INTERIM RECORD OF DECISION AMENDMENT
ADAM'S PLATING SUPERFUND SITE
LANSING, MICHIGAN
EPA SITE ID: MID006522791

PREPARED BY:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

MARCH 2022

ACRYONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane
APC	Adams Plating Company
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BGS	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2-DCE	cis-1,2-Dichlorothene
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DER	Data Evaluation Report
DGI	Data Gaps Investigation
EGLE	Michigan Department of Environment, Great Lakes and Energy
ELCR	Excess Lifetime Cancer Risk
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
FYR	Five-year Review
HHRA	Human Health Risk Assessment
HI	Hazard Index
ICs	Institutional Controls
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation & Maintenance
OU	Operable Unit
PFAS	Per- and polyfluoroalkyl substances
PRG	Preliminary Remediation Goal
PVC	Polyvinyl chloride
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SITE	Adam’s Plating Superfund Site
SLERA	Screening Level Ecological Risk Assessment
TBC	To-Be-Considered
TCE	Trichloroethene
TCRA	Time-Critical Removal Action
VI	Vapor Intrusion
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound
WBU	Water Bearing Unit

PART 1: DECLARATION

A. Site Name and Location

The Adam's Plating Superfund Site is located in Lansing, Ingham County, Michigan. The Site Identification Number for this site is MID006522791.

B. Statement of Basis and Purpose

This decision document amends the 1993 Record of Decision (ROD) for the Adam's Plating Superfund Site (Site) and explains the factual and legal bases for amending the selected remedy. This Interim ROD Amendment was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300 et seq., as amended; as well as CERCLA §117 and NCP §300.435(c)(2)(ii).

This Interim ROD Amendment is based on the Administrative Record for the Site, which has been developed in accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9601 et seq., The Administrative Record Index identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based. The Administrative Record for this Interim ROD Amendment is available for review at the Lansing Public Library, located at 401 S. Capitol, Lansing, Michigan 48933 or the Lansing Township Hall at 3209 West Michigan, Lansing, Michigan 48917 and at the U.S. Environmental Protection Agency (EPA) Region 5 Records Center located at 77 W. Jackson Blvd, Chicago, IL 60604.

The Michigan Department of Environment, Great Lakes and Energy (EGLE), as the support agency, concurs with the remedy.

C. Assessment of Site

The response action selected in this Interim ROD Amendment is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances, pollutants, or contaminants into the environment.

D. Description of Selected Remedy

This Interim ROD Amendment addresses the vapor intrusion remedy for the Site, which was not a focus of the 1993 ROD. The 1993 ROD selected excavation of contaminated soils, replacement with clean fill and installation of vertical barriers, collection of water from the excavation activities, land use restrictions, and groundwater monitoring. A 1994 Explanation of Significant Differences (ESD) modified the ROD by updating cleanup standards, extending excavation to 10 feet in depth, and extending excavation laterally until soil cleanup levels were achieved or a building foundation was encountered. This Interim ROD Amendment modifies the original remedy by mitigating vapor intrusion risks at the Adams Plating Company (APC) property via institutional controls and at the adjacent residential property RP-07 via a passively-vented aerated floor system, a sump cover with passive ventilation, and institutional controls. All other components of the 1993 ROD and 1994 ESD remain the same.

E. Statutory Determinations

The amended remedy is protective of human health and the environment, complies with federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy, because no source materials will be addressed within the scope of this action.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that would allow for unlimited use and unrestricted exposure, a statutory review will continue to be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment. Five-year reviews will continue as long as waste remains at the Site and unlimited use is restricted.

F. ROD Data Certification Checklist

The following information is included in the Decision Summary section of this ROD Amendment. Additional information can be found in the Administrative Record file for this Site.

ROD DATA	LOCATION
Chemicals of concern and their respective concentrations.	Section D. Site Characteristics
Baseline risk represented by the chemicals of concern.	Section F. Summary of Site Risks
Cleanup levels established for chemicals of concern and the basis for these levels.	Section G. Remedial Action Objectives for Vapor Intrusion
How source materials constituting principal threats are addressed.	Section J. Principal Threat Waste
Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of ground water used in the baseline risk assessment and ROD.	Section E. Current and Potential Future Site and Resource Uses
Potential land and groundwater use that will be available at the Site because of the Selected Remedy.	Section E. Current and Potential Future Site and Resource Uses
Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and thenumber of years over which the remedy cost estimates are projected.	Section K. Selected Remedy
Key factors that led to selecting the remedy.	Section C. Scope and Role of Operable Unit or Response Action

G. Authorizing Signatures

This Interim ROD Amendment documents the selected remedy to address actual and potential vapor intrusion risks at the Adam's Plating Superfund Site. This remedy was modified by EPA with concurrence of EGLE.

3/16/2022

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Douglas Ballotti, DIrector
Superfund & Emergency Management Division
Signed by: DOUGLAS BALLOTTI

PART 2: DECISION SUMMARY

A. Site Name, Location, and Brief Description

The Adam's Plating Superfund Site (Site) is located in Lansing, Ingham County, Michigan. EPA is the lead agency and EGLE is the support agency. This is a fund-financed remedial action.

The Site is situated in a small topographic depression, near the central portion of a 1-mile radius bend of the Grand River, in the east half of the northwest quarter of the northeast quarter of Section 18, Township 4 North, Range 2 West in Ingham County.

The Adams Plating Company (APC) property, which is located at 521 North Rosemary Street, Lansing, Michigan (Figure 1), is less than 1 acre of land located in a mixed commercial, industrial, and residential block across the street to the west of the former Oldsmobile Plant No. 2. The APC property is bounded to the east by North Rosemary Street, west by North Grace Street, north by residential properties, and south by residential properties.

History of Site Use

Prior to 1964, the Site property was occupied by the Verrakleen dry-cleaning establishment, which stored dry-cleaning fluid (Stoddard solvent) in a 500-gallon underground storage tank. The location of the tank on the property is unknown, but it is reported to have been removed from the Site in the mid-1950s due to the tank leaking (PRC Environmental Management, Inc. [PRC] 1993a).

The Adams family acquired the property in 1964 and began the APC operations at that time. The company was primarily involved in chrome, nickel, and copper electroplating and anodizing; however, tin and brass electroplating were also performed. Degreasing operations of pieces to be electroplated were performed in conjunction with the electroplating process. Degreasing was commonly performed using volatile organic compounds (VOCs) including 1,1,1-trichloroethane (1,1,1-TCA), acetone, and methylene chloride. The former APC facility may have used per- and polyfluoroalkyl substances (PFAS)-containing foam blankets for dust suppression during the plating process. This is a possibility because PFAS-containing foam blankets were an inexpensive solution for dust suppression commonly used in smaller plating facilities like APC instead of expensive fume hood and ventilation system installation.

Contaminants at the Site included those generated by the electroplating process: antimony, cadmium, chromium, cobalt, copper, nickel, vanadium, and zinc. A wide variety of organic contaminants, such as chlorinated hydrocarbons, paraffins, aromatic hydrocarbons, and phthalates, were also associated with the past dry-cleaning operation at the Site (PRC 1993a). Recent investigations have also identified the VOCs acrolein and 1,1,-dichloroethane (1,1-DCA) as contaminants of concern.

Previous Investigations and Removal Actions

Between 1980 and 1993, EPA performed a number of investigations and collected air, groundwater, soil, and surface water data. The Adam's Plating Site was placed on the National Priorities List (NPL) in March 1989. The NPL is a list of hazardous waste sites eligible for cleanup under EPA's Superfund program.

EPA made the initial cleanup decision for the Site in the September 29, 1993 ROD. The remedial action objective to address risks associated with contaminated surface and subsurface soils was to prevent residents and trespassers from being exposed to contaminated soils through ingestion, dermal contact, and inhalation of particulates.

The 1993 ROD for the Site included the following remedy components:

- Excavation of contaminated soils and off-site disposal in Michigan Act 641/Resource Conservation and

Recovery Act (RCRA) Subtitle D landfill.
- Collection and treatment of water from excavation/dewatering activities.
- Replacement of the excavated soil with clean fill and the installation of vertical barriers to reduce the potential for recontamination of the fill.
- Land use restrictions, including deed restrictions on installation of wells and restrictions on excavation of contaminated soils if necessary.
- Groundwater monitoring to evaluate the effectiveness of the soil remediation and to monitor for continuing sources of contamination.

The soils targeted for excavation included an estimated 4,700 cubic yards of contaminated soils close to the APC drain tile system and around existing buildings. Contaminated soils were to be excavated down to a maximum depth of 10 feet below ground surface (bgs), or to analyte-specific levels, whichever was encountered first. Horizontally, excavation limits would be based on the same analyte-specific levels. Excavation cleanup levels of chromium (total) (26.1 milligrams per kilogram [mg/kg]) and arsenic (6.7 mg/kg) were selected in the 1993 ROD for two primary reasons: l) based on the RI, they accurately represented the distribution of contamination at the Site; and 2) the majority of risk was driven by these two chemicals.

The following modifications were made to the 1993 ROD in the September 30, 1994 ESD:
- Removal of two additional structures (garage and shed) due to their proximity to the excavation.
- Update cleanup standards to 33.5 mg/kg for chromium and 5.8 mg/kg for arsenic based on post-ROD background sampling results.
- Excavation to maximum depth of 10 feet without verification sampling requirement (above the 10-foot depth).
- Remove hexavalent chromium analysis for samples since total chromium concentrations in verification samples indicated that performance standards were achieved for chromium.
- Excavate soils laterally until background cleanup levels for arsenic and chromium are achieved or a building foundation encountered.

Construction activities were performed between August and October 1994, resulting in removal of 6,888 cubic yards of contaminated soil. Soil was excavated to a depth of approximately 10 feet bgs (PRC 1995). A geo-composite liner consisting of bentonite and two layers of interwoven fabric was installed as a barrier between backfill material and contaminated soil that was allowed to remain in-place. The Site received construction completion in September 1995 with the signing of the closeout report (PRC 1995).

2010 APC Building Fire and EPA and EGLE Response Actions

In December 2010, the APC building caught fire and was destroyed. The Lansing Township Fire Department responded to the fire. EPA and EGLE also responded to the fire and completed an emergency cleanup of the electroplating waste runoff from the Site, including containment of surface water runoff, water removal from storm sewer catch basins, removal of contaminated snow, and decontamination of two residential basements.

A time critical removal action (TCRA) was performed by EPA from February through August 2011. Actions involved demolition and removal of debris of the former APC building, removal and disposal of a 10,000-gallon underground storage tank, removal of hazardous substances stored onsite, excavation and disposal of contaminated soils under the former building, and backfilling with clean soil (Weston 2012). Soil was excavated to varying depths ranging from 2 to 10 feet bgs within the footprint of the building depending on the visual contamination observed. One foot of surface soil was also excavated from around an adjacent residential property north of the Site. Additional details of the TCRA are provided in the *Adam's Plating Site Removal Action Summary Report* (Weston 2012). TCRA excavation extents are shown in Figure 3.

After the TCRA, EPA conducted a supplemental Remedial Investigation (RI) and Feasibility Study (FS) from

2013 – 2021 to evaluate residual effects of the fire event on the nature and extent of chemical releases to the Site, and as such an Amendment to the original ROD is appropriate. As part of this work, groundwater, sump water, soil vapor, subslab soil vapor, outdoor air, indoor air, and catch basins were sampled. The 2020 Final RI Report presents the data collected by EPA between 2013 and 2016, in addition to data collected by EGLE in 2011, 2012, 2014, 2015, and 2017 and by the EPA Removal Program in 2017. Specifically, the EPA Removal Program conducted an assessment of potential vapor intrusion (VI) at three residences to determine the extent to which VOCs had the potential to impact indoor air quality. Information from this VI investigation was incorporated into the RI and the Human Health Risk Assessment (HHRA) for this interim action. EPA approved the Final RI Report in April 2020. The 2020 RI was supplemented by a follow-up Data Evaluation Report (DER) and a Data Gap Investigation (DGI) (CH2M 2021a, 2021b).

The FS developed and evaluated remedial alternatives to address potential unacceptable risk associated with the potential for VI at the APC property and in nearby residences. EPA approved the Final FS Report in February 2021 (CH2M 2021c).

B. Community Participation

The Proposed Plan for this Interim ROD Amendment at the Adam's Plating Superfund Site, in Lansing, Michigan, was made available to the public in November 2021. A copy of the Proposed Plan can be found in the Administrative Record and the information repository maintained at the Region 5 EPA Records Center, at the Lansing Public Library and at Lansing Township Hall. The notice of the availability of this document was published in the Lansing State Journal on November 22, 2021. A public comment period was held from November 15, 2021 to December 22, 2021. The comment period was extended seven days due to an error running the newspaper ad. In addition, a public meeting was held on November 30, 2021 to present the Proposed Plan to a broader community audience than those who had already been involved at the Site. At this meeting, representatives from EPA answered questions about Site health and safety, cost and timeframe of remediation at the Site, and the remedial alternatives. EPA also used this meeting to solicit a wider cross-section of community input on the reasonably anticipated future land use and potential beneficial groundwater uses at the Site. EPA's response to the comments received during this period is included in the Responsiveness Summary, which is part of this Interim ROD Amendment.

C. Scope and Role of Operable Unit or Response Action

This Interim ROD Amendment describes a VI remedy originally not considered in the 1993 ROD. The VI remedy is described in more detail in Section K (Selected Remedy). The response action discussed in this ROD Amendment represents an interim action to address vapor intrusion for buildings which overlie the groundwater contamination plume. This response action is intended to address all buildings within the potential vapor intrusion area of concern at which EPA has determined or may determine in the future that remedial action is required due to Site-related vapor intrusion.

EPA anticipates next selecting a final remedy that will address contaminated groundwater and the source areas that contribute contamination to the groundwater and soil vapor. This will be addressed in a Final ROD Amendment. EPA's expectation is that remediation of the source areas and contaminated groundwater, through implementation of future remedies, will ultimately remediate the vapor intrusion threats and allow termination of the interim response actions selected in this ROD.

This Interim ROD Amendment does not affect other components of the remedy, including*:*

- Land use restrictions including deed restrictions on installation of wells and excavation of contaminated soils; and
- Groundwater monitoring to evaluate the effectiveness of the soil remediation and to monitor for continuing

sources of contamination.

D. Site Characteristics

Physical Setting

The Site topography is relatively flat. The surface cover at the former APC property consists primarily of grass and no buildings remain. The Site is situated near the central portion of a 1-mile radius bend of the Grand River (Figure 1). No perennial surface water bodies or wetlands are present on or near the Site.

After the post-fire emergency response action and TCRA excavation, excavated portions of the former APC property were backfilled with clean soil and restored. A surficial gravel area is present on the west side of the Site, and an asphalt pad is located on the east side of the Site. The asphalt pad has an apron that slightly slopes east and meets grade with North Rosemary Street (Figure 2). A concrete dock, elevated approximately 3 feet above the asphalt parking lot, is a remnant of former operations and used for miscellaneous storage. This dock is located immediately east of the former APC building footprint and separates the asphalt pad from the remainder of the Site. A chain-link fence installed in 2016 currently surrounds the Site with gates installed at both the east and west ends. The buildings that surround the former APC property are a mix of residential and commercial/industrial-use buildings (Figure 2). Several monitoring wells are present at the Site (Figure 4). The monitoring wells are a combination of aboveground and flush-mount completions.

Geology

The description of the Site geology is based on regional reports and boring logs from previous investigations and the RI. The surface geology at the Site generally consists of approximately 6 inches of topsoil (when present) composed of silt or clay with variable amounts of sand. Locations without topsoil are usually paved with fine sand below asphalt/concrete and gravel base. Below the topsoil and pavement material is predominately fine to medium silty sand with variable amounts of clay and gravel, ranging from 6 to 20 feet bgs. The glacial deposits consist of approximately 30 to 35 feet of glacial till with saturated sand seams occurring within the till. The upper portion of the till consists of brownish sandy to silty clay transitioning to gray sandy to silty clay, each with variable amounts of gravel present. A continuous dry sand layer rests above the bedrock unit. This dry deep sand unit is observed at approximately 30 to 40 feet bgs and ranges in thickness from 29 to 48 feet. Bedrock is encountered at approximately 60 to 80 feet bgs. The bedrock encountered is the top of the Saginaw Formation which consists of interbedded sandstone, shale, coal, and limestone sequences (Milstein 1987; Velbel and Brandt 1989). The thickness of the Saginaw Formation ranges from 100 to 500 feet and underlies the entire region (Holtschlag, Luukkonen, and Nichols 1996).

Hydrogeology

Across the Site, groundwater is perched in two shallow (usually less than 30 feet) water bearing units (WBUs) that are present in discontinuous saturated seams of varying thickness within the glacial till overburden. Groundwater is typically encountered at an average of 6.86 feet bgs in the upper shallow water bearing unit 1 (WBU1) and at an average 10.47 feet bgs in the lower shallow water bearing unit 2 (WBU2).

There are no known private residential wells in the vicinity of the Site, and residents in Lansing Township are connected to municipal water. It is unlikely that impacted groundwater in WBU1 and WBU2 is in communication with nearby municipal wells. Municipal wells within the Wellhead Protection Area operated by the Lansing Board of Water and Light are not installed at the Site, and the closest is approximately 1,500 feet away.

Surface Water Hydrology

Because the Site is located in urban commercial and residential areas, the natural surface drainage pattern was altered by roadway, driveway, and building construction. Surface water runoff from buildings, developments, and streets is directed into the City of Lansing stormwater sewer system. The closest body of water is the Grand River,

a major tributary of Lake Michigan.

Conceptual Site Model

A Conceptual Site Model (CSM) is a three-dimensional picture of Site conditions that illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors. The CSM documents current and potential future Site conditions and is supported by maps, cross sections, and Site diagrams that illustrate what is known about human and environmental exposure through contaminant release and migration to potential receptors.

Sources of Contamination

The sources of contamination at the Site are the surrounding soil and groundwater impacted by operations and waste disposal practices prior to 1980 and the fire suppression activities in 2010, described in more detail below. Remedial activities have been implemented to address historical source soils at the Site. However, additional investigation of the vapor intrusion pathway, including groundwater, sump water, indoor and outdoor air, was performed to identify any risk from potential releases after the Site fire and demolition of the former APC building in 2010. As discussed in Section F below, vapor intrusion is considered to pose a potential threat to human health.

Nature and Extent of Contamination

For the Adam's Plating Superfund Site, the APC property, 3 commercial/industrial properties (CP05, CP06, CP09), and 8 residential properties (RP01 – RP04, RP06 – RP08, RP10) were sampled for all media at least once during the 2013 – 2021 investigations. CP06 and RP06 are located on the same land parcel, and several property owners (CP05, CP06/RP06, and CP09) rescinded or did not grant access to EPA during the course of investigations. The nature and extent of contamination was determined by comparing analytical data from Site investigations to the screening levels for each medium. Screening levels were developed for each medium of interest and are detailed in the RI (CH2M 2020). Sampling locations with analytical results that exceed the screening levels are considered within the extent of contamination at this Site and are summarized in Table 1. Specifics of the sampling events, data evaluations, and full analytical tables are found in the RI, Data Evaluation Report (DER), Data Gaps Investigation (DGI), and further summarized in the Final FS Report (CH2M 2020, 2021a, b, c).

Contaminants of Potential Concern (COPCs) are defined in the risk assessment. Unacceptable risk is assessed in the HHRA and the Screening Level Ecological Risk Assessment (SLERA) and is what drives the action for remediation, as defined by CERCLA. A summary of risk assessment findings is described in Section F "Summary of Site Risks" below.

Vapor Intrusion

A VI pathway investigation was conducted as part of the 2020 RI. Groundwater and soil vapor analytical data were screened to evaluate which chemicals, specifically VOCs, exceeded vapor intrusion screening levels (VISLs). This identification facilitated the Site-specific VI assessment by identifying VOCs that may pose a potential VI risk for buildings that overlie or are within the 100-foot lateral inclusion zone of VOCs in source media. To understand the nature and extent of indoor air contamination associated with Site-related groundwater and soil contamination, a VI assessment was completed for each individual sampled residence.

EPA assessed VI using a "multiple-lines-of-evidence" approach. The multiple-lines-of-evidence include (if and as present) shallow groundwater data, sump or flooded basement water, soil vapor data from above the water table, subslab soil vapor data, indoor air (including crawl space) data, and information collected on background sources. Evaluating multiple-lines-of-evidence allows EPA to reasonably determine if Site-related contaminants have migrated from contaminated groundwater or some other subsurface source of contamination through the subsurface to the sub-slab space, and from the sub-slab space to indoor air at concentrations which represent a

potential threat to human health (i.e., unacceptable cancer risks and/or non-cancer hazards).

At this Site, the multiple-lines-of-evidence evaluation (Table 2) used groundwater, sump or flooded basement water, soil vapor, and indoor/outdoor air data to generate building-specific VI CSMs. These VI CSMs allowed the assessment of the nature and extent of indoor air contamination and, in turn, the likelihood of a complete VI pathway. The VI multiple-lines-of-evidence evaluation is detailed in Table 7-1 of the RI (CH2M 2020). For VI media, multiple factors are needed to understand if there is a complete VI pathway, influence if a chemical becomes a COPC or Contaminant of Concern (COC), and if the COC is further retained for the FS. Because a chemical is detected above a screening level, it does not automatically become a COC or be retained for the FS.

Groundwater

In groundwater, VOC concentrations exceed EPA maximum contaminant limits (MCLs) for drinking water generally in the middle of and immediately north of the former APC building footprint. 1,1-DCA, 1,1-dichloroethene (1,1-DCE), 1,4-dioxane, cis-1,2-dichloroethene (cis-1,2-DCE), and trichloroethene (TCE) were the organic compounds detected in groundwater at concentrations greater than screening levels.

With the exception of 1,4-dioxane, VOCs were generally not detected in groundwater samples collected south, east, west, and further north of the former building footprint, indicating that VOC contamination present at the Site has likely not migrated or otherwise spread within the shallow groundwater (WBU1 or WBU2). No SVOCs were detected in groundwater at concentrations exceeding the screening levels. Metals detected in groundwater at concentrations exceeding their respective screening levels are present at their highest concentrations from the northeast sample locations to the southwest locations. Aluminum, arsenic, boron, cobalt, iron, lead, manganese, nickel, and vanadium were detected above screening levels.

Sump Water

Sump water was collected from multiple residential properties during the RI (Table 5-21 of the RI Report, CH2M 2020). The purpose of the sump water sampling was to evaluate if contaminated groundwater is present beneath a building, to identify where the sump discharges, and to assess whether a sump is in communication with contaminated groundwater. This communication, if present, can be used to assess whether it could be a potential vapor source causing measurable VOCs in indoor air at the buildings or a dermal contact risk from detected metals in the water.

During RI activities in 2013, 2016, and 2017, three residential sumps (SP-01/SP-05 at RP07, SP-02 at RP04, and SP-04 at RP02) and one flooded basement (SP-03 at RP01) were sampled. One sump, SP-01, was later renamed as SP-05 during the 2016 sampling event. SP-01/SP-05 at RP07 is the one location that shows a consistent contamination footprint over the years. In SP-01/SP-05, 1,1-DCA exceeded the screening level, there were no SVOC exceedances, and several metals (aluminum, hexavalent chromium, total and dissolved nickel, and dissolved chromium) exceeded their respective screening levels. The previous 1993 RI Report indicates that the sump (SP-01/SP-05) at RP07 had a detection of trichloroethane (TCA), as well as Site-related metals. This would indicate that the sump at this property has, historically, been in communication with impacted water from APC operations and the contamination is likely Site-related at RP07/SP-05.

At RP02 no VOCs or SVOCs were detected in the sump water (SP-04) in 2016; although various metals were detected, all were below respective screening levels. At RP04, VOCs, SVOCs, and metals were detected below screening levels in the sump water (SP-02) in 2016.

There is no sump present at residence RP01. In March 2016, SP-03 was collected as a basement standing water sample due to recent flooding. The SP-03 sample results showed 1,1-DCA and aluminum exceeded screening levels for inhalation and ingestion, respectively. In July, the basement from the SP-03 location was dry.

Exterior and Subslab Soil Vapor

Multiple exterior (i.e., outside the footprint of a building) and subslab (i.e., inside the footprint of a building through the slab) soil vapor samples were collected and documented in the RI and DGI reports (CH2M 2020, 2021b). The purpose of exterior and subslab soil vapor sampling was to evaluate whether contamination in groundwater (the vapor source) caused measurable VOCs in the vadose zone and immediately below occupied buildings. This information can reduce uncertainties about vapor migration from a groundwater source. Based on the U.S. Department of Agriculture Natural Resources Conservation Service Custom Soil Resources Report as cited in the Final RI Report (CH2M 2020), the Site soil has moderate to moderately low permeability; therefore, soil vapor transport through Site soils is considered moderate to moderately low. There does not seem to be a strong geographic pattern between the likelihood of a complete VI category pathway and property location; however, there are multiple properties where access was not granted for VI sampling, so the data set was limited.

Two exterior soil vapor samples (SG-02 and SG-03) from the APC property and one soil vapor sample (SG-01) from an area beyond the APC property boundary were collected from soil vapor probes as part of the 2013 RI activities. The soil vapor concentration of 1,1-DCA in the sample collected from SG-01 (north of the APC property) and of TCE at SG-02 (southeast corner of the 2011 TCRA removal area) exceeded their respective residential VISLs. The soil vapor concentrations of 1,3-butadiene, acrolein, and benzene at SG-03 exceeded their respective industrial VISLs. SG-03 is located on the APC property within the northeast portion of the 2011 TCRA removal area.

In 2017, an additional 12 exterior and 3 subslab soil vapor samples were collected at three residences (RP03, RP07, and RP08). The 12 exterior soil vapor samples (4 at each residence) exceeded VISLs for benzene, 1,3-butadiene, and 1,1-DCA. The concentration of 1,3-butadiene exceeded the industrial soil vapor VISL at RP03 and RP07. Concentrations of 1,1-DCA exceeded the industrial soil vapor VISL at RP07 and the residential soil vapor VISL at RP08.

Inside the buildings, one temporary subslab soil vapor sampling point was installed at each of three residential properties (RP03, RP07, RP08). However, due to shallow groundwater/water table infiltrating the subslab soil vapor samples from RP03 and RP08, only the subslab soil vapor sample from RP07 could be collected and analyzed. The RP07 subslab soil vapor sample results exceeded the residential soil vapor VISL for chloroform, 1,1-DCA, and 1,2-DCE. The vapor intrusion pathway at RP03 was further investigated in the DGI and was found to be incomplete. At RP08, the vapor intrusion pathway was further evaluated based on indoor air sampling as discussed below.

Crawlspace and Indoor Air

Based on the multiple-lines-of-evidence evaluation (Table 2) conducted at properties with buildings (this excludes the APC property), currently there is one complete and significant VI pathway where Site-related chemicals impact crawlspace air or indoor air above VISLs. EPA has determined that concentrations of 1,1-DCA in RP07 could pose an unacceptable risk to residents by inhalation.

Of all of the properties evaluated, two properties are unlikely to have VI pathways develop in the future (RP01, RP02), while five properties (RP03, RP04, RP07, RP08, and CP09) have the potential for a complete VI pathway in the future, with future crawlspace air or indoor air above VISLs. Of these five properties, RP03 and RP07 were identified in the HHRA as posing unacceptable risk and were carried forward into the FS along with the APC property.

Contaminant Fate and Transport

COPCs present in the upper sand unit, or WBU1, may have been transported by percolating rainwater through the upper till unit. Contaminants may have also been released directly into the upper sand unit from leaking underground tanks and are known to have been released via the buried clay tile drain system. Migration of COPCs from the upper sand unit to the lower till unit is expected. However, contaminants in the lower till unit are for the

most part expected to remain sorbed to the lower till due to a higher clay content in comparison to the upper till unit. The presence of contaminants in the lower sand unit, or WBU2, can be attributed to the downward vertical gradient existing between the upper and lower sand unit. The organic and inorganic vertical contaminant distribution indicates that contaminants have migrated to the upper and lower sand units, and these sand units are the preferred pathways of contaminant transport (PRC 1993a).

E. Current and Potential Future Site and Resource Uses

The former APC property is currently zoned industrial. Surrounding properties are zoned industrial and commercial, though some are used as residences. The current and reasonably anticipated future land uses of the property form the basis for the exposure assumptions that are used for the risk assessment, are considered in the development of remedial objectives and remedial alternatives and are considered in the selection of the appropriate remedial action.

Land Uses

The former APC property is currently vacant and undeveloped, with no buildings present. Current land use near the APC property is a mix of industrial, retail/services, and residential. According to the currently adopted Lansing Township Master Plan, future land use on and near the Site is expected to be mixed use (retail/office) and residential, with the General Motors special plan area to the east and northeast of the Site (Charter Township of Lansing 2009).

Ground and Surface Water Uses

There are no known private residential wells in the vicinity of the Site, and residents in Lansing Township are connected to municipal water. It is unlikely that impacted groundwater in WBU1 and WBU2 is in communication with nearby municipal wells. Municipal wells within the Wellhead Protection Area operated by the Lansing Board of Water and Light are not installed at the Site, and the closest municipal well is approximately 1,500 feet away. Municipal wells are screened at approximately 400 feet bgs within the Saginaw Formation aquifer and the average depth for groundwater encountered in WBU2 (the deeper water-bearing unit) is approximately 10 feet bgs. Municipal wells were installed with a casing advanced through the upper hydrogeologic units to prevent potential cross contamination into the lower aquifer and to strengthen the integrity of the wells. The municipal well construction and hydrogeology of the Site as outlined prevent communication between these glacial deposits and the lower aquifer used by the municipality.

F. Summary of Site Risks

The baseline risk assessment estimates what risks the Site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the Interim ROD Amendment summarizes the results of the baseline risk assessment for this Site. The summary of the relevant aspects of the human health and ecological risk assessments, discussed below, support the need for remedial action.

At the Adam's Plating Superfund Site, EPA used data from the RI to conduct a baseline HHRA and SLERA and data from the DGI to amend one HHRA conclusion. The Site and surrounding areas are zoned for residential or commercial/mixed use, and future land use is not expected to differ from current land use. To assess risk, EPA assumed that current land use will remain the same in the future. EPA issued both the HHRA and SLERA in April 2020 as appendices to the Final RI Report (CH2M 2020). The DGI Report, which amended the HHRA, is an appendix in the Final FS Report issued in February 2021 (CH2M 2021b, c). Identified risks are summarized below.

Human Health Risks

A baseline HHRA evaluated potential current and future risks associated with detected constituents at the Site. For the purposes of the HHRA, soil, groundwater, basement sump and flooded water, subslab and exterior soil vapor, outdoor air, crawlspace, and indoor air were assessed at the APC property, eight adjacent residential properties, and three adjacent commercial properties. The HHRA is Appendix M of the Final RI Report (CH2M 2020).

COPCs are based on data collected during the RI and then identified in the HHRA. COPCs are those chemicals that have the greatest potential to cause adverse human health effects if receptors come in contact with Site media. The maximum detected concentration of each chemical in a data grouping is compared to its respective screening level. If the maximum detected concentration exceeds its screening level, it is retained as a COC in the HHRA. Chemicals considered essential nutrients (calcium, magnesium, potassium, and sodium) were not selected as COCs in the HHRA (EPA 1989) because they were not detected at elevated concentrations and are not Site-related. Table 3 summarizes the COCs per property and per matrix (and in Section 2.2.2 of the HHRA, CH2M 2020).

The HHRA evaluated the APC property and surrounding impacted properties under current conditions using 2013 – 2020 analytical data for soil, groundwater, soil vapor (subslab and external), crawlspace air, and indoor air. Because chemicals may have migrated beyond the APC property through surface runoff or overflow, potential exposure to impacted soil on adjacent parcels also was evaluated in this HHRA. Based on current and reasonably foreseeable future Site conditions, the following potential current and future human receptors, locations, and scenarios were identified and evaluated in the HHRA:

- Acrolein is identified as a COC at the APC property for future residents and industrial/commercial workers based on an indoor air exposure scenario from intrusion of exterior soil vapor.

- 1,3-Butadiene is identified as a COC in exterior soil vapor at RP03 for a potential future indoor air exposure scenario.

- 1,1-DCA is identified as a COC in groundwater (inhalation) at RP07 for potential current and future indoor air exposure scenarios.

Although the HHRA identified 1,3-butadiene as a COC at RP03, the source of the 1,3-butadiene had not been identified during the RI. A DGI was conducted December 21, 2020 – January 7, 2021 where samples were collected (soil, groundwater, exterior soil vapor, and outdoor air) and an assessment conducted based on the data results. The DGI report used a multiple-lines-of-evidence approach and concluded that 1,3-butadiene was not attributable to the APC property or previous Site-related activities. Therefore, this chemical was not carried forward into the FS and no alternative developed. More detailed discussion is in the DGI (CH2M 2021b).

The Agency for Toxic Substances and Disease Registry (ATSDR) fact sheet on 1,3-butadiene (ATSDR 2012) notes that common sources of 1,3-butadiene include the processing of petroleum, for example in the creation of rubber, car and truck exhaust, cigarette smoke and the smoke from wood fires.

Ecological Risks

A SLERA was conducted in accordance with EPA guidance (EPA 1992, 1997, 1998). Wildlife present on or directly adjacent to the Site includes various songbirds, household pets, and mammals common to central Michigan. Threatened and endangered species were not noted onsite. The SLERA is Appendix L of the Final RI Report (CH2M 2020).

The surface soil and groundwater data generated from the RI activities were used to conservatively assess potential risk for both aquatic and terrestrial invertebrates, fish, and wildlife (i.e., ecological receptors) by comparing measured concentrations of COCs in soil and groundwater with ecological screening levels for soil and surface water, respectively. The conclusion of the SLERA is that COC concentrations in soil and groundwater do not present

significant risk to ecological receptors, and that no further evaluation relative to ecological risk at the Site is necessary.

Basis for Action

The amendment of the 1993 ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. Based on the data collected to date and summarized above, EPA has determined that VI from contaminated groundwater poses unacceptable risks at the APC property based on potential future inhalation risk to future residents and industrial/commercial workers and at RP07 based on potential current or future inhalation risk to residents. EPA's remedy includes the implementation of institutional controls (ICs) at the APC property and RP07, VI mitigation at RP07, and supplemental ICs and/or VI mitigation response actions at other residential and/or commercial properties, should future VI data identify current or potential future risks associated with Site-related releases.

G. Remedial Action Objectives for Vapor Intrusion

The purpose of this change to the remedy at the Site is to address Site VI risks associated with current and future use of the APC and RP07 properties to ensure the protection of human health and the environment. EPA anticipates that this can be accomplished via the following specific Remedial Action Objectives (RAOs):

- Protect human health at the APC property and surrounding properties by preventing potential future exposure (via VI or direct volatilization from groundwater) to acrolein or other Site-related VOCs in indoor air at concentrations that could pose an unacceptable risk to human health.
- Protect human health at RP07 by preventing potential current and future exposure (via VI or direct volatilization from groundwater) to 1,1-DCA in indoor air at a concentration that could pose an unacceptable risk to residents.

These RAOs are in addition to the original RAO developed for the Site: prevent human ingestion, dermal contact and inhalation of contaminated soils contributing to unacceptable risk at the Site.

Remediation Action Levels

Remediation action levels are risk-based or Applicable or Relevant and Appropriate Requirement (ARAR)-based chemical-specific concentrations that act as quantitative goals to achieve the RAOs. When identifying remediation action levels, the following are often considered in parallel:

- Risk-based concentrations corresponding to target excess lifetime cancer risk (ELCR) levels between 10^{-4} and 10^{-6}; and noncancer target Hazard Index (HI) values of 1 and 0.1.
- Background (upgradient) concentrations identified based on the data collected during the RI or from other relevant background studies.
- Chemical-specific ARARs, such as groundwater quality standards, if groundwater is being evaluated.

The risk-based remediation action levels for protection of human health were developed for indoor air since the HHRA concluded that indoor air is the current or future exposure medium that potentially poses an unacceptable risk due to impact by COCs in soil vapor and groundwater. The remediation action levels for the Site are based on an ELCR of 10^{-5} (1,1-DCA) and an HI of 1 (Acrolein) and are summarized for each constituent and medium as follows:

Proposed Remediation Action Levels in Indoor Air[a]

Scenario/Rationale for COC	Exposure Area	Acrolein[b]	1,1-DCA[b]	Basis
Residential, HI = 46	APC property	0.021 µg/m^3	NA	Residential, HI=1
Industrial Worker, HI =11	APC property	0.088 µg/m^3	NA	Industrial, HI=1
Residential ELCR = $5x10^{-4}$	RP07	NA	18 µg/m^3	Residential, ELCR=10^{-5}

Notes:

[a] The COCs were selected based on their exceedance of a 10^{-4} cumulative ELCR or a target-organ HI greater than 1.
[b] COC = chemical of concern (identified in the Final HHRA [CH2M 2020]).
Indoor Air remediation action levels are for protection of residents and industrial workers for the inhalation exposure route as presented in the November 2020 EPA Regional Screening Level Tables (EPA 2020).
ELCR = excess lifetime cancer risk
µg/m^3 = micrograms per cubic meter
1,1-DCA = 1,1-dichloroethane
HI = hazard index
NA = not applicable (not a COC)

H. Description of Alternatives

This section provides a narrative summary of each remedial alternative retained following screening and evaluated in the detailed analysis section of the FS Report. These alternatives were developed by combining response actions and technologies to address the estimated exposure risks to human health and the environment. The alternatives were also developed, to the extent practical, to represent a range of effectiveness, duration of time required to achieve the RAO, and cost to implement.

The descriptions of each remedial alternative are conceptual and are used for costing purposes. The specific design details and costs for the selected remedy will be re-evaluated during the remedial design. The costs are intended to be within the target accuracy of -30 to +50% of the actual cost. All present worth costs associated with O&M and periodic expenditures are based on a 7% discount rate over 30 years.

The remedial action alternatives for the APC property and RP-07 are presented below. They are numbered to correspond with the FS.

APC Property Alternatives

Alternative APC-1: No Further Action

The No Action alternative is required to be evaluated under the NCP as a baseline against which all other alternatives are compared. Under this alternative, no remedial actions would take place. There are no costs associated with Alternative 1.

Alternative APC-2: Institutional Controls

Deed restrictions have been in place for the APC property since 1997. The deed restrictions were originally implemented when the APC building was present. However, the APC building burned down in 2010, so there is no building currently on the property. As part of Alternative APC-2, the deed restrictions would be updated to require vapor mitigation if a building is constructed (for industrial, commercial, or residential use) at the APC property in the future.

No monitoring would be performed as part of this Alternative; however, EPA or the state may elect to monitor any new construction to verify the efficacy of installed vapor intrusion mitigation measures. Because hazardous

substances would remain on-site above levels that allow unrestricted use and unlimited exposures of the property, a review of the protectiveness of this remedy would continue to be required every five years and would include an evaluation of the performance of ICs.

The estimated timeframe to implement Alternative APC-2 is one year. The estimated capital cost associated with Alternative APC-2 is $29,000 and the annual O&M cost is $0. The total present worth cost of Alternative APC-2 is $29,000.

RP07 Alternatives

Alternative RP07-1: No Action

The No Action alternative is required to be evaluated under the NCP as a baseline against which all other alternatives are compared. Under this alternative, no remedial actions would take place. Alternative RP07-1 does not include any remedial action for the soil vapor or groundwater, it does not include monitoring, institutional controls, or five-year reviews. There are no costs associated with Alternative RP07-1.

Alternative RP07-2: Sump Cover with Passive Ventilation, Sealing, and Institutional Controls

The objectives of Alternative RP07-2 are to disconnect the VI pathway between the groundwater and indoor environment and to mitigate exposure to current (and potential future) receptors. Alternative RP07-2 consists of sealing preferential vapor entry points, if any, and includes a sump cover with passive ventilation to reduce unacceptable risk to occupants of the buildings. The alternative includes an option for active ventilation, if required, where a powered radon-type mitigation fan would be added inline to the ventilation piping. Five-year reviews would continue to be performed and would reevaluate the VI pathway, including potential sources to indoor air (that is, COCs in groundwater), and notify property owners of potential risks.

The estimated timeframe for construction completion of the remedial action components is one year and the timeframe to remedial completion is 30 years. Timeframe to remedial completion is tentative and will be refined in the Final ROD Amendment, which will address the sources of vapor intrusion. The estimated capital cost associated with Alternative RP07-2 is $88,000 and the annual O&M cost is $1,200. The total present worth cost of Alternative 2 is $103,000. Total costs for RP07-2 differ slightly from those presented in the Proposed Plan. The costs presented here have been updated per EPA guidance (EPA, 2000) to include a 7% discount rate. The following subsections describe the main remedial components and implementation assumptions of Alternative RP07-2. More detailed information can be found in the FS.

Institutional Controls

ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination and/or protect the integrity of a response action. ICs typically are designed to work by limiting land and/or resource use or by providing information that helps modify or guide human behavior at a site. A restrictive covenant would be the recommended IC for RP07 per Section 324.20121 in the Michigan Natural Resources and Environmental Protection Act, 451 Public Act. This type of IC would restrict land use, building use, or activities, to protect human health but allow for the property owner to sell and/or reuse the contaminated property as long as the use is consistent with the restrictions or controls in the restrictive covenant. The restrictive covenant would also define when evaluation of the VI pathway is required and when VI mitigation would be required for newly constructed buildings and/or structures in the areas where soil vapor presents a risk to receptors.

During each five-year review, the ICs would be revisited to determine effectiveness and identify the need for revisions. ICs would follow guidance provided in *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites* (EPA 2012) and Section 8.6 (Use of Institutional Controls) in *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (EPA 2015).

Inspections

Annual inspections would be performed to confirm that the sump cover is still sealed to the floor, wiring/discharge lines are properly sealed, the sump cover is not cracked, and all penetrations into the sump cover are also sealed. The passive ventilation system would be inspected to confirm that the vent system is still connected, there are no cracks/leaks in the exterior polyvinyl chloride (PVC) vent pipe, and that the passive fan is still operational and spinning adequately. Inspections will also include verification of compliance with ICs.

Five-Year Reviews

The NCP requires review of the protectiveness of a CERCLA remedial action every five years (five-year reviews) if hazardous substances with the potential to cause unacceptable risk to human health and the environment remain at the Site. Five-year reviews would be needed for this Alternative.

Alternative RP07-3: Passively Vented Aerated Floor System, Sump Cover with Passive Ventilation, and Institutional Controls

The objectives of Alternative RP07-3 are to disconnect the VI pathway between the groundwater and indoor environment and to mitigate exposure of current (and potential future) receptors to unacceptable risk. Alternative RP07-3 consists of sealing preferential vapor entry points, if any, and includes an aerated floor system with passive ventilation to reduce unacceptable risk to occupants of the building.

The estimated timeframe for construction completion of the remedial action components is one year and the timeframe to remedial completion is 30 years. The estimated capital cost associated with Alternative RP07-3 is $135,000 and the annual O&M cost is $1,200. The total present worth cost of Alternative 3 is $150,000. Total costs for RP07-3 differ slightly from those presented in the Proposed Plan. The costs presented here have been updated per EPA guidance (EPA, 2000) to include a 7% discount rate.

The following subsections describe the main remedial components and implementation assumptions of Alternative RP07-3. More detailed information can be found in the FS.

Sump Cover and Passive Ventilation

Before the installation of the aerated floor system, a commercially available rigid sump cover (Figure 5) would be installed over the sump opening to completely isolate the water-containing portion of the sump from indoor air. The details of the sump cover and passive ventilation are provided as for Alternative RP07-2.

Passively Vented Aerated Floor System

Concrete forms (Figure 6) would be placed throughout the basement, creating the base of the aerated floor. PVC pipe would be placed through the concrete forms at a central location in the floor; this pipe would serve as the passive vent pipe through which subfloor vapors are collected and ultimately discharged to the exterior of the structure. The PVC pipe would be routed out of the basement and up the side of the building exterior to above the roofline, where it would terminate and be fitted with a passive, wind-driven turbine. The wind-driven turbine would facilitate the collection of subslab vapors and removal to the outdoors. Concrete would then be poured into the forms, creating a single concrete slab. The perimeter of the new floor slab and any sawcut joints would be sealed using polyurethane caulking so that the void spaces in the aerated floor are isolated from indoor air. If needed due to sustained indoor air COC concentrations, this system can be converted to active ventilation, essentially becoming a subslab depressurization system beneath the new aerated concrete floor. One round of sampling would be performed as part of the system startup to confirm that the sump cover and ventilation system is working properly, and no potential receptors are at risk from 1,1-DCA concentrations in indoor air. A more detailed description of the vented aerated floor system can be found in the FS.

Institutional Controls

ICs would be implemented as described for Alternative RP07-2.

Inspections
Annual inspection would be performed as previously described for Alternative RP07-2. In addition, the passive-vented aerated floor system would also be inspected for damage, cracks, or holes and any owner- or occupant-instigated changes that may affect the operation of the system. Inspections will also include verification of compliance with ICs.

Five-Year Reviews
Five-year reviews would be implemented as described for Alternative RP07-2.

I. Comparative Analysis of Alternatives

Section 121(b)(1) of CERCLA presents several factors that, at a minimum, EPA is required to consider in its assessment of remedial alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the remedial alternatives for the APC and RP-07 properties using the nine evaluation criteria in order to select a remedy. The comparative analysis of alternatives was presented in Section 5.0 of the FS. The following is a summary of the comparison of each alternative's strength and weakness with respect to the nine evaluation criteria. These criteria are summarized as follows:

Threshold Criteria

The two threshold criteria described below must be met in order for the alternatives to be eligible for selection in accordance with the NCP.

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with applicable or relevant and appropriate requirements** addresses whether or not a remedy will meet all Federal environmental and more stringent State environmental and facility siting standards, requirements, criteria, or limitations, unless a waiver is invoked.

Primary Balancing Criteria

The following five criteria are utilized to compare and evaluate the elements of one alternative to another that meet the threshold criteria:

3. **Long-term effectiveness and permanence** addresses the criteria that are utilized to assess alternatives for the long-term effectiveness and permanence they afford, along with the degree of certainty that they will prove successful.

4. **Reduction of toxicity, mobility, or volume through treatment** addresses the degree to which alternatives employ treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site.

5. **Short term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

6. **Implementability** addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. **Cost** includes estimated capital and O&M costs, as well as present-worth costs.

Modifying Criteria

The modifying two modifying criteria are used as the final evaluation of remedial alternatives, generally after EPA has received public comment on the RI/FS and Proposed Plan:

8. **State acceptance** addresses the State's position and key concerns related to the preferred alternative and other alternatives described in the Proposed Plan and RI/FS, and the State's comments on ARARs or the proposed use of waivers.

9. **Community acceptance** addresses the public's general response to the alternatives described in the Proposed Plan and RI/FS.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against the nine criteria, was conducted.

APC Property

1. Overall Protection of Human Health and the Environment

The following RAO is proposed to address human health risk at the APC property:

- Protect human health at the APC property and surrounding properties by preventing potential future exposure (via VI or direct volatilization from groundwater) to acrolein or other Site-related VOCs in indoor air at concentrations that could pose an unacceptable risk to human health.

Alternative APC-1 (No Action) would not be protective because there would be no remediation of soil vapor, and exposures to future receptors would continue to be a risk. Alternative APC-2 would be protective of human health because institutional controls would prevent exposure of acrolein to future receptors. APC-2 would also address potential future VI exposures to other Site-related VOCs which could be detected in the future.

2. Compliance with ARARs

In accordance with the NCP (40 CFR 300.430(f)(l)(ii)(C)(l)), interim actions such as this are not required to comply with ARARs as long as the final remedial action at the Site will attain them. There were no federal and state requirements identified that are applicable or relevant and appropriate to the limited scope of this interim action.

3. Long-Term Effectiveness and Permanence

Under Alternative APC-1, no action would be taken to address risks associated with potential future use of the property. Alternative APC-2 would address potential future exposures by implementation of institutional controls that require the incorporation of vapor mitigation measures as part of building design. Additionally, if a building were placed on the APC property, EPA may choose to monitor to verify that COC concentrations in indoor air do not exceed target levels.

4. Reduction of Toxicology, Mobility, and/or Volume Through Treatment

No treatment to reduce toxicity, mobility, or volume of Site contaminants would be used in either Alternative.

5. Short-Term Effectiveness

There are no short-term risks associated with either of the alternatives because no active remedial action would be taken and no construction would be performed. Execution of the ICs under APC-2 would require any new construction to incorporate mitigation measures into their design.

6. Implementability

Alternative APC-1 and APC-2 would require no construction or treatment. ICs associated with APC-2 are expected to be readily implementable.

7. Cost

Alternative APC-2 has a higher cost than APC-1 (no cost). APC-2 has capital costs of $29,000 with no periodic costs, therefore the total present value cost is $29,000. These costs were developed as American Association of Cost Engineering (AACE) International Class IV cost estimates that provide accuracy of +50 percent to -30 percent and were prepared using EPA Guidance (EPA 2002). The present worth values were calculated using a discount rate of 7 percent for a timeframe of 30 years, based on *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (2000).

8. Support Agency Acceptance

As the state support agency, EGLE concurs with the selected remedy APC-1. EGLE's letter of concurrence is provided in Appendix A.

9. Community Acceptance

EPA evaluated the community's acceptance of the Preferred Alternative at the end of the public comment period, which ran from November 15, 2021 to December 22, 2021. EPA received no comments on the preferred alternative for the APC property that was presented in the Proposed Plan for this Interim ROD Amendment.

RP-07 Property

1. Overall Protection of Human Health and the Environment

The following RAO is proposed to address human health risk at RP07:

- Protect human health by preventing potential current and future exposure (via VI or direct volatilization from groundwater) to 1,1-DCA in indoor air at a concentration that could pose an unacceptable risk to human health for residents.

Alternative RP07-1 (No Action) would not be protective because exposures to current and future receptors would continue. Alternatives RP07-2 and RP07-3 would be protective of human health because mitigation systems for direct volatilization of groundwater would prevent exposure of 1,1-DCA to current and future receptors. RP07-2 and RP07-3 would also address potential future VI exposures to other Site-related VOCs which could be detected in the future.

2. Compliance with ARARs

In accordance with the NCP (40 CFR 300.430(f)(l)(ii)(C)(l)), interim actions such as this are not required to comply with ARARs as long as the final remedial action at the Site will attain them. There were no federal and state requirements identified that are applicable or relevant and appropriate to the limited scope of this interim action.

3. Long-Term Effectiveness and Permanence

The residual risk of Alternative RP07-1 (No Action) would remain unchanged. Alternatives RP07-2 and RP07-3 would address exposures by mitigating the movement of contaminated vapors into the home and by applying institutional controls to require the property to maintain vapor mitigation as needed into the future. RP07-3 would provide greater long-term effectiveness and permanence than Alternative RP07-2 because the aerated floor would provide an additional layer of protection to receptors from direct volatilization of groundwater in direct contact with the basement floor slab. Periodic system inspections and five-year reviews would be required to ensure that the systems continue to function properly.

4. Reduction of Toxicology, Mobility, and/or Volume Through Treatment

No treatment to reduce toxicity, mobility, or volume of Site contaminants would be used in any of the Alternatives.

5. Short-Term Effectiveness

Alternative RP07-01 does not present any short-term risks to Site workers or the environment because it does not include active remediation work. Alternatives RP07-02 and RP07-3 are both short-term protective because the time to install the vapor intrusion mitigation is a matter of weeks. Exposure to direct volatilization of groundwater to indoor air during the construction of RP07-2 or RP07-3 would be controlled through best management practices.

6. Implementability

Alternative RP07-1 would not require construction or treatment and would be the easiest to implement. Alternative RP07-2 would only require the installation of the sump cover and ventilation system with materials that are readily available. Alternative RP07-3 would require the installation of the same sump system and an aerated floor system, which is more difficult to implement than Alternative RP07-2.

7. Cost

Alternative RP07-1 has no cost. Alternative RP07-3 ($150,000) has a higher total present value cost than RP07-2 ($103,000) by $47,000. Both alternatives have the same annual periodic costs of $1,200. Both RP07-02 and RP07-03 include sump cover with passive ventilation, sealing, monitoring, and institutional controls. The difference in capital costs ($47,000) between RP07-2 ($88,000) and RP07-3 ($135,000) is primarily to implement the passively vented aerated floor system that is part of RP07-3 and that raises the level of protection by providing a barrier from potential vapor intrusion through the floor.

8. Support Agency Acceptance

As the state support agency, EGLE concurs with the selected remedy RP07-3. EGLE's letter of concurrence is provided in Appendix A.

9. Community Acceptance

EPA evaluated the community's acceptance of the Preferred Alternative at the end of the public comment period, which ran from November 15, 2021 to December 22, 2021. EPA received no comments on the preferred alternative for the RP-07 Property that was presented in the Proposed Plan for this Interim ROD Amendment.

J. Principal Threat Waste

The NCP at 40 C.F.R. Section 300.430(a)(l)(iii) states that EPA expects to use "treatment to address the principal

threats posed by a site, wherever practicable" and "engineering controls, such as containment, for waste that poses a relatively low long-term threat" to achieve protection of human health and the environment. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or would pose significant risks to human health or the environment should exposure occur. Low-level threat wastes are source materials that generally can be reliably contained and that would present only a low risk in the event of exposure.

The concept of principal threat and low-level threat wastes is applied on a site-specific basis when characterizing source material. Source material is defined as material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, air, or acts as a source for direct exposure.

Although EPA has not established a threshold level of toxicity for identifying a principal threat waste, generally where toxicity and mobility of source material combine to pose a potential risk of 10^{-3} or greater, the source material is considered to be a "principal threat waste."

Principal threat waste was not identified in the 1993 ROD or this Interim ROD Amendment.

K. Selected Remedies

EPA selects Alternative APC-2 for the APC property and Alternative RP07-3 at RP07. Based on the information available now, EPA believes the selected alternatives meet the threshold criteria and provides the best balance of tradeoffs among the alternatives evaluated with respect to the balancing and modifying criteria.

Rationale for Selected Remedies

Alternatives APC-2 and RP07-3 are EPA's selected remedies for the Site. APC-2 will update and continue implementing the current deed restrictions on the APC property. The update will include a requirement for vapor mitigation if a future building is constructed (for industrial or residential use) at the APC property. RP07-3 will disconnect the VI pathway between the groundwater and indoor environment and mitigate exposure of current and potential future receptors to unacceptable risk. Alternative RP07-3 consists of sealing preferential vapor entry points, if any, and includes an aerated floor system with passive ventilation to reduce unacceptable risk to occupants of the building.

This combination of alternatives is recommended because the findings of the comparative analysis indicate that both Alternative APC-2 and Alternative RP07-3 implemented in concert address unacceptable risk across the Site, at both the APC property and at RP07. They both each meet the two threshold criteria and four out of five balancing criteria. They both achieve RAOs, are protective of human health and the environment and capable of complying with ARARs. Specifically, the selected alternatives protect human health at the APC property by preventing potential future exposure (via VI or direct volatilization from groundwater) to acrolein, and at RP07 by preventing potential current and future exposure (via VI or direct volatilization from groundwater) to 1,1-DCA, in indoor air at a concentration that could pose an unacceptable risk to human health.

Summary of costs and timeframes for the Preferred Alternative [APC-2 and RP07-3]	
Capital Cost	$164,000
Annual O&M Cost	$1,200
Present Worth Cost	$179,000
Complete Construction	1 years
Reach RAOs	30 years

Changes in the cost elements may occur as a result of new information and data collected during remedial design. Major changes may be documented in the form of a memorandum in the Administrative Record, an ESD, or a ROD amendment.

While remedy RP07-3 has been selected as the best course for action at RP07, RP07-2 is also protective and meets threshold and balancing criteria. If for any reason RP07-3 cannot be implemented, RP07-2 is an acceptable alternative for RP07, and would be formalized as the new selection through an Explanation of Significant Differences. Additionally, should Site-related vapor intrusion be found at other residences near the APC property and/or should EPA elect to proactively mitigate residences in lieu of repeated on-going sampling, EPA could implement RP07-2, RP07-3, or other mitigation actions including sealing cracks and gaps in the slab, and installing sub-slab depressurization systems at the property, depending on the specific conditions of the structure and the extent of groundwater contamination in the immediate area.

While the vapor intrusion mitigation system and implementation of institutional controls will address risk to residents, this will not end the EPA's involvement at the Site. EPA will work with EGLE to determine what, if anything, is necessary to address remaining Site contamination in soil and groundwater.

L. Statutory Determinations

The remedies selected for implementation at the Adam's Plating Superfund Site are consistent with CERCLA and, to the extent practicable, the NCP. The selected remedies are protective of human health and the environment, will comply will ARARs, and are cost-effective. In addition, the selected remedies utilize permanent solutions and alternate treatment technologies or resource recovery technologies to the maximum extent practicable. The selected remedies do not satisfy the statutory preference for treatment that permanently and significantly reduces the mobility, toxicity, or volume of hazardous substances as a principal element..

Protection of Human Health and the Environment

The selected remedies will adequately protect human health and the environment by reducing exposures to human receptors through vapor mitigation and institutional controls. The vapor mitigation remedy for RP07 will protect human health by reducing exposure to VOCs in indoor air. ICs at RP07 and the APC property will ensure that any future construction on the properties should incorporate needed vapor mitigation.

Compliance with ARARs

This interim action is limited in scope and based on risk-based standards calculated by the vapor intrusion evaluation and human health risk assessment for the Site. There are no applicable or relevant and appropriate environmental statutory or regulatory standards for migration of soil gases through building foundations into indoor air.

Cost-Effectiveness

The selected remedies are cost-effective because the remedies costs are proportional to their overall effectiveness (see 40 C.F.R. 300.430(f)(1)(ii)(D)). This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and comply with all federal and any more stringent ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria—long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness, in combination. The overall effectiveness of each alternative then was compared to the alternative's cost to determine cost-effectiveness. The relationship of the overall effectiveness of these remedial alternatives was determined to be proportional to their costs and hence represents a reasonable value for the money to be spent.

Permanent Solutions

The selected remedies utilize permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable. Neither the APC or RP07 selected amended remedy includes a treatment component, as no cost-effective treatment of the site hazardous substances is available to address the risks presented. EPA has determined that the selected amended remedies for the Adam's Plating Site provide the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and state and community acceptance.

Five-Year Reviews

These remedies will leave hazardous substances, pollutants or contaminants in place above levels that allow unrestricted use and unlimited exposure. Therefore, as required by law, EPA will continue to review the Site remedies to ensure that the remedial action continues to protect human health and the environment. These reviews will be conducted at least once every five years as part of the Agency's five-year reviews for the Site. The last five-year review (FYR) was completed on June 15, 2020. EPA will complete the next FYR by June 15, 2025.

M. Documentation of Significant Changes

EPA presented the Proposed Plan for the Site to the public for review and comment on November 15, 2021. The Plan described the alternatives considered and EPA's preferred alternatives for the selected remedies.

As noted in *Section H. Description of Alternatives*, an updated discount rate was used to calculate present value cost estimates for each remedy per EPA guidance (EPA, 2000). This differs from the Proposed Plan but does not constitute a significant change to the remedy.

EPA reviewed all hand-delivered, written, and verbal comments submitted during the public comment period, which began on November 15, 2021 and ended on December 22, 2021. Based upon a review of the comments, EPA determined that no significant changes to the remedies, as originally identified in the November 2021 Proposed Plan, were necessary.

PART 3: RESPONSIVENESS SUMMARY

In accordance with sections 113(k)(2)(B) and 117 of CERCLA and the NCP, EPA held a public comment period to allow interested members of the public to comment on the proposed ROD Amendment for the Adam's Plating Site. A public comment period was held from November 15, 2021 to December 22, 2021.

This Responsiveness Summary complies with Section 113(k)(2(B)(iv) of CERCLA and provides a summary of the comments received during the comment period and EPA's response to those comments. The only set of comments EPA received on the Proposed Plan were submitted by Arcadis on behalf of RACER Trust, associated with the General Motors plants to the east and northeast of the APC property. The comments provided groundwater data for consideration when EPA is planning additional investigation. The Trust provided no comments on the proposed remedy. As a result, EPA made no substantive changes to the proposed remedy.

A. Stakeholder Comments and Lead Agency Responses

In accordance with sections 113(k)(2)(B) of CERCLA and 117 the NCP, EPA published the notice of availability of the Proposed Plan and Administrative Record in the Lansing State Journal on November 22, 2021, and released the Proposed Plan to the public by posting a publicly accessible link on EPA's website. In addition, EPA provided the Proposed Plan to the Lansing Public Library located at 401 S. Capitol, Lansing, MI 48933, and

at the Lansing Township Hall located at 3209 West Michigan, Lansing, MI 48917.

From November 15, 2021 through December 22, 2021, EPA held a public comment period to accept public comments on the alternatives presented in the Proposed Plan, and on any other documents previously released to the public. On November 30, 2021, EPA held a public informational meeting, immediately followed by a Public Hearing, to describe EPA's Proposed Plan and to accept any oral or written comments. The meeting was held virtually via Zoom.

No comments were received during the Public Hearing. The full text of the written comments received during the comment period has been included in the Administrative Record for the Site.

COMMENT 1: *RACER Trust provided data suggesting that PFAS are not fully addressed at the APC Site.*
EPA RESPONSE 1: EPA thanks the Trust for the data and will take this into consideration during EPA's evaluation of next steps for addressing groundwater contamination.

COMMENT 2: *RACER Trust provided data that suggests APC may be contributing 1,4-dioxane to the weathered bedrock zone.*
EPA RESPONSE 2: EPA thanks the Trust for the data and will take this into consideration during EPA's evaluation of next steps for addressing groundwater contamination.

B. Technical and Legal Issues

No technical or legal issues have been identified.

APPENDICES

Appendix A: State Letter of Concurrence
Appendix B: Tables
Appendix C: Figures
Appendix D: References
Appendix E: Administrative Record Index

Appendix A: Michigan Department of Environment, Great Lakes and Energy Letter of Concurrence

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING

LIESL EICHLER CLARK
DIRECTOR

February 7, 2022

VIA E-MAIL

Mr. Douglas E. Ballotti, Director
Superfund & Emergency Management Division
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (S-6J)
Chicago, Illinois 60604-3507

Dear Mr. Ballotti:

SUBJECT: Concurrence with the Proposed Remedy in the Interim Record of Decision (ROD) Amendment; Adams Plating Superfund Site; Lansing, Michigan

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has received a copy of the Interim ROD Amendment for the Adams Plating Superfund Site. The United States Environmental Protection Agency (USEPA) has requested concurrence from the State of Michigan with the Interim ROD Amendment for this site.

EGLE concurs with the remedial actions that are proposed in the Interim ROD Amendment for the Adams Plating Superfund Site.

If you need further information or assistance, please contact Mr. Mike Neller, Director, Remediation and Redevelopment Division, at 517-512-5859; NellerM@Michigan.gov; or EGLE, P.O. Box 30426, Lansing, Michigan 48909-7926; or you may contact me.

Sincerely,

Liesl Eichler Clark
Director
517-284-6700

cc: Ms. Stephanie Ross, USEPA, Region 5
Mr. Aaron B. Keatley, Chief Deputy Director, EGLE
Mr. Mike Neller, EGLE
Mr. David A. Kline, EGLE
Mr. Robert L. Franks, EGLE
Ms. Jessica Ferris, EGLE

Appendix B: Tables

Table 1. Summary of Analytical Results for Analytes Exceeding Screening Levels (2013 - 2017)

Adams Plating Superfund Site

Analyte		Summary of Analytical Results							
		GW	Sump	Soil	SV	SSSV	CS	IA	OA
Dissolved Metals									
Aluminum	7429-90-5	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Arsenic	7440-38-2	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Chromium	7440-47-3	<SL	**>SL**	NR	NR	NR	NR	NR	NR
Cobalt	7440-48-4	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Iron	7439-89-6	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Manganese	7439-96-5	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Nickel	7440-02-0	**>SL**	**>SL**	NR	NR	NR	NR	NR	NR
Vanadium	7440-62-2	**>SL**	<SL	NR	NR	NR	NR	NR	NR
Metals									
Aluminum	7429-90-5	**>SL**	**>SL**	**>SL**	NR	NR	NR	NR	NR
Arsenic	7440-38-2	**>SL**	<SL	**>SL**	NR	NR	NR	NR	NR
Boron	7440-42-8	**>SL**	NR	NR	NR	NR	NR	NR	NR
Chromium	7440-47-3	<SL	**>SL**	**>SL**	NR	NR	NR	NR	NR
Cobalt	7440-48-4	**>SL**	<SL	**>SL**	NR	NR	NR	NR	NR
Cyanide	57-12-5	<SL	ND	**>SL**	NR	NR	NR	NR	NR
Hexavalent Chromium	18540-29-9	<SL	**>SL**	**>SL**	NR	NR	NR	NR	NR
Iron	7439-89-6	**>SL**	**>SL**	**>SL**	NR	NR	NR	NR	NR
Lead	7439-92-1	**>SL**	<SL	ND	NR	NR	NR	NR	NR
Manganese	7439-96-5	**>SL**	<SL	**>SL**	NR	NR	NR	NR	NR
Nickel	7440-02-0	**>SL**	**>SL**	**>SL**	NR	NR	NR	NR	NR
Thallium	7440-28-0	<SL	ND	**>SL**	NR	NR	NR	NR	NR
Vanadium	7440-62-2	**>SL**	<SL	**>SL**	NR	NR	NR	NR	NR
Semivolatile Organic Compounds									
2-Methylnaphthalene	91-57-6	<SL	ND	**>SL**	ND	ND	ND	ND	ND
Benzo(a)anthracene	56-55-3	ND	ND	**>SL**	NR	NR	NR	NR	NR
Benzo(a)pyrene	50-32-8	ND	ND	**>SL**	NR	NR	NR	NR	NR
Benzo(b)fluoranthene	205-99-2	ND	ND	**>SL**	NR	NR	NR	NR	NR
Dibenzo(a,h)anthracene	53-70-3	ND	ND	**>SL**	NR	NR	NR	NR	NR
Hexachlorobutadiene	87-68-3	ND	ND	ND	ND	ND	ND	**>SL**	ND
Indeno(1,2,3-cd)pyrene	193-39-5	ND	ND	**>SL**	NR	NR	NR	NR	NR
Naphthalene	91-20-3	<SL	ND	**>SL**	ND	ND	ND	ND	ND
Volatile Organic Compounds									
1,1,2-Trichloroethane	79-00-5	<SL	ND	<SL	ND	ND	ND	**>SL**	detected
1,1-Dichloroethane	75-34-3	**>SL**	**>SL**	**>SL**	**>SL**	**>SL**	ND	<SL	ND
1,1-Dichloroethene	75-35-4	**>SL**	<SL	<SL	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	120-82-1	ND	ND	ND	<SL	**>SL**	ND	**>SL**	ND
1,2,4-Trimethylbenzene	95-63-6	ND	ND	**>SL**	<SL	<SL	ND	<SL	detected
1,2-Dichloroethane	107-06-2	<SL	ND	<SL	ND	**>SL**	ND	**>SL**	detected
1,2-Dichloropropane	78-87-5	ND	ND	<SL	<SL	ND	ND	ND	ND
1,3,5-Trimethylbenzene	108-67-8	ND	ND	<SL	ND	<SL	ND	**>SL**	detected
1,3-Butadiene	106-99-0	NR	NR	NR	**>SL**	ND	**>SL**	**>SL**	detected
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	ND	ND	**>SL**	ND
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	ND	ND	**>SL**	detected
1,4-Dioxane	123-91-1	**>SL**	ND	<SL	<SL	ND	ND	ND	ND
2-Hexanone	591-78-6	ND	ND	<SL	ND	ND	ND	**>SL**	detected
Acetonitrile	75-05-8	NR	NR	NR	NR	NR	<SL	**>SL**	ND
Acrolein	107-02-8	NR	NR	NR	**>SL**	ND	NR	**>SL**	detected
Benzene	71-43-2	<SL	ND	<SL	**>SL**	<SL	**>SL**	**>SL**	detected
Bromodichloromethane	75-27-4	<SL	ND	ND	ND	ND	ND	**>SL**	ND
Carbon tetrachloride	56-23-5	ND	ND	ND	ND	<SL	ND	**>SL**	detected
Chloroform	67-66-3	<SL	ND	<SL	<SL	**>SL**	ND	**>SL**	detected
cis-1,2-Dichloroethene	156-59-2	**>SL**	ND	<SL	<SL	ND	ND	ND	ND
Ethyl acetate	141-78-6	NR	NR	NR	ND	ND	ND	**>SL**	ND
Ethylbenzene	100-41-4	<SL	ND	<SL	<SL	<SL	ND	**>SL**	detected
Isopropyl Alcohol (Isopropanol)	67-63-0	NR	NR	NR	<SL	<SL	ND	**>SL**	detected
Tetrachloroethene	127-18-4	ND	ND	<SL	<SL	<SL	ND	**>SL**	detected
trans-1,3-Dichloropropene	10061-02-6	ND	ND	ND	ND	ND	ND	**>SL**	ND
trans-1,4-Dichloro-2-butene	110-57-6	ND	NR	**>SL**	NR	NR	NR	NR	NR
Trichloroethylene	79-01-6	**>SL**	ND	**>SL**	**>SL**	<SL	ND	**>SL**	detected
Xylene, o	95-47-6	<SL	ND	<SL	<SL	<SL	ND	**>SL**	detected
Perfluorinated Compounds									
PFOA+PFOS	335-67-1 & 1763-23-1	**>SL**	NS	NS	NS	NS	NS	NS	NS
PBFS	29420-49-3	**>SL**	NS	NS	NS	NS	NS	NS	NS

Notes:

Analytes in italics are not considered site-related contaminants of interest (COIs).

<SL = detected at concentrations below the screening level

>SL = detected at concentrations greater than the screening level

COI = contaminant of interest

GW = groundwater

IA = indoor air

NR = analyte not reported by laboratory

ND = analyte not detected within given media

NS = Analyte not sampled for

SL = screening level

SSSV = subslab soil vapor

Sump = water samples from sumps

SV = soil vapor

CS = crawl space

IA = indoor air

OA = outdoor air

TABLE 2.
Vapor Intrusion Multiple Lines of Evidence Evaluation
Adams Plating Superfund Site

Property ID	**RP01**		**RP02**		**RP03**				
Lines of Evidence	**Phase 2 March 2016**	**Phase 3 July 2016**	**Phase 2 March 2016**	**Phase 3 July 2016**	**Phase 2 March 2016**	**Phase 3 July 2016**	**EPA Removal Program March 2017**	**EPA Removal Program May 2017**	**MDEQ July 2017**
Comparison to Screening Levels[2]									
GW VOC concentrations > VISL within 100 ft of building?	**1,1-DCA[(1)]**		<VISL		<VISL				
Sump VOC concentrations > VISL	NA		< VISL	NS	NA				
SS IA target analyte concentrations > VISL?	NS		NS		NS				
CS IA target analyte concentrations > RSL?	NA		NA		NS	NS	NS	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**
IA (basement) target analyte concentrations >RSL?	**Acrolein, Benzene**		**Acrolein, Benzene**	**Acrolein, 1,3-Butadiene**	**1,3-Butadiene, Acrolein, Benzene**	**1,3-Butadiene, Acrolein, Benzene**	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**
IA (1st floor) target analyte concentrations > RSL?	**Acrolein, Benzene**		**Acrolein, Benzene**	**Acrolein, 1,3-Butadiene**	**1,3-Butadiene, Acrolein, Benzene & TCE**	**1,3-Butadiene, Acrolein, Benzene**	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**
Lines of Evidence Used to Evaluate IA Data									
Building located within 100 ft of exterior soil vapor sample location >VISL?	No soil vapor samples collected within 100 lateral feet of structure		No soil vapor samples collected within 100 lateral feet of structure		**1,3-Butadiene, Benzene**				
Soil vapor results within 100 ft indicate sufficient source strength for potential VI if preferential pathways (such as utility conduits) are present?	NA		NA		**Potentially**				
OA (sitewide) similar or greater than IA concentrations, indicating background VOCs?	**Acrolein and benzene outdoor concentration similar or slighly lower than IA basement concentrations**		**Benzene OA similar to basement IA**	**Benzene OA similar to basement IA**	**Benzene OA concentrations similar to IA; 1st floor concentrations higher than basement**	**Acrolein and benzene OA concentrations similar to IA**	**Benzene OA concentrations similar to IA; 1st floor concentrations higher than basement**	**Benzene OA concentrations similar to IA; 1st floor concentrations of benzene higher than basement and crawlspace**	**1st floor concentrations of 1,3-Butadiene, Acrolein and Benzene higher than basement and crawlspace**
Potential indoor VOC sources identified during building survey and/or HAPSITE investigation?	HAPSITE all NDs		HAPSITE all NDs		Yes (Building survey indicated potential solvent cleaners and petroleum product [i.e., fuels and motor oils]) sources including gun cleaning, smoking, snowblower in crawlspace, and automotive oils Low VOC detected with HAPSITE				
Building construction/conditions that could increase or decrease likelihood of VI?	Yes (frequent basement flooding)		Yes (old structure, floor cracks, sump pump)		Yes (old structure, floor cracks, foundation wall cracks, sump pump) Resident mentioned gun cleaning occurs within residence				
IA ≥ CS or SS concentration?	NA		NA; basement concentrations lower than 1st floor concentrations		--			**Benzene IA > CS**	**1,3-Butadiene, Benzene IA > CS**
Mismatched ratios between SS, CS, and IA concentrations for different indoor air target analytes?	NA		NA		--		**Yes** **1,3-Butadiene/Benzene SV ratio does not match the IA ratio.** **Benzene > 1,3-Butadiene in IA but 1,3-Butadiene > Benzene in SV**	--	
Discrepancy between sampling event results?	IA & OA concentrations slightly higher during Phase 3		**1,3-Butadiene > RSL during Phase 3 but not detected during Phase 2;** **Benzene > RSL during Phase 2 but not detected during Phase 3**		**TCE > Res. IA SL in Phase 2 and not Phase 3** **1,3-Butadiene & Benzene Phase 3 concentrations > Phase 2**		**1,3-Butadiene, Benzene IA concentrations higher during non-heating season**		
VI CSM Category									
Property likely currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future									
Property possibly currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future									
Property unlikely currently has complete VI pathway that is causing IA and/or CS > SLs, but has potential for this in the future					X				
Property unlikely currently has complete VI pathway causing IA and/or CS > SLs, and unlikely has potential for this in the future	X		X						
Current Scenario: Site-related COPCs	None		None		None				
Future Scenario: Site-related COPCs	None		None		**1,3-Butadiene, Benzene**				

TABLE 2.
Vapor Intrusion Multiple Lines of Evidence Evaluation
Adams Plating Superfund Site

Property ID	RP04		RP07				
Lines of Evidence	**Phase 2 March 2016**	**Phase 3 July 2016**	**Phase 1 November 2013**	**Phase 2 April 2016**	**Phase 3 July 2016**	**EPA Removal Program March 2017**	**EPA Removal Program May 2017**
Comparison to Screening Levels[2]							
GW VOC concentrations > VISL within 100 ft of building?	<VISL		**1,1-DCA, 1,2-DCA, TCE, VC**				
Sump VOC concentrations > VISL	< VISL		**1,1-DCA**				
SS IA target analyte concentrations > VISL?	NS		NS			**1,1-DCA, 1,2-DCA**	NS
CS IA target analyte concentrations > RSL?	NA		NA				
IA (basement) target analyte concentrations >RSL?	**Acrolein, Benzene**		**1,2-DCA, 1,3-Butadiene, Acrolein, & Benzene**			**1,3-Butadiene & Benzene**	**Benzene**
IA (1st floor) target analyte concentrations > RSL?	**Acrolein, Benzene**		**1,2-DCA, 1,3-Butadiene, Acrolein, & Benzene**				
Lines of Evidence Used to Evaluate IA Data							
Building located within 100 ft of exterior soil vapor sample location >VISL?	**Benzene & 1,3-Butadiene**		**Benzene, 1,1-DCA, & 1,3-Butadiene**				
Soil vapor results within 100 ft indicate sufficient source strength for potential VI if preferential pathways (such as utility conduits) are present?	**Potentially**		**Potentially**				
OA (sitewide) similar or greater than IA concentrations, indicating background VOCs?	**Benzene OA > IA**	**Benzene OA similar to IA**	NS	**OA Benzene & 1,2-DCA concentrations similar to IA concentrations**		No	
Potential indoor VOC sources identified during building survey and/or HAPSITE investigation?	Yes (Building survey indicated potential solvent cleaners) HAPSITE all NDs		Yes (solvents and cigarette smoke); HAPSITE all NDs				
Building construction/conditions that could increase or decrease likelihood of VI?	Yes (old structure, floor cracks, foundation wall cracks, sump pump)		Yes (old structure, floor cracks, sump pump)				
IA ≥ CS or SS concentration?	NA		NA			**1,3-Butadiene IA > SS**	NA
Mismatched ratios between SS, CS, and IA concentrations for different indoor air target analytes?	NA		NA			No	NA
Discrepancy between sampling event results?	No		No				
VI CSM Category							
Property likely currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future							
Property possibly currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future							
Property unlikely currently has complete VI pathway that is causing IA and/or CS > SLs, but has potential for this in the future	X		X				
Property unlikely currently has complete VI pathway causing IA and/or CS > SLs, and unlikely has potential for this in the future							
Current Scenario: Site-related COPCs	None		None				
Future Scenario: Site-related COPCs	**1,3-Butadiene, Benzene**		**1,1-DCA, 1,2-DCA, Benzene, 1,3-Butadiene, TCE, VC**				

TABLE 2.
Vapor Intrusion Multiple Lines of Evidence Evaluation
Adams Plating Superfund Site

Property ID	**RP08**					**CP09**
Lines of Evidence	**Phase 2 March 2016**	**Phase 3 July 2016**	**EPA Removal Program March 2017**	**EPA Removal Program May 2017**	**MDEQ July 2017**	**Phase 2 March 2016**
Comparison to Screening Levels[2]						
GW VOC concentrations > VISL within 100 ft of building?	**1,1-DCA & VC**					**1,1-DCA**
Sump VOC concentrations > VISL	--					--
SS IA target analyte concentrations > VISL?	NS					<VISLs
CS IA target analyte concentrations > RSL?	NA					NA
IA (basement) target analyte concentrations >RSL?	**1,3-Butadiene & Benzene**	**1,3-Butadiene, Acrolein, Benzene**	**1,2-DCA, 1,3-Butadiene, Benzene**	**1,2-DCA**	**1,2-DCA, 1,3-Butadiene, Benzene**	NS
IA (1st floor) target analyte concentrations > RSL?	**1,3-Butadiene, Acrolein, Benzene**	**1,3-Butadiene, Acrolein, Benzene**	**1,2-DCA, 1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**	**1,3-Butadiene, Benzene**	NS
Lines of Evidence Used to Evaluate IA Data						
Building located within 100 ft of exterior soil vapor sample location >VISL?	**1,1-DCA, 1,3-Butadiene, Benzene, Acrolein**					**1,3-Butadiene, Acrolein, Benzene**
Soil vapor results within 100 ft indicate sufficient source strength for potential VI if preferential pathways (such as utility conduits) are present?	**Potentially**					**Potentially**
OA (sitewide) similar or greater than IA concentrations, indicating background VOCs?	No					--
Potential indoor VOC sources identified during building survey and/or HAPSITE investigation?	Yes (Building survey indicated various chemicals stored in basement) Low PCE IA concentrations detected w/ HAPSITE					Yes
Building construction/conditions that could increase or decrease likelihood of VI?	Yes (old structure, floor cracks, foundation wall cracks, 2" hole in slab, sump pump)					Yes (floor cracks, floor drain)
IA ≥ CS or SS concentration?	NA					--
Mismatched ratios between SS, CS, and IA concentrations for different indoor air target analytes?	NA					--
Discrepancy between sampling event results?	1,2-DCA non-detected in Phase 2 and Phase 3.					--
VI CSM Category						
Property likely currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future						
Property possibly currently has complete VI pathway that is causing IA and/or CS > SLs, and has potential for this in the future						
Property unlikely currently has complete VI pathway that is causing IA and/or CS > SLs, but has potential for this in the future	X					X
Property unlikely currently has complete VI pathway causing IA and/or CS > SLs, and unlikely has potential for this in the future						
Current Scenario: Site-related COPCs	None					None
Future Scenario: Site-related COPCs	**1,1-DCA, 1,3-Butadiene, Benzene, Acrolein, VC**					**1,1-DCA, 1,3-Butadiene, Acrolein, Benzene**

TABLE 2.
Vapor Intrusion Multiple Lines of Evidence Evaluation
Adams Plating Superfund Site

Notes

(1) = There is no sump present at RP01. Sump sample is a sample of flooded basement water

(2) = Target analyte is any VOC detected in exterior soil gas or WBU1 groundwater above residential VISLs (acrolein, benzene, 1,3-butadiene, 1,1-DCA, 1,2-DCE, 1,2-dichloropropane, TCE, and VC) anywhere onsite

< = less than

> = greater than

≥ = greater than or equal to

µg/m^3 = microgram(s) per cubic meter

COPC = Contaminant of Potential Concern

CS = crawlspace air

DCA = Dichloroethane

IA = indoor air

Industrial = Industrial

NA = Not applicable or not available

ND = not detected

NS = Not sampled

OA = outdoor air

Res. = Residential

SL = Screening Level

SS = subslab soil vapor

SV = Soil vapor

TCA = Trichloroethane

TCE = trichloroethene

VI = vapor intrusion

VISL = Vapor Intrusion Screening Level

VOC = volatile organic compound

vs. = versus

Table 3. Summary of Chemicals of Potential Concern

Adams Plating Superfund Site

Property	Onsite Surface Soil	Onsite Total Soil	Offsite Surface Soil	Offsite Total Soil	Groundwater (VI)	Basement Flooded Water (D)	Basement Sump Water (D)	Basement Flooded Water (VI)	Basement Sump Water (VI)	Exterior Soil Vapor	Subslab Soil Vapor	Crawl Space Air	Indoor Air
APC Property	X	X								X			
CP05					X								
CP06										X			
CP09											None		
RP01						X		None					None
RP02					None		X		None				None
RP03			None	None						X		None	None
RP04					None		X		None				None
RP06										X			
RP07			X	X			X		X	X	X		None
RP08			X	X						X			None
RP10			X	X									

Notes:

X indicates COPCs are present for a given medium/property.

Blank cell indicates medium not sampled for given property.

D = dermal contact pathway

VI = vapor intrusion pathway

Appendix C: Figures

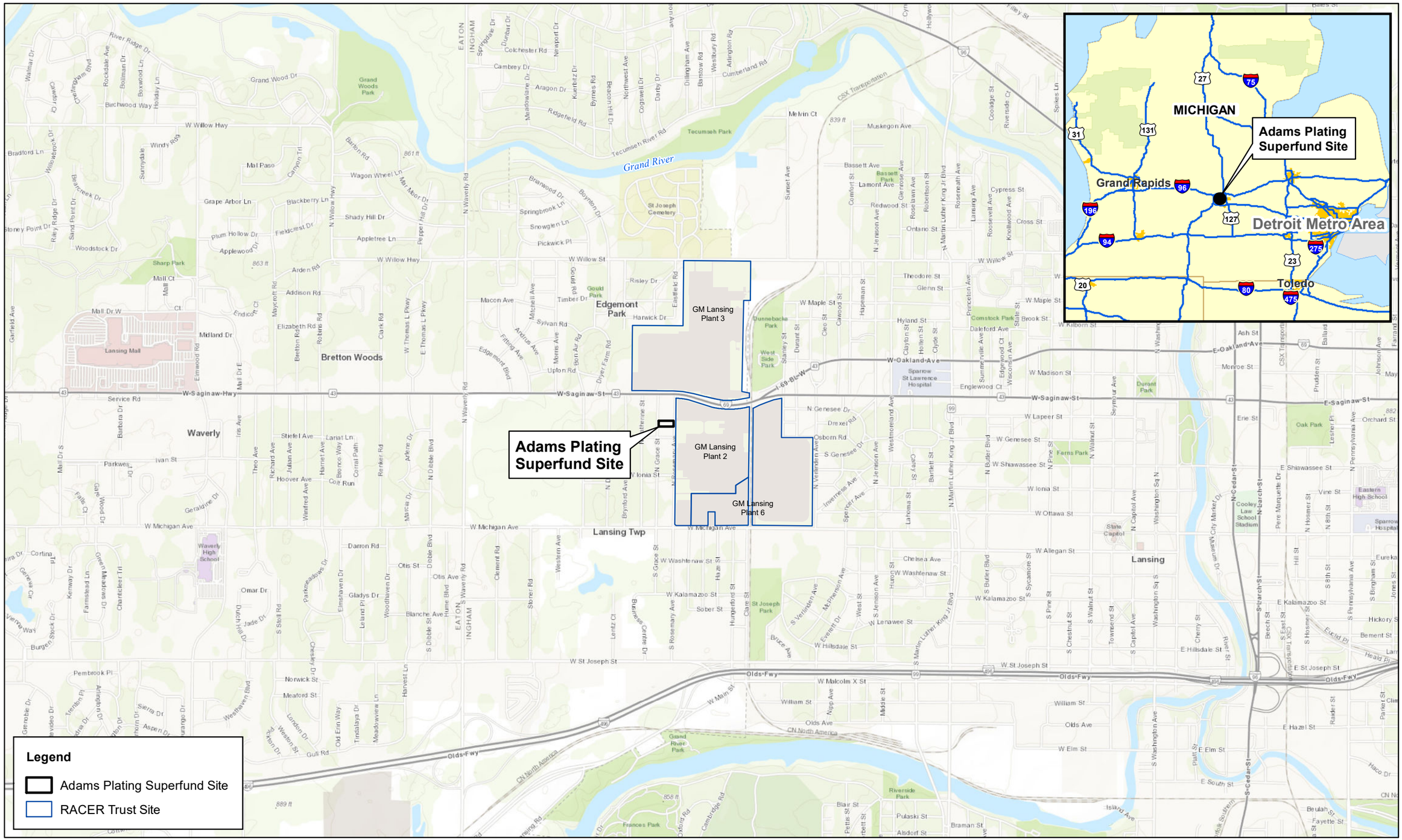

Figure 1
Site Location
Adams Plating Superfund Site
Lansing, Ingham Country, Michigan

ch2m:

R:\ENBG\00_PROJ\E\EPA\426963_ADAMSPLATING_RI_FS\MAPFILES\2018\FIG 2-1 SITE LOCATION.MXD AESPEJO 5/22/2018 2:39:58 PM

Figure 2
Aerial Map of the Site and Surrounding Properties
Adams Plating Superfund Site
Lansing, Ingahm Country, Michigan

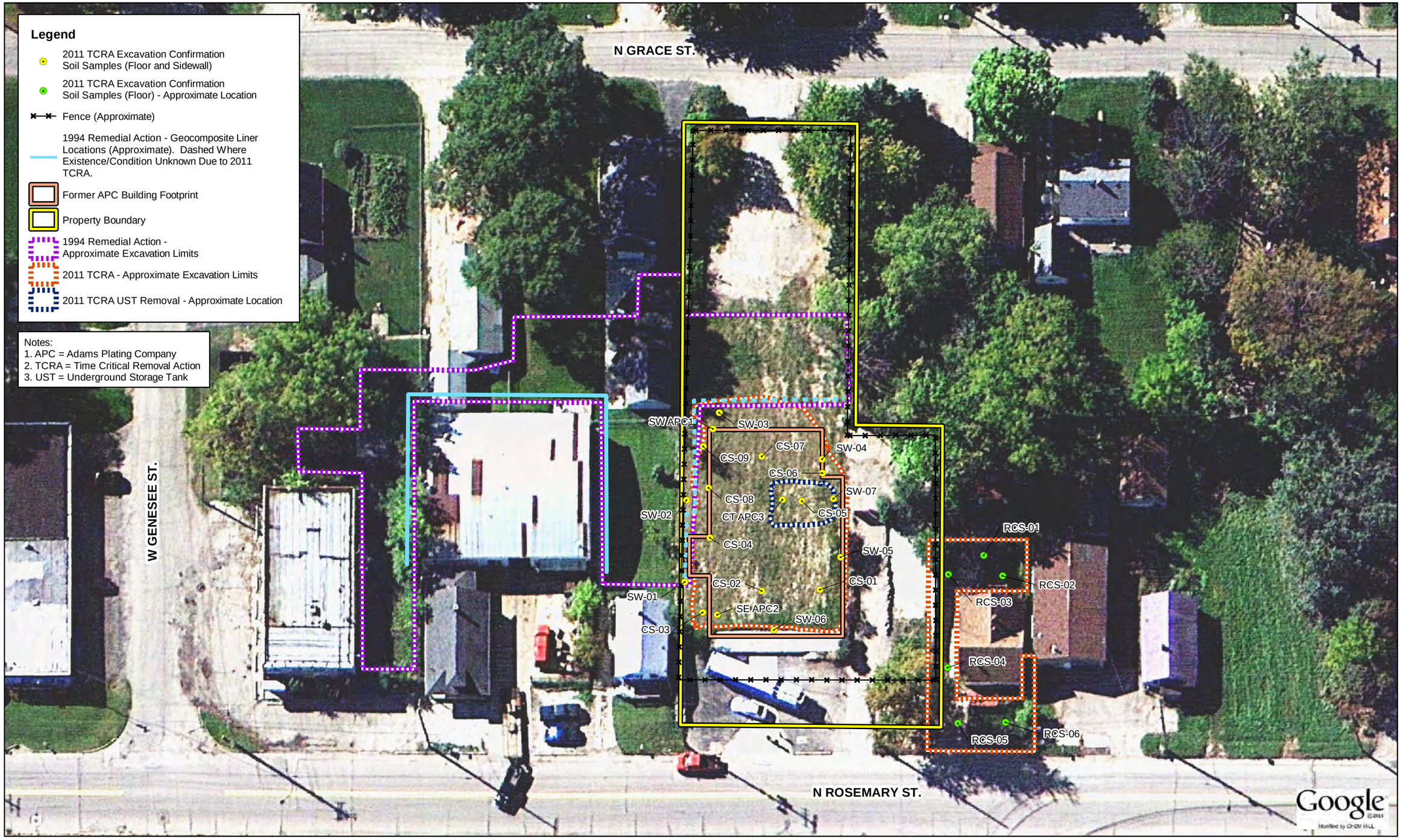

Figure 3
Previous Source Soil Actions Conducted at the Site
Adams Plating Superfund Site
Lansing, Ingham County, Michigan

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R:\ENBG\00_PROJ\E\EPA\426963_ADAMSPLATING_RI_FS\MAPFILES\2018\FIG 2-3 PREVIOUS SOURCE SOIL ACTIONS CONDUCTED AT THE SITE.MXD AESPEJO 5/24/2018 11:01:02 AM

N

0 45 90

Feet

Figure 4
Monitoring Well Locations
Adams Plating Superfund Site
Lansing, Ingham County, Michigan

ch2m:

R:\ENBG\00_PROJ\E\EPA\426963_ADAMSPLATING_RI_FS\MAPFILES\2018\FIG 3-1 MW AND GW GRAB LOCATIONS.MXD AESPEJO 11/8/2018 6:09:35 PM

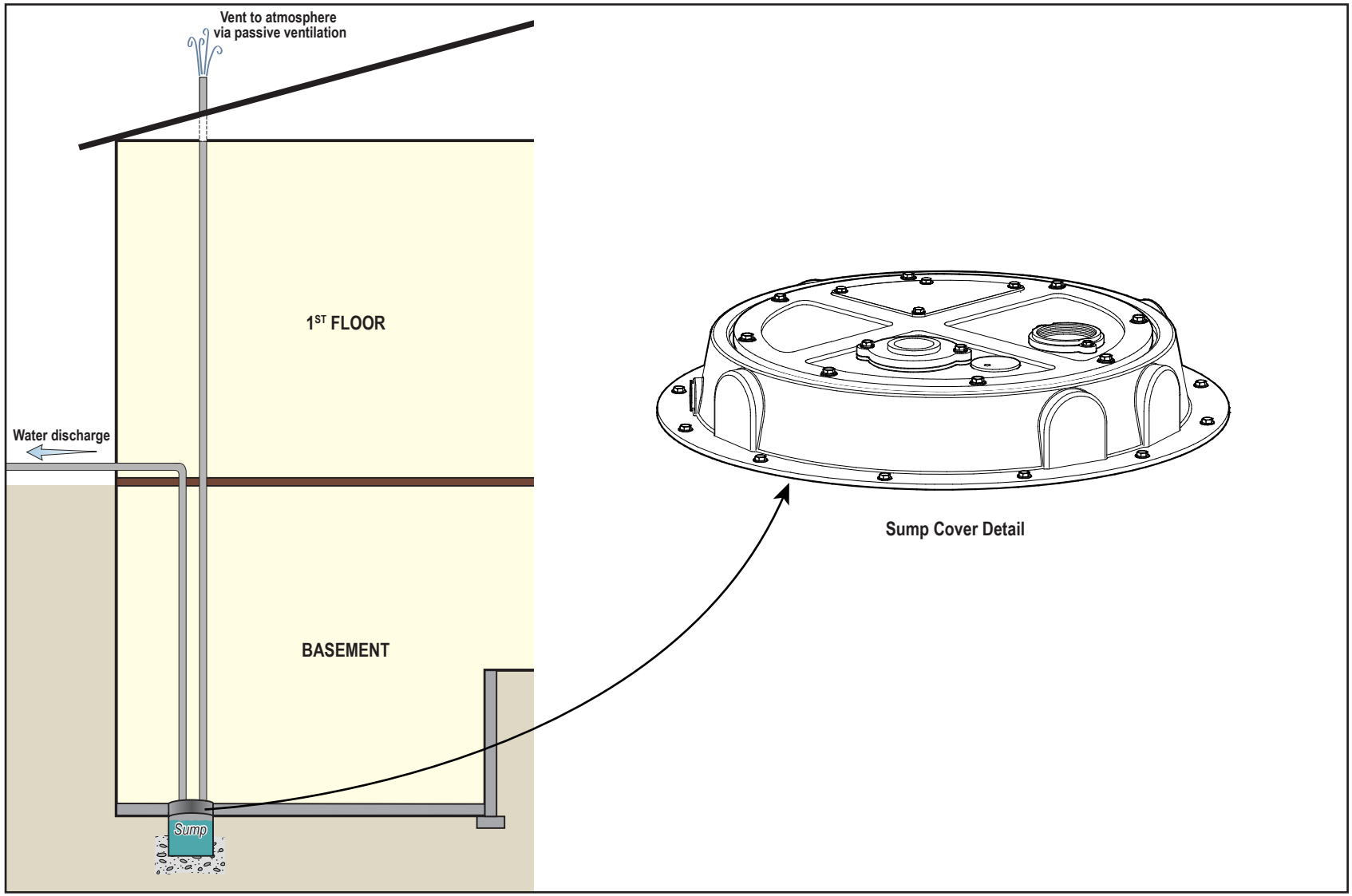
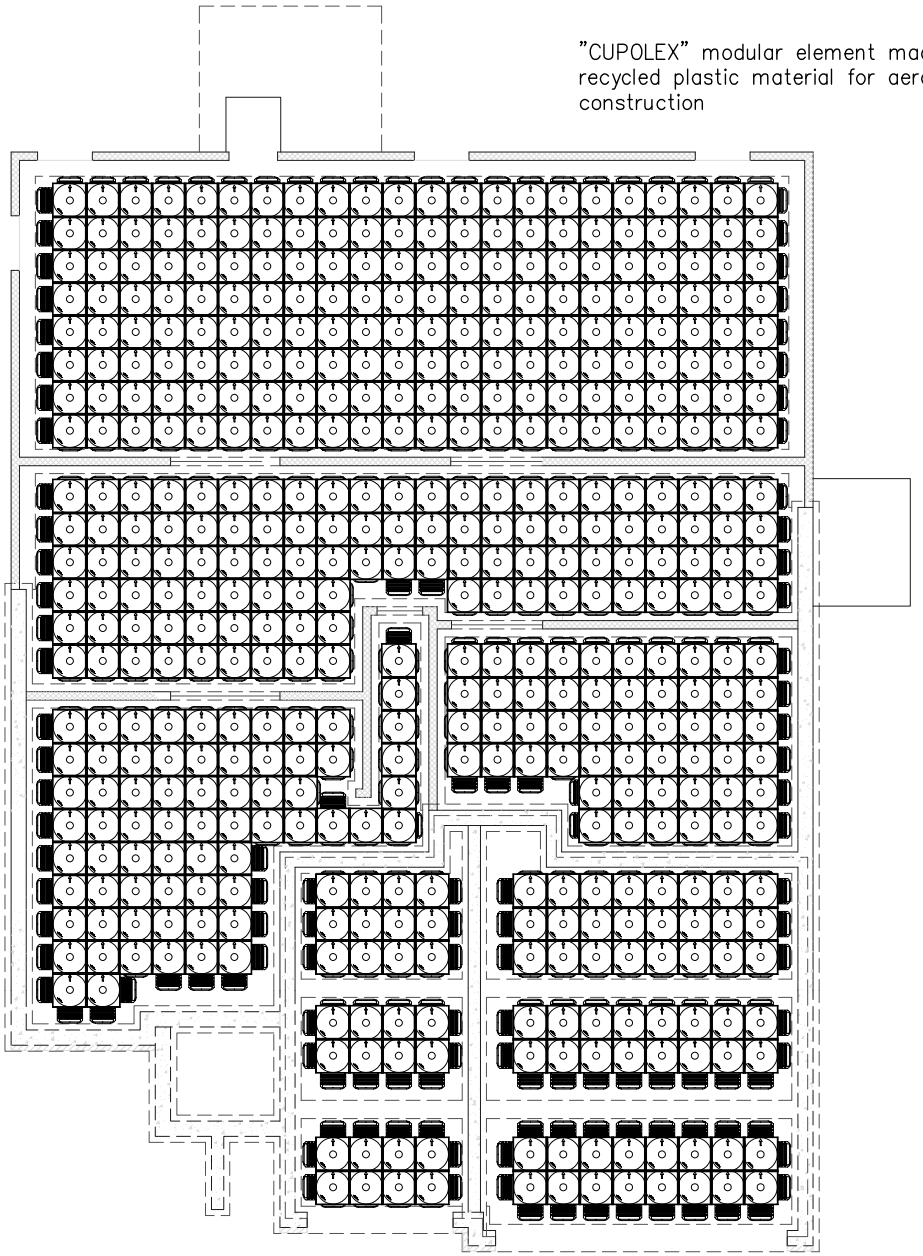
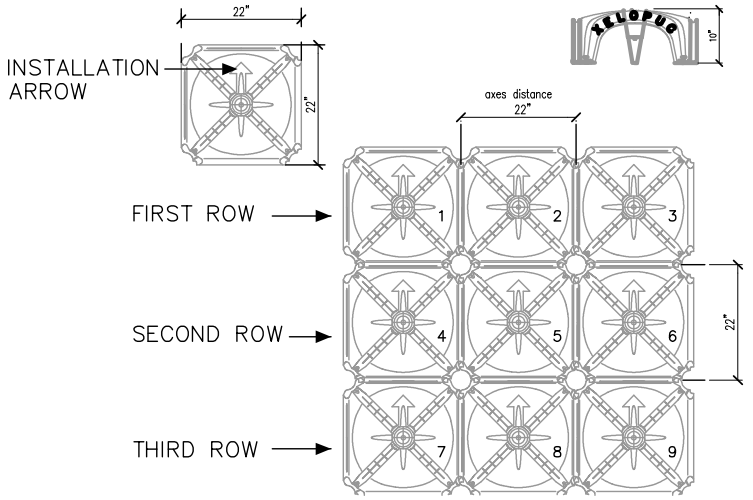
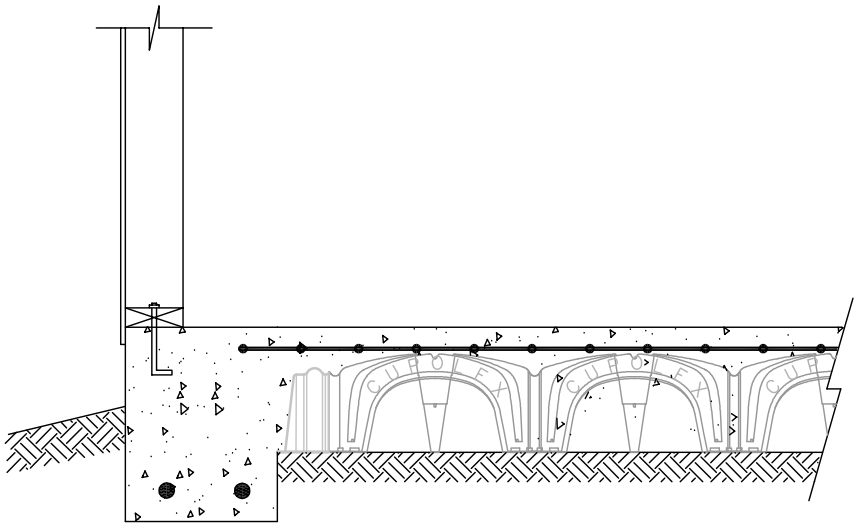


Figure 5
Example Sump Cover Installation in Basement
Adams Plating Superfund Site
Lansing, Ingham County, Michigan



Example Aerated/Cupolex Floor Layout





Typical Profile View of Aerated/Cupolex Floor System

Figure 6
Example Aerated/Cupolex Floor Layout
Adams Plating Superfund Site
Lansing, Ingham County, Michigan

Appendix D: References

Agency for Toxic Substances Disease Registry (ATSDR). 2012. *1,3-Butadiene Tox FAQs*., accessed 11/4/2021 at https://www.atsdr.cdc.gov/toxfaqs/tfacts28.pdf.

CH2M HILL (CH2M). 2020. *Final Remedial Investigation Report, Adams Plating Superfund Site, Lansing, Ingham County, Michigan.* April.

CH2M HILL (CH2M). 2021a. PFAS *Data Evaluation Report Remedial Investigation/Feasibility Study Adams Plating Superfund Site, Lansing, Michigan.* February.

CH2M HILL (CH2M). 2021b. *Data Gap Investigation Report Remedial Investigation/Feasibility Study Adams Plating Superfund Site, Lansing, Michigan* (Appendix B to the Final Feasibility Study Report). February.

CH2M HILL (CH2M). 2021c. *Final Feasibility Study Report, Adams Plating Superfund Site, Lansing, Ingham County, Michigan.* February.

Holtschlag, D. J., Luukkonen, C. L., and J. R. Nichols. 1996. "Simulation of Ground-Water Flow in the Saginaw Aquifer, Clinton, Eaton, and Ingham Counties, Michigan." U. S. Geological Survey Water-Supply Paper 2480.

Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. *Compliance Strategy for Addressing PFAS (PFOS/PFOA) from Industrial Direct Discharges and Industrial Storm Water Discharges.*

Milstein, R.I. 1987. Bedrock geology of Southern Michigan: Michigan Geological Survey, scale 1:500,000.

PRC Environmental Management, Inc. (PRC). 1993a. *Adams Plating Company Final Remedial Investigation Report.* March.

PRC Environmental Management, Inc. (PRC). 1993b. *Adams Plating Company Final Feasibility Study Report.* July.

PRC Environmental Management, Inc. (PRC). 1995. *Final Remedial Action Completion Report for Remedial Action at the Adams Plating Company Site, Lansing Township, Michigan.* September

U.S. Environmental Protection Agency (EPA). 1988a. *Adams Plating Company, Lansing, Michigan, Potentially Responsible Party Sear*ch.

U.S. Environmental Protection Agency (EPA). 1988b. *Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy.*

U.S. Environmental Protection Agency (EPA). 1989. R*isk Assessment Guidance for Superfund: Volume II, Environmental Evaluation Manual.* Office of Emergency and Remedial Response. EPA/540/1-89/001.

U.S. Environmental Protection Agency (EPA). 1991. *ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers.* OSWER Publication 9234.2-01. July.

U.S. Environmental Protection Agency (EPA). 1992. *Framework for Ecological Risk Assessment*, EPA/630/R-92/001.

U.S. Environmental Protection Agency (EPA). 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments*. Interim Final. EPA/540/R-97/006.

U.S. Environmental Protection Agency (EPA). 1998. *Guidelines for Ecological Risk Assessment.* EPA/630/R-95/002F.

U.S. Environmental Protection Agency (EPA). 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study.*

U.S. Environmental Protection Agency (EPA). 2012. *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*.

U.S. Environmental Protection Agency (EPA). 2014. *Emerging Contaminants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*. EPA 505-F-14-001. March.

U.S. Environmental Protection Agency (EPA). 2015. *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*.

U.S. Environmental Protection Agency (EPA). 2020. Vapor Intrusion Screening Level (VISL) Calculator (XLSM), November. https://epa-visl.ornl.gov/cgi-bin/visl_search.

Velbel, M. A. and Brandt, D. S. 1989. Sedimentology and paleogeography of Grand Ledge: Michigan Basin Geological Society, Spring 1989 field trip guide, 33 p.

Weston Solutions, Inc. (Weston). 2012. *Adam's Plating Site Removal Action Summary Report, Lansing Township, Ingham County, Michigan*. January.

Appendix E: Administrative Record Index

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD FOR THE ADAM'S PLATING SITE LANSING, MICHIGAN

UPDATE 5
OCTOBER 5, 2021
SEMS ID: 968527

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	233304	9/30/94	U.S. EPA	General Public	Report - Preliminary Site Close out (SCO)	5
2	527422	9/25/95	PRC Environmental Mgmt., Inc.	U.S. EPA	Report - Final Remedial Action Completion for Remedial Action *(This Document is Included for Informational Purposes only)*	24
3	266395	10/7/99	U.S. EPA	General Public	Report - First Five Year Review (Signed)	9
4	152308	10/7/99	U.S. EPA	General Public	Report - Addendum to Five Year Review (Signed)	1
5	533073	9/28/01	U.S. EPA	File	Report - Superfund Site Close Out *(This Document is Included for Informational Purposes Only)*	8
6	235010	6/27/05	U.S. EPA	General Public	Report - Second Five Year Review (Signed)	86
7	367273	6/25/10	U.S. EPA	General Public	Report - Third Five Year Review (Signed)	139
8	904929	1/31/12	Weston Solutions, Inc.	U.S. EPA	Report - Removal Action Summary *(This Document is Included for Informational Purposes Only)*	495
9	485624	6/24/15	U.S. EPA	General Public	Report - Fourth Five Year Review (Signed)	70

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
10	938469	7/25/17	Tetra Tech, Inc.	U.S. EPA	Report - Final Site Assessment *(This Document is Included for Informational Purposes Only)*	289
11	958910	8/1/18	U.S. EPA	File	Report - Remedial Investigation, Draft Comments and RTCS *(This Document is Included for Informational Purposes Only)*	1 Zip File
12	958886	9/1/18	MDEQ	File	Notes - Regarding Human Health Risk Assessment *(This Document is Included for Informational Purposes Only)*	2
13	958891	10/31/18	MDEQ	File	Memo - Regarding Review of Draft Appendix M Human Health Risk Assessment *(This Document is Included for Informational Purposes Only)*	6
14	958889	3/18/19	U.S. EPA	File	Memo - Regarding Review of Appendix M - Human Health Risk Assessment *(This Document is Included for Informational Purposes Only)*	2
15	958880	3/20/19	U.S. EPA	File	Memo - Regarding Review of Appendix M - Human Health Risk Assessment For Vapor Intrusion Issues *(This Document is Included for Informational Purposes Only)*	1
16	2003734	4/10/19	CH2M	General Public	Notes - Regarding Response to Two MDEQ Comment Memo's on the Draft Human Health Risk Assessment of September 2018	5
17	2002676	3/9/20	Ferris, J., EGLE	Ross, S., U. S. EPA	Letter - Regarding Comments and Review on the Final Remedial Investigation Report	12
18	955672	4/1/20	CH2M	U.S. EPA	Report - Final Remedial Investigation with Appendices *(This Document is Included for Informational Purposes Only)*	8375

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
19	2002675	4/13/20	Ross, S., U. S. EPA	Ferris, J., EGLE	Memo - Regarding Response to 03/09/2020 Comments and Review on the Final Remedial Investigation	8
20	958875	5/27/20	Ferris, J., EGLE	Ross, S., U. S. EPA	Letter - Regarding Comments and Review on the Final Remedial Investigation Report *(This Document is Included for Informational Purposes Only)*	2
21	958286	6/15/20	U.S. EPA	General Public	Report - Fifth Five Year Review (Signed)	92
22	2003567	8/17/20	Ross, S., U.S. EPA	Ferris, J., EGLE	Memo - Regarding Identification and Initial Selection of Applicable or Relevant and Appropriate Requirements (ARARS)	1
23	2003735	8/17/20	EGLE	U.S. EPA	Notes - Regarding Comments on PFAS Data Evaluation Report, Remedial Investigation and Feasibility Study	4
24	2003562	10/1/20	Ferris, J., EGLE	Ross, S., U.S. EPA	Letter - Regarding Identification and Initial Selection of Applicable or Relevant and Appropriate Requirements (ARARS)	6
25	2003571	1/19/21	Ross, S., U.S. EPA	Ferris, J., EGLE	Letter - Regarding PFAS Data Evaluation Report Response to Comments for EGLE	8
26	2003565	2/1/21	CH2M	U.S. EPA	Report - Final Feasibility Study	348
27	2003736	2/2/21	CH2M	U.S. EPA	Report - PFAS Data Evaluation, Remedial Investigation and Feasibility Study	675
28	2003563	2/12/21	CH2M	U.S. EPA	Report - Data Gap Investigation, Remedial Investigation and Feasibility Study	203
29	2003572	3/24/21	Ferris, J., EGLE	Ross, S., U.S. EPA	Letter - Regarding Comments and Review on the Final Feasibility Study Report	3

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
30	2003568	4/15/21	Ferris, J., EGLE	Ross, S., U.S. EPA	Letter - Regarding Comments and Review on the "Data Gap Investigation"	3
31	2003569	7/28/21	Ross, S., U.S. EPA	Ferris, J., EGLE	Letter - Regarding Data Gaps and Investigation Response to Comments for EGLE	6
32	2003570	8/16/21	Ross, S., U.S. EPA	Ferris, J., EGLE	Letter - Regarding Feasibility Study Response to Comments for EGLE	7
33	_____	_____	_____	_____	*Record of Decision Amendment Pending*	_____