PROPOSED PLAN
ADAM'S PLATING SUPERFUND SITE
LANSING, MICHIGAN
EPA SITE ID: MID006522791

PREPARED BY:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

NOVEMBER 2021

ACRYONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

1,1,1-TCA	1,1,1-trichloroethane
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2-DCA	1,2-dichloroethane
$\mu g/m^3$	Micrograms per cubic meter
APC	Adams Plating Company
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
Bgs	Below ground surface
Blvd	Boulevard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH2M	CH2M Hill, Inc.
cis-1,2-DCE	Cis-1,2-dichloroethene
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
DER	Data Evaluation Report
DCE	Dichloroethene
DGI	Data Gap Investigation
EGLE	Michigan Department of Great Lakes, Environment, and Energy
ELCR	Excess Lifetime Cancer Risk
EPA	United States Environmental Protection Agency
ERA	Ecological Risk Assessment
FS	Feasibility Study
HHRA	Human Health Risk Assessment
ICDH	Ingham County Health Department
HI	Hazard Index
IC	Institutional Control
MCL	Michigan Compiled Law
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	Operation & Maintenance
PFAS	Per- and Polyfluoroalkyl Substances
PFOS	Perfluorooctanesulfonic Acid
PFC	Perfluorinated Compound
PRC	PRC Environmental Management, Inc.
PRG	Preliminary Remediation Goal
PVC	Polyvinyl Chloride
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RP	Residential Property
RSL	EPA's Regional Screening Level
Site	Adams Plating Superfund Site
SLERA	Screening Level Ecological Risk Assessment
SVOC	Semi-volatile Organic Compound

TBC	To Be Considered
TCA	Trichloroethane
TCE	Trichloroethene
TCRA	Time Critical Removal Action
VI	Vapor Intrusion
VOC	Volatile Organic Compound
WBU1	Water Bearing Unit 1
WBU2	Water Bearing Unit 2

A. INTRODUCTION

The United States Environmental Protection Agency (EPA) is issuing this Proposed Plan as part of its public participation requirements under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The objective of this Proposed Plan is to present EPA's Preferred Alternatives for remedial action for the Adam's Plating Superfund Site (Site) in Lansing, Ingham County, Michigan. EPA's Preferred Alternatives for this interim action are intended to address unacceptable risks to human health and the environment due to vapor intrusion. The proposed action identified in this Proposed Plan is considered to be an interim action, since further consideration of remaining site contamination is needed. A decision on the final action at the Site will be made in the near future.

This Proposed Plan summarizes information gathered and assessed during the remedial investigation (RI) (CH2M 2020), subsequent data gap investigations (CH2M 2021a, b), and the feasibility study (FS) (CH2M 2021c). Acrolein, a volatile organic compound (VOC), was found in Site soil vapors, and the VOC 1,1-dichloroethane (1,1-DCA) was found in a residential sump. These contaminants can affect human health through vapor intrusion when contaminants volatize from groundwater, move upward through the subsurface as soil vapor, and enter residences and buildings. This proposed plan presents EPA's Preferred Alternatives for the Adams Plating Property and adjacent residential structure RP-07, to address vapor intrusion for residential and industrial/commercial buildings at the Site where vapor intrusion is occurring and/or concentrations have the potential to impact human health.

This document is issued by EPA, the lead agency. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is the support agency. EPA and EGLE are soliciting community involvement in the selection of the interim remedial action and invite the public to comment on all alternatives presented in the FS and summarized in this Proposed Plan. EPA, in consultation with EGLE, will select an interim remedial action for Adam's Plating Superfund Site after considering relevant comments submitted during a public comment period. The public comment period runs for thirty (30) days from November 15, 2021 to December 15, 2021. Please review and comment on this Proposed Plan. EPA also encourages community members to attend a virtual public availability session on Tuesday, November 30. The public availability session will begin at 6PM. A link to the virtual meeting will be posted on www.epa.gov/superfund/adams-plating. EPA will accept oral comments during the public availability session and written comments during the public comment period.

EPA will issue its final decision on the selected interim remedial action in a decision document called a Record of Decision (ROD) Amendment. The public will be notified of the ROD Amendment in a local newspaper notice and through EPA's website for the Site www.epa.gov/superfund/adams-plating. The ROD Amendment will include a responsiveness summary that summarizes EPA's responses to public comments on this Proposed Plan. Based on new information and/or public comments received during the public comment period, the selected remedy may differ in some details from the Preferred Alternatives presented in this Proposed Plan.

EPA and EGLE encourage the public to review the documents in the Administrative Record to gain a more comprehensive understanding of the Site and the Superfund activities conducted at the Site to date. Supporting documents for the Site are available at the following locations:

Lansing Public Library 401 S. Capitol Lansing, MI 48933 517-367-6350 (limited hours/access due to COVID) Lansing Township Hall 3209 West Michigan Lansing, MI 48917 517-485-4063 Monday – Friday 8am – 5pm ET	EPA Region 5 Records Center 77 W. Jackson Blvd. (SRC-7J) Chicago, IL 60604 (312) 886-0900 Mon-Fri: 8 am to 4 pm Call for appointment

B. SITE BACKGROUND

Site Description

The Adam's Plating Superfund Site (Site) located in Lansing, Ingham County, Michigan (Figure 1), includes Adams Plating Company (APC) property and any areas where hazardous substances, pollutants, or contaminants from the APC have come to be located. 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 APC property, which is located at 521 North Rosemary Street, Lansing, Michigan, is less than 1 acre of land located in a mixed commercial, industrial, and residential block across the street to the east from 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 (Figure 2). The area around the Site has potential Environmental Justice (EJ) concerns, with an elevated low-income population, potential for lead-based paint, and wastewater discharge issues identified at the census block level. There are no known climate change issues or concerns related to the Site.

History of Contamination

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 VOCs including 1,1,1-trichloroethane (1,1,1-TCA), acetone, and methylene chloride. It is assumed that the former APC facility potentially used per- and polyfluoroalkyl substances (PFAS)-containing foam blankets for dust suppression during the plating process. This assumption is made 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-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 on September 29, 1993, as documented in the Record of Decision (ROD). The remedial action objective (RAO) 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 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 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 a September 30, 1994, Explanation of Significant Differences (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 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 contamination 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 RI and 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 Amendment to the original ROD is appropriate. As part of this work, 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 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).

C. SITE CHARACTERISTICS

Physical Characteristics and Land Use

The Site is relatively flat. The surface cover 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, the Site was 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 Site 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.

Site Geology and Hydrogeology

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 bgs. 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).

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.

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.

Site 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 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 summarized in Table 1. Specifics of the sampling events, data evaluations, and full analytical tables are found in the RI, DER, DGI, and further summarized in the Final FS Report (CH2M 2020, 2021a, b, c).

Contaminants of Potential Concerns (COPCs) are defined in the risk assessment. and 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 the risk assessment findings is described further below in the "Summary of Site Risks" section of this Proposed Plan.

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 conceptual site models (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 screening levels generally in the middle of and immediately north of the former APC building footprint. 1,1-DCA, 1,1-DCE, 1,4-dioxane, cis-1,2-DCE, and 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 onsite (APC property) exterior soil vapor samples (SG-02 and SG-03) and one offsite soil vapor sample (SG-01) 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 Site) and of TCE at SG-02 (southeast corner of the 2011 TCRA removal area) exceeded their respective residential VISL. The soil vapor concentrations of 1,3-butadiene, acrolein, and benzene at SG-03 exceeded their respective industrial VISLs. SG-03 is located onsite 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 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-DCA. 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 (not APC property), currently there is one complete and significant VI pathways where Site-related chemicals impact crawlspace air or indoor air above VISLs at properties where VI sampling was completed. 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.

WHAT IS NEEDED TO HAVE A COMPLETE VAPOR INTRUSION PATHWAY?

In order for the vapor intrusion pathway to be complete, there must be volatilization of contaminants from contaminated groundwater or other subsurface sources through the vadose zone to the soil vapor underneath a structure (i.e. sub-slab soil vapor). These contaminants can then migrate through the sub-slab into indoor air. Contaminant vapors move from an area of higher concentration to an area of lower concentration. EPA's vapor intrusion guidance recommends, through multiple site evaluations, that the sub-slab soil vapor concentrations must be approximately 33 times higher than indoor air concentrations in order to be a complete vapor intrusion pathway. As such, chemicals which are detected in indoor air but not in sub-slab soil vapor are considered to be the result of an indoor air source and not from vapor intrusion (see *EPA OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air,* June 2015). Similarly, chemicals that are found in groundwater but not in sub-slab soil vapor, even if detected in indoor air, are not considered to be COCs related to vapor intrusion.

D. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The Site has not been divided into operable units.

This Proposed Plan presents information necessary to inform the public about the potential for VI at the Site and presents EPA's Preferred Alternatives to address VI at RP07 and the APC property.

The response action discussed in this Proposed Plan is considered by EPA to be an interim action. It is an interim action because it addresses only the risks due to vapor intrusion from contaminated groundwater and/or subsurface vapor sources.

Work at the Site is ongoing. EPA is working with EGLE to determine what additional sitewide investigations are necessary. The remedy described in this Proposed Plan is an interim remedy. Further consideration of remaining site contamination is needed.

E. SUMMARY OF SITE RISKS

Under the CERCLA statute, the underlying legal requirement mandates that CERCLA remedial actions must attain a degree of cleanup that provides protection of human health and the environment. In order to determine if a cleanup is necessary, a risk assessment is performed, which identifies if compound-specific exposure pathways and contaminant levels present either a current or potential future unacceptable risk. When such a risk is identified, remedial or removal action is required to address the unacceptable risk.

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 previous HHRA conclusion. The Site and surrounding areas are zoned for residential or commercial/mixed use. 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 COPC in the HHRA. Chemicals considered essential nutrients (calcium, magnesium, potassium, and sodium) were not selected as COPCs in the HHRA (EPA 1989) because they were not detected at elevated concentrations and are not Site-related. Table 3 summarizes the COPCs per property and per matrix (and in Section 2.2.2 of the HHRA, CH2M 2020).

The HHRA evaluated the onsite and offsite areas 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 to offsite properties through surface runoff or overflow, potential exposure associated with offsite soil also was evaluated in this HHRA. Based on current and reasonably foreseeable future Site conditions, the following potential current and future human receptors were identified and evaluated in the HHRA.

The HHRA identified the following three COCs at various locations, receptors, and scenarios.

- 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 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.

WHAT IS HUMAN HEALTH RISK AND HOW IS IT CALCULATED?

A Superfund human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of developing cancer or non-cancer health effects if no cleanup action were taken at a site. To estimate baseline risk at a Superfund site, EPA undertakes a four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, EPA looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). A comparison between site-specific concentrations and concentrations reported in past studies helps EPA to determine which concentrations are most likely to pose the greatest threat to human health.

In Step 2, EPA considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, EPA calculates a "reasonable maximum exposure" scenario, which portrays the highest level of exposure that could reasonably be expected to occur.

In Step 3, EPA uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. EPA considers two types of risk: cancer and non-cancer risk. The likelihood of any kind of cancer resulting from exposure to carcinogens at a Superfund site is generally expressed as an upper bound incremental probability, such as a "1 in 10,000 chance" (expressed in scientific notation as 1E-04). In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to Site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, EPA calculates a "hazard index" (HI). The ratio of exposure to toxicity is called a hazard quotient (HQ). The HI is generated by adding the HQs for all chemicals of concern that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media to which a given individual may reasonably be exposed. An HQ of less than 1 indicates that the dose from an individual contaminant is less than the reference dose, so non-cancer health effects are unlikely. The key concept here is that a "threshold level" (measured usually as an HI of less than 1) exists below which non-cancer health effects are no longer predicted. EPA's acceptable risk range is defined as a cancer risk range of 1E-06 to 1E-04 and an HI < 1. Generally, remedial action at a Site is warranted if cancer risks exceed 1E-04 and/or if non-cancer hazards exceed an HI of 1.

In Step 4, the results of the three previous steps are combined, evaluated and summarized. EPA adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

Basis for Taking Action

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 workers and at RP07 based on potential current or future inhalation risk to residents.

It is EPA's judgment that the Preferred Alternatives identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

EPA's proposed remedy and this Proposed Plan includes the implementation of ICs and VI mitigation response action at other residential and/or commercial properties, should future VI data identify current or potential future risks associated with site-related releases.

F. REMEDIAL ACTION OBJECTIVES

RAOs describe the goals that the proposed remedial action is expected to accomplish. They are specific to media for protecting human health and the environment. Potential risk can be associated with current or potential future exposures. Therefore, an important component of developing RAOs is determining future land use. The RAOs developed for this Site are based on assumptions that future land use would not differ from current land use.

The conclusion of the SLERA was 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. Therefore, RAOs were not developed to protect ecological receptors.

Remedial Action Objectives

RAOs developed to protect human health receptors from potentially unacceptable risk resulting from contamination at the Site are as follows:

- Protect human health at the APC property by preventing potential future exposure (via VI or direct volatilization from groundwater) to acrolein in indoor air through inhalation at a concentration that could pose an unacceptable risk to residents or industrial/commercial workers.
- 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 through inhalation at a concentration that could pose an unacceptable risk to residents.

Preliminary Remediation Goals

PRGs are risk-based or ARAR-based chemical-specific concentrations that act as quantitative goals to achieve the RAOs. The final remedial goals, which will be defined in the ROD Amendment, will become the performance requirements and the main basis for measuring the success of the selected response actions. When identifying PRGs, 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 HI 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 PRGs 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 PRGs were calculated using two target ELCR levels within EPA's acceptable risk range (10^{-5} and 10^{-6})[1] and a target HI of 1. EPA will select and document the final remedial goals in the ROD Amendment. The PRGs for the Site are based on an ELCR of 10^{-5} (1,1-DCA) and an HI of 1 (Acrolein) and summarized for each constituent and medium as follows:

Proposed PRGs in Indoor Air[a]

Scenario/Rationale for COC	Exposure Area	PRG - Acrolein[b]	PRG - 1,1-DCA[b]	PRG 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 PRGs 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)
PRG = preliminary remediation goal

Applicable or Relevant and Appropriate Requirements

CERCLA onsite remedial actions must meet the standards and criteria that are legally applicable to the hazardous substance, pollutant, or contaminant, or that are relevant and appropriate under the circumstances (EPA 1991). Federal and State environmental and public health agencies develop criteria, advisories, guidance, and proposed standards that are not legally enforceable but contain information that would be helpful in carrying out or in determining the level of protectiveness of selected remedies. Because TBCs are not ARARs, their identification and use are not mandatory. No potential chemical-, location-, and action-specific ARARs were identified for this proposed cleanup decision. TBC criteria to address the contamination and potential exposure pathways at the Adam's Plating Superfund Site are presented below.

Potential chemical-specific ARARs/TBCs

No applicable or relevant and appropriate federal chemical-specific requirements exist for soil vapor or indoor air. Federal TBC values for soil vapor and indoor air include the EPA RSLs and the EPA VISLs. NREPA, 1994 PA 451, as amended, Part 201, includes a regulation on VI, provided at Michigan Compiled Laws (MCL) 20120f, which is applicable. This regulation provides options for development of acceptable risk levels, which include the EPA RSLs.

Potential action-specific ARARs/TBCs

[1] 1x10^{-5} is typically selected by EPA Region 5 as the target ELCR level for the VI pathway.

There are no action-specific ARARs or TBCs. The only media with a potential action-specific ARAR would be air. There are no action-specific air regulations because the maximum discharge to air would be 2.18 lbs/day of 1,1-DCA under any alternative, which is well below the regulatory trigger of 10 tons per year of hazardous air pollutants which would be applicable to a minor source.

Potential location-specific ARARs/TBCs

There are no location-specific ARARs or TBCs for the developed alternatives at this Site.

G. SUMMARY OF REMEDIAL ALTERNATIVES

Two alternatives were developed for the APC property and three for RP07 to address unacceptable human health risk to current and/or future receptors. At least one alternative for each area would be required to achieve the RAOs. The remedial action alternatives for Adam's Plating Superfund Site are presented below. They are numbered to correspond with the FS.

As noted earlier, access issues have prevented EPA from testing all buildings with potential VI from Site-related contamination. If sampling is ultimately authorized and the VI pathway is found to be complete at any additional properties and there is unacceptable current or future risk, vapor mitigation alternatives similar as proposed below for RP07 would be considered and implemented as appropriate. EPA would determine this based on multiple-lines-of-evidence that VI of Site-related substances is occurring or has the potential to occur at concentrations exceeding proposed remedial action levels or otherwise poses a current or potential unacceptable risk. Costs for additional investigation work is not included in the cost estimates for the specified below.

APC Property Alternatives

Alternative APC-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 APC-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 APC-1.

Alternative APC-2: Institutional Controls

Deed restrictions on the installation of groundwater wells and excavation of contaminated soils have been in place for the APC property since 1997. The deed restrictions were originally implemented when the APC building was present. 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 in the event any new building construction takes place (for industrial or residential use) at the APC property in the future.

No monitoring would be performed as part of this Alternative. 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 be required every five years.

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

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 includes sealing preferential vapor entry points, if any, and a sump cover (See Figure 5) 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 be performed to 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. The estimated capital cost associated with Alternative RP07-2 is $88,000 and the annual O&M cost is $34,000. The total present worth cost of Alternative 2 is $122,000.

Detailed description of the main remedial components and implementation assumptions of Alternative RP07-2 can be found in the FS.

Inspections

Annual inspections would be performed to confirm that the sump cover is sealed to the floor, wiring/discharge lines are also 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 vent pipe, and that the passive fan is still operational and spinning adequately.

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.

Institutional Controls

Institutional controls 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. Institutional controls 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 institutional control for RP07 per Section 324.20121 in the Michigan Natural Resources and Environmental Protection Act, 451 Public Act. This type of institutional control 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 implementation of VI mitigation for newly constructed buildings and/or structures in the areas where soil vapor presents a risk to receptors.

During each five-year review, the institutional controls would be revisited to determine effectiveness and identify the need for revisions. Institutional controls 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).

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 buildings.

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 30-year O&M cost is $34,000. The total present worth cost of Alternative 3 is $169,000. The following subsections describe the main remedial components and implementation assumptions of Alternative RP07-3.

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 sump cover and passive ventilation are similar to 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. More detailed description of the vented aerated floor system can be found in the FS.

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.

Five-Year Reviews

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

Institutional Controls

Institutional controls would be implemented as described for Alternative RP07-2.

H. EVALUATION OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA articulates nine evaluation criteria for assessing remedial alternatives for sites that require remediation or mitigation. This evaluation promotes consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of remedies that offer the most effective and efficient means of achieving site cleanup goals. This section summarizes the relative performance of each alternative against the nine criteria and each other. For further examination, the detailed analysis and comparative analysis of alternatives is provided in the FS (CH2M 2021c).

The nine criteria consist of two threshold criteria, five balancing criteria, and two modifying criteria. The threshold criteria include: (1) overall protectiveness of human health and the environment and, (2) compliance with ARARs. These two criteria must be met by any remedial alternative for it to be considered a viable remedial action.

The five balancing criteria include the following: long-term effectiveness and permanence; short-term effectiveness; reduction of toxicity, mobility, and volume through treatment; implementability; and cost. These are the primary criteria upon which the detailed analysis was based.

The remaining two criteria include state acceptance and community acceptance. These modifying criteria are typically evaluated following a public comment period on the Proposed Plan and will be documented in the ROD Amendment.

While all nine criteria are important, they are weighed differently in the decision-making process depending on whether they evaluate protection of human health and the environment, or compliance with federal and state requirements (threshold criteria); consider technical or economic merits (primary balancing criteria); or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria). To be selected, an alternative must meet the threshold criteria. The nine criteria are described below, followed by a discussion of how each alternative meets or does not meet each criterion.

CERCLA EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to human health and the environment through ICs, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets cleanup criteria, standards of control, or requirements of other environmental laws and regulations that pertain to the contamination, or whether a waiver is justified.

Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual O&M costs, and present-worth cost. Present-worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State Agency Acceptance considers whether the state agrees with the EPA's analyses and recommendations, as described in the RI/FFS and Proposed Plan.
Community Acceptance considers whether the local community agrees with the EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Comparison of Remedial Alternatives

In this section, the remedial alternatives are compared to each other in terms of how well they meet the specified evaluation criteria. Threshold and primary balancing criteria are presented separately for the APC Property and RP07 alternatives. The two modifying criteria: State and Community Acceptance, are briefly addressed below for both media and will be further evaluated after this Proposed Plan undergoes public comment, then addressed in the ROD Amendment.

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 by preventing potential future exposure (via VI or direct volatilization from groundwater) to acrolein in indoor air at a concentration 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 current and future receptors would continue. Alternative APC-2 would be protective of human health because institutional controls would prevent exposure of acrolein to future receptors.

2. Compliance with ARARs

There are no ARARs for the remedial measures considered for these Alternatives, therefore, this evaluation criterion is not a consideration in this decision-making.

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 exposures leading to residual risks by implementation of institutional controls. Monitoring would be required in the future if a building were placed on the APC property to verify that the COC concentration in indoor air does 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 existing structures to maintain VI mitigation and 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 AACE International Class IV cost estimate 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 0.4 percent for a timeframe of 30 years, based on the *Office of Management and Budget Circular A-94, Appendix C* (revised November 2019).

RP07

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.

2. Compliance with ARARs

There are no ARARs for the remedial measures considered for these Alternatives, therefore, this evaluation criterion is not a consideration in this decision-making.

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 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. Alternative RP07-3 would provide the least degree of short-term effectiveness because the installation of the aerated floor system would cause the more disruption to the household during construction than Alternative RP07-2. However, exposure to direct volatilization of groundwater to indoor air during construction would be controlled through standard best management practices, such as appropriate decontamination protocols and air monitoring during construction.

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 ($169,000) has a higher total present value cost than RP07-2 ($122,000) by $47,000. Both alternatives have the same periodic costs of $34,000. 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 raises the level of protection by providing a barrier from potential vapor intrusion through the floor.

Modifying Criteria for both APC Property and RP07

8. Support Agency Acceptance

EPA will further evaluate State acceptance of the Preferred Alternatives after the public comment period ends. Based on discussions to date, EPA expects EGLE to concur with the selection of the preferred alternative combination of APC Property Alternative APC-2 and RP07 Alternative RP07-3.

9. Community Acceptance

Community acceptance of the preferred alternatives will be evaluated after the public comment period ends and will be described in the ROD Amendment.

I. PREFERRED ALTERNATIVE

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

Alternatives APC-2 and RP07-3 are EPA's Preferred Alternatives for the Site. APC-2 will provide for ICs that update and continue to implement 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 present the best balance of the five balancing criteria. They both achieve RAOs for this interim action, are protective of human health and the environment, and are capable of complying with ARARs. Specifically, the Preferred 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	$198,000
Complete Construction	1 years
Reach RAOs	30 years

EPA expects the Preferred Alternatives to satisfy the following statutory requirements of CERCLA §121(b), which is: (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The preferred Alternatives do not satisfy the preference for treatment as a principal element because no cost-effective treatment for the low-level indoor vapor contamination is available. The Preferred Alternatives can change in response to public comment or new information.

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.

Support Agency Coordination

EGLE will have an opportunity to review this Proposed Plan and provide their support, or lack thereof, for the Preferred Alternatives.

J. COMMUNITY PARTICIPATION

The Final RI Report, Final FS Report, this Proposed Plan, and all supporting documents are available online at www.epa.gov/superfund/adams-plating and will be placed in the Administrative Record for the Adam's Plating Superfund Site. The public is encouraged to review and comment on all the alternatives presented in this Proposed Plan. The public comment period for the Proposed Plan begins November 15, 2021 and ends December 15, 2021.

A virtual public meeting will be held to discuss the Proposed Plan on Tuesday, November 30 from 6 – 8PM. The public meeting will be conducted via the Zoom web platform. A link to the virtual meeting will be posted on www.epa.gov/superfund/adams-plating. A court reporter will be available to record verbal comments after the presentation. Written comments may be provided the evening of the public meeting or mailed or emailed before the close of the comment period to either EPA representative below:

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The Preferred Alternatives may change in response to public comment or new information acquired during the public comment period. Responses to comments received will be provided in the ROD Amendment, which will identify the selected interim remedial action to be implemented.

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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

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**

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

$\mu g/m^3$ = 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

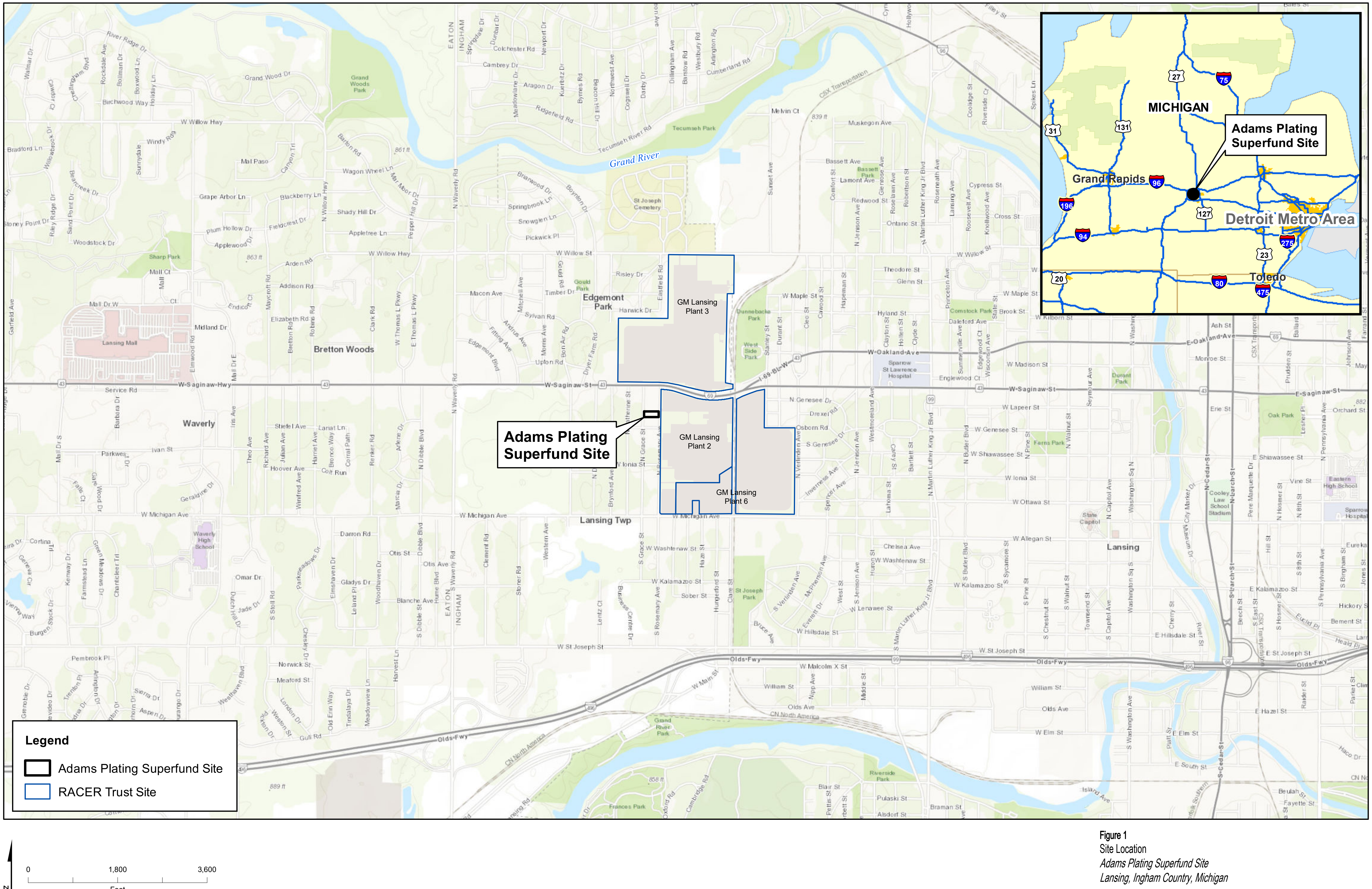
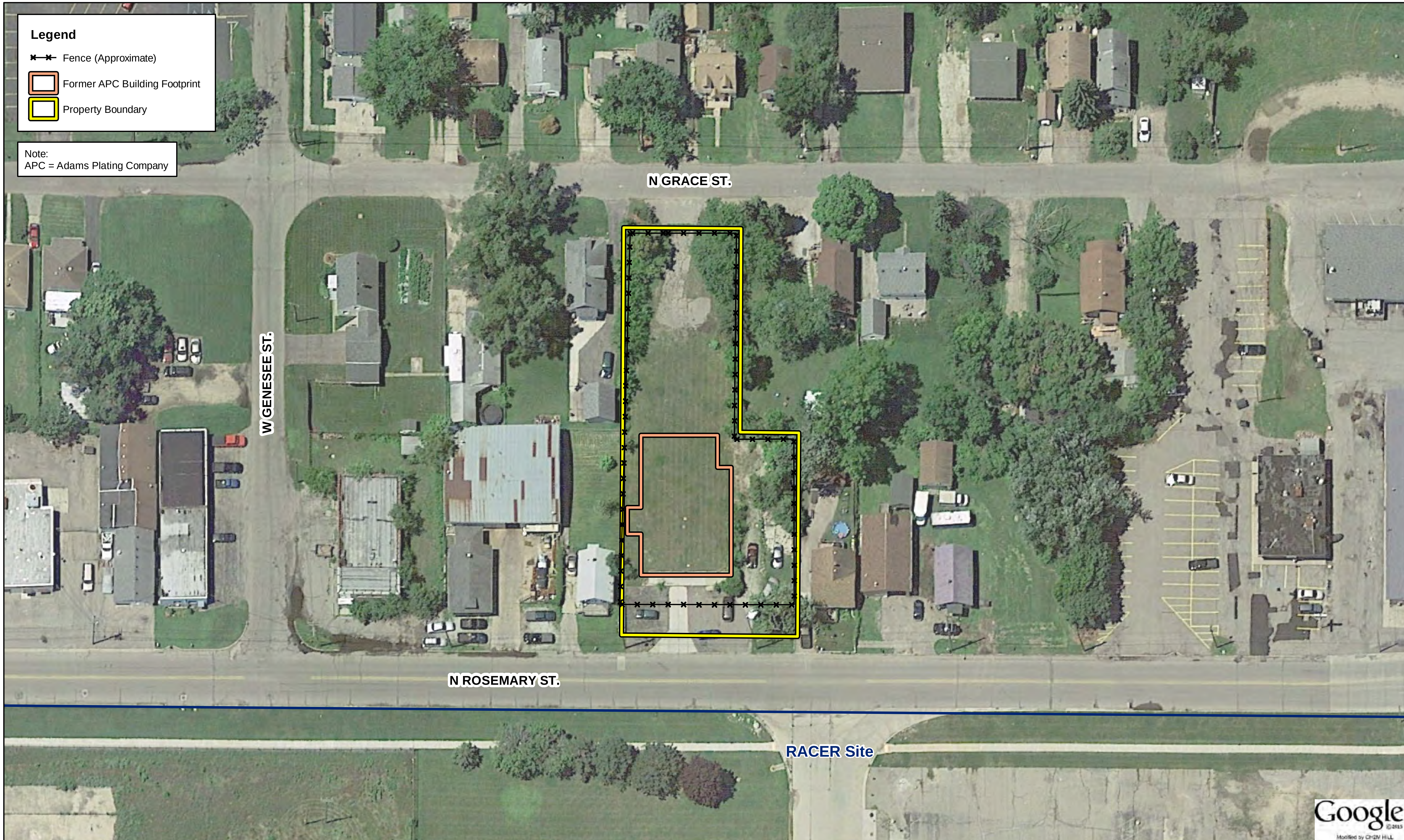


Figure 1
Site Location
Adams Plating Superfund Site
Lansing, Ingham Country, Michigan

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



Z

0 60 120

Feet

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

ch2m

R:\ENBG\00_PROJ\E\EPA\426963_ADAMSPLATING_RI_FS\MAPFILES\2018\FIG 2-2 AERIAL SITE MAP.MXD AESPEJO 5/9/2018 4:06:30 PM

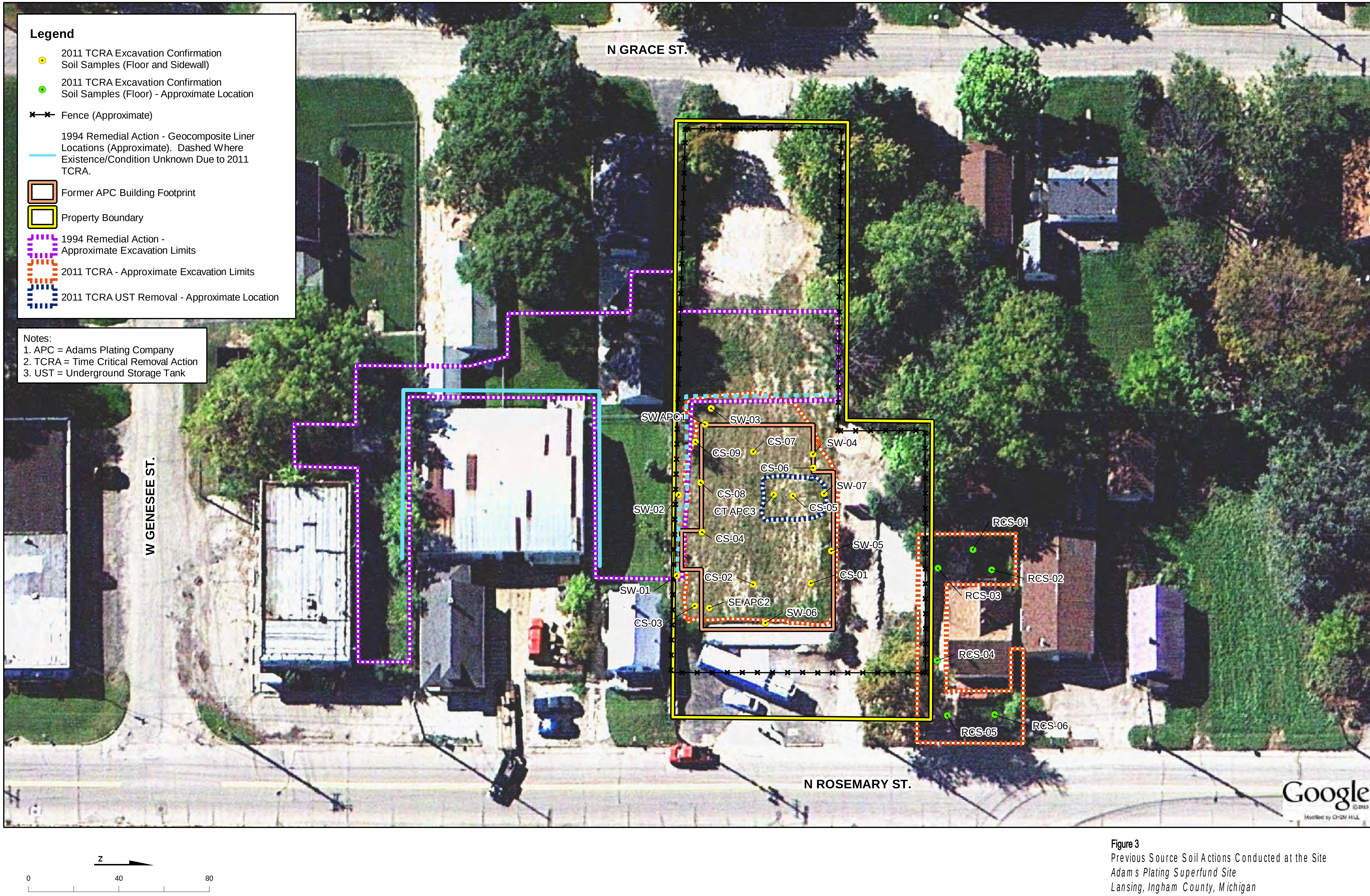


Figure 3
Previous Source Soil Actions Conducted at the Site
Adams Plating Superfund Site
Lansing, Ingham County, Michigan

ch2m:

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

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

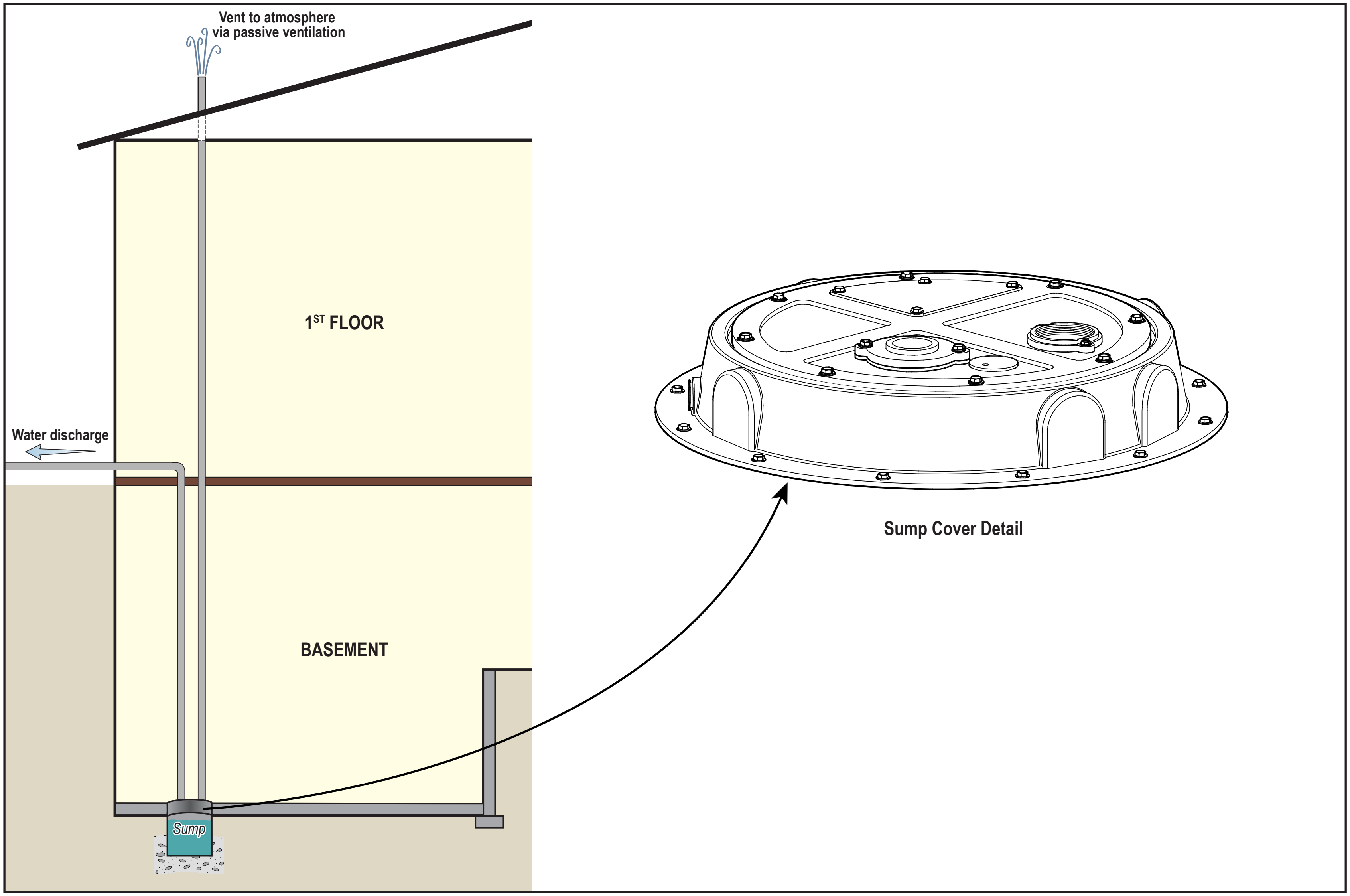
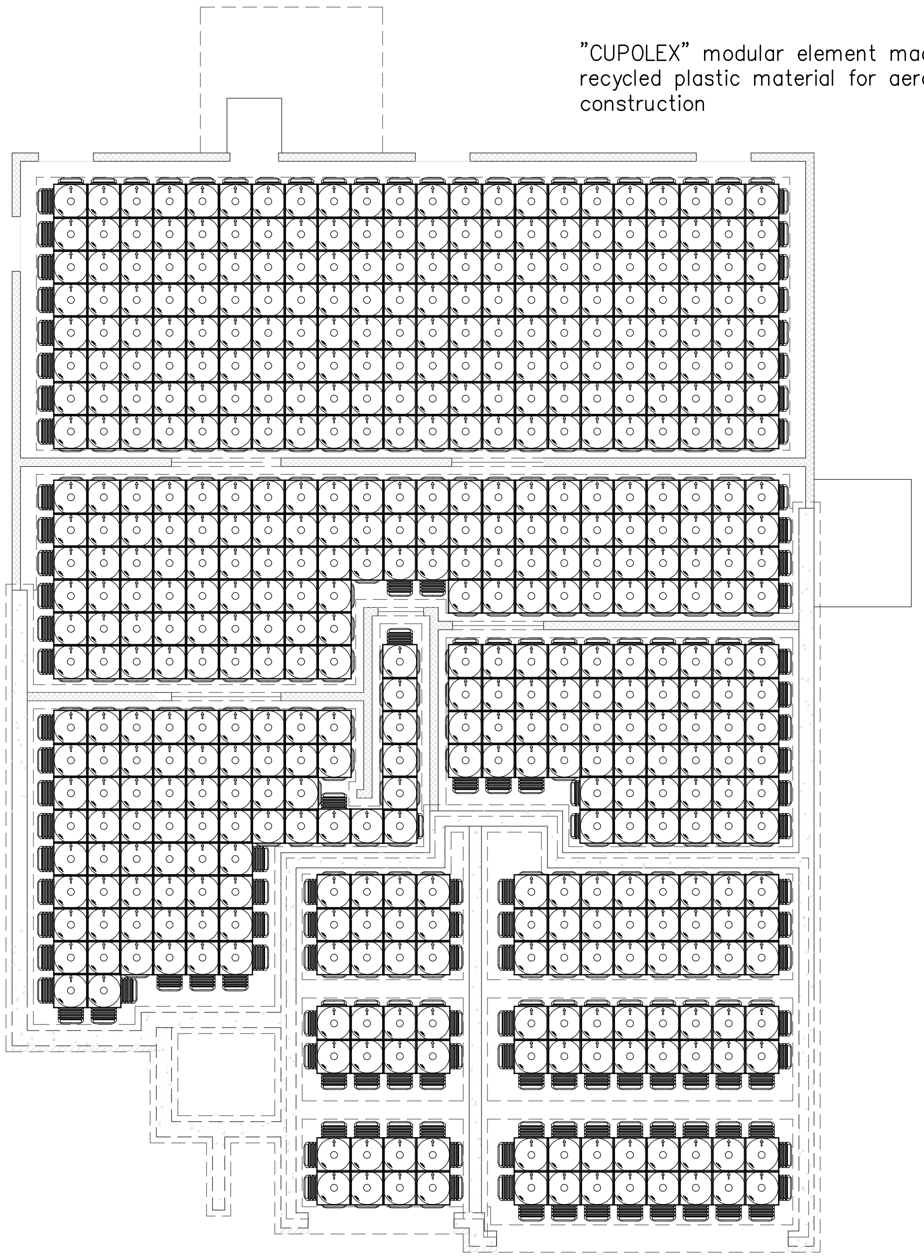
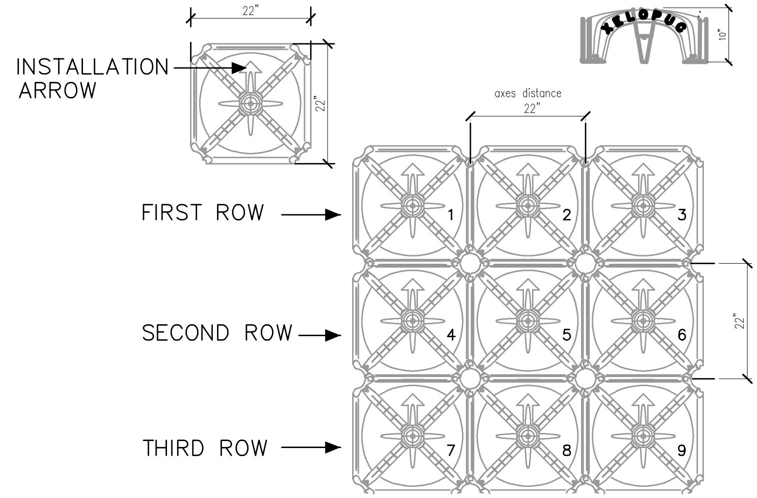
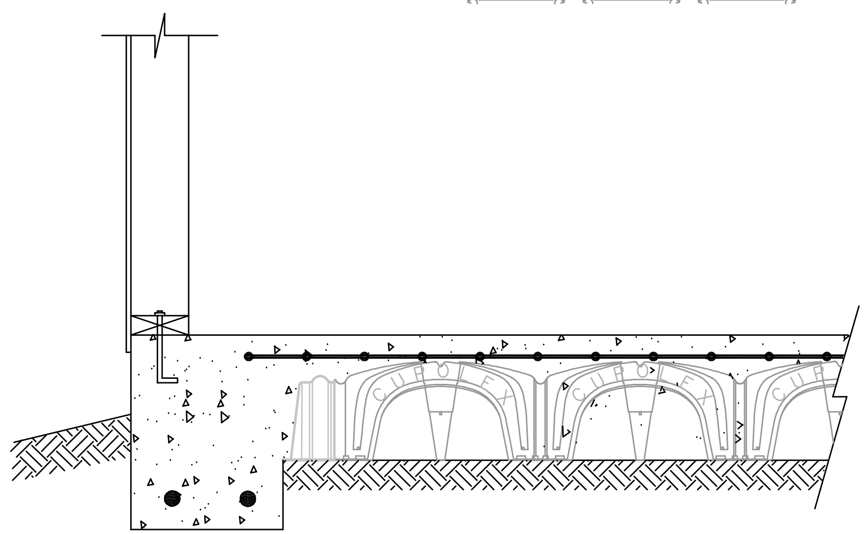


Figure 5
Example Sump Cover Installation in Basement
Adams Plating Superfund Site
Lansing, Ingham County, Michigan



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

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