ All required wells located

☒ Good condition ☒ Needs Maintenance

Remarks Offsite monitoring wells need new locks.

4. Monitoring Data

A. Monitoring Data:

☒ Is Routinely Submitted on Time ☒ Is of Acceptable Quality

B. Monitoring Data Suggests:

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

5. Monitored Natural Attenuation

A. Monitoring Wells (natural attenuation remedy) ☒ N/A

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ All required wells located ☐ Needs Maintenance ☐ Good condition

Remarks: Click or tap here to enter text.

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

1. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
Remedy goals include leachate extraction, capped fill, and limitation of leachate via slurry wall. Visual review of remedy appears in good order with the exception of a possible seep present at the north ditch, and stained runoff present in the northwest corner of the gated area. Methane smell present at northwest corner standing water area.

2. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
Activities appear to be adequate, however, recent reduction in extraction/pumping rates is worrisome. Maintenance of tubing/piping from extraction wells must be completed.

3. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

N/A

4. Early Indicators of Potential Remedy Problems

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Extraction rates have dropped recently, suggesting maintenance necessary.

Adjacent property to the south has raised ground level with fill and/or grading by approximately 3 feet. This may impact surface runoff or infiltration in the area of MW-105O.

Photo 1: Looking south, up gravel access ramp from north gate.

Photo 2: Looking west, from gravel access ramp.

Photo 3: Looking east, from gravel access ramp.

Photo 4: Looking west, some settling evident since well was constructed.

Photo 5: Looking southwest, electrical access for extraction wells, monitoring well MW-102I.

Photo 6: Looking south, fines present inside gate from runoff flow.

Photo 7: Looking southeast to gated access.

Photo 8: Adjacent property owner has cleared gate of debris but has not cleared road for access.

Photo 9: Looking east from northern access road.

Photo 10: Looking south at MW-105O. Standing water inside gate, debris and raised ground surface outside gate.

Photo 11: Typical monitor well completion, with lock.

Photo 12: Looking north, view of eastern slope of cap.

Photo 13: Looking south from area of MW-105O. Raised ground surface and debris by adjacent property owner.

Photo 14: Standing water/ suspected seep in northern ditch. Sheen is thought to be film created by bacteria.

Photos 15, 16, 17: 5,000-gallon tank housed within site maintenance building, 3,000-gallon tank outside building. Pumping controls, documentation and spare parts stored inside building.

Photo 18: Looking east to MW-4S. Lock has rusted and needs to be replaced.

Photo 19: Looking southeast to MW-3S. Wetlands to the east have been overtaken by phragmites.

Photo 20: Looking southwest. Surface drainage from south of site drains along road ditch to buried culvert located under bright green trees, center left. Surface drainage north of this point drains through onsite ditch around to north of site.

Photo 21: Looking south from northern access road.

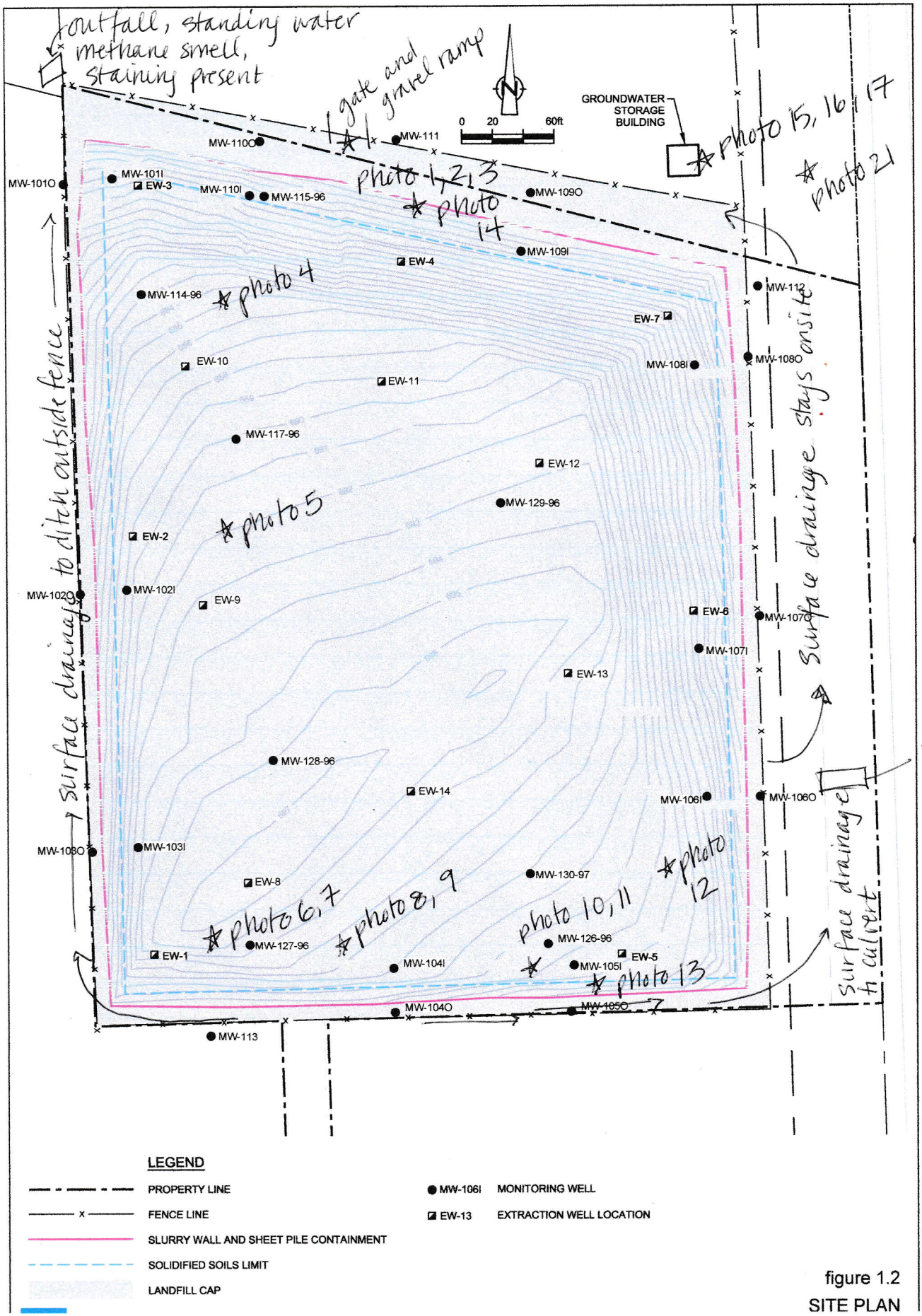


figure 1.2
SITE PLAN

Site inspection, LDI, 5/30/19

APPENDIX D

US EPA RECORDS CENTER REGION 5
494240

United States
ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

SUPERFUND PROPERTY REUSE EVALUATION CHECKLIST FOR REPORTING THE SITEWIDE READY-FOR-ANTICIPATED USE GPRA MEASURE

Office of Superfund Remediation & Technology Innovation and Federal Facilities Restoration & Reuse Office

PART A – GENERAL SITE INFORMATION

1. Site Name Liquid Disposal, Inc.	**2. EPA ID** MID067340711
3. Site ID 0502593	**4. RPM** Linda Kern

5. Street Address Intersection of Ryan Road & Hamlin Road

6. City Utica	**7. State** Michigan	**8. Zip Code** 48317

9. Site Wide Ready-for-Reuse Determination Requirements (all must be met for the entire construction complete site)

- All cleanup goals in the Record(s) of Decision or other remedy decision document(s) have been achieved for any media that may affect current and reasonably anticipated future land uses, so that there are no unacceptable risks.
- All institutional or other controls required in the Record(s) of Decision or other remedy decision document(s) have been put in place.

Institutional Control Name	Date Implemented	Type of Control	Total Acres
Declaration of Restrictive Covenant (Landfill Property)	June 5, 2015	Propriety	6.8 acres
Restrictive Covenant (Off-site monitoring wells: MW-109-O and MW-111)	October 24, 2003	Proprietary	5.04 acres

PART B – SIGNATURE (Branch Chief or above should sign)

NOTE: The outcome of this Property Reuse Evaluation does not have any legally binding effect and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. EPA assumes no responsibility for reuse activities and/or any potential harm that might result from reuse activities. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with the site, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at the site that indicates that the response and/or the conditions at the site are no longer protective of human health or the environment.

10. Name **Rebecca Frey**	11. Title/Organization **Acting Chief, Remedial Response Branch #2** **Superfund Division, Region 5**
12. Signature Rebecca Frey	13. Date 9/21/2015

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

Date: SEP 17 2015

From: Linda A. Kern, Remedial Project Manager
Luis Oviedo LO, Office of Regional Counsel

To: Rebecca Frey, Acting Chief
Remedial Response Branch #2

Subject: Recommendation to Sign the Site-Wide Ready for Anticipated Use Determination for the Liquid Disposal, Inc. Superfund Site, Utica, Michigan

The Liquid Disposal Inc. (LDI) site is located in Shelby Township, approximately 20 miles north of Detroit. The site occupies approximately 6.8 acres. (See Figure 1 for the Site Location Map.) The site achieved Construction Completion on September 15, 1997, based on the remedy selected in the Record of Decision (ROD) of September 30, 1987. The remedial action goals in the ROD were to minimize risks to public health and the environment from direct contact with contaminated materials such as on- and off-site soils and leachate, to minimize further migration of contaminants to groundwater and surface water, to control potential risks posed by use of groundwater as a drinking water source, to control risks due to inhalation of chemicals volatilizing from or adsorbed on soil, and control future impacts of on-site groundwater migration to wetlands. The ROD required the following:

- Demolition of structures and equipment on-site;
- Consolidation of soil and debris on-site;
- Removal of off-site soils above target cleanup levels and consolidation with on-site soils;
- Solidification using cement or a similar substance down to the water table to immobilize wastes in the soil;
- Construction of a slurry wall around the site keyed into the confining layer to restrict migration of groundwater onto or off of the site;
- Construction of an impermeable cap over the site to impede infiltration;
- Installation and operation of leachate extraction wells inside the slurry wall to create an inward gradient by removing groundwater trapped on-site under the cap and any potential groundwater entering the site through the cap or slurry wall in the future; and
- Extraction and treatment of off-site groundwater through the installation and operation of extraction wells just off site.

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (100% Post-Consumer)

On August 28, 1995, the United States Environmental Protection Agency (EPA) issued an Explanation of Significant Difference (ESD) to modify the remedy defined in the ROD. Those changes included the following:

- The original remedy called for the extraction and treatment of off-site groundwater. In accordance with the ESD, this component of the remedy would not be implemented unless EPA found that off-site groundwater quality had deteriorated as a result of site-related contamination.
- The ROD also called for solidification of all on-site soils down to the water table. EPA determined that this degree of solidification was not necessary because the site contamination would be adequately contained by means of a cap, slurry wall, and on-site groundwater extraction. Instead, in accordance with the ESD, a 20-foot-wide swath around the perimeter of the site would be solidified. This solidification would provide structural support for the slurry wall and would supplement the containment provided by the slurry wall. In addition to the perimeter solidification, all grossly-contaminated soils and materials encountered during the remedial action were to be solidified.
- In addition, the target cleanup levels (TCLs) for barium and benzene were increased to meet the current Safe Drinking Water Act Maximum Contaminant Levels (MCLs). The barium MCL had changed from 1,000 ppb to 2,000 ppb; therefore, the TCL for barium became 2,000 ppb. Likewise, the TCL for benzene (0.2 ppb) had been based on risk calculation in 1987, because no MCL for benzene was available at the time. Subsequently, an MCL for benzene was set at 5 ppb, so the TCL for benzene became 5 ppb.

The 1987 ROD did not include an institutional control (IC) component for the Site. However, as a result of the 2008 five-year review (FYR), the need for requiring ICs at the Site was further evaluated. Subsequently, EPA issued a second ESD dated September 10, 2010, that required ICs to restrict the area of the Site that contains the cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc.

The State of Michigan (State) currently owns the LDI site property through tax reversion. The potentially responsible parties (PRPs) prepared a Declaration of Restrictive Covenant (DRC) for the site property based on current Michigan Department of Environmental Quality (MDEQ) guidance. The DRC was recorded on June 5, 2015 with the Michigan Land Bank First Track Authority being the Grantor and the State of Michigan Department of Environmental Quality being the Grantee. The Grantor is the title holder of the real property. The purpose of the restrictive covenant and easement is to create restrictions that run with the land in the Grantor's real property rights; to protect the public health, safety, and welfare, and the environment; to prohibit or restrict activities that could result in unacceptable exposure to environmental contamination present at LDI; and to grant access to the Grantee, EPA, and the PRP Steering Group, as Third Party Beneficiaries, and their representatives or designees to monitor and conduct response actions at the LDI Site.

The DRC (see Attachment A) describes in detail the ICs in the form of restrictions on land use and activity at the Site. These restrictions comply with Section 20120b(4) of Part 201,

Environmental Remediation, of the Natural Resources and Environmental Protection Act, Michigan Compiled Law 324.20101 et seq. and are effective in the long term by binding future owners and allowing for enforcement of restrictions at the Site. In general terms, the ICs were established to prohibit:

- Any on-site excavation that would disturb soils or the engineered remedy (cap, slurry wall, solidification/fixation zone, extraction and treatment system, monitoring wells, etc.);
- Installation of buildings or structures on the capped areas of the Site;
- Any activities that could compromise the integrity of the cap, slurry wall, solidification/fixation zone, extraction and treatment system, monitoring wells, etc.;
- Installation of wells through the cap or other components of the engineered remedy, except as necessary to operate and maintain the implemented remedy and monitor the effectiveness of the remedy;
- Operation of heavy equipment or vehicles on the cap;
- Any activity that could potentially disturb or interfere with the continued stability and integrity of the existing remedy; and
- Any use of on-site groundwater for any purpose other than as necessary to operate and maintain the implemented remedy and monitor the effectiveness of the remedy.

The area subject to the restrictions in the 2015 DRC is shown in Figure 2. An aerial photograph of the nearby properties at LDI is illustrated in Figure 3.

There are two off-site monitoring wells (MW-109O and MW-111), which are located on the northern portion of the landfill property (see Figure 2). These off-site monitoring wells are covered under a Restrictive Covenant (recorded October 24, 2003) for the G&H Landfill Superfund Site (see Attachment B). For purposes of this Site Wide Ready for Anticipated Use (SWRAU) determination, EPA has reviewed the terms of the October, 2003 restrictive covenant and has determined that the IC is in place and effective for MW-109O and MW-111.

Remedial design (RD) and remedial action (RA) were performed by the PRPs pursuant to Consent Decree (CD) No. 89-CV-71180DT, entered on December 20, 1989. Under this CD, 41 major PRPs and 494 de minimis PRPs agreed to fund and to perform the RD/RA. Additional funding for the RA came from another 325 de minimis parties who settled with the United States in CD No. 90-CV-71414-DT, entered on August 30, 1990. EPA signed a Preliminary Close Out Report (PCOR) on September 15, 1997, that concluded RA activities were completed.

A groundwater monitoring program has been implemented at the Site. All cleanup goals for the Site have been achieved for media that may affect current and reasonably anticipated future land uses. The cleanup goals for soil, groundwater, and sediments allow for and were based on a containment remedy. The selected remedy is protective of the environment by reducing the potential risks posed by site contaminants.

The ICs have been reviewed and evaluated and found to be effective based on the following considerations:

- The ICs cover all physical areas that do no support unlimited use/unrestricted exposure (UU/UE), and the ICs' physical description of the non-UU/UE areas are accurate based on current conditions for the entire Site. The legal description of the area subject to the restrictions in the DRC has been mapped (see Figure 2).
- All needed land use restrictions/objectives are covered by the ICs.
- Title work shows the proper recording of the DRC and that no other existing property rights interfere with the Site remedy or cause undue exposure.
- There is current compliance with the land use restrictions determined by recent review and inspection. At present, warning signs are posted along the perimeter fence and on the locked gates. Monthly inspections for signs of trespassing or vandalism are conducted and additional review is conducted during groundwater monitoring with the results included in monitoring reports sent to the State and EPA. The State remains the only Site owner, and the current and surrounding land use has not changed and is not expected to change for the foreseeable future.
- Future compliance with the restrictions is expected because:
    - There is a legal basis for enforcing the use restrictions contained in the DRC against current and future owners: the terms of the CD are enforceable by EPA against the PRPs; and the restrictions imposed by the DRC are indicated as running with the land.
    - The PRPs will provide an amendment to the Site Operation and Maintenance Plan that will include monitoring to ensure regular inspection of the Site's ICs and prepare an annual certification to EPA and MDEQ that ICs are in place and effective.

Summary Table of Physical Area and IC Objectives

Map of Media, Engineered Controls, & Areas that Do Not Support UU/UE Based on Current Conditions	IC Objective in Decision Document	Physical Area covered by Implemented IC
Landfill Cap – Area of landfill cap identified in Figure 2	Prohibit any on-site excavation that would disturb soils or the engineered remedy (cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc. Prohibit installation of buildings or structures on the capped areas of the site. Prohibit any activities that could compromise the	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015

	integrity of the cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc. Prohibit installation of wells through the cap or other components of the engineered remedy, except as necessary to operate and maintain the implemented remedy and monitor the effectiveness of the remedy. Prohibit operation of heavy equipment or vehicles on the cap. Prohibit any activities that could potentially disturb or interfere with the continued stability and integrity of the existing remedy.	
Slurry Wall, Solidification/fixation zone, Extraction and treatment system, monitoring wells – Areas identified in Figure 2 2 Off-Site monitoring wells (MW-109O and MW-111) identified in Figure 2	Prohibit any on-site excavation that would disturb soils or the engineered remedy (cap, slurry wall, solidification/fixation zone, extraction and treatment systems, monitoring wells, etc. Prohibit any activities that could compromise the integrity of the cap, slurry wall, solidification/fixation zone, extraction and treatment system, monitoring wells, etc.	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015 Restrictive Covenant, recorded with the Macomb County Recorder's Office, October 24, 2003
Groundwater – Current area identified in Figure 2	Prohibit any use of on-site groundwater for any purpose other than as necessary to operate and maintain the implemented remedy and monitor the effectiveness of the remedy.	Declaration of Restrictive Covenant, recorded with the Macomb County Recorder's Office, June 5, 2015

The Fourth FYR dated September 23, 2013, documented that the remedy is currently protective of human health and the environment because there is no current human exposure to site-related groundwater contamination and because the landfill cap adequately provides protection against direct contact with unacceptable levels of site contaminants. It documented that in order for the remedy to be protective in the long term, the remedy needs to function as intended by the decision documents and effective ICs needed to be implemented. Specifically, it documented the steps needed to be taken to achieve and then maintain the two-foot inward hydraulic gradient required by the ROD. EPA, MDEQ and the PRPs have discussed a strategy to evaluate whether this requirement will be able to be achieved. Subsequently the PRPs redeveloped the groundwater extraction wells mid-summer 2015, with oversight by MDEQ. Technical discussions have taken place to evaluate the long-term groundwater monitoring needs for the Site, with the inclusion of a revised list of contaminants. Sampling of accumulated water at the base of the landfill cap was also performed. With the recording of the DRC, comprehensive long-term ICs have been implemented at the Site.

We have also reviewed the current Human Exposure Environmental Indicator and have determined that the Site is classified as "Current Human Exposure is Controlled and Protective Remedy in Place" at the Site. This determination is consistent with this SWRAU determination. Based on the above information and all documents reviewed for LDI, we find that the Site meets the following requirements:

- All cleanup goals in the ROD or other decision document have been achieved for any media that may affect current and reasonable anticipated future land uses, so that there are no unacceptable risks.
- All institutional or other controls required in the ROD or identified as part of the response action to help ensure long-term protection have been put in place.

Based on the information presented below, we are recommending that you sign the attached SWRAU Determination checklist.

Cleanup goals	Closed landfill – containment of soils and groundwater, no residential use, no use of property that will damage landfill cap or other remedy components such as the slurry wall, leachate, groundwater extraction, and monitoring wells.
Construction Complete Date	September 15, 1997
FYR Date	September 23, 2013
Human Exposure Environmental Indicator	Current Human Exposure is Controlled and Protective Remedy in Place
NPL Deletion Date	n/a
Existing Land Use for Entire Site/Status of Use	Closed landfill – no current use Groundwater – no consumptive use underlying property

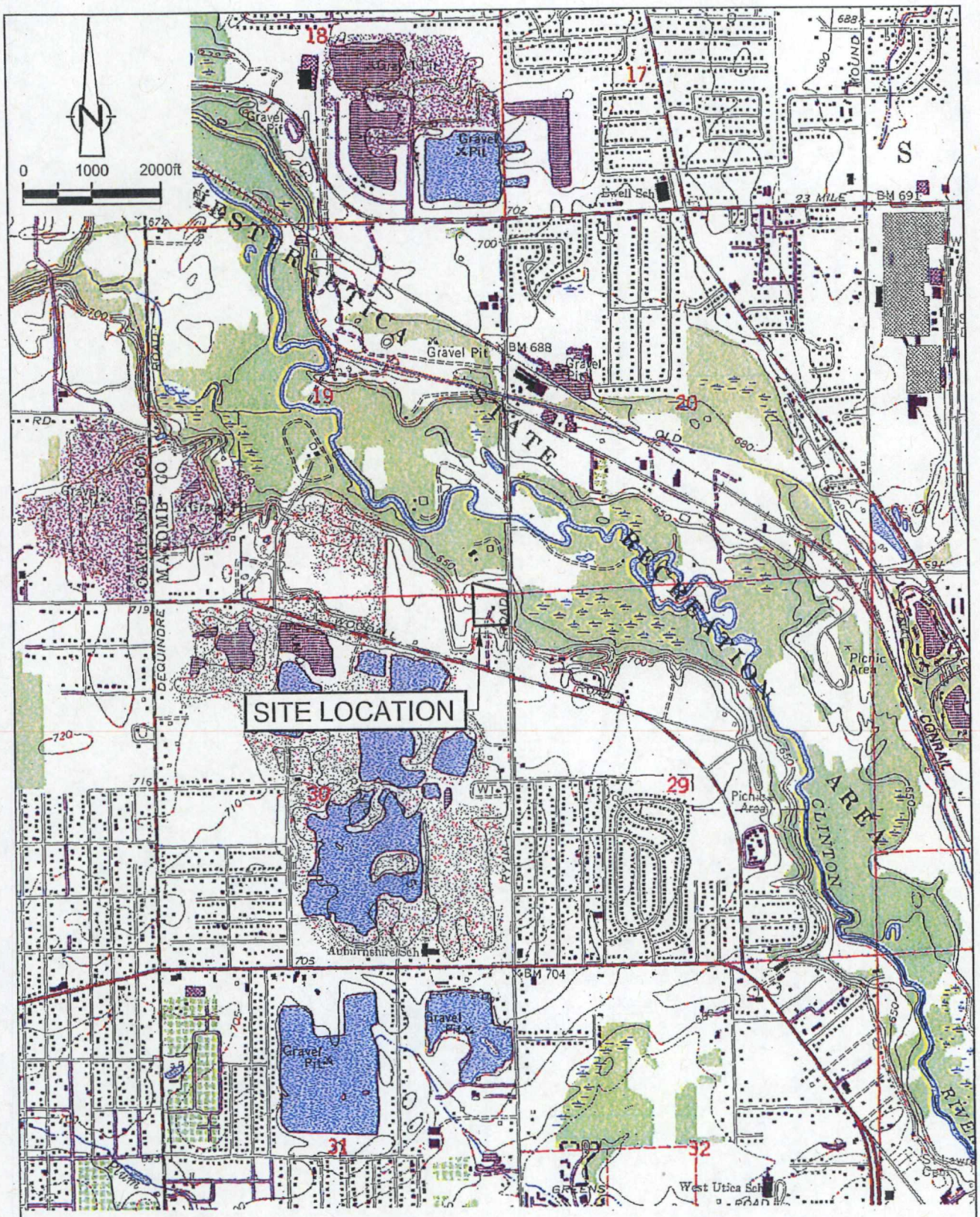
Last Inspection Date	May 15, 2015
Anticipated Future Land Use	Closed landfill (containment) – ecological use, limited recreational use as approved by EPA Groundwater use – No consumptive use anticipated
Media, Remedy Components, and Areas that do no support UU/UE Based on Current Conditions	Closed landfill Groundwater
Acres Associated with Institutional Control	6.8 acres
Total Property Acres	6.8 acres
Title of Institutional Control Instrument	Declaration of Restrictive Covenant; Restrictive Covenant
IC Implementation Date	June 5, 2015; October 24, 2003
Documents Reviewed for SWRAU Determination	ROD (September 30, 1987) ESD (August 28, 1995) ESD (September 10, 2010) PCOR (September 15, 1997) First FYR (February 23, 1998) Second FYR (September 26, 2003) Third FYR (September 26, 2008) Fourth FYR (September 23, 2013) CD, Civil Action No. 89-CV-71180-DT (Eastern district, Michigan, December 20, 1989) Groundwater Quality and Hydraulic Monitoring Reports (PRPs) Monthly Progress Reports for the Site (PRPs) Institutional Controls Work Plan by Conestoga-Rovers & Associates (CRA) (August 5, 2011) Evaluation of Current (2014) Conditions Report by CRA (March, 2015) Work Plan for Development of Extraction Wells by CRA (June, 2015)
ICTS Booklet	See Attached

Region 5 may, in the future, modify the SWRAU Determination based on changed site conditions.

Attachments

Figure 1 - Site Location Map
Figure 2 - Areas Subject to Declaration of Restrictive Covenants
Figure 3 - Nearby Properties
Attachment A - Declaration of Restrictive Covenant for the Liquid Disposal Site
Attachment B - Restrictive Covenant for the G&H Landfill
ICTS Booklet

Figures



SOURCE: UTICA, MICHIGAN U.S.G.S. QUADRANGLE MAP

figure 1

SITE LOCATION
LDI SUPERFUND SITE
Utica, Michigan

08627-00(013)GN-WA001 JUN 10/2003

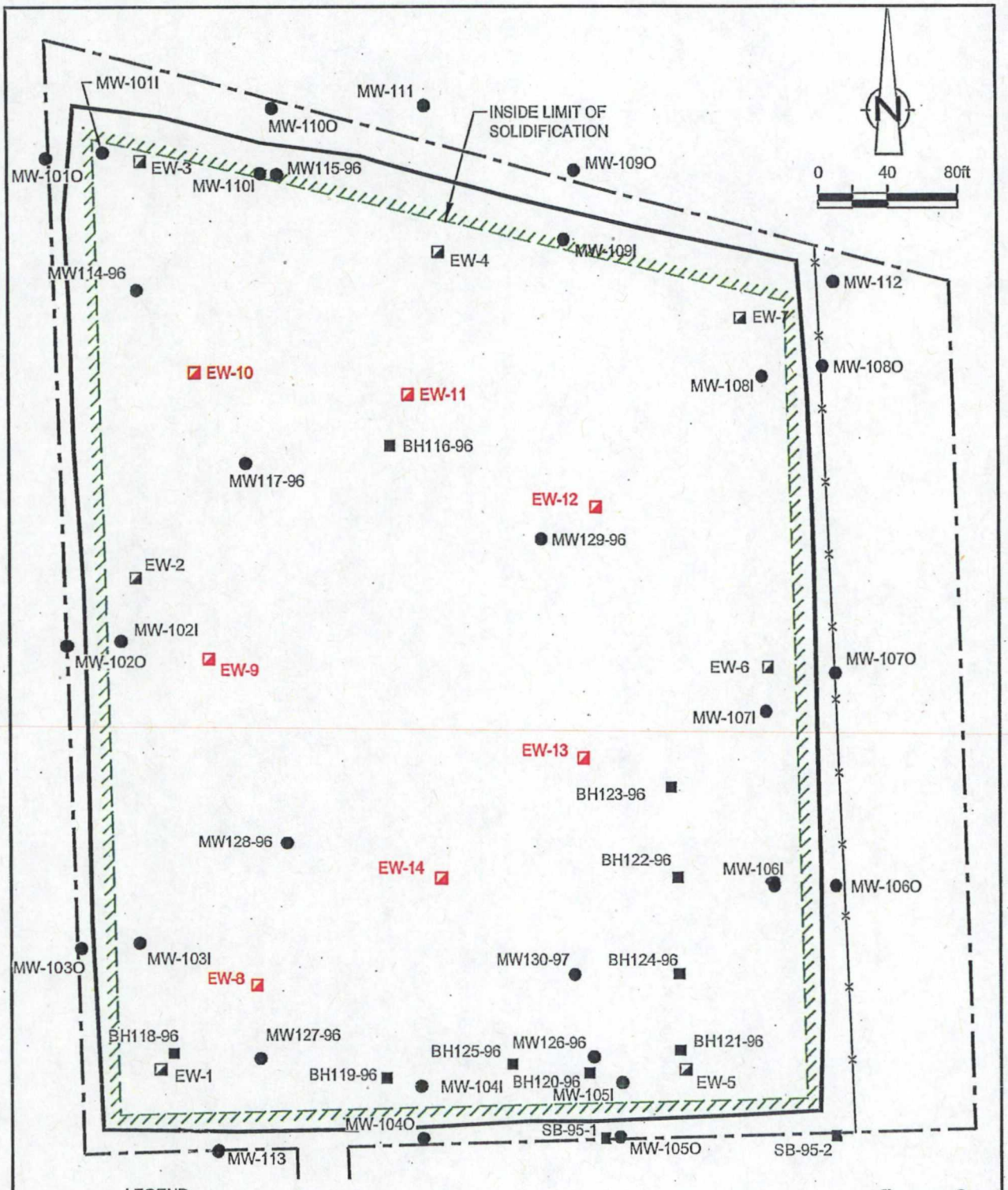
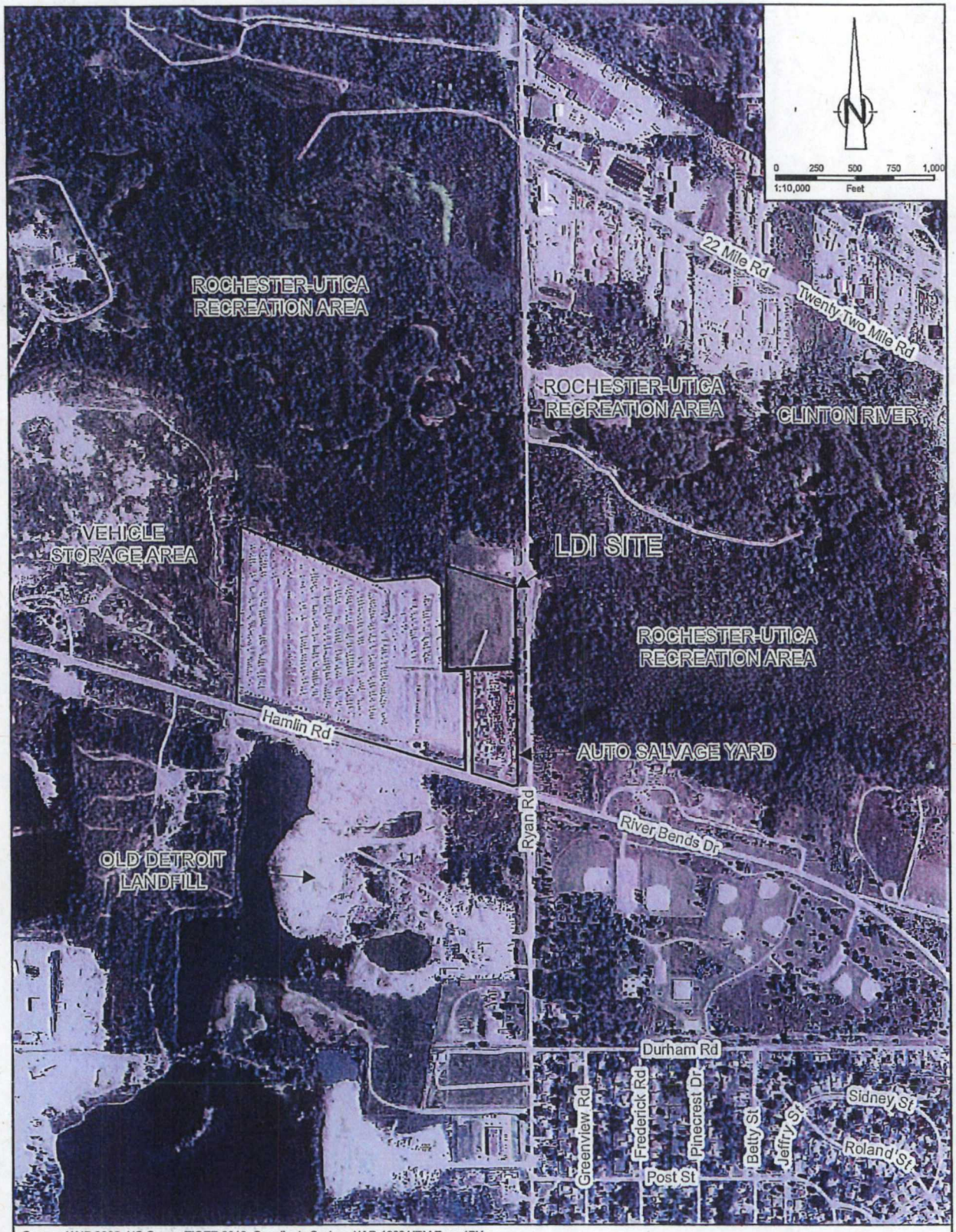


figure 2

LOCATION OF SLURRY WALL, AREA OF SOLIDIFICATION, ON-SITE EXTRACTION WELLS, MONITORING WELLS, AND BOREHOLES LDI SUPERFUND SITE

Utica, Michigan

08627-00(KERN001)GN-WA001 JUL 26/2011



Source: NAIP 2009, US Census TIGER 2010; Coordinate System: NAD 1983 UTM Zone 17N

figure 3

NEARBY PROPERTIES
LDI SUPERFUND SITE
Utica, Michigan

08627-00(INT001)GIS-WA001 July 26, 2011; Drawn By: jcunningham

Attachment A

Declaration of Restrictive Covenant for the Liquid Disposal Site

RECD MACOMB CO '15MAY08PM0224

RET'D. FOR CORR. MAY 14 2015

RECD MACOMB CO '15JUN01PM0319

5072013 Page 1 of 20
LIBER 23446 PAGE 917
06/05/2015 04:02:57 PM
Macomb County, MI SEAL
Carmella Sabaugh, Clerk/Register of Deeds
Receipt # 33185

DECLARATION OF RESTRICTIVE COVENANT

This transfer is exempt from County and State transfer taxes pursuant to MCL 207.505(a) and MCL 207.526(a), respectively.

Liquid Disposal Inc. Superfund Site, Macomb County, Michigan
MDEQ Site ID No. 50000015
U.S. EPA Site No. MID067340711

MDEQ Reference No. RC-SF-201-12-006

This Declaration of Restrictive Covenant and Grant of Environmental Protection Easement (Restrictive Covenant and Easement) is made on April 24, 2015, by Michigan Land Bank First Track Authority, the Grantor, whose address is 735 East Michigan Avenue, Lansing, Michigan, 48912, for the benefit of the Grantee, the Michigan Department of Environmental Quality (MDEQ), whose address is 525 West Allegan Street, Lansing, Michigan 48933.

RECITALS

i. The Grantor is the title holder of the real property located in Macomb County, Michigan and legally described in Exhibit 1 attached hereto (Property). The Tax ID number of the Property is 07-30-200-016.

ii. The purpose of this Restrictive Covenant and Easement is to create restrictions that run with the land in the Grantor's real property rights; to protect the public health, safety, and welfare, and the environment; to prohibit or restrict activities that could result in unacceptable exposure to environmental contamination present at the Property; and to grant access to the Grantee, the United States Environmental Protection Agency (U.S. EPA), and the Potentially Responsible Party (PRP) Steering Group, as Third Party Beneficiaries, and their representatives or designees to monitor and conduct Response Activities.

iii. A Record of Decision (ROD) was issued by the U.S. EPA on September 30, 1987, for the purpose of carrying out the Response Activities selected to address environmental contamination at the Liquid Disposal, Inc. Superfund Site (Site). The MDEQ concurred with the ROD in a letter dated November 9, 1987. The Response Activities summarized below are more fully described in the ROD and have been implemented by the State of Michigan. The ROD also consists of an Explanation of Significant Differences (ESD) issued by the U.S. EPA and approved by the MDEQ on August 28, 1995, and a second ESD issued by the U.S. EPA on September 1, 2012, and approved by the MDEQ on September 10, 2012 (collectively referred to as Decision Documents).

iv. The Property is associated with the Site, MDEQ Site ID No. 50000015. Hazardous substances, including benzene, benzo(a)pyrene, bis(2-ethylhexy)phthalate, 2-butanone, chloroform, fluoranthene, methane, methylene chloride, naphthalene, polychlorinated biphenyls (PCBs), phenols, tetrachloroethylene (PCE), toluene, trichloroethylene (TCE), tetrahydrofuran, barium, cadmium, and lead, have been historically released and/or disposed of on the Property. The Site was placed on the National Priorities List on September 8, 1983, and is a facility as that term is defined in Section 101(9) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 *et seq.* (CERCLA); and Section 20101(1)(s) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (NREPA), MCL 324.20101 *et seq.*

v. At the time of recording this Restrictive Covenant and Easement groundwater containing hazardous substances remains present at the Property at levels exceeding federal maximum contaminant levels and state drinking water standards. The U.S. EPA and the MDEQ have also determined that the remaining hazardous substances at the Property present an explosion hazard, or a threat to human health through direct contact with contaminated soils or landfill materials or via ingestion of contaminated groundwater, and that the land use and resource use restrictions set forth below are required to prevent unacceptable exposures.

vi. The restrictions contained in this Restrictive Covenant and Easement are based upon information available to the U.S. EPA and the MDEQ at the time the Decision Documents were issued. Failure of the Response Activities to achieve and maintain the cleanup criteria, exposure controls, and requirements specified in the Decision Documents; future changes in the environmental condition of the Property or changes in the applicable cleanup criteria; the discovery of environmental conditions at the Property that were not accounted for in the Decision Documents, regardless of the date of the release of hazardous substances contributing to those environmental conditions; or the use of the Property in a manner inconsistent with the restrictions described herein; may result in this Restrictive Covenant and Easement not being protective of public health, safety, and welfare, and the environment. Information pertaining to the environmental conditions at the Property and Response Activities undertaken at the Site is on file with the U.S. EPA and the MDEQ, Remediation and Redevelopment Division.

vii. The MDEQ recommends that prospective purchasers or users of the Property undertake appropriate due diligence prior to acquiring or using this Property, and undertake appropriate actions to comply with the applicable requirements of Section 20107a of the NREPA.

SUMMARY OF RESPONSE ACTIVITIES

Hazardous substances including benzene, benzo(a)pyrene, bis(2-ethylhexy)phthalate, 2-butanone, chloroform, fluoranthene, methane, methylene chloride, naphthalene, PCBs, phenols, PCE, toluene, TCE, tetrahydrofuran, barium, cadmium, and lead, have been released and/or disposed of in the soil and groundwater on the Property. Prior to the recording of this Restrictive Covenant and Easement, response activities have been undertaken to remove or treat in-place some of the hazardous substances. The demolition of structures, removal of equipment and consolidation of soil and debris on-Site was conducted to limit the exposure of hazardous substances. Off-Site soils above the target cleanup levels were removed and consolidated with on-Site soils. A twenty feet wide perimeter solidification/fixation zone of soil down to the top of the water table was established to immobilize wastes in the soils, to provide structural support for the perimeter slurry wall, and to provide additional physical containment. Construction of a slurry wall around the Site was performed to restrict the migration of groundwater onto or off of the Site. An impermeable cap was placed over the Site to impede infiltration. Leachate extraction wells inside the slurry wall were installed to remove groundwater trapped on-Site under the cap and any groundwater entering the Site through the cap or slurry wall in the future. All collected groundwater was treated and disposed of off-Site.

DEFINITIONS

"Grantee" shall mean the MDEQ, its successor entities, and those persons or entities acting on its behalf;

"Grantor" shall mean the title holder of the Property at the time this Restrictive Covenant and Easement is executed or any future title holder of the Property or some relevant sub-portion of the Property;

"MDEQ" shall mean the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf;

"NREPA" shall mean the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 *et seq.*;

"Part 201" shall mean Part 201, Environmental Remediation, of the NREPA, MCL 324.20101 *et seq.*;

"Property" shall mean the real property legally described in Exhibit 1;

"PRP Steering Group" shall mean BASF Corporation, Chrysler Corporation, Dow Corning Corporation, E.I. DuPont DeNemours, Elf Atochem North America, Ford Motor Company, the former General Motors Corporation, United Technologies, and Warner-Lambert, and their successor entities.

"Response Activities" shall mean, consistent with Section 101(25) of CERCLA, 42 U.S.C. Section 9601(25), such actions as have been or may be necessary to conduct any removal, remedy or remedial action, as those terms are defined in Sections 101(23) and 101(24) of CERCLA, 42 U.S.C. Sections 9601(23) and 9601(24), on the Property and/or at the Site, including enforcement activities related thereto;

"Site" shall mean the Liquid Disposal, Inc. Superfund Site;

"U.S. EPA" shall mean the United States Environmental Protection Agency, its successor entities and those persons or entities acting on its behalf; and

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201; or the Part 201 Administrative Rules (Part 201 Rules), 2013 AACS R 299.1 – R299.50, shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of execution of this Restrictive Covenant and Easement.

NOW THEREFORE,

For valuable consideration of less than $100.00, the receipt of which is hereby acknowledged, the Grantor, on behalf of itself, its successors and assigns hereby covenants and declares that the Property shall be subject to the restrictions set forth below, for the benefit of the Grantee, and grants and conveys to the Grantee, and its assigns and representatives, the perpetual right to enforce said restrictions. The Grantor further, on behalf of itself, its successors and assigns does grant and convey to the Grantee and its representatives an environmental protection easement of the nature, character, and purposes set forth below with respect to the Property, and the right to enforce said easement.

1. **Restrictions on Land Use:** The Grantor shall prohibit all residential uses of the Property. Permissible and impermissible uses compatible with nonresidential uses are generally described in Exhibit 4 (Description of Allowable Uses) and incorporated by reference pursuant to Paragraph 14 (Exhibits).

2. **Restrictions on Activity:** The Grantor shall:

(a) Prohibit activities that cause existing contamination to migrate beyond the boundaries of the Property, increase the cost of Response Activities, or otherwise exacerbate the existing contamination located on the Property. The term "exacerbation" is more specifically defined in Section 20101(1)(r) of the NREPA, MCL 324.20101(1)(r).

(b) Prohibit and prevent use of the Property in a manner that may interfere with Response Activities that have been or will be performed at the Property. At the time of recording this Restrictive Covenant and Easement, those Response Activities that have been performed are depicted in Exhibit 3 (List and Depiction of Completed Response Activities at the Property).

(c) Prohibit the construction of and use of wells or other devices on the Property to extract groundwater for consumption, irrigation, or any other use, except for wells and devices that are necessary for Response Activities or testing and monitoring groundwater contamination levels in accordance with plans approved by the MDEQ or the U.S. EPA. Short-term dewatering for construction purposes is permitted provided the dewatering, including management and disposal of the groundwater, is conducted in accordance with all applicable local, state, and federal laws and regulations and does not cause or result in a new release, exacerbation of existing contamination, or any other violation of local, state, and federal environmental laws and regulations including, but not limited to, Part 201 of the NREPA. The use of leachate extraction wells inside the slurry wall is permitted to remove groundwater trapped on-Site under the cap and any groundwater entering the Site through the cap or slurry wall. Leachate extraction wells are permitted provided management and disposal of the leachate, is conducted in accordance with all applicable local, state, and federal laws and regulations and does not cause or result in a new release, exacerbation of existing contamination, or any other violation of local, state, and federal environmental laws and regulations.

(d) Prohibit all construction of new structures or any modification of existing structures on the Property, unless such construction or modification is necessary for the implementation and operation of Response Activities, and incorporates engineering controls designed to eliminate the potential for subsurface vapor phase hazardous substances at concentrations greater than the MDEQ acceptable levels.

(e) Prohibit any excavation activities, and property use or other activities involving the disturbance of soils, over, or within ten (10) feet of the fence surrounding the landfill cap as depicted in Exhibit 3.

(f) Prohibit all construction of new structures or any modification of existing structures or occupancy of existing structures, unless either the construction incorporates engineering controls designed to eliminate the potential for subsurface vapor phase hazardous substances to migrate into the existing, new, and/or modified structures, or prior to occupancy of any existing, new, and/or modified structures, the Grantor demonstrates, using current MDEQ-approved methodologies, that subsurface vapor phase hazardous substances are not creating unacceptable exposures within the existing, new, and/or modified structures and makes documentation of the demonstration available to the MDEQ and the U.S. EPA upon request.

(g) Prohibit any excavation or other activities involving disturbance of soils on the Property unless conducted in accordance with applicable state and federal environmental and health and safety laws and regulations. Any contaminated soils or groundwater generated by excavation or other activities shall be handled and disposed of in accordance with all applicable local, state, and federal laws and regulations and in a manner that does not cause or result in a new release, exacerbation of existing contamination, or any other violation of local, state, and federal environmental laws and regulations including, but not limited to, Part 201 of the NREPA.

(h) Prohibit any activity that disturbs the Response Activities listed and/or depicted in Exhibit 3 unless such activity is conducted in association with appropriate soil characterization and in compliance with applicable state and federal environmental, health, and safety laws and regulations including, but not necessarily limited to, the use of appropriate personal protective equipment.

(i) Prohibit any excavation or other intrusive activity that could affect the integrity of the slurry wall, except during short-term construction or repair projects or for purposes of further treating or remediating the subject contamination. The slurry wall as depicted in Exhibit 3 serves to restrict the migration of groundwater onto or off of the Site. If any excavation or other intrusive activity, including removing, altering, or disturbing the slurry wall, affects the integrity of the barrier, it must be replaced with a barrier that provides at least an equivalent degree of protection as the original barrier within fourteen (14) days of completion of the work. Repair and/or replacement of the barrier must be completed unless additional sampling is conducted that demonstrates that a barrier in the area is no longer necessary to comply with the applicable provisions and requirements of Part 201 of the NREPA.

(j) Prohibit any excavation or other intrusive activity that could affect the integrity of the impermeable cap, except during short-term construction or repair projects or for purposes of further treating or remediating the subject contamination. The impermeable cap as depicted in Exhibit 3 serves to impede infiltration. If any excavation or other intrusive activity, including removing, altering, or disturbing the impermeable cap, affects the integrity of the barrier, it must be replaced with a cap that provides at least an equivalent degree of protection as the original cap within fourteen (14) days of completion of the work. Repair and/or replacement of the cap must be completed unless additional sampling is conducted that demonstrates that a cap is no longer necessary to comply with the applicable provisions and requirements of Part 201 of the NREPA.

(k) Prohibit any activity that would interfere with the function of or obstruct access to any monitoring wells and devices as depicted in Exhibit 3. This includes, but is not limited to, removing, destroying, or altering any well or device in any way that renders it inoperable or incapable of functioning as intended.

(l) Not alter or remove the fence depicted in Exhibit 3. The PRP Steering Group is responsible for maintenance of the fence until such care and maintenance is no longer a required component of the remedial action.

3. **Permanent Markers:** The Grantor shall allow the installation of permanent markers that have been approved by the U.S. EPA and the MDEQ within the Property boundaries. These permanent markers shall more or less describe the restricted areas and the nature of the prohibitions specified in this Restrictive Covenant and Easement and the liber and page number of this Restrictive Covenant and Easement as recorded with the Macomb County Register of Deeds. The Grantor shall not remove, cover, obscure, or otherwise alter or interfere with any permanent markers placed on the Property at the locations generally depicted in Exhibit 5. The Grantor shall keep vegetation and other materials clear of any permanent markers to assure that the markers are readily visible. See Exhibit 5.

4. **Management of Contaminated Soil, Media, and Debris:** The Grantor shall manage all soils, media and/or debris located on the Property in accordance with the applicable requirements of Section 20120c of Part 201, MCL 324.20120c and Part 111, Hazardous Waste Management, of the NREPA, MCL 324.11101 *et seq.*; the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 *et seq.*; the administrative rules promulgated thereunder; and all other relevant state and federal laws and regulations.

5. **Access:** The Grantor grants the MDEQ and its representatives the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the Decision Documents and with this Restrictive Covenant and Easement, including the right to take samples, inspect the operation of the Response Activities, and inspect any records relating thereto; and to perform any actions necessary to maintain compliance with Part 201 and the Decision Documents.

Nothing in this Restrictive Covenant and Easement shall limit or otherwise affect the MDEQ's right of entry and access, or authorities to take Response Activities as defined in this Restrictive Covenant and Easement, as well as in NREPA, and any successor statutory provisions, or other state or federal law.

6. **Term:** This Restrictive Covenant and Easement shall run with the land and shall be binding on the Grantor, including persons as set forth in Paragraph 13(e), Successors.

7. **Third Party Beneficiaries:** The Grantor, on behalf of itself and its successors, transferees, and assigns, hereby agrees that the United States, acting by and through the U.S. EPA, its successors and assigns, and the PRP Steering Group shall be third party beneficiaries (Third Party Beneficiaries) of all the benefits and rights set out in the restrictions, covenants, easements, exceptions, notifications, conditions, and agreements herein, and that the Third Party Beneficiaries shall have the right to enforce the restrictions described herein as if they were a party hereto. No other rights in third parties are intended by this Restrictive Covenant and Easement, and no other person or entity shall have any rights or authorities hereunder to enforce these restrictions, terms, conditions, or obligations beyond the Grantor, the MDEQ, their successors, assigns, and the Third Party Beneficiaries.

8. **Enforcement:** The State of Michigan, through the MDEQ; and the United States of America, through the U.S. EPA, and the PRP Steering Group, as Third Party Beneficiaries, may enforce the restrictions and grant of easement set forth in this Restrictive Covenant and Easement by legal action in a court of competent jurisdiction.

9. **U.S. EPA Entry, Access, and Response Authority:** Nothing in this Restrictive Covenant and Easement shall limit or otherwise affect the U.S. EPA's right of entry and access, or authority to undertake Response Activities as defined in this Restrictive Covenant and Easement, as well as in CERCLA, the National Contingency Plan, 40 Code of Federal Regulations Part 300, and any successor statutory provisions, or other state or federal law. The Grantor consents to officers, employees, contractors, and authorized representatives of the

U.S. EPA entering and having continued access to this Property for the purposes described in Paragraph 5, above.

10. **Modification/Release/Rescission**: The Grantor may request in writing to the U.S. EPA and the MDEQ, at the addresses provided in Paragraph 12, below, modifications to, or release or rescission of, this Restrictive Covenant and Easement. This Restrictive Covenant and Easement may be modified, released, or rescinded only with the written approval of the U.S. EPA and the MDEQ. Any approved modification to, or release or rescission of, this Restrictive Covenant and Easement shall be filed with the appropriate county Register of Deeds by the Grantor and a certified copy shall be returned to the MDEQ and the U.S. EPA at the addresses provided in Paragraph 12, below.

11. **Transfer of Interest**: The Grantor shall provide notice at the addresses provided in this document to the MDEQ and to the U.S. EPA of the Grantor's intent to transfer any interest in the Property, or any portion thereof, at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Grantor without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and Easement and the applicable provisions of Section 20116 of the NREPA. The Grantor shall include in any instrument conveying any interest in any portion of the Property, including, but not limited to, deeds, leases, and mortgages, a notice which is in substantially the following form:

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO A DECLARATION OF RESTRICTIVE COVENANT AND ENVIRONMENTAL PROTECTION EASEMENT, DATED _____, AND RECORDED WITH THE MACOMB COUNTY REGISTER OF DEEDS, LIBER _____, PAGE _____.

12. **Notices**: Any notice, demand, request, consent, approval, or communication that is required to be made or obtained under this Restrictive Covenant and Easement shall be made in writing; include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant and Easement; include the MDEQ Site ID No. 50000015 and the MDEQ Reference No. RC-SF-201-12-006; and shall be served either personally, or sent via first class mail, postage prepaid, as follows:

For the U.S. EPA:

Director
Superfund Division (SR-6J)
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, IL 60604

with a copy to:

Office of Regional Counsel (C-14J)
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, IL 60604

For the MDEQ:

Chief
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
P.O. Box 30426
Lansing, MI 48909-7926

13. **Miscellaneous**:

(a) **Controlling Law**. The interpretation and performance of this Restrictive Covenant and Easement shall be governed by the laws of the United States as to the obligations referred to in the Decision Documents, and by the laws and regulations of the State of Michigan for all other purposes hereunder (without reference to choice of laws and principles thereof). The right to enforce the conditions and restrictions in this Restrictive Covenant and Easement are in addition to other rights and remedies that may be available, including, but not limited to, administrative and judicial remedies under CERCLA or Part 201 of the NREPA.

(b) **Construction**. Any general rule of construction to the contrary notwithstanding, this Restrictive Covenant and Easement shall be liberally construed to achieve the purpose of this Restrictive Covenant and Easement and the policy and purpose of CERCLA and the land use restrictions and prospective use limitations required by Part 201. If any provision of this Restrictive Covenant and Easement is found to be ambiguous, an interpretation consistent with the purpose of this Restrictive Covenant and Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

(c) **Severability**. If any provision of this Restrictive Covenant and Easement is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provision hereof, and all other provisions shall continue unimpaired and in full force and effect.

(d) **Entire Agreement.** This Restrictive Covenant and Easement and its attachments and appendices supersedes all prior discussions, negotiations, understandings, or agreements between the undersigned relating to the matters addressed herein, all of which are merged herein.

(e) **Successors.** The covenants, terms, conditions, and restrictions of this Restrictive Covenant and Easement shall be binding upon; and inure to the benefit of, the Grantor and Grantee and their agents, successors, lessees, and assigns and any subsequent title holders, occupants or other persons acquiring an interest in the Property or a relevant portion of the Property, and their respective agents, successors and assigns. The rights, but not the obligations or authorities, of the U.S. EPA are freely assignable to any public entity, subject to the notice to the Grantor, its successors and assigns, as their interests appear in the public title records kept and maintained by the Macomb County Register of Deeds.

14. **Exhibits:** The following exhibits are incorporated into this Restrictive Covenant and Easement:

Exhibit 1 – Legal Description of the Property

Exhibit 2 – Survey of the Property

Exhibit 3 – List and Depiction of Completed Response Activities at the Property

Exhibit 4 – Description of Allowable Uses

Exhibit 5 – Permanent Markers

15. **Authority to Execute Restrictive Covenant and Easement:** The undersigned person executing this Restrictive Covenant and Easement represents and certifies that he or she is duly authorized and has been empowered to execute this Restrictive Covenant and Easement.

IN WITNESS WHEREOF, The State of Michigan – Michigan Land Bank First Track Authority, the Grantor, has caused this Restrictive Covenant and Easement to be executed on this 24 day of April 2015.

Signature

Steve Arwood
Printed Name

Director, Talent & Economic Development
Title

STATE OF Michigan)
)ss
COUNTY OF Ingham)

Acknowledged before me in Ingham County, Michigan, on April 24, 2015, by Steve Arwood.

Lavonne Blonde
NOTARY PUBLIC
Lavonne Blonde
Notary Public, State of Michigan
County of Ingham
My commission expires: November 10, 2017
Acting in the County of Ingham

The MDEQ approves the form and content of this Restrictive Covenant and Easement on this 20th day of February 2015.

BY: _____
Susan Erickson, Assistant Division Chief
Remediation and Redevelopment Division
Department of Environmental Quality

STATE OF Michigan)
)ss
COUNTY OF Ingham)

Acknowledged before me in Ingham County, Michigan, on February 20, 2015, by Susan Erickson, Assistant Division Chief, Remediation and Redevelopment Division.

JODI POTTER
Notary Public - Michigan
Ionia County
My Commission Expires Aug 16, 2021
Acting in the County of Ingham

_____
NOTARY PUBLIC

Notary Public, State of Michigan
County of Ionia
My commission expires: 8-16-2021
Acting in the County of Ingham

This Document Prepared By:
Bradley J. Ermisch
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
525 West Allegan Street
Lansing, Michigan 48933-2125

EXHIBIT 1

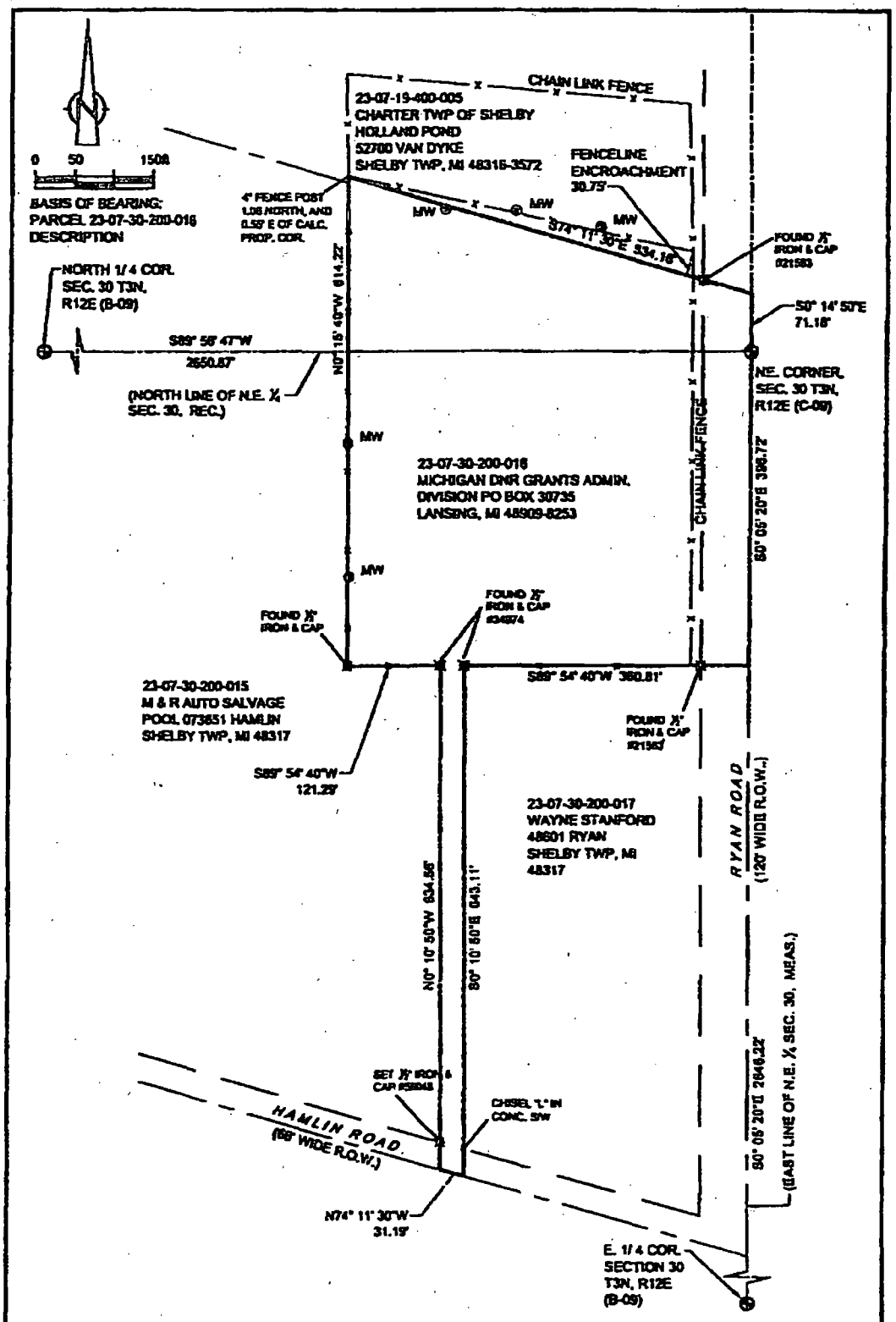
LEGAL DESCRIPTION OF THE PROPERTY

TAX DESCRIPTION: AS FURNISHED

L 368A1B, B1B, A2B & B2B 79 SPLIT & COMB T3N R12E SEC 19 & 30 BEG AT NE COR SEC 30, TH S 0 DEG 5' 20" E 396.72 FT, TH S 89 DEG 54' 40" W 360.81 FT, TH S 0 DEG 10' 50" E 643.11 FT, TH N 74 DEG 11' 30" W 31.21 FT, TH N 0 DEG 10' 50" W 634.56 FT, TH S 89 DEG 54' 40" W 121.29 FT, TH N 0 DEG 15' 40" W 614.22 FT, TH S 74 DEG 11' 30" E 534.16 FT, TH S 0 DEG 14' 50" E 71.18 FT TO PT BEG. 6.810 A.

EXHIBIT 2

SURVEY OF THE PROPERTY



TITLE: CERTIFIED SURVEY
LDI SITE
DE MAXIMIS, INC.

DRAWN DMG	APPROVED F.Y.
PROJECT No. 008627-00	SCALE 1" = 150'
DATE 9/12/12	DRAWING NUMBER SHEET 1 OF 2

CONESTOGA-ROVERS & ASSOCIATES

008627-00(C3D001)GN-DE001 SEPT 122012

TAX DESCRIPTION: AS FURNISHED

L 368A1B, B1B, A2B & B2B 79 SPLIT & COMB T3N R12E SEC 19 & 30 BEG AT NE COR SEC 30, TH S 0 DEG 5' 20" E 396.72 FT, TH S 89 DEG 54' 40" W 360.81 FT, TH S 0 DEG 10' 50" E 643.11 FT, TH N 74 DEG 11' 30" W 31.21 FT, TH N 0 DEG 10' 50" W 634.56 FT, TH S 89 DEG 54' 40" W 121.29 FT, TH N 0 DEG 15' 40" W 814.22 FT, TH S 74 DEG 11' 30" E 534.16 FT, TH S 0 DEG 14' 50" E 71.18 FT TO PT BEG. 6.810 A.

NOTES:

1. PARCEL BOUNDARIES SHOWN ARE AS-RECORDED, MACOMB COUNTY EQUALIZATION DEPARTMENT. SEARCHES AT MACOMB COUNTY REGISTER OF DEEDS DID NOT PRODUCE ANY DEEDS OR PREVIOUS SURVEYS FOR THE LDI OR ADJOINING PARCELS.
2. ALL BOUNDARY-CONTROLLING EVIDENCE WAS MEASURED BY GPS EQUIPMENT IN THE FOLLOWING DATUM: STATE PLANE COORDINATES, MICHIGAN SOUTH, NAD83, INTERNATIONAL FEET.
3. FIELD DATA WAS SCALED & ROTATED TO MATCH TAX DESCRIPTION.
4. NO ENCROACHMENTS EXIST OTHER THAN THOSE SHOWN ON SHEET 1.
5. SECTION CORNER POSITIONS WERE VERIFIED BY COMPARISON WITH LAND CORNER RECORDATION CERTIFICATES.
6. FIELD SURVEYS WERE CONDUCTED AUGUST 28 & SEPTEMBER 10, 2012.

CERTIFICATION:

I HEREBY CERTIFY THAT I HAVE SURVEYED AND MAPPED THE LAND ABOVE PLATTED AND/OR DESCRIBED, AND THAT THE SURVEY COMPLIES WITH THE REQUIREMENTS SET FORTH IN PUBLIC ACT 132 OF 1970. THE ERROR OF CLOSURE IS NO GREATER THAN 1:5000.

FREDERICK H. YOERG, PS # 38048

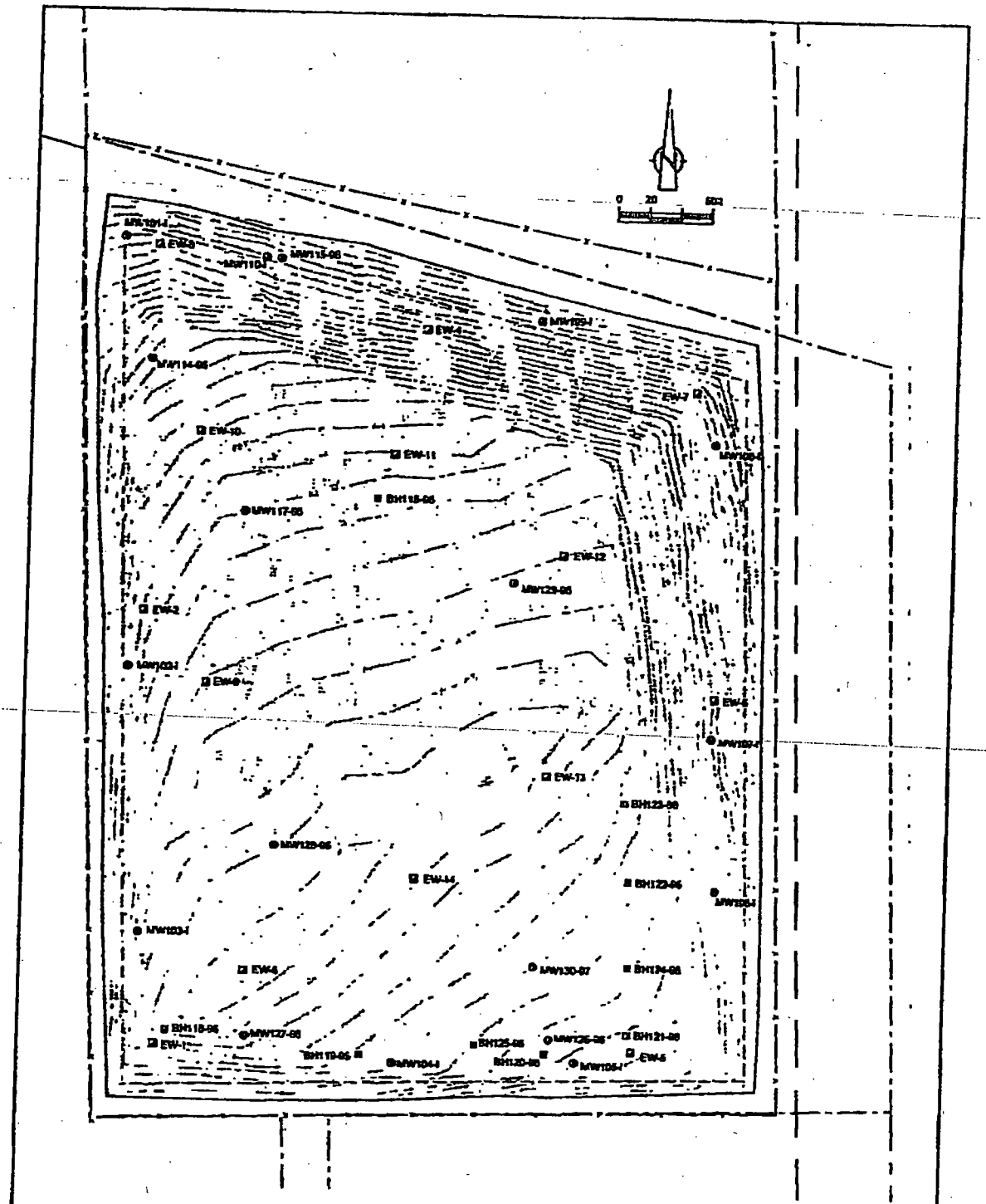
FREDERICK H. LAND SURVEYOR NO. 38048 LICENSED LAND SURVEYOR

CONESTOGA-ROVERS & ASSOCIATES	TITLE: CERTIFIED SURVEY LDI SITE DE MAXIMIS, INC.
	DRAWN: DMG / APPROVED: F.Y.
	PROJECT No. 008627-00 / SCALE: N/A
	DATE: 9/12/12 / DRAWING NUMBER: SHEET 2 OF 2

EXHIBIT 3

LIST AND DEPICTION OF COMPLETED RESPONSE ACTIVITIES AT THE PROPERTY

- Landfill Cap
- Slurry Wall
- Monitoring Well Locations
- Property Fence



LEGEND

PROPERTY LINE	MW128-05	MONITORING WELL
FENCE LINE	SW1-01	SURFACE WATER SAMPLE LOCATION
SLURRY WALL	VAS 1-01	VERTICAL AQUIFER SAMPLING LOCATION
SOLIDIFIED SOILS LIMIT	BH116-05	BOREHOLE LOCATION
LANDFILL CAP	EW-1	EXTRACTION WELL LOCATION

figure 1.1
SITE PLAN
LDI SUPERFUND SITE
Utica, Michigan

08627-00(PRESIZE)CN-WA001 SEP 25/2012

EXHIBIT 4

DESCRIPTION OF ALLOWABLE USES

Nonresidential Land Use: This land use is characterized by any use which is not residential in nature and is primarily characterized by industrial and commercial uses. Industrial uses typically involve manufacturing operations engaged in processing and manufacturing of materials or products. Other examples of industrial uses are utility companies, industrial research and development, and petroleum bulk storage. Commercial uses include any business or income-producing use such as commercial warehouses, lumber yards, retail gas stations, auto dealerships and service stations, as well as office buildings, banks, and medical/dental offices. Commercial uses also include retail businesses whose principal activity is the sale of food or merchandise within an enclosed building and personal service establishments which perform services indoors such as health clubs, barber/beauty salons, photographic studios, etc.

Any residential use is specifically prohibited from the non-residential land use category. This would include the primary use of the property for human habilitation and includes structures such as single family dwellings, multiple family structures, mobile homes, condominiums, and apartment buildings. Any authority that allows for residential use of the Property as a legal non-conforming is also restricted per the prohibitions contained in this Restrictive Covenant.

EXHIBIT 5

PERMANENT MARKERS

WARNING

HAZARDOUS SUBSTANCES ARE PRESENT ON THE PROPERTY. THE BOUNDARY OF THE PROPERTY AND LOCATION OF THE PERMANENT MARKERS ARE SHOWN ABOVE. DEMOLITION OF STRUCTURES AND EQUIPMENT AND THE CONSOLIDATION OF SOILS AND DEBRIS, ON-SITE AND OFF-SITE, WAS CONDUCTED TO LIMIT THE EXPOSURE OF HAZARDOUS SUBSTANCES. A SLURRY WALL WAS CONSTRUCTED AROUND THE SITE TO RESTRICT MIGRATION OF GROUNDWATER ONTO OR OFF OF THE SITE. AN IMPERMEABLE CAP WAS PLACED OVER THE SITE TO IMPEDE INFILTRATION. LEACHATE EXTRACTION WELLS OPERATE ON-SITE TO CAPTURE ANY GROUNDWATER ENTERING THE SITE THROUGH THE CAP OR THE SLURRY WALL. THE FOLLOWING RESTRICTIONS ARE PROHIBITED: DIGGING, EXCAVATING OR DISTURBING THE SOIL, DRINKING OR CONTACTING THE GROUNDWATER, REMOVING SOIL FROM THE PROPERTY, AND DISTURBING THE MONITORING WELLS AND THE GROUNDWATER STORAGE SYSTEM.

ADDITIONAL INFORMATION CAN BE FOUND IN THE RESTRICTIVE COVENANT AND EASEMENT FILED WITH THE MACOMB COUNTY REGISTER OF DEEDS, LIBER _____ AND PAGES ____ THROUGH _____.

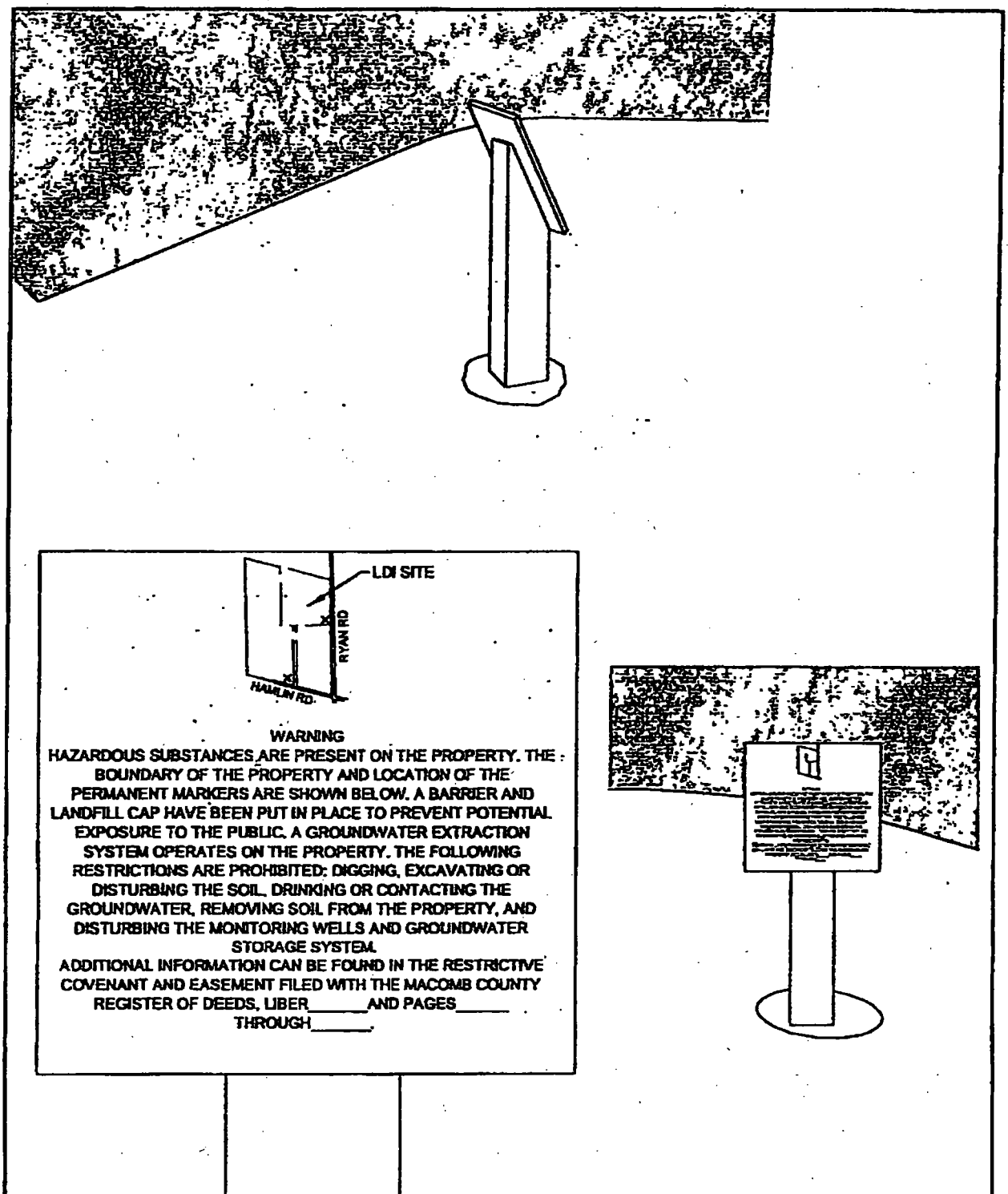


figure 2

SCHEMATIC - PERMANENT SITE MARKER
LDI SUPERFUND SITE
Utica, Michigan

08627-00(PRES024)GN-WA004 APR 17/2013

Attachment B
Restrictive Covenant for the G&H Landfill

3317510
LIBER 14492 PAGE 304
10/24/2003 02:30:55 P.M.
MACOMB COUNTY, MI SEAL
CARMELLA SABAUGH, REGISTER OF DEEDS

RESTRICTIVE COVENANT

MDEQ Reference No.: RC-ERD-02-008

This Restrictive Covenant has been recorded with the Macomb County Register of Deeds for the purpose of protecting public health, safety and welfare and the environment and to facilitate the transfer of the property during the performance of response activities pursuant to work plans approved by the United States Environmental Protection Agency (U.S. EPA) or the Michigan Department of Environmental Quality (MDEQ).

The Charter Township of Shelby (Shelby Township) has received the property legally described as Parcel A (Property) in Attachment 1 to this Restrictive Covenant from the State of Michigan for use as a public park. Portions of the Property are associated with the G&H Landfill or Liquid Disposal Inc., Superfund sites and are subject to on-going remedial actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, USC 42, as amended, Section 9601 et. seq. (CERCLA) and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.20101 et seq. (NREPA). Information pertaining to the response activities being undertaken at the Property is on file at the Shelby Township Library, 51680 Van Dyke, Shelby Township, Michigan.

Property Tax ID Number of Property: 23-07-19-400-005

As used herein, the term "Owner" shall mean at any given time the then current titleholder of the Property.

NOW THEREFORE Shelby Township, pursuant to 2001 PA 92 and Part 201 of the NREPA, hereby imposes restrictions on the Property and covenants and agrees that:

1. The Owner shall restrict the use of the Property to those uses compatible with the response activities being implemented to protect public health, safety or welfare or the environment pursuant to Part 201 of the NREPA and as necessary to avoid exacerbation (as defined in Section 20101(1)(n) of the NREPA of existing contamination on the Property.

2. The Owner shall prohibit activities at the Property that may interfere with a response activity, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the remedial actions.

3. The Owner shall prohibit the use of groundwater underlying the Property for any purpose. Wells shall not be installed on the Property except as provided under response activity work plans approved by the (U.S. EPA) or the MDEQ.

4

4. The Owner shall prohibit any activity that interferes or alters any leachate/groundwater collection system, leachate/groundwater treatment system, or monitor well network and their associated components located on the Property.

5. The Owner shall prohibit any activity that disrupts, disturbs, or in any way compromises the landfill cap present on the portion of the Property more specifically described as Parcel B in Attachment 1.

6. The Owner shall provide notice to the MDEQ of the Owner's intent to convey any interest in the Property 14 days prior to consummating the conveyance. A conveyance of title, an easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant.

7. The Owner shall grant to the MDEQ and U.S. EPA and their designated representatives or contractors, and other persons performing response activities pursuant to U.S. EPA or MDEQ approved plans, the right to enter the Property at reasonable times for the purpose of implementing and monitoring the response activities, including the right to take samples.

The Owner also acknowledges that the Property includes portions of the G&H Landfill and Liquid Disposal Inc. Superfund sites which are subject to on-going remedial actions pursuant to the CERCLA and Part 201 of the NREPA and that the implementation of additional response activities on the Property may be required to protect public health, safety or welfare or the environment.

The state may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of appropriate jurisdiction.

This Restrictive Covenant shall run with the Property and shall be binding upon all future owners, successors, lessees or assigns and their authorized agents, employees, or persons acting under their direction and control, and shall continue until the MDEQ or its successor approves modifications or rescission of this Restrictive Covenant. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, assigns and transferees by the person transferring the interest.

If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof. All such other provisions shall continue unimpaired in full force and effect.

The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner, and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, the said Owner of the above-described Property has caused this Restrictive Covenant to be executed on this 1ST day of OCTOBER, 2003.

Ralph L Maccarone

Signature

Ralph L. Maccarone, Supervisor

Shelby Charter Township, Macomb County

STATE OF MICHIGAN
COUNTY OF MACOMB
~~COUNTY OF OAKLAND ACTING IN MACOMB~~

The foregoing instrument was acknowledged before me this 1ST day of OCTOBER, 2003 by Ralph L. Maccarone, Supervisor, Shelby Charter Township, on behalf of the township.

Julia E Smith

Notary Public

My Commission Expires: JULIA E. SMITH NOTARY PUBLIC OAKLAND CO., MI MY COMMISSION EXPIRES Nov 11, 2008

JULIA E SMITH
ACTING IN MACOMB
COMM. EXPIRES NOV. 11, 2006

Prepared by: Jennifer Cherrette
Office of Land and Facilities
Michigan Department of Natural Resources
PO Box 30448
Lansing, MI 48909-7948

WHEN RECORDED RETURN
SHELBY TWP SUPER
52700 VAN DYKE
SHELBY TWP MI 48

CERTIFIED SURVEY

ATTACHMENT 1

LEGAL DESCRIPTIONS:

PARCEL A (INCLUDING PARCEL B)

That part of Section 19, T3N, R12E, Shelby Township, Macomb County, Michigan, described as beginning at the East corner of said Section 19: thence N00°00'00"E along the East line of said Section 19 a distance of 679.14' to the Southwesterly right of way line of the old railroad right of way; thence N59°19'30"W along the said line a distance of 1283.29 feet to the North line of the South 1/2 of the Northeast 1/4 of said Section 19; thence S89°37'19"W along the said North line a distance of 1569.83 feet to the North and South 1/4 line of said Section 19; thence S89°37'28"W along the North line of the South 1/2 of the Northwest 1/4 of said Section 19 a distance of 599.05 feet more or less to the centerline of the Clinton River; thence Southerly and Easterly along the said centerline to a point, said point being N00°26'27"W along the East line of said Section 19 a distance of 71.57, and N74°36'51"W a distance of 1894.86 feet, and N00°41'01"W a distance of 815.29 feet; thence continuing from said Point S00°41'01"E a distance of 815.29 feet; thence S74°36'51"E a distance of 1894.86 feet to the said East line of Section 19; thence N00°26'27"W along the said East line a distance of 2596.07 feet to the said East 1/4 corner and the point of beginning.

Contains 204.5 acres of land, more or less.

PARCEL B (CAPPED PORTION OF PROPERTY)

That part of the Northeast 1/4 of Section 19, T3N, R12E, Shelby Township, Macomb County, Michigan, described as commencing at the East corner of said Section 19; thence N00°00'00"E along the East line of said Section 19 a distance of 679.14' to the Southwesterly right of way line of the old railroad right of way; thence N59°19'30"W along the said line a distance of 671.23 feet to the point of beginning of the following described parcel of land: thence continuing N59°19'30"W along the said line a distance of 592.08 feet to the North line of the South 1/2 of the said Northeast 1/4; thence S89°37'19"W along the said North line a distance of 571.64 feet; thence S00°11'08"E a distance of 69.47 feet to the centerline of a private roadway; thence S51°11'07"E along the said centerline a distance of 67.62 feet; thence S45°41'49"E along the said centerline a distance of 48.78 feet; thence S43°16'48"E along the said centerline a distance of 130.15 feet; thence S54°48'12"E along the said centerline a distance of 86.69 feet; thence Southeasterly along the said centerline on a 183.54 feet radius curve to the left a distance of 103.17 feet, the chord bears S77°34'17"E a distance of 101.81 feet; thence N89°22'43"E along the said centerline a distance of 535.40 feet; thence S89°10'59"E along the said centerline a distance of 214.53 feet to the said Southwesterly line of the railroad right of way and the point of beginning.

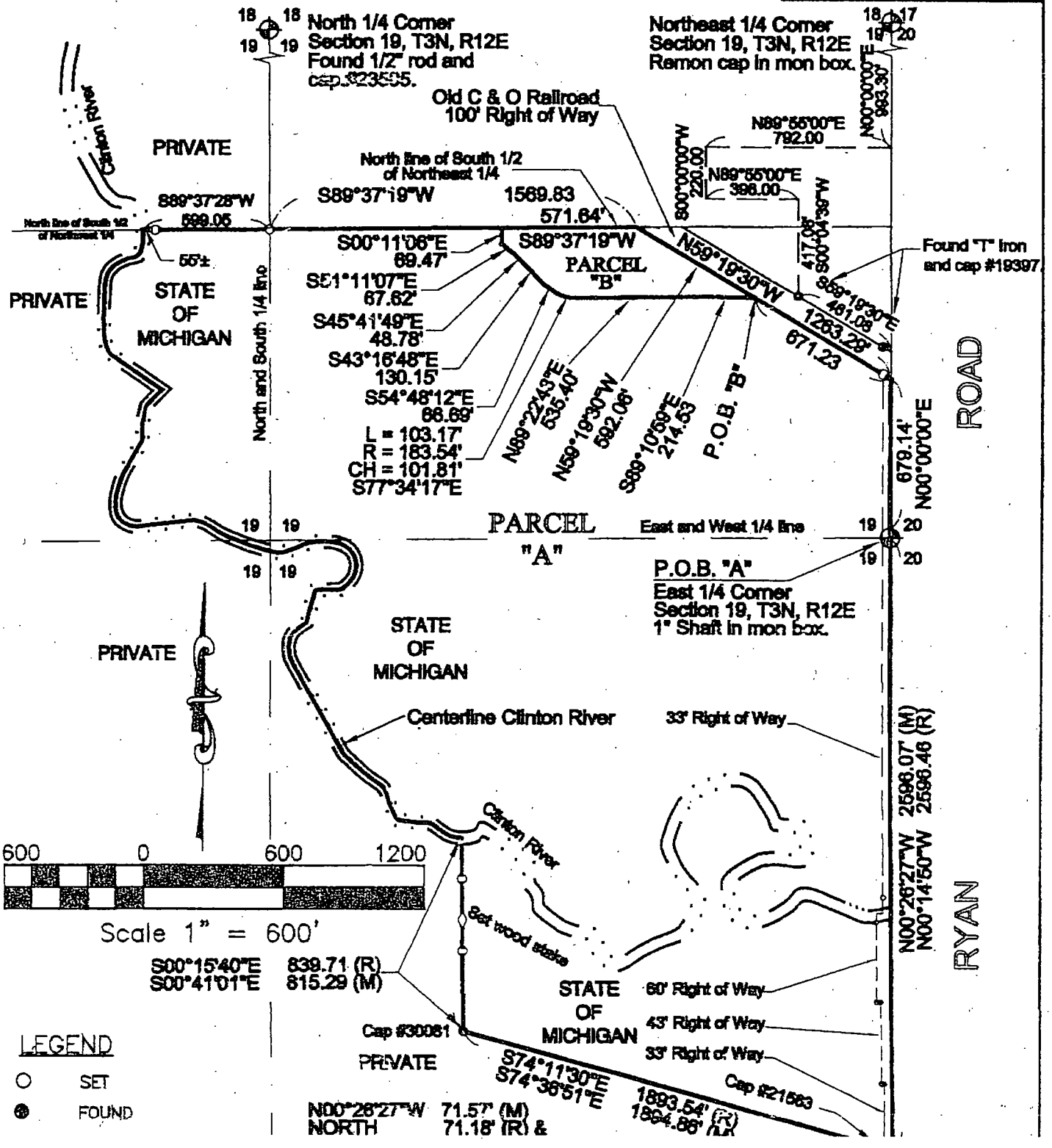
Contains 5.04 acres of land, more or less.

No irons set in Parcel "B".

I Robin P. Reed, a Professional Land Surveyor in the State of Michigan, certify that I have surveyed and marked the above described parcel of land on August 8th, 2002 and that the ratio of closure of the unadjusted field observations is 1:42086 and that the requirements of Public Act 132 of 1970 as amended have been complied with.

CERTIFIED SURVEY

LEGAL DESCRIPTIONS:
SEE SHEET 2 OF 2



ICTS Forms

U.S. EPA, Region 5, Superfund Division
ICTS Tier II QA Sign-Off Sheet

Updated June 17, 2009

Data Quality Certification and Contact Information

Note Quality Assurance:

Upon completion of data entry, each RPM will be provided two copies of the Basic Summary Report, Extended Summary Report, Public Preview Report (reflecting all entries made into the ICTS) and this ICTS Tier II QA Sign-off Sheet. One copy of the package is for the RPM's records and one copy of the package is for RPM/Site Attorney review and signature.

At this point, it is the responsibility of the RPM to provide the Site Attorney with a copy of the entire reports package and QA Sign-Off Sheet and obtain his/her signature for QA purposes ands return to LaVetta Walters or Teresa Jones.

The final Tier II Report and QA Sign-off Sheet will be submitted to the Record Center for scanning into SDMS and placed in the Site file.

Data Entry	Site Name: LIQUID DISPOSAL, INC	Data Entry Date: 8/4/15
	EPA ID: MID 067340711	
Completed by: (RPM)	Name: LINDA KERN	Date: 9/14/15
	Title: RPM	Signature:
	Phone: 312/886-7341	
	☐ Check box if you have any problems with any information contained in the database being released to the public. If so, please explain: ☐ Check box if ICs are not required ☐ Check box if ICs have been implemented ☒ Check box if ALL ICs required have been implemented Note: Planning information will not be included	
Completed by: (Legal Site Attorney)	Name: LUIS OVIEDO	Date: 9/14/15
	Title: Legal Site Attorney	Signature:
	Phone: 312-353-9538	
	☐ Check box if you have any problems with any information contained in the database being released to the public. If so, please explain: ☐ Check box if ICs are not required ☐ Check box if ICs required have been implemented ☒ Check box if ALL ICs required have been implemented Note: Planning information will not be included	
Received for Data entry Revision/Corrections	Name	Date
	Signature	
Correction made & Returned to RPM	Name	Date
	Signature	

Institutional Controls for LIQUID DISPOSAL, INC.

CERCLIS ID: MID067340711

Institutional Controls are required for this site. This site requires ICs because a decision document, such as a Record of Decision, has documented some level of contamination and/or remedy component at the site that would restrict use of the site. In order to determine the current status of ICs for this site, the site contacts below should be consulted:

Linda Kern, Remedial Project Manager Phone: **312-886-7341** Email: **kern.linda@epa.gov**

Luis Oviedo, Associate Regional Counsel Phone: **312-353-9538** Email: **oviedo.luis@epa.gov**

ICs are generally defined as administrative and legal tools that do not involve construction or physically changing the site. Common examples of ICs include site use and excavation restrictions put in place through State and local authorities like zoning, permits and easements. ICs are normally used when waste is left onsite and when there is a limit to the activities that can safely take place at the site (i.e., the site cannot support unlimited use and unrestricted exposure) and/or when cleanup components of the remedy remains onsite (e.g., landfill caps, pumping equipment or pipelines). Effective ICs help ensure that these sites can be returned to safe and beneficial use.

Disclaimer: This information is being provided by EPA as an informational tool to further assist the public in determining the types of restrictions that may be in place at National Priorities List sites being addressed by EPA under the Superfund program. In addition to the areas addressed by the institutional controls identified on this web site there may be other areas on the property that require restrictions on use of the property that are not captured in this EPA database. States and other entities may have implemented laws or restrictions applicable to this site. The information provided herein does not replace a title search or meet "All Appropriate Inquiry" requirements. U.S. EPA encourages users to review the Site files to obtain information regarding remedy components, containment systems and the land use for which cleanup standards were selected for these sites. More information and links can be found on the site profile page from which this page was accessed, and EPA regional offices may also be contacted.

Report generated on **August 04, 2015**

	Document Class	Class	Category Class	Source	Life Span	Life Span Conditions		ID	ID Context		
345	Decision	Record of Decision (ROD)	Decision	Federal			RECORD OF DECISION (ROD) REMEDIAL ALTERNATIVE SELECTION	05: 201109	SDMS ID - Superfund Document Management System ID	(6766)	Public
346	Monitoring	Five Year Review	Informational	Federal			THIRD FIVE YEAR REVIEW REPORT (SIGNED) - LIQUID DISPOSAL INC - 2008	05: 312743	SDMS ID - Superfund Document Management System ID	(6767)	Public
3567	Decision	Explanation of Significant Differences (ESD)	Decision	Federal			EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD) (SIGNED)	05: 381314	SDMS ID - Superfund Document Management System ID	(18085)	Public
3568	Monitoring	Five Year Review	Informational	Federal			FOURTH FIVE YEAR REVIEW REPORT (SIGNED) - LIQUID DISPOSAL INC - 2013	05: 461410	SDMS ID - Superfund Document Management System ID	(18086)	Public

VENT Add/Edit/Delete

	Name	IC Event Class	Event Type	Actual Date	Planned Date	Individual	Organization	Sensitivity
766	Record of Decision	Decision	Document Issuance	09-30-1987		(3188, Remedial Project Manager) (3189, Associate Regional Counsel)	(3282, Issuing/Implementing Organization)	Restricted (Confidential)
767	Five Year Review	Monitoring	Document Issuance	09-26-2008		(3188, Remedial Project Manager) (3189, Associate Regional Counsel)	(3282, Issuing/Implementing Organization)	Restricted (Confidential)
3085	ESD (2010)	Decision	Document Issuance	09-10-2010		(3188, Remedial Project Manager) (3189, Associate Regional Counsel)	(3282, Issuing/Implementing Organization)	Public
3086	Five Year Reviw (Fourth)	Monitoring	Document Issuance	09-23-2013		(3188, Remedial Project Manager) (3189, Associate Regional Counsel)	(3282, Issuing/Implementing Organization)	Public

DIVIDUAL Add/Edit/Delete

	First Name	Last Name	Middle Initial	Phone Number	Email Address	Organization
88	Linda	Kern		312-886-7341	kern.linda@epa.gov	(3282, Remedial Project Manager)
89	Luis	Oviedo		312-353-9538	oviedo.luis@epa.gov	(3282, Associate Regional Counsel)

RGANIZATION Add/Edit/Delete

	Organization Formal Name	Organization Type	Phone Number	Email Address	Web Site
82	USEPA	Federal Government			

OMMENT Add/Edit

	Comments

Site : LIQUID DISPOSAL, INC. (MID067340711)

Site Institutional Controls Summary

Published by Kerry Street on 05/01/2008 Click To View

ended Summary

Edit Mode Save

All Institutional Controls are implemented at this Site: ☐

TE History Edit

	Name	Site ID Context	CERCLIS ID	Region	Region Context	State	IC Required
02593	LIQUID DISPOSAL, INC.		MID067340711	05		MI	Yes

REA OF IC INTEREST Add/Edit/Delete

	Name	Area ID	Area ID Context	Subarea of	Media	Resource	Individual	Organization
342	Sitewide		Area Of IC Interest		(6044) (6045)	(6845)	(3188, Remedial Project Manager) (3189, Associate Regional Counsel)	(3282, Issuing/Implementing Organization)

EDIA Add/Edit/Delete

	Name	Is Media Contaminated?	Use Restriction	Objective	Engineering Control
044	Ground Water	Yes	(3768) (3766)	(6246) (6249)	
045	Soil	Yes	(3767)	(6247) (6248)	

BJECTIVE Add/Edit/Delete

	Objective Purpose	Description	Required from Decision Document?	Use Restriction	Resources
246	Prohibit Drinking of Groundwater		Yes	(3766)	(6845)
247	Prohibit Dermal Contact		Yes	(3767)	(6845)
248	Prohibit Inhalation Exposure		Yes	(3767)	(6845)
249	Other	Slurry wall - Groundwater containment	Yes	(3767)	(6845)

SE RESTRICTION Add/Edit/Delete

	Restriction Type	Description	Resource	Event
766	Limit Ground Water Use Activities		(6845)	(6766)
767	Prohibit Any Activity that May Disturb the Integrity of an Engineering Control		(6845)	(6766)
768	Prohibit Any Activity that May Disturb the Integrity of an Engineering Control		(6845)	(6766)

NGINEERING CONTROL Add/Edit/Delete

	Engineering Control Type	Description	Objective
021	Cap		(6247) (6248)
022	Slurry Wall		(6249)

ESOURCE Add/Edit/Delete

	IC	Document	Document	Document	Document	Document	Document Title	Document	Document	Event	Sensitivity

APPENDIX E

US EPA RECORDS CENTER REGION 5
560156

digitalfirst MEDIA

MICHIGAN GROUP

AFFIDAVIT OF PUBLICATION

2125 Butterfield Dr, Suite 102N • Troy MI 48084

U.S. EPA - SUPERFUND DIV.
77 W. JACKSON BLVD SI-6J

CHICAGO, IL 60604
Attention: HERIBERTO LEON

STATE OF MICHIGAN,
COUNTY OF MACOMB

The undersigned Justin DeNemy, being duly sworn the he/she is the principal clerk of Macomb Daily, macombdaily.com, macombdaily.com2, published in the English language for the dissemination of local or transmitted news and intelligence of a general character, which are duly qualified newspapers, and the annexed hereto is a copy of certain order, notice, publication or advertisement of:

U.S. EPA - SUPERFUND DIV.

Published in the following edition(s):

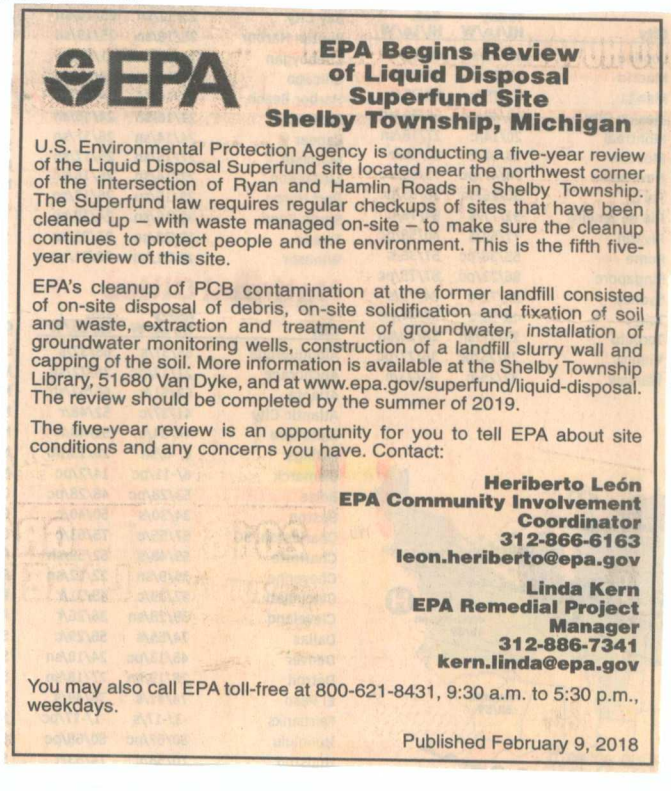
Macomb Daily	02/09/18
macombdaily.com	02/09/18
macombdaily.com2	02/09/18

TINA M CROWN
Notary Public - Michigan
Lapeer County
My Commission Expires Mar 30, 2021
Acting in the County of Oakland

Sworn to the subscribed before me this 14th February 2018.

Tina M Crown

Notary Public, State of Michigan
Acting in Oakland County



EPA

EPA Begins Review of Liquid Disposal Superfund Site Shelby Township, Michigan

U.S. Environmental Protection Agency is conducting a five-year review of the Liquid Disposal Superfund site located near the northwest corner of the intersection of Ryan and Hamlin Roads in Shelby Township. The Superfund law requires regular checkups of sites that have been cleaned up – with waste managed on-site – to make sure the cleanup continues to protect people and the environment. This is the fifth five-year review of this site.

EPA's cleanup of PCB contamination at the former landfill consisted of on-site disposal of debris, on-site solidification and fixation of soil and waste, extraction and treatment of groundwater, installation of groundwater monitoring wells, construction of a landfill slurry wall and capping of the soil. More information is available at the Shelby Township Library, 51680 Van Dyke, and at www.epa.gov/superfund/liquid-disposal. The review should be completed by the summer of 2019.

The five-year review is an opportunity for you to tell EPA about site conditions and any concerns you have. Contact:

Heriberto León
EPA Community Involvement Coordinator
312-866-6163
leon.heriberto@epa.gov

Linda Kern
EPA Remedial Project Manager
312-886-7341
kern.linda@epa.gov

You may also call EPA toll-free at 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays.

Published February 9, 2018

Advertisement Information

Client Id: 1250332 **Ad Id:** 1524026 **PO:** **Total:** $454.25