REMEDIATION WORK PLAN

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

April 2022

Prepared for:

City of Warsaw
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Warsaw, Indiana 46580

Indiana Brownfields Program
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ENVIRONMENTAL PROFESSIONAL STATEMENT

I certify, under penalty of law, that this document and all appendices and attachments as applicable were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience.

_____
Glen A Howard, CHMM
Senior Project Manager
SES Fort Wayne, IN

EXECUTIVE SUMMARY

This document serves as a remediation work plan (RWP) for addressing contaminants at the former Arnolt Corporation property located at 2525 Durbin Street, Warsaw, Kosciusko County, Indiana (project area/site). This RWP was prepared on behalf of the City of Warsaw, the Indiana Brownfields Program (IBP) and Indiana Finance Authority (IFA).

The City of Warsaw (City) will utilize brownfield funding (i.e., grant) from the U.S. EPA Region 5 and the Indiana Finance Authority (IFA) to conduct remediation of hazardous substances trichloroethene (TCE) and tetrachloroethene (PCE) in groundwater at the subject property, as well as asbestos abatement and chemical container and waste removal and disposal. Cleanup will help revitalize approximately two acres of blighted property east of downtown Warsaw, Indiana. The City intends to redevelop the property for residential use.

Background Information

The site is 2.26-acres with an approximately 60,000-square foot interconnected building on the west portion. Remaining areas are covered with grass, trees, and scrub vegetation. Piles of debris generally consist of brick, concrete, scrap wood and metal, tires, and general refuse are scattered throughout the site.

The immediate project area is characterized as commercial/industrial. Durbin Street borders the site to the south, with a parking lot and commercial buildings beyond. Adams Street borders the site to the east, with Cold Storage Units and restaurant property beyond. Hendricks Street borders the site to the north, with vacant lots and storage/warehouse structures to the north. A convenience store and fueling marketing facility adjoins the site to the west, with Argonne Road beyond.

Reportedly, the site operated as Arnolt Corporation (Arnolt) from circa 1942 (or 1938 depending on the source) as a manufacturer of metal parts (steel arresting hooks, parachute retainer clips, small motors, steel yokes, shock mounts and potentially asbestos brake pads, tubular frames, etc.) for the Department of Defense and others. Prior to Arnolt, site operations are unknown. Operations ceased on the site in 1990 and the building was used as a storage warehouse until 2019. The site is currently vacant and in disrepair.

Future Land Use

The redevelopment plan for the property includes multi-tenant building, community building, parking, playground, dog park, and sports courts. The draft plans are shown on Figure 7, along with the existing Arnolt Corporation building layout and remediation area. Proposed building #2 (southeast adjacent) is outside the scope of this project.

Constituents of Concern (COCs)

Environmental investigations in 2020 and 2021 identified chlorinated volatile organic compounds (cVOCs) and metals in soil, vapor and/or groundwater across the north and west portions of the site. While soil at the site exhibited contaminants of concern; contaminant concentrations did not exceed *residential direct contact screening levels,* with only one exception being metal (arsenic and thallium) in soil at one area. Groundwater occurring at a depth of approximately 20 feet exhibited chlorinated volatile organic compounds (trichloroethene (TCE) and tetrachloroethene (PCE)) concentrations that exceeded *tap water screening* and *vapor exposure screening levels.* Soil gas TCE and PCE contamination was identified, along with asbestos, lead paint, chemical containers, a suspected buried tank and solid wastes (PCB impacted debris).

Potential Exposure Assessment

As the project area will be used for residential development, residents and workers are identified as potential receptors and the following human exposure pathways are identified (1) soil - residential direct contact; (2) groundwater - residential tap water ingestion and residential vapor exposure; and (3) soil gas: residential vapor exposure. Inhalation of asbestos is another potential exposure pathway and chemical containers/buried tanks/wastes should be removed/disposal to eliminate future exposure hazards.

Proposed Remedial Approach

The overall objective of the project is to complete pre-demolition removal/abatement and post-demolition remediation activities on the subject property for its intended future residential use. Remediation will include contaminant source removals, along with chemical amendments to reduce contaminant concentrations, if necessary. Potential vapor intrusion will be addressed by active depressurization/soil vapor extraction. Monitoring will be initiated to assess temporal changes in groundwater quality following the removals and amendments.

- Based on exposure assessment results, removal will be completed prior to building demolition at the molten material area that exhibited arsenic and thallium concentrations in soil exceeding *residential direct contact screening levels*. The molten material is visible at the surface and appears to extend beneath a ramp extending into the building. Removal of a suspected buried tank/structure beneath the northeast portion of the building is also proposed. Reportedly, Mason Private Locating identified a geophysical anomaly at this area and a buried tank/structure is suspected.
- Abatement, disposal, and water well decommissioning will be completed prior to building demolition.
    - Asbestos abatement will include the removal of 12 fire doors, roofing, thermal system insulation on boiler pipe elbows and fittings, 12"x 12" floor tile – cream with gray speckles on first floor, and on the second floor, 12" x 12" floor tile – dark-gray with flecks, and 12" x 12" floor tile – green/blue with flecks, as well as any additional asbestos containing building material confirmed, based on testing, to require abatement. Abatement will be conducted by EMS a licensed abatement contractor with monitoring by SES, except roofing will be addressed during demolition.
    - A dilapidated drum was observed inside the western portion of the building. Several bins full of a white powder were also observed inside the eastern portion of the building. Additionally, several containers (10-gallons or less) were observed in a partial basement area underneath a concrete loading platform along the western exterior of the building, and an air compressor with a large oil reservoir was observed in the central portion of the building. A chemical inventory of petroleum and/or hazardous substances remaining on site will be completed. Totes, bins, drums, small containers (<10 gallons) identified during the inventory will be characterized and disposed offsite. Removal and disposal will be completed under the supervision of a CHMM.
    - Removal/disposal of PCB impacted residue on the concrete flooring in the east portion of the building and PCB impacted concrete will also be evaluated, removed, and disposed. Transformer oils were removed from the site in 2019 by Tetra Tech under the direction of US EPA Region 5. Three transformer shells remain at the site. Reportedly, the transformers were tested for PCB oils, then drained, and the oil was disposed offsite. The report indicates oil dry was applied in the transformer shell (two bags into each). Removal and offsite disposal of the solid waste absorbent material is proposed.
    - White painted transformers, salmon orange painted piping, and yellow painted shelfing, stair railing, piping, and sheeting are coated with lead-based paint. Segregation of metal for scrap metal recycling during demolition is proposed and the LBP on metal surfaces will seek regulatory recycling exclusion via the *RCRA Scrap Metal Exemption*.
    - The water well and monitor wells located east of the building will be abandoned in accordance with the Indiana Department of Natural Resources (IDNR) regulation 312 IAC 13-10-2 (Permanent Abandonment of Wells) and IDEM's "Drilling Procedures and Monitoring Well Guidelines Non-rule Policy Document (Waste-0053)".

- Groundwater beneath the northwest portion of the site building in the area of sampling location B2 will be addressed using an application of Regenesis' 3-D Microemulsion®, S-MZVI®, BDI® Plus. Treatment will be initiated after building demolition. The application will include 800 pounds of 3DME, 1,000 pounds of SMZVI, and 18 liters of BDI PLUS. A Regenesis prepared design application is provided as Appendix E. In brief, a product and water solution will be injected at 28 locations within the area of boring B2 (Figure 10). The products will be injected in a grid pattern with spacing of ten feet. Product will be applied across a depth interval of 20 to 25 feet via direct-push probing technology.

- A soil vapor extraction (SVE) system will be installed to recover TCE/PCE soil gas and minimize vapor migration. The proposed SVE will utilize a regenerative blower to draw a vacuum from multiple extraction points adjacent to the residential building proposed at the northwest portion of the site. For purposes of initial design, four SVE wells are proposed. The wells are identified as SVE1 through SVE4 on Figure 11. A Gast model EN757, 2.5 hp regenerative blower, or equivalent, will be used for vapor extraction.

  While the proposed SVE system is intended to recover TCE/PCE soil gas, the building final design may also need to incorporate a vapor mitigation system consisting of a liner/membrane (sub slab barrier) below the floor slab. If a negative pressure field is not recorded or inferred beneath the proposed residential buildings (based on SVE monitoring data), a liner/membrane below the floor slab will be recommended.

- Groundwater monitoring will be conducted at up to ten (10) monitor wells for two years to assess temporal changes in groundwater quality following the groundwater treatment. Groundwater monitor wells and groundwater monitoring will be conducted within and surrounding the groundwater VOC plume as shown on Figure 12. In addition, methane will be evaluated using a QRae plus gas meter, at each monitor well location.

The need for additional extraction points, additional mitigation, injection, and sub slab barrier installation will be evaluated after reviewing monitoring results, including vacuum influence, methane concentrations, reduction rates, and contamination distribution.

Schedule

Regulatory approval of this RWP is requested to initiate remediation of this site. RWP implementation is estimated to require at least 34 months. RWP Implementation – Removals, Abatement, Disposal will require approximately two months. Following building demolition, groundwater treatment and SVE installation will be completed in about three months. Monitoring will be conducted over a two year duration. Site closure will be contingent on how quickly contamination concentrations diminish with time, as well as the need for further remedial amendments.

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1.0 INTRODUCTION

This document serves as a remediation work plan (RWP) for addressing contaminants at the former Arnolt Corporation property located at 2525 Durbin Street, Warsaw, Kosciusko County, Indiana (project area/site). This RWP was prepared on behalf of the City of Warsaw, the Indiana Brownfields Program (IBP) and Indiana Finance Authority (IFA).

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The plan begins by providing a summary of site conditions and recent environmental investigation conducted between June 2020 and October 2021. This discussion is followed by details concerning contaminant characteristics, distribution, and potential exposure scenarios. The plan concludes by presenting details concerning the remediation approaches chosen for the site. All figures referenced in the text are located together at the conclusion of the report. Project supporting information is provided in the Appendices.

1.1 Project Identification

The site is 2.26-acres with an approximately 60,000-square foot interconnected building on the west portion. Remaining areas are covered with grass, trees, and scrub vegetation. The City of Warsaw acquired the site in August 2020. Contact information for involved parties are as follows:

Owner	**Indiana Brownfields / Indiana Finance Authority**	**Consultant**
City of Warsaw	Indiana Brownfields Program / Indiana Finance Authority	SES Environmental
102 South Buffalo Street	100 North Senate Avenue, Suite 1275	3807 Transportation Drive
Warsaw, IN 46580	Indianapolis, IN 46204	Fort Wayne, IN 46818
Joseph Thallemer, Mayor	Lori Bebinger, Project Manager	Glen A. Howard, Project Manager
Office: (574) 372-9595	Office: (317) 234-8099	Office: (260) 497-7645
mayor@warsaw.in.gov	lbebinger@ifa.in.gov	g.howard@sesadvantage.com

1.2 Overview of COC Distribution and Cleanup Approach

Environmental investigations in 2020 and 2021, conducted by Roberts Environmental Services (Roberts), identified chlorinated volatile organic compounds (cVOCs) and metals in soil, vapor and/or groundwater across the north and west portions of the site. While soil at the site exhibited contaminants of concern; contaminant concentrations did not exceed *residential direct contact screening levels,* with only one exception being metal (arsenic and thallium) in soil at one area. Groundwater occurring at a depth of approximately 20 feet exhibited chlorinated volatile organic compounds (trichloroethene (TCE) and tetrachloroethene (PCE)) concentrations that exceeded *tap water screening* and *vapor exposure screening levels.* Soil gas TCE and PCE contamination was identified, along with asbestos, lead paint, chemical containers, a suspected buried tank and solid wastes/PCB impacted debris.

The overall objective of the project is to complete pre-demolition removal/abatement and post-demolition remediation activities on the subject property for its intended future residential use. Remediation will include contaminant source removals, along with chemical amendments to reduce contaminant concentrations, if necessary. Potential vapor intrusion will be addressed by active depressurization/soil vapor extraction. Monitoring will be initiated to assess temporal changes in groundwater quality following the removals and amendments.

2.0 GENERAL BACKGROUND INFORMATION

This section provides general information concerning local and site-specific conditions. This information was obtained from published sources and site reconnaissance.

2.1 Site Location and Setting

The site consists of one land parcel located at 2525 Durbin Street, Warsaw, Kosciusko County, Indiana and identified by the Kosciusko County Assessor's Offices as Parcel ID 43-11-15-400-020.000-032. Geographically, the site is located at approximately 41° 14' 4.73" north latitude and 85° 49' 18.23" west longitude. An abbreviated legal description of the site obtained from Kosciusko County Assessor's Office is as follows:

LOTS 258-261 VAC ST E LOT 258 PT VAC ALLEY W LOT 261 LOTS 294-303 VAC ST BTWN LOTS 297 & 298 PT

The elevation of this site is approximately 850 feet above mean sea level as shown on the Warsaw, Indiana USGS 7.5-Minute Quadrangle Map. A Topographic Map and Site Area Map are presented as Figures 1 and 2, respectively.

2.2 Surrounding Population and Land Use

The immediate project area is characterized as commercial/industrial. Durbin Street borders the site to the south, with a parking lot and commercial buildings beyond. Adams Street borders the site to the east, with Cold Storage Units and restaurant property beyond. Hendricks Street borders the site to the north, with vacant lots and storage/warehouse structures to the north. A convenience store and fueling marketing facility adjoins the site to the west, with Argonne Road beyond.

2.3 Site and Site History

The site is 2.26-acres with an approximately 60,000-square foot interconnected building on the west portion. Remaining areas are covered with grass, trees, and scrub vegetation. Piles of debris generally consist of brick, concrete, scrap wood and metal, tires, and general refuse are scattered throughout the site.

Reportedly, the site operated as Arnolt Corporation (Arnolt) from circa 1942 (or 1938 depending on the source) as a manufacturer of metal parts (steel arresting hooks, parachute retainer clips, small motors, steel yokes, shock mounts and potentially asbestos brake pads, tubular frames, etc.) for the Department of Defense and others. Prior to Arnolt, site operations are unknown. Operations ceased on the site in 1990 and the building was used as a storage warehouse until 2019. The site is currently vacant and in disrepair.

2.4 Surface Waters

The closest body of water to the site is Winona Lake located approximately 1,000 feet to the south. An intermittent stream is located approximately 1,500 feet to the east. The intermittent stream extends to a wetland area, which is located approximately ½ mile southeast of the site.

Surface water drainage percolates into the local soils or drains across the ground surface towards low elevations to the south and east. Review of a FEMA Flood Insurance Rate Map (FIRM) indicates the site is located in Zone X, an area of minimal flood hazard.

Surface water on the site or in its immediate vicinity is not a source of local drinking water. The site area receives potable water from Indiana American Water Company.

2.5 Regional and Local Topography

Local topography surrounding the site is gently rolling with nearby lakes and wetlands accounting for changes in relief. Elevations range between 810 feet near the lakes, to more than 900 feet north-northeast of the site. The site elevation is approximately 850 feet. Site surfaces slope down to the south and east.

2.6 Subsurface Structures

Municipal water and sewer services are provided to the site area, along with natural gas service and telecommunication. Buried telecommunication cables were identified along Durbin Street and Adams Street. Water, natural gas, and sewer lines are suspected beneath streets/right of ways. Roberts provided the following details concerning sewers at the site:

> Citing Roberts: "Sewer laterals were also identified and traced, which included: a storm sewer lateral southwest of the building and an apparent sanitary sewer line running from a manhole directly west of the interior former transformer room to a manhole directly south of the southwest corner of the building along Durbin Street. The manhole lids were removed to help evaluate the locations and depth of the laterals. The storm sewer lateral southwest of the building is approximately 3.0-feet deep and 6.0-inches in diameter. The storm sewer lateral runs from a downspout at the southwest corner of the building south-southwesterly to a catch basin structure directly north of Durbin Street. The apparent sanitary sewer line is approximately 8.0 to 10-inches in diameter. The clay sewer pipe is approximately 6.0-feet below grade within the manhole along Durbin Street and 7.5-feet below grade within the interior manhole directly west of the interior former transformer room (building 2-3-feet higher elevation).

Known underground utilities are depicted on Figure 2.

2.7 Geology and Hydrogeology

2.7.1 Regional

According to the Soil Survey of Kosciusko County, Indiana (Natural Resource Conservation Service ("NRCS"), 2019 – via Web Soil Survey), surficial soils on the site primarily consist of Ormas loamy sand (OrA) soils. Ormas soils are described as loamy sand soils with sands and gravels at depth that formed from outwash plains. These nearly level soils are well drained with a low available water capacity. Surficial geology in the area consists of thick glacial outwash deposits. The unconsolidated layers of clays, silts, sand and gravels are approximately 250-feet thick. The bedrock below the unconsolidated deposits is comprised of Devonian-age Muscatatuck Group limestone and dolomite.

Groundwater resources are encountered in buried discontinuous sand and gravel formations that are generally fluvial in nature and associated with pre-glacial braided streams. Once deposited, the sand and gravel were dissected by glacial scouring causing them to be discontinuous (Fenelon, 1994). The sand and gravel deposits often exhibit confined conditions due to overlying fine textured glacial deposits.

Bedrock is not typically used for groundwater supply in the area.

2.7.2 Site

Sandy soils extended from the near surface to a depth of at least 26 feet. According to Roberts Phase I ESA, the regional ground water flow direction is westerly. However, ground water flow calculated as part of Envirocorp's investigations indicate an east to northeast ground water flow direction across the east half of the Site. Conversely, ground water flow directions presented as part of the nearby Warsaw Chemical cleanup activities (October 2019 Progress Report VFC ID 82906240), located west of the Site, show a westerly ground water flow

direction near the subject Site then a southwesterly flow towards Winona Lake, located approximately 1,000-feet southwest of the subject Site. The Warsaw Chemical ground water flow maps include ground water elevations from an extensive monitoring well network that stretches from the Freedom Express filling station, located directly west of the Site, all the way to Winona Lake. The Freedom Express leaking UST facility also presents a westerly ground water flow direction (August 2019 Progress Report VFC ID 82828119). Ground water flow in the area could be affected by any nearby high-capacity production wells. It appears that the Site could be on a ground water divide, with ground water flow on the eastern portion of the Site flowing to the east and ground water flow on the western portion of the Site flowing west.

2.8 Location and Usage of Water Wells

The site and surrounding area are reportedly provided with water by the Indiana American Water Company. However, a suspected private water well was observed east of the building. The approximately 4.0-inch diameter water well was located in an area of dense vegetation and appeared to be connected to a faucet. The electronic database maintained by the Indiana Department of Natural Resources; Water Resources Division showed no water well record for the site. However, water well record (#257105) was shown approximately 200 feet to the north. There were several other water wells within the area, but none located within 450 feet of the site and there was no significant withdrawal well areas within one mile of the site. In addition, according to IDEM's *Source Water Proximity Determination Tool*, the site is not located within a Wellhead Protection Area or Source Water Area. Water well records and proximity results are provided in Appendix C.

The database review identified 1,000 low discharge (unconsolidated) water wells and five significant withdraw well within two miles of the site. The database also indicates 355 water wells within one mile of the site. Due to the large number of well logs, the closest identified water well in each proximal direction are detailed below.

- Record #257105: This record is for a water well approximately 200 feet north of the site. The record indicates sand and gravel extends from the near surface to a depth of 105 feet. The listed static water level is 15 feet, and the well use is listed as "other".
- Record #88894: This record is for a water well approximately 3,000 feet east-northeast of the site. The record indicates gravel extends from the near surface to a depth of 110 feet. The listed static water level is 42 feet, and the well use is listed as "home".
- Record #89217: This record is for a water well approximately 920 feet southeast of the site. The record indicates alternating layers of sand/gravel and clay extends from the near surface to a depth of 102.5 feet. The listed static water level is 20 feet, and the well use is listed as "water utility". There are two other records for this area listing the same use.
- Record #89488: This record is for a water well approximately 920 feet southwest of the site. The record indicates clay extends from the near surface to a depth of 35 feet, followed by gravel to a depth of 50 feet, followed by clay to a depth of 135 feet. The listed static water level is 16 feet, and the well use is listed as "home".
- Record #19071: This record is for a water well approximately 930 feet west of the site. The record indicates alternating layers of sand/gravel and clay extends from the near surface to a depth of 100 feet. The listed static water level is 20 feet, and the well use is listed as "other".

2.9 Future Land Use

The redevelopment plan for the property includes multi-tenant building, community building, parking, playground, dog park, and sports courts. The draft plans are shown on Figure 7, along with the existing Arnolt Corporation building layout and remediation area. Proposed building #2 (southeast adjacent) is outside the scope of this project.

2.10 Susceptible Area Evaluation

Geologically susceptible areas (e.g., surface-water bodies, karstic bedrock areas, etc.) have not been identified at or immediately surrounding the site. Ecological receptors including plants and wildlife that may inhabit or forage at this vacated commercial property are not expected. The closest ecological receptors may occur along or at marsh and lake areas approximately 1,000-1,500 feet to the south and southeast.

Potentially susceptible community areas located adjacent to the site have not been identified. The following table describes potential sensitive community institutions and their approximate distance from the site

Table 1. Potential Sensitive Community Institutions
RLF Subgrant – Arnolt Corporation
2525 Durbin Street, Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002, Revolving Loan Fund RLF BF-00E48101-D

Community Institution	Address	Distance from Site (miles)
Hospitals		
Kosciusko Community Hospital	2101 Dubois Drive, Warsaw	1.3 miles north-northwest
Senior Citizen Services / Living Centers		
Grace Village	337 Grace Village Dr, Winona Lake	1.7 miles east-southeast
Neighborhood Associations		
Forest Park	https://nextdoor.com/neighborhood/forestparkwarsaw	
Recreational – Athletic		
Park/Recreation	County Fairground / Miller Athletic Complex	1.5 miles west and southeast, respectively
Churches		
Sacred Heart Catholic Church	135 N Harrison St., Warsaw	0.7 mile northwest
Church of Good Shepherd	708 College St., Winona Lake	0.4 mile southeast
Grace Baptist	2626 E Jefferson St., Warsaw	0.3 mile northeast
Day Cares / Preschools		
Warsaw KinderCare	62 Capital Dr., Warsaw	1 mile – north
Sacred Heart Catholic Church	135 N Harrison St., Warsaw	0.7 mile northwest
Schools (K-12)		
Sacred Heart Catholic Church	135 N Harrison St., Warsaw	0.7 mile northwest
Jefferson Elementary	1 Jefferson Dr., Winona Lake	1 mile southeast
Lincoln Elementary	203 N Lincoln St., Warsaw	1 mile northwest
Colleges / Universities / Trade Schools		
Grace College	1 Lancer Way, Winona Lake	1.3 miles southeast
Community/Public Parks		
Winona Lake Park	Limitless Park, Winona Lake	1 mile south
Park	Market and Colfax streets, Warsaw	1.1 mile – west
County Fairground	East Smith St., Warsaw	1.5 mile west

Source: Directions – Bing Maps and Google

2.11 Constituents of Concern (COCs)

Environmental investigations in 2020 and 2021 identified chlorinated volatile organic compounds (cVOCs) and metals in soil, vapor and/or groundwater across the north and west portions of the site. While soil at the site exhibited contaminants of concern; contaminant concentrations did not exceed *residential direct contact screening levels,* with only one exception being metal (arsenic and thallium) in soil at one area. Groundwater occurring at a depth of approximately 20 feet exhibited chlorinated volatile organic compounds (trichloroethene (TCE) and tetrachloroethene (PCE)) concentrations that exceeded *tap water screening* and *vapor exposure*

screening levels. Soil gas TCE and PCE contamination was identified, along with asbestos, lead paint, chemical containers, a suspected buried tank, and solid wastes (PCB impacted debris).

2.12 Potential Exposure Evaluation

As the project area will be used for residential development, residents and workers are identified as potential receptors and the following human exposure pathways are identified:

Soil:	Residential direct contact
Groundwater:	Residential tap water ingestion, residential vapor exposure
Soil Gas:	Residential vapor exposure

Inhalation of asbestos is another potential exposure pathway and chemical containers/buried tanks/wastes should be removed/disposal to eliminate future exposure hazards.

3.0 PREVIOUS INVESTIGATIONS

The following provides a summary of recent investigation information that has been reproduced from the following previous reports.

- Roberts Environmental Services, LLC, *Phase I Environmental Site Assessment,* June 16, 2020
- Metric Environmental, *Asbestos and LBP Survey Report,* September 14, 2020
- Roberts Environmental Services, LLC, *Limited Soil and Groundwater Screening Investigation,* November 19, 2020
- Roberts Environmental Services, LLC, *Further Site Investigation,* October 1, 2021
- SES Environmental, *Analysis of Brownfield Cleanup Alternatives,* March 2022

Data compilation tables are provided in Appendix A, along with Figures from the Roberts *Further Site Investigation*. Soil boring logs are provided in Appendix B.

3.1 Phase I Environmental Site Assessment – June 2020

Roberts Environmental Services, LLC, (Roberts), in a *Phase I Environmental Site Assessment* dated June 16, 2020, identified four (4) recognized environmental conditions (RECs) in connection with the subject site. The four cited RECs are as follows.

REC #1 – Documented cVOC Impacts: Previous soil and ground water sampling activities conducted at the Site have revealed chlorinated volatile organic compound ("cVOC") impacts at the subject Site and at nearby off-Site locations. A 1991 Screening Site Inspection ("SSI") by the United States Environmental Protection Agency ("USEPA") identified trichloroethylene ("TCE") in soil along the northeast exterior of the building (former dumpster area) at a concentration of 8,600 micrograms per kilogram ("ug/kg"), which exceeds present day Indiana Department of Environmental Management ("IDEM") screening levels ("SLs"). TCE was also detected in soil samples collected at off-Site locations north and south of the Site. Additionally, ground water sampling conducted in 1993 by Envirocorp identified 1,100 micrograms per liter ("ug/l") TCE (greater than its SL of 5.0 ug/l) in the ground water on the eastern portion of the Site and 90 ug/l directly north of the building. TCE was also detected at a concentration of 130 ug/l in a ground water collected at an off-Site location north of the subject Site across Hendricks Street. During a 1994 ground water sampling event by Envirocorp, TCE was detected at a concentration of 160 ug/l directly north of the building and ethylbenzene was detected at a concentration of 840 ug/l (greater than its SL of 700ug/l) east of the building. Further, as part of leaking underground storage tank ("LUST") monitoring activities at the western adjacent Freedom Express gasoline station, tetrachloroethylene ("PERC") and TCE were detected in 2019 from a monitoring well ground water sample located near the subject Site's western property boundary at concentrations of 121 ug/l and 39.7 ug/l, respectively. It appears that none of the documented on-Site impacts have been properly delineated via further

investigation. Other compounds or parameters that were identified at the Site historically include certain metals, total petroleum hydrocarbons, petroleum-related VOCs, and semi-volatile organic compounds ("SVOCs"). Also note that the 1990s investigations did not include any sampling/analysis from the former Gast Fuel & Service property (southeast portion of the Site - Delta Investments lots).

REC #2 – Historical Hazardous Material & Petroleum Use/Storage: Coal and fuel storage activities occurred on the southeastern portion of the Site (Delta Investments lots) as part of the former Gast Fuel & Service company operations. Aerial photographs depict what appear to be cylindrical aboveground storage tanks ("ASTs") on the far east-central portion of the Site in the 1960s through portions of the 1990s. A large AST is also visible on the southeastern portion of the Site in photographs taken by EPA as part of their SSI in 1991. Envirocorp also noted two (2) "tanks" and "areas of 55-gal. drums" on the southeast portion of the Site during their 1993 and 1994 investigations. A representative of Delta Investments LLC stated that two (2) ASTs were historically used on the southeastern portion of the Site when it was owned by Gast Fuel & Service. The ASTs reportedly had capacities of 18,000-gallons (horizontal AST) and 100,000-gallons (vertical AST). Coal storage is evident across this same area of the Site in aerial photographs dated 1957 and 1961 as well as a Sanborn Map® dated 1964. Local fire department officials reported that petroleum tankers were also previously parked on the southeastern portion of the Site. The 1964 Sanborn Map identifies a Paint Dip Tank at the northern portion of the far northeastern Site building. Further, an aerial photograph dated 1948 shows a large area of darker coloration, which appears to be some type of liquid discharge emanating from the northern portion of the original building and flowing to the east and then southerly across the Site. Various USEPA and Envirocorp reports from the early to mid-1990s indicate possible buried drums and/or dumping of drums associated with the "Arnolt Barrel Pit" site, which was reportedly located north of the Site across Hendricks Street, south of the Site across Durbin Street, and/or northeast of the Site at a former gravel pit pond/lake. Historical documents state that the Arnolt Corporation used and stored significant quantities of chemicals and petroleum products throughout their Site usage from circa 1946 to the early 1990s, including TCE. Suspect underground storage tank ("UST") piping was observed in the far northern portion of the building and also in the northeastern portion of the building near the same location that in 1993 Envirocorp surmised that an underground storage tank ("UST") may be located. A 10,000-gallon 24:1 outboard motor gasoline/#1 fuel oil UST was reported to have previously been located on the southeastern portion of the Site (former Gast Fuel & Service), according to a representative of Delta Investments LLC. This UST was reportedly removed circa 1985, however, no closure documentations was identified in the regulatory records review or provided by stakeholders.

REC #3 – Chemicals and Petroleum Products Observed On-Site: Two (2) dilapidated drums were observed inside the western portion of the building during the Site visit. The contents of the drums are unknown. Several bins full of a white powder were also observed inside the eastern portion of the building. Recent analytical testing during EPA 2019 Emergency Response Activities at the Site (transformer oil spill and asbestos sampling/disposal) indicate that the white powder contains TCE, arsenic, barium, cadmium, chromium, and selenium via Toxicity Characteristic Leaching Procedure ("TCLP"). Analytical testing for total constituent concentrations was not performed. No asbestos fibers were reportedly identified in the white powder through laboratory analysis. Additionally, several containers (10-gallons or less) were observed in a partial basement area underneath a concrete loading platform along the western exterior of the building. Some of the containers appeared to be leaking onto the surface of the concrete floor near floor drains. Further, an air compressor with a large oil reservoir was observed in the central portion of the building. Some of the oil appeared to be leaking out of the compressor. Characterization and proper disposal of these oils and chemicals would be necessary in order to prevent future leaks/spills at the Site. Oils in older manufacturing equipment can contain polychlorinated biphenyls ("PCBs"). It should be noted that the 1990s investigations and more recent 2019 response activities did not include any surface wipe sampling at the Site for PCBs.

REC #4 – Observed Building Features (Piping, Trenches, Catch Basins, etc.): Suspect hazardous material, petroleum, and/or process wastewater piping was observed in several areas of the building, including within a network of grated trenches inside the western and central portions of the building. A grated trench and two (2) or three (3) pit type features were also observed within the eastern portion of the building. Manholes were observed near a transformer room and a trench in the central portion of the building, while a catch basin was observed in the bottom of a trench located in the eastern portion of the building. The grated nature of the trenches may indicate that some type of wet process was utilized during manufacturing activities at the Site. Additionally, exhaust features in the ceiling of the eastern portion of the building where suspect piping was observed along with peeling paint on the walls may indicate some type of painting, coating, or plating process that produced fumes previously occurred in this area. Note that

what appeared to be a large metal subsurface scale was observed in the far southwestern portion of the building. The area below the surface plate for the apparent scale could not be accessed.

3.2 Asbestos and Lead Paint Survey – September 2020

Metric Environmental (Metric), in an *Asbestos and LBP Survey Report* dated September 14, 2020, performed an asbestos and lead-based paint (LBP) survey of the site building. Metric identified the following assumed asbestos containing materials (ACMs): 12 fire doors, and 23,000 square feet of asphalt roofing in the north wing. Regulated ACM was identified as thermal system insulation on boiler pipe elbows and fittings (approximately 25 fittings/elbows). Non-friable ACM included 12"x 12" floor tile – cream with gray speckles on first floor, and on the second floor, 12" x 12" floor tile – dark-gray with flecks, and 12" x 12" floor tile – green/blue with flecks. Metric also indicated that the white transformers, salmon orange piping, and yellow shelfing, stair railing, piping, and sheeting are coated with lead-based paint.

3.3 Limited Soil and Groundwater Sampling – November 2020

Roberts, in a *Limited Soil and Groundwater Screening Investigation* dated November 19, 2020, advanced 16 soil borings, identified as B1 through B16. The sampling/borings were completed in August 2020. Twenty-one (21) soil samples and eleven (11) ground water samples were collected and submitted for laboratory analysis. Roberts reported the screening investigation was designed to assess potential widespread impacts related to specific RECs described in a previously completed Phase I ESA. Roberts presented the following findings and conclusions.

cVOCs in Soil and Ground Water. Concentrations of the chlorinated VOC ("cVOC") constituents PERC and/or TCE in soil samples collected at seven (7) boring locations (B-1 through B-5, B-12, and B-14) exceed MTG SLs. As shown on Figure 3, all of the PERC/TCE exceedances in soil were from borings installed inside the building or very near the on-Site building. PERC and/or TCE were detected at multiple depths within the soil column at all five (5) interior borings, B-1 through B-5. The highest PERC detection in soils was from soil sample B-1 (15-17) at a concentration of 0.30 mg/kg and the highest TCE detection in soils was from soil sample B-12 (3-5) at a concentration of 1.1 mg/kg. Multiple soil samples exceed the MTG SL for PERC of 0.045 mg/kg and/or the MTG SL for TCE of 0.036 mg/kg by orders of magnitude. However, none of the PERC or TCE detections exceed RDC SLs. PERC and/or TCE was detected in ground water at various concentrations (0.48 ug/l to 500 ug/l) at nine (9) of the eleven (11) locations. Concentrations of PERC and/or TCE in ground water exceed their Tap GWSL of 5.0 ug/l at borings B-1, B-2, B-4, B-5, B-12, and B-14 and the C/I VE SL for TCE of 38 ug/l at each of these same locations. As shown on Figure 4, the data indicate that TCE in ground water may be migrating off-Site to the west. Additional soil and ground water sampling as well as a determination of ground water flow characteristics via permanent monitoring wells would be necessary to better define the extent of TCE impacts at the Site and at off-Site locations. Since PERC/TCE are dense non-aqueous phase liquids ("DNAPLs"), vertical delineation of the cVOC impacts in ground water would also be necessary. Note that no other cVOC SL exceedances were identified in ground water for the analyzed constituents.

Metals in Soils. Arsenic in soils at four (4) soil sample locations, B-1 (15-17), B-7A (1-3), B-8 (1-3), and B-11 (0-1), was detected at concentrations greater than its MTG SL of 5.9 mg/kg. However, the average arsenic concentration from all twenty-one (21) soil samples collected at the Site and analyzed for arsenic during this investigation is 4.94 mg/kg, below the MTG SL. Additionally, no elevated arsenic concentrations were detected in ground water samples collected at the Site during this investigation. As such, it appears that arsenic in the soil is not leaching into the ground water at the Site and may be related to naturally occurring background arsenic in soils. Elevated concentrations of nickel and thallium (greater than SLs) were also identified in soil sample B-11 (0-1), which was collected from an area of orangish stained soils/residues located at the northeastern exterior of the building. This soil sample also contained the greatest concentration of arsenic, 11 mg/kg, which exceeds the RDC SL for arsenic of 9.5 mg/kg. Remediation of the orangish material and impacted soil via excavation and disposal at an approved landfill may be a viable remedial option to help mitigate the risk of future residential exposures in this area.

Petroleum-Related VOCs and PAHs in Soils. Petroleum-related VOC and PAH impacts were identified in soils at borings B-6, B-7A, B-7B, and B-9, which were all advanced on the southeastern portion of the Site (former Gast Fuel Services property). Concentrations from shallow soil samples (0-1 feet or 1-3 feet bgs) exceed MTG SLs for naphthalene at each of these locations, while MTG SL exceedances for 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, 1,2,4-TMB, benzene, and m,p-xylenes were also identified at B-7A. However, no exceedances of RDC SLs were identified. Further investigation would be necessary to adequately delineate these impacted soils.

Other Areas/Features Requiring Further Evaluation. Other areas and/or features that would require further evaluation during potential FSI activities would include the suspected UST or other underground features identified inside the far northeastern portion of the building and the extensive trench drain systems inside the building. Also note that excessive vegetation on the southeastern portion of the Site significantly limited GPR screening in this area and could have prevented adequate evaluation of a reported potential UST in this same area. Various containers/bins of chemicals and/or petroleum products and an unknown white powder identified at the Site during the Phase I ESA still remain on-Site. Additionally, a suspected water well and three (3) previously installed monitoring wells located east of the building were not evaluated or abandoned as part of this investigation.

3.4 Further Site Investigation – October 2021

Roberts, in a *Further Site Investigation* dated October 1, 2021, advanced 17 soil borings, identified as B17 through B28, B-7C, and B-11A. The sampling/borings were completed in July 2021. A total of five (5) PCB wipe samples, twenty-seven (27) soil samples, eight (8) ground water samples, and fifteen (15) soil gas samples were collected and submitted for laboratory analysis. The data tables are included as Appendix A. This screening investigation was reportedly performed to provide a better understanding of potential sources as well as the extent and magnitude of the previously identified TCE impacts at the Site. The FSI sampling was also designed to provide a general screening for PFAS and hex chrome in ground water, as well as PCBs on concrete flooring inside the building. Roberts presented the following findings and conclusions.

cVOCs in Soil and Ground Water. As shown on Figure 4, all of the PERC/TCE exceedances in soil are from borings installed inside the building or very near the on-Site building. The impacted area of TCE in ground water (Figure 5) remains similar to the impacts delineated during the ISI activities. The greatest concentration of TCE in ground water (500 ug/l) occurs at the boring B-2 location within the northern portion of the building. As shown on Figure 5, the data indicate that TCE in ground water may be migrating off-Site to the west. Based on the data collected from the ISI and FSI, cVOCs are the primary contaminants of concern.

Soil "hot spots" (defined as PERC or TCE in soil at concentrations 10x their MTG SL) shown on Figure 6 indicate a relatively large area of elevated TCE concentrations in soils underneath/near the central, north-central, and eastern portions of the building. Elevated PERC concentrations in soils are primarily located underneath/near the west-central portion of the building.

The cVOC impacts at the Site have been generally defined. Additional soil and ground water sampling as well as a determination of ground water flow characteristics via permanent monitoring wells would be necessary to better define the extent of PERC/TCE impacts at the Site and at off-Site locations. Since PERC/TCE are dense non-aqueous phase liquids ("DNAPLs"), vertical delineation of the cVOC impacts in ground water would also be necessary. Note that no other cVOC SL exceedances were identified in ground water for the analyzed constituents.

PCB Wipes. Sample PCBW-1 collected from the concrete surface inside the eastern portion of the building contained 11 ug/100cm2 of PCBs, which is greater than the EPA PCB wipe standard of 10 ug/100cm2 . The concrete in this area should be considered "PCB Contaminated". No PCBs were detected at concentrations greater than the EPA standard at any of the other four (4) wipe sample locations.

PFAS and Hex Chrome Analysis. The PFAS constituent PFOA was detected at two (2) of the three (3) PFAS sampling locations. The concentrations of PFOA identified in ground water at B-2 of 4.98 ng/l and at B-28 of 2.40 ng/l are below the EPA Health Advisory Level of 70 ng/l. As such, PFAS ground water screening at the Site has not identified any

widespread PFAS impacts. Hex chrome was not detected above laboratory reporting limits in the ground water samples collected from B-1, B-2, or B-28. Hex chrome was also less than reporting limits in soil sample B-11A (0-1), which was collected next to ISI soil sample B-11 (0-1) that previously contained elevated metals concentrations in soils. As such, the data suggests that hex chrome is not a contaminant of concern (COC) at the Site.

Petroleum-Related VOCs at Borings B-7 Area (*SES notes that the B-7 Area is not part of the site*). Elevated petroleum-related VOCs in soils (greater than MTG SLs) were previously identified at depths of 1.0 to 3.0-feet bgs at borings B-7A and B-7B during the ISI activities. Deeper soil samples (5-7 and 9-11 feet bgs) collected from boring B-7C during the FSI activities did not contain detectable concentrations of VOCs. Similarly, the ground water sample collected from boring B-7C exhibited no detections of VOCs. Therefore, it appears that the petroleum-related VOC impacts in soil near the surface in the borings B-7 area on the far southeastern portion of the Site have not negatively impacted the ground water.

Soil Gas. Elevated concentrations of PERC and/or TCE were identified in the soil gas samples collected at SG-1s, SG-1d, SG-3s, SG-3d, SG-4d, and SG-SS. The concentrations of PERC and/or TCE in these soil gas samples exceed C/I soil gas SLs by orders of magnitude at locations north of the northeastern portion of the building (SG-1 location), along the western property boundary (SG-3 and SG-4 locations), and underneath the northern portion of the building's concrete floor (SG-SS location). However, soil gas samples (SG-6 and SG-7 locations) collected east and southeast of the building on the Delta Lots did not exhibit any soil gas SL exceedances. Similarly, no SL exceedances were identified in the shallow soil gas sample SG-5s collected near a storm sewer lateral at the southwestern exterior of the building. Soil gas sample SG-8s, collected directly above a sanitary sewer lateral within the southeastern portion of the building exceeds the residential soil gas SL for TCE of 70 ug/m3 , but does not exceed the C/I soil gas SL of 293 ug/m3 for TCE. Note that elevated concentrations (greater than the C/I soil gas SL) of naphthalene were detected in soil gas samples SG-4s and SG-4d. Naphthalene has not been detected at concentrations greater than SLs in soil or ground water samples on the western portion of the Site. As such, the elevated naphthalene concentrations at SG-4 may be related to the nearby active gasoline filling station located directly west of the Site in close proximity to the SG-4 sample location.

Other Areas/Features Requiring Further Evaluation. Various metals impact at ISI boring B-11 were not further delineated but are presumed to be related to stained soils/residues at the northeastern exterior of the building. A suspect UST is potentially located in the far northeastern portion of the building, which would likely require closure through removal. Various containers/bins of chemicals and/or petroleum products and an unknown white powder identified at the Site during the Phase I ESA still remain on-Site. Additionally, a suspected water well and three (3) previously installed monitoring wells located east of the building were not evaluated or abandoned as part of this investigation. Business environmental risks ("BERs") such as asbestos and lead paint have been evaluated separately by Metric Environmental, LLC. It is also important to note that the Site-specific ground water flow direction has not been verified via the installation of permanent monitoring wells and it is possible that the Site is situated on a local ground water divide (i.e., westerly direction on central and western portions of the Site and an easterly flow direction on the eastern portion of the Site).

3.5 Analysis of Brownfield Cleanup Alternatives – March 2022

SES prepared an *Analysis of Brownfield Cleanup Alternatives* (ABCA). The ABCA outlined environmental cleanup alternatives that were evaluated to mitigate blight and facilitate potential redevelopment. The analysis included an evaluation of alternatives with respect to effectiveness and cost.

Remediation alternatives for impacted soil and impacted groundwater included (1) isolation, (2) immobilization, (3) physical separation, (4) extraction, and/or (5) reduction. Alternatives were summarized based on conceptual application and estimated costs. The ABCA determined that while there may be alternatives for addressing the soil and groundwater contamination at this particular site, given the known conditions and proposed residential redevelopment, an integrated approach of soil extraction, chemical application/amendments to groundwater, and active soil depressurization would be the most effective corrective action alternative to achieve conditional closure.

SES notes that removals of asbestos, any buried tanks, water wells, containers and solid wastes were not evaluated in the ABCA but are deemed necessary remedial actions.

4.0 REMEDIATION APPROACH AND RATIONALE

As a part of selecting an appropriate environmental remedy, the nature, contaminant concentrations and distribution of constituents of concern were evaluated, as well as potential exposure risk to human health and the environment. Based on this evaluation, remediation will include contaminant source removals, along with chemical amendments to reduce contaminant concentrations, if necessary. Potential vapor intrusion will be addressed by active depressurization/soil vapor extraction. Monitoring will be initiated to assess temporal changes in groundwater quality following the removals and amendments. Furthermore, remediation will include the removals of asbestos, buried tanks, chemical containers, water and monitor wells, and solid wastes/debris.

4.1 Source and Nature of COCs

Constituents of concern include arsenic and thallium soil contamination identified as B-11 (0-1') obtained near molten metal adjacent to the northeast corner of the site building; and trichloroethene (TCE) and tetrachloroethene (PCE) in groundwater across the north and west portions of the site. Soil gas impacts are also identified, and this impact generally coincide with the groundwater impacts. The site has had a long industrial history dating to circa 1942. As previously noted, the site operated as Arnolt Corporation (Arnolt) from circa 1942 (or 1938 depending on the source) as a manufacturer of metal parts.

Arsenic, thallium, PCE, and TCE are the primary COCs detected at concentrations exceeding *residential direct contact screening levels* and/or *residential vapor exposure screening levels*. Asbestos containing materials are also identified as contaminants of concern, as well as the containerized chemicals, solid wastes, and lead-based paint. PCB impacted solid waste (dust, debris, residue) was identified on the concrete flooring in the east portion of the building. The following presents published toxicity characteristics for these parameters.

Arsenic (CAS#: 7440-38-2) Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Inorganic arsenic compounds are mainly used to preserve wood and organic arsenic compounds are used as pesticides. Symptoms of acute inorganic arsenic poisoning in humans are nausea, anorexia, vomiting, epigastric and abdominal pain, and diarrhea. Severe exposures can result in acute encephalopathy, congestive heart failure, stupor, convulsions, paralysis, coma, and death. General symptoms of chronic arsenic poisoning in humans are weakness, general debility and lassitude, loss of appetite and energy, loss of hair, hoarseness of voice, loss of weight, and mental disorders. Although the carcinogenic potential of arsenic is debated, U.S. EPA has placed inorganic arsenic in weight-of-evidence group A, human carcinogen.

Asbestos According to ATSDR (https://www.atsdr.cdc.gov/asbestos/health_effects_asbestos.html) "asbestos is a dangerous substance and should be avoided. Breathing asbestos can cause tiny asbestos fibers to get stuck in the lungs and irritate lung tissues. Scientific studies have shown that the following non-cancer diseases can be caused by breathing asbestos: Asbestosis is scarring in the lungs caused by breathing asbestos fibers. Oxygen and carbon dioxide do not pass in and out of scarred lungs easily, so breathing becomes harder. Asbestosis usually occurs in people who have had very high exposures over a long time, but years may pass before any symptoms appear. Pleural disease is a non-cancerous lung condition that causes changes in the membrane surrounding the lungs and chest cavity (pleura). The membrane may become thicker throughout (diffuse pleural thickening) or in isolated areas (pleural plaques), or fluid may build up around the lungs (known as a pleural effusion). Not everyone with pleural changes will have problems breathing, but some may have less efficient lung function. Asbestos exposure also increases the risk of developing certain cancers. In addition to lung cancer and mesothelioma, asbestos exposure can also cause cancer of the larynx and ovary. Current evidence also suggests asbestos exposure may cause cancer of the pharynx, stomach, and colorectum."

PCB (Polychlorinated Biphenyls) According to ATSDR, PCBs are a group of synthetic organic chemicals that can cause a number of different harmful effects. There are no known natural sources of PCBs in the environment. PCBs are either oily liquids or solids and are colorless to light yellow. Some PCBs are volatile and may exist as a vapor in air. They have no known smell or taste. PCBs enter the environment as mixtures containing a variety of individual chlorinated biphenyl components, known as congeners, as well as impurities. Skin conditions, such as acne and rashes, may occur in people exposed to high levels of PCBs. These effects on the skin are well documented but are not likely to result from exposures in the general population. Most of the human studies have many shortcomings, which make it difficult for scientists to establish a clear association between PCB exposure levels and health effects. Some studies in workers suggest that exposure to PCBs may also cause irritation of the nose and lungs, gastrointestinal discomfort, changes in the blood and liver, and depression and fatigue. The preponderance of the biomedical data from human and laboratory mammal studies provides strong evidence of the toxic potential of exposure to PCBs. Based on indications of PCB-related cancer at several sites, particularly the liver, biliary tract, intestines, and skin (melanoma), the human studies provide suggestive evidence that PCBs are carcinogenic.

Thallium (CAS# 7440-28-0): According to ATSDR's Public Health Statement, thallium is a soft, bluish-white metal that is widely distributed in trace amounts in the earth's crust. In its pure form, it is odorless and tasteless. It can be found in pure form or mixed with other metals in the form of alloys. Thallium can affect your nervous system, lung, heart, liver, and kidney if large amounts are eaten or drunk for short periods of time. Temporary hair loss, vomiting, and diarrhea can also occur, and death may result after exposure to large amounts of thallium for short periods. Thallium can be fatal from a dose as low as 1 gram. No information was found on health effects in humans after exposure to smaller amounts of thallium for longer periods. The federal government has set standards and guidelines to protect individuals from the possible effects of excessive thallium exposure. The EPA has determined a water quality criteria level of 13 ppb in surrounding waters to protect humans from the harmful effects of drinking water and eating food containing thallium. The Occupational Safety and Health Administration (OSHA) has established an occupational limit of 0.1 mg of soluble thallium compounds per cubic meter of workplace air (mg thallium/m3 /skin) for an 8-hour workday over a 40-hour workweek. "Skin" indicates that measures must be taken to prevent skin exposure to thallium.

Tetrachloroethylene (CAS #127-18-4) According to ATSDR's Public Health Statement, tetrachloroethylene is a nonflammable colorless liquid. Other names for tetrachloroethylene include perchloroethylene, PCE, PERC, tetrachloroethene, and perchlor. Tetrachloroethylene is used as a dry cleaning agent and metal degreasing solvent. Tetrachloroethylene exposure may harm the nervous system, liver, kidneys, and reproductive system, and may be harmful to unborn children. If you are exposed to tetrachloroethylene, you may also be at a higher risk of getting certain types of cancer. The EPA considers tetrachloroethylene to be "likely to be carcinogenic to humans by all routes of exposure" based on suggestive evidence in human studies and clear evidence of mononuclear cell leukemia in rats and liver tumors in mice exposed for 2 years by inhalation or stomach tube. The International Agency for Research on Cancer considers tetrachloroethylene "probably carcinogenic to humans" based on limited evidence in humans and sufficient evidence in animals. The National Toxicology Program considers tetrachloroethylene to be "reasonably anticipated to be a human carcinogen.

Trichloroethylene (CAS #79-01-6) According to ATSDR's Public Health Statement, trichloroethylene is a colorless, volatile liquid. Liquid trichloroethylene evaporates quickly into the air. It is nonflammable and has a sweet odor. Relatively short-term exposure of animals to trichloroethylene resulted in harmful effects on the nervous system, liver, respiratory system, kidneys, blood, immune system, heart, and body weight. Exposure to trichloroethylene in the workplace may cause scleroderma (a systemic autoimmune disease) in some people. Some men occupationally-exposed to trichloroethylene and other chemicals showed decreases in sex drive, sperm quality, and reproductive hormone levels. Long-term exposure studies in animals have mainly focused on carcinogenicity and relatively insensitive noncancer end points following oral exposure; these studies are not helpful in defining noncancer end points in humans following long-term exposure. However, depressed body weight and evidence of effects on the thymus were reported in one recent study of mice exposed to trichloroethylene via their mothers during gestation and lactation and via the drinking water for up to 12 months thereafter. There is strong evidence that trichloroethylene can cause kidney cancer in people and some evidence that it causes liver cancer and malignant lymphoma (a blood cancer). Lifetime exposure to trichloroethylene resulted in increased liver cancer in mice and increased kidney cancer in rats at relatively high exposure levels. There is some evidence for trichloroethylene-induced testicular cancer and leukemia in rats and lymphomas and lung tumors in mice. The Department of Human Health Services (HHS) has classified trichloroethylene

as "known to be a human carcinogen" based on sufficient evidence of carcinogenicity from humans. Similarly, the International Agency for Research on Cancer (IARC) has classified it as "carcinogenic to humans" and EPA has characterized it as "carcinogenic in humans by all routes of exposure." These agencies concluded that there was sufficient evidence from human studies that trichloroethylene exposure can cause kidney cancer in humans. There is also some evidence of an association between trichloroethylene exposure and non-Hodgkin's lymphoma in humans.

4.2 Distribution

Environmental investigation in 2020 identified arsenic and thallium soil contamination. A soil sample identified as B-11 (0-1') obtained near molten metal adjacent to the northeast corner of the site building exhibited arsenic and thallium concentrations exceeding *residential direct contact screening levels* (see Figure 4*)*.

Environmental investigations in 2020 and 2021 identified TCE and PCE in groundwater across the north and west portions of the site (see Figure 5). Soil gas impacts generally coincide with the groundwater impacts (see Figure 6).

Metric identified the following assumed asbestos containing materials (ACMs): 12 fire doors, and 23,000 square feet of asphalt roofing in the north wing. Regulated ACM was identified as thermal system insulation on boiler pipe elbows and fittings (approximately 25 fittings/elbows). Non-friable ACM included 12"x 12" floor tile – cream with gray speckles on first floor, and on the second floor, 12" x 12" floor tile – dark-gray with flecks, and 12" x 12" floor tile – green/blue with flecks. Abatement will be conducted by EMS a licensed abatement contractor with monitoring by SES, except roofing will be addressed during demolition.

Metric also indicated that the white transformers, salmon orange piping, and yellow shelfing, stair railing, piping, and sheeting are coated with lead-based paint. Segregation of metal for scrap metal recycling is proposed and the LBP on metal surfaces will seek regulatory recycling exclusion via the *RCRA Scrap Metal Exemption*.

A dilapidated drum was observed inside the western portion of the building. Several bins full of a white powder were also observed inside the eastern portion of the building. Additionally, several containers (10-gallons or less) were observed in a partial basement area underneath a concrete loading platform along the western exterior of the building, and an air compressor with a large oil reservoir was observed in the central portion of the building. A chemical inventory of petroleum and/or hazardous substances remaining on site will be completed. Totes, bins, drums, small containers (<10 gallons) identified during the inventory will be characterized and disposed offsite. Removal and disposal will be completed under the supervision of a CHMM.

Removal/disposal of PCB impacted residue on the concrete flooring in the east portion of the building will also be evaluated, removed, and disposed. Transformer oils were removed from the site in 2019 by Tetra Tech under the direction of US EPA Region 5. Three transformer shells remain at the site. Reportedly, the transformers were tested for PCB oils, then drained, and the oil was disposed offsite. The report indicates oil dry was applied in the transformer shell (two bags into each). Removal and offsite disposal of the solid waste absorbent material is proposed. The need for concrete flooring removal, due to impact, is being evaluated and a RWP Addendum will be prepared if removal is required.

4.3 Baseline Ecological Assessment

A baseline ecological assessment was conducted to determine if any critical habitats exist on or near the site. The assessment included a review of the U.S. Geological Survey 7.5-minute topographic map to identify features such as parks, preserves, and other special-use areas within a one-mile radius of the site; a visit to the property to identify wildlife, vegetation, and critical habitats in the near vicinity; and online database review of governmental and regulatory agencies having jurisdiction over protected species to identify state-listed and proposed endangered and threatened animal and plant species and wetlands within the area.

Topographic Map. No other significant potential ecological features were noted within the immediate site vicinity. The closest ecological receptors may occur along or at marsh and lake areas approximately 1,000-1,500 feet to the south and southeast.

Site Visit. The site was visually inspected and ecological habitats were not discernible due to the existing debris surrounding the building. The inspection revealed grass, scrub vegetation and gravel over the majority of the site surface surrounding the buildings, as well as many debris piles. Streets border the site to the north, east and south and a convenience store/fuel marketing facility is located to the west. Residential properties are located farther to the north and west.

Governmental Database. Online information was obtained from the following agencies: U.S. Forest Service, National Park Service, U.S. Department of Fish and Wildlife Service, and the Indiana Department of Natural Resources (DNR). No registered forests or parks were identified at or adjacent to the site.

The U.S. Department of Fish and Wildlife Service National Wetlands Inventory (Appendix D) identified a *Freshwater Forested/Shrub Wetland* with *Freshwater Pond* to the southeast and *Lake* to the south. As previously noted, these features are at least 1,000 feet beyond the site.

A DNR listing of endangered, threatened, and rare species for Kosciusko County is provided in Appendix D. Several types of mollusk, insect, fish, amphibian, reptile, bird, mammal, and vascular plant are listed, as well as high-quality natural communities.

In summary, the offsite *wetland, pond,* and *lake* may be a potentially susceptible ecological area and habitat for animal species. Geologically susceptible areas (e.g., surface-water bodies, karstic bedrock areas, etc.) have not been identified at or immediately surrounding the site.

4.4 Identification and Evaluation of Potential Human Receptors

Human receptors that might be potentially exposed to COCs were identified by inspecting the site property and adjacent properties, and reviewing published site maps, and reports detailing site conditions. Potentially susceptible community areas located adjacent to the site have not been identified. The site is currently vacant, without human receptors. However, as the project area will be used for residential development, residents and workers are identified as potential receptors and the following human exposure pathways are identified:

Soil:	Residential direct contact
Groundwater:	Residential tap water ingestion, residential vapor exposure
Soil Gas:	Residential vapor exposure

Inhalation of asbestos is another potential exposure pathway and chemical containers/buried tanks/wastes should be removed/disposal to eliminate future exposure hazards.

4.5 Removals – Buried Tank and Molten Material

Based on exposure assessment results, removal will be completed at the molten material area that exhibited arsenic and thallium concentrations in soil exceeding *residential direct contact screening levels*. The molten material is visible at the surface and appears to extend beneath a ramp extending into the building. Removal of a suspected buried tank/structure beneath the northeast portion of the building is also proposed. Reportedly, Mason Private Locating identified a geophysical anomaly at this area and a buried tank/structure is suspected.

Removals will be completed prior to building demolition. The following provides general specifications concerning removals and offsite disposal.

1. Indiana 811 will be notified to mark underground utilities at the jobsite. Excavation contractor will install chain link panel fencing around the excavation / removal areas.
2. SES will observe excavation / removal work and collect samples as needed to demonstrate the project is completed in accordance with specifications.
3. Waste characterization will be conducted in accordance with criteria provided by the waste disposal facility chosen to receive the wastes. Specifically, VOCs, SVOCs, PCBs, RCRA 8 Metals have been requested by GFL Environmental the owner and operator of the landfill located at 2710 East 800 South in Claypool.
4. Excavation will begin by breaking and removing concrete flooring and pavement over the suspected tank / removal areas (as needed). This material will be transported offsite as general construction debris.
5. Tank/buried structures will be exposed, evacuated, purged, cut open, cleaned, and processed for salvage/recycling or landfill disposal.
6. Soil targeted for removal will then be excavated, loaded into trucks, and transported to the licensed solid waste disposal facility. Waste manifest will be maintained for all offsite shipments.
7. Excavation will be terminated approximately 1 to 2 feet laterally and vertically beyond the molten material and tank/structure.
8. After completing the excavation / removal work, SES will collect native soil samples from exposed excavation sidewalls and bottom. Soil samples will be collected at a rate of one per each 20 linear feet of sidewall. The soil samples will be collected from the vertical midpoint of the sidewall. One soil sample will be collected from each 400 square feet of exposed soil in the bottom of the excavation.
    a. Samples from the molten material area will be analyzed for arsenic and thallium (Method 6010).
    b. Samples from the suspected buried tank area will be analyzed for VOCs (Method 8260), PAHs (Method 8270), and lead (Method 6010).
9. VOC samples will be collected in accordance with Method 5035A. Samples will be stored in laboratory supplied, four-ounce containers, and placed in a cooler containing ice for transport to the laboratory. Appropriate chain-of-custody documentation will be maintained during the sample collection and transport process.
10. Quality assurance/quality control sampling will consist of trip blanks, blind duplicates, matrix spike/matrix spike duplicates, and a Level IV data package.
11. Soil samples will be screened in the field for the presence of total volatile organic vapor using a photoionization detector (PID) instrument. Conventional, closed-container headspace methods will be used to screen samples.
12. Soil samples will be promptly delivered to a sub-contract laboratory for analyses with results presented on a dry weight basis. Analysis will be conducted within 5 to 7 days.
13. In the event a sidewall or bottom soil sample testing result exceeds the residential direct contact screening level, additional soil may be removed from the sampled area (dependent on accessibility). The additional soil will be transported off-site for disposal as previously specified.
14. After receiving acceptable laboratory testing results, the excavations will be backfilled with granular soil/aggregate and topped with crushed stone. The aggregate will not be mechanically compacted and screening for contaminants in the aggregate will not be conducted.

4.6 Abatement, Disposal, and Water Well Decommissioning

Abatement, disposal, and water well decommissioning will be completed prior to building demolition.

Disposals: A chemical inventory of containers will be completed, profiles prepared, and issued to the selected disposal facilities. Following profile approvals, the containers will be removed from the site under the supervision of a CHMM. The containers will be transported under manifest control to the selected disposal facilities.

Removal/disposal of PCB impacted residue on the flooring in the east portion of the building and PCB impacted concrete will also be evaluated and, if applicable, completed by Hazwoper certified personnel. The following general work practices are anticipated.

1. At a minumum, five samples will be retained from the east portion of the building to assess the extent of PCB debris on the flooring. The proposed sampling locations are depicted on Figure 9.
2. The samples will be obtained by wiping a 10 square centimeter area with a hexane soake gauze pad. The wipe samples will be analyed for PCBs.
3. In addition, samples of concrete from locations at and outward of the identified transformer area will be retained to determine the extent of the regulated concrete, if any.
4. Based on sampling results, access to the regulated work area(s) shall be restricted to properly trained and authorized personnel.
5. Contactor shall remove regulated concrete within the building.
    a. Concrete sawing will be conducted around the perimeter of the defined impact. Cooling water from the sawing process will be vacuumed into 55-gallon drums.
    b. After sawing, concrete, along any base course material beneath the concrete will be placed into 20-yard roll-offs.
    c. The roll-offs will be covered with a tarp to prevent storm water contact and losses during storage and transport to the disposal site.
    d. The roll-offs will be transported by a commercial waste trucking company under hazardous waste manifests to a licensed waste collection facility.
    e. After completing the removal, soil samples will be collected. In general accordance with 40 CFR §761.283, a grid system will be applied at the removal areas. Each grid will measure 6.5 feet. One soil sample will be obtained from each grid intersect. Up to nine grid intersection samples will then be composited.
    f. Samples will be collected 'by hand' with each soil composite sample inserted into a laboratory provided, four-ounce, glass sample containers. Samples will be analyzed for PCBs in accordance with SW846 Method 8082 and the Soxhlet Extraction Method 3540C.
6. Contractor shall remove regulated residues within the building using methods such as vacuuming, wiping, brushing, scraping, and other state-of-the-art techniques or better.
    a. Decontamination will include a detergent and potable water solution wash followed by a rinse. All decontaminated sampling equipment will be dry prior to reuse. Lightly contaminated areas may be wiped with a hexane-soaked cloth and hexane rinsed for decontamination.
    b. Following cleaning/decontamination, wipe samples will be collected from areas that exhibited the thickest residue and/or oil residue. At a minumum, five samples will be retained by wiping a 10 square centimeter area with a hexane soaked gauze pad. The wipe samples will be analyed for PCBs.
    c. Residue will be placed in DOT approved containers.
    d. The containers will contain approved OSHA and US DOT labels, identifying the contents.
7. Prior to initiating disposal, Contractor will prepare a waste profile application on behalf of the Owner.
8. Contractor shall prepare shipping papers for Owner.
9. At completion of hauling and disposal of each load the Contractor will submit copy of waste manifest, chain of custody form, and landfill receipt to Owner and Programs.
10. Contractor will provide notification, in writing, that acceptable final clearance levels have been achieved.

Abatement: A licensed abatement contractor will remove and dispose of asbestos-containing material (ACM) using industry-accepted asbestos removal procedures. Furthermore, if suspect asbestos containing building material is identified, the material will be sampled and properly disposed. Roofing is assumed ACM but characterized as non-friable and will not require abatement personnel. This roofing material will be disposed at a landfill or permitted facility during the demolition process (by City). Visually identified asbestos will be removed using methods such as vacuuming, wet wiping, wet brushing, wet scraping, and other state-of-the-art techniques or better. The selected contractor will remove and properly containerize all asbestos-contaminated debris/materials. The following general work practices are anticipated.

1. Contractor shall post “Asbestos Health Hazard" danger signs at all entrances to the work area.
2. Access to the regulated work area shall be restricted to properly trained and authorized personnel.
3. Critical barriers shall be installed at openings to work area and dropcloths shall be placed when ACM is not removed substantially intact, or there is a potential for exposure above the PEL.
4. Personal protective clothing and respirator protection shall be consistent with selected control methods and a prepared HASP.
5. Contractor shall remove ACM within the building.
6. As applicable, ACM shall be sprayed with amended water, and if applicable detached from surface without breaking (as possible).
7. As ACM is removed, simultaneously pack material in disposal bags. Twist neck of bags, bend over and seal with minimum three wraps of duct tape.
8. ACM shall remain wet until transferred to a closed receptacle.
9. The closed receptable will contain approved OSHA and US DOT labels, identifying the contents as asbestos materials, to each container/receptacle.
10. Prior to initiating disposal, Contractor shall prepare a special waste acceptance application on behalf of the Owner and then submit application and fee to Indiana Department of Environmental Management for review and approval.
11. Contractor shall prepare shipping papers for Owner.
12. At completion of hauling and disposal of each load the Contractor will submit copy of waste manifest, chain of custody form, and landfill receipt to Owner and Programs.
13. Contractor will provide notification, in writing, that acceptable final clearance levels have been achieved.

After removal, SES will perform a complete final visual inspection of the entire work area. If any waste or chemical containers, PCB debris, and/or PCB impacted soil above residential criteria, is found, Contractor will repeat the removal processes. Closeout documents shall be submitted to owner and Program at the conclusion of the project. Documents shall include but not limited to the following:

1. Copies of daily project sign-in/sign-out logs
2. Daily project log forms,
3. Equipment used,
4. Sample locations, dates, and times
5. Descriptions of unique or unusual events during the project.
6. A copy of final clearance certification,
7. Copies of waste manifests,
8. Copies of disposal application documents,
9. Visual inspection records, and
10. Any other relevant records.

Well Decommissioning: Prior to building demolition, the water well and monitor wells located east of the building will be abandoned in accordance with the Indiana Department of Natural Resources (IDNR) regulation 312 IAC 13-10-2 (Permanent Abandonment of Wells) and IDEM’s “Drilling Procedures and Monitoring Well Guidelines Non-rule Policy Document (Waste-0053)”. In brief, wells are to be filled with bentonite chips or concrete-grout, and piping cut off approximately two feet below grade. Additionally, a Well Abandonment Form signed by licensed well driller will be generated.

4.7 Groundwater Treatment

Groundwater beneath the northwest portion of the site building in the area of sampling location B2 will be addressed using an application of Regenesis' 3-D Microemulsion®, S-MZVI®, BDI® Plus. Treatment will be initiated after building demolition.

4.7.1 3-D Microemulsion™ Overview

The application will include 800 pounds of 3DME, 1,000 pounds of SMZVI, and 18 liters of BDI PLUS.

3DMe™ is manufactured and available from Regenesis. As published by Regenesis, 3DMe™ "*is a form of HRC Advanced® and has a molecular structure specifically designed to maximize the cost-effective anaerobic treatment of contaminants in subsurface soil and groundwater. This structure (patent pending) is composed of free lactic acid, controlled-release lactic acid (polylactate) and certain fatty acid components which are esterified to a carbon backbone molecule of glycerin. 3DMe™ produces a sequential, staged release of its electron donor components. The immediately available free lactic acid is fermented rapidly while the controlled-release lactic acid is metabolized at a more controlled rate. The fatty acids are converted to hydrogen over a mid to long-range timeline giving 3DMe™ an exceptionally long electron donor release profile. This staged fermentation provides an immediate, mid-range and very long-term, controlled-release supply of hydrogen (electron donor) to fuel the reductive dechlorination process. Typical 3DMe™ single application longevity is rated at periods of up to 3 to 5 years.*"

"S-MicroZVITM is an In Situ Chemical Reduction (ISCR) reagent that promotes the destruction of many organic pollutants and is most commonly used with chlorinated hydrocarbons. It is engineered to provide an optimal source of micro-scale zero valent iron (ZVI) that is both easy to use and delivers enhanced reactivity with the target contaminants via multiple pathways. S-MicroZVI can destroy many chlorinated contaminants through a direct chemical reaction. S-MicroZVI will also stimulate anaerobic biological degradation by rapidly creating a reducing environment that is favorable for reductive dechlorination."

"Bio-Dechlor INOCULUM Plus (BDI PLUS®) is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI PLUS has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water. The culture also contains microbes capable of dehalogenating halomethanes (e.g., carbon tetrachloride and chloroform) and haloethanes (e.g., 1,1,1-TCA and 1,1-DCA) as well as mixtures of these contaminants."

4.7.2 Application and Injection

A Regenesis prepared designed, focused approach for the B2 area, is provided as Appendix E. In brief, a product and water solution will be injected at 28 locations within the area of boring B2. The products will be injected in a grid pattern with spacing of ten feet. Product will be applied across a depth interval of 20 to 25 feet via direct-push probing technology. Regenesis mixing and injection instructions are provided in Appendix E.

4.7.3 Reduction Monitoring

Following application, groundwater monitoring will be conducted to assess temporal changes in VOC groundwater concentrations. In addition, methane monitoring will be conducted. A methane and groundwater monitoring program are detailed in Section 4.10. The need for further application will be evaluated after reviewing groundwater and methane sampling results. Furthermore, in the event, methane is above the 10% LEL criteria in IDEM's *Addressing Methane at Anaerobic Bioremediation Sites* created October 5, 2012 and most

recently updated on August 31, 2019 nearby receptors will be evaluated, as well as mitigation measures, if necessary.

4.8 Soil Vapor Extraction

SES proposes the installation of a soil vapor extraction system to recover TCE/PCE soil gas and minimize vapor migration. The proposed SVE will utilize a regenerative blower to draw a vacuum from multiple extraction points adjacent to the residential building proposed at the northwest portion of the site. Vacuum trend analysis for Incident 2003-04-506 at the former Steve's Fast Food Mart along East Center Street northeast of the site indicated soil vapor extraction was feasible and effective. However, the cumulative influence of multi-extractions points at the site will need to be determined.

4.8.1 Initial Design

For purposes of initial design, four SVE wells are proposed. The wells are identified as SVE1 through SVE4 on Figure 11. A Gast model EN757, 2.5 hp regenerative blower, or equivalent, will be used for vapor extraction.

- The specified blower is rated at 157 scfm and a maximum vacuum of 60 inches of mercury.
- The blower will be equipped with a separation tank to remove trace amounts of water that may be entrained within the air recovery stream, as well as an air flow meter, filter, and silencer.
- A vacuum lines will extend from a central vacuum manifold assembly at the blower to each extraction well. The assembly will include vacuum gauges, flow meters and adjustment valves, and air sampling ports to control airflow rates from each extraction well.
- The blower will be housed in a plastic enclosure with Noise-Reducing Gypsum Board or equivalent be installed around the equipment for noise reduction and control.
- An indicator light will provide notice of full separation tank, motor overload, or hi/lo vacuum and system shutdown.
- Three-phase, 208/230 volt power will be supplied to the equipment from a separate meter installation.
- Air effluent from the SVE blower will be discharged to the atmosphere through an exhaust stack that will extend at least four feet above the nearest building's roofline. A rain cap will be affixed to the top of the exhaust stack.

Soil vapor extraction wells will be installed within 4-1/4-inch ID hollow-stemmed augers advanced to a depth of 15 feet (blank drilled). Wells will be constructed using two-inch diameter PVC casing and 0.020-slotted screen. Well materials will be assembled and placed inside the hollow-stemmed augers. The screens will be positioned to intercept a depth interval between 5 and 15 feet below surface grade. A commercial, washed and dried, quartz silica sand pack will be placed around the well screen to a level one-foot above the screened interval. The sand pack will be Global #5 or equal. The remainder of the borehole annulus will be sealed with coarse-milled bentonite material. The bentonite will be hydrated upon completion.

A three-inch PVC fitting cleanout adapter will be installed at each SVE wellhead for access. A subgrade trench for PVC conveyance piping or direct burial HDPE conveyance piping will be extended to each SVE from the equipment building to be located along the west property boundary. The trenching plan is depicted on Figure 11. Offsite disposal of soils is not anticipated and any sandy soils encountered during trenching will be reused as backfill. Surfaces disturbed by trenching will be restored to match original conditions.

Potential to Emit: The facility will be a major source and regulated by the NESHAP if the potential hazardous air pollutant (HAP) emissions (Potential to Emit/PTE) are more than 10 tons for any single HAP or 25 tons for any combination of HAPs. The emission rate calculation equation is as follows and the calculated PTE using soil gas data from soil gas SG-3d reveal no single HAP greater than 0.01 tons per year and the total is 0.1 tons per year (Appendix F). Based on this PTE calculation, treatment of VOC off gas is not proposed at this time.

Qc = (Cc) * (F) * (MWc) * (60 minutes/hour) * (24 hours/day) divided by (10^6) * (V)

where: Qc = Mass Emission Rate of Contaminant c, lbs/day
Cc = Concentration of Contaminant c, ppm
1 x 10^6 = Conversion from parts per million to parts per unit volume
F = Vapor Volume Flow Rate, scfm (max of 157 cfm per the proposed blower)
V = Molar Volume = 385.3 ft 3 /lb-mole (based on Ideal Gas Law for a gas at standard conditions of 68 °F and 1 atm)
MWc = Molecular Weight of Contaminant c

= 133.4 g/mole for 1,1,1-TCA
= 120.19 g/mol for 1,2,4-TMB
= 120.2 g/mol for 1,3,5-TMB
= 72.11 g/mole for MEK
= 58.08 g/mole for Acetone
= 78.11 lb/lb-mol for Benzene
= 76.14 g/mole for Carbon Disulfide
= 119.4 lb/lb-mol for Chloroform
= 84.16 g/ mole for Cyclohexane
= 120.91 g/ mole for Dichlorodifluoromethane
= 106.16 g/ mole for Ethylbenzene
= 100.21 g/ mole for Heptane
= 86.17 g/ mole for Hexane
= 106.16 g/ mole for mp-Xylene
= 106.16 g/ mole for o-Xylene
= 84.93 lb/lb-mol for Methylene Chloride
= 42.08 g/ mole for Propylene
= 104.15 g/ mole for Styrene
= 165.8 lb/lb-mol for Tetrachloroethylene (Perchloroethylene, PCE)
= 131.4 lb/lb-mol for Trichloroethylene (TCE)
= 96.95 g/ mole for cis-12-DCE
= 96.95 g/ mole for trans-12-DCE
= 72.11 g/mole for Tetrahydrofuran
= 92.14 g/ mole for Toluene
= 134.37 g/ mole for Trichlorofluoromethane
= 120.19 g/ mole for Cumene
= 128.17 g/ mole for Naphthalene

4.8.2 Operation and Monitoring

The SVE system will be operated continuously and inspections will be completed at least quarterly for the first year of operation and semi-annually the second year. Vacuum, differential pressure, and/or airflow measurements will be obtained at the blower piping and at monitor points (monitor points are detailed in Section 4.10) to evaluate system performance. A log sheet will be maintained to accurately detail the time, nature, and duration of any equipment malfunctions, as well as corrective actions taken in response to those malfunctions. Operation will continue for two years, until contaminants in the subsurface have reduced to levels that will no longer results in vapor intrusion and/or IDEM determines operation no longer required.

Exhaust (vented soil gas) sampling will be conducted to assess system performance and to evaluate soil gas concentrations. Sampling will be initiated by attaching tubing from the exhaust stack sample point to a 1-liter summa canister with a flow regulator. The vacuum seal on the canister will then be released to introduce soil vapor at a rate of approximately 100 ml/min (ten-minute sample duration). The canister will be closed at the conclusion of the sampling event and disassembled. Following collection, the sample will be labeled, entered into chain-of-custody, and transported via courier to Envision Air located in Indianapolis, Indiana. Canister vacuums prior to and after sampling will be recorded on the chain-of-custody. The sample will be analyzed for

VOCs in accordance with SW846 Method TO-15. The laboratory report will be affixed to an inspection monitoring form.

- If VOCs are detected system operation will continue.
- Emission rates will be calculated.
- If no VOCs are detected, system operation will continue until additional investigation demonstrates vapor intrusion is no longer a risk and the risk demonstration is approved by IDEM.

Measurements will be conducted at monitor wells using a digital manometer and recorded to the nearest 0.01-inch of water. Measurements will be obtained from direct observation as the manometer is coupled to sampling ports on system pipelines or directly to the monitor points.

- If measurements are within 20% difference as compared to the system baseline values, no system adjustments will be conducted.
- System maintenance will be conducted and piping inspected for blockage if measurements differ by more than 20% of baseline values.
- If vacuum is not recorded at three or more monitor points, maintenance will be completed to the degree necessary to re-establish the negative pressure field.

The need for additional extraction points will be evaluated after reviewing monitoring results, including vacuum influence, reduction rates, and contamination distribution.

4.9 Vapor Mitigation System

SES reviewed the preliminary facility layout showing a proposed 3-story building #1 over the identified remediation area and a community building. While the proposed SVE system is intended to recover TCE/PCE soil gas, the building final design may also need to incorporate a vapor mitigation system consisting of a liner/membrane below the floor slab.

- If a negative pressure field is not recorded or inferred beneath the proposed residential buildings (based on SVE monitoring data), a liner/membrane below the floor slab will be recommended.
- Indoor air sampling and/or sub slab soil gas sampling would also be needed to assess the effectiveness of the mitigation system.

4.10 Groundwater Monitoring

Groundwater monitoring will be conducted at up to ten (10) monitor wells for two years to assess temporal changes in groundwater quality following the groundwater treatment. Groundwater monitor wells and groundwater monitoring will be conducted within and surrounding the groundwater VOC plume as shown on Figure 12. The following task implementation sequence is anticipated:

1. Borings will be advanced using direct-push probing methods, with borings extended to a depth of approximately 28 feet. All soil samples will be visually inspected in the field by a SES geologist and classified according to color, texture, and relative moisture content in accordance with ASTM Standard D 2488. A portion of each sample interval will be equally divided and placed in a plastic container for headspace analysis using a PID instrument. Soil sample testing is not anticipated at this time. To limit the generation of soil cuttings, wells may be installed using geoprobe direct push technology and in this case pre-pack well screens will be used. A permanent groundwater monitor well will be installed at each boring location. Wells will be constructed using conventional 2-inch, PVC casing, and a 10-foot 0.010-slotted screen (pre-pack screen for geoprobe install). Well screens will be positioned between 18 and 28 feet (but subject to observed soil conditions). Washed, commercial, quartz sand pack will be placed around the screened interval to a level approximately one foot above the screen and capped with 2 feet of

bentonite. Grout will then be placed from the top of the bentonite seal to the ground surface. The wells will be finished with a watertight expansion seal, and a protective steel cover set in concrete, flush with grade.

2. Following well construction, groundwater will be purged to remove fines and to improve connection with the water bearing formation. Relative elevations will then be established for the top of each point/well using standard level survey methods. Elevations will be established to an accuracy of 0.01 feet. A horizontal control survey will also be conducted to locate the position of each well relative to significant site features. GPS data will also be collected.

3. On a quarterly basis, for a period of two years, groundwater samples will be collected from the monitor well locations. In addition, methane will be determined using a QRae plus gas meter.

4. A QRae plus four-gas meter will be used to measure methane concentrations (as %LEL) at each monitor well. The instrument will be calibrated prior to field usage in accordance with manufacturer's specifications. Instrument response to calibration gas will be tested during and after all readings have been collected (bump tests). The instrument will be re-calibrated if the instrument response to %LEL is less than, or more than 10% greater than calibration standard gas. The collection of methane measurements at the monitor well locations will begin by recording the internal pressure of the well casing. This measurement will be obtained by first connecting a short length of ¼" OD tube between a hose barb fitting to be installed on the probe cap or riser to a magnehelic gauge. The ball valve will then be opened, and a casing pressure measurement will be recorded. The ball valve will then be closed, and the magnehelic gauge will be replaced with the gas monitoring instrument. The valve will then be reopened, and an air sample from the casing will be drawn through the instrument. If methane is present, the instrument will detect %LEL within one minute.

5. Groundwater sampling will be initiated by removing the well caps, and then allowing sufficient time for groundwater levels to equalize with ambient pressure conditions. The depth to water will then be gauged at each monitor well. Gauging will be conducted using an electronic water level indicator with an accuracy of 0.01 feet. The water level indicator will be cleaned with a detergent solution and tap water rinse prior each measurement. Following gauging, groundwater samples will be collected using low flow/low stress techniques. A small-diameter low-flow bladder pump will be used to purge and sample monitor wells. The purge rate will be set not to exceed 500 milliliters per minute (ml/min). During purging, regardless of the sample type or well recovery, field indicator parameters will be monitored and documented. These parameters are measured to document that the purging procedure is adequate, and that the stagnant water in the well has been removed. These parameters will begin to stabilize as purging continues and should completely stabilize at the end of well purging. Turbidity, dissolved oxygen, oxygen reduction potential (ORP), specific conductivity, pH, and temperature will be measured. After stable conditions are established, water samples will be collected using the bladder pump and discharged directly into the appropriate sample containers. The following sample collection sequence will be followed for consistency:

    a) Measure water level.
    b) Purging with mechanical bladder pump (low flow-low stress).
    c) After stable field readings are attained, collect sample under low flow conditions.
    d) Collect sample for volatile organics (cVOCs).
    e) Place samples into appropriate containers and follow sample preservation, packaging, and shipping procedures.

6. QA/QC samples will include a trip, equipment blank, and blind duplicate. A MS/MSD will be collected for the final sampling event. Upon completion of a groundwater quarterly sampling event, a written report of analytical results and field activities will be submitted to the Program's project manager for review.

7. Well abandonment activities will be conducted after obtaining Program approval.

8. As previously noted, a *Remediation Completion Report* will be prepared to document groundwater monitoring, soil barrier construction, soil sampling methods, and laboratory testing results.

4.11 Evaluation and Reporting

A *Completion Report* will be prepared to document the removals, soil sampling methods, groundwater treatment, SVE installation, and laboratory testing results. Site maps will be developed that clearly and

accurately depict the removal locations, treatment areas, groundwater monitoring and SVE locations, and final sampling results. The report appendix will include waste characterization data, disposal documentation, photographs, and other information derived from RWP implementation.

Upon completion of quarterly SVE and groundwater monitoring, a written report of analytical results and field activities will be submitted to the Program's project manager for review. The need for additional extraction points, injection, and sub slab barrier installation will be evaluated after reviewing monitoring results, including vacuum influence, reduction rates, and contamination distribution. Furthermore, in the event, methane is above the 10% LEL criteria in IDEM's *Addressing Methane at Anaerobic Bioremediation Sites* created October 5, 2012 and most recently updated on August 31, 2019 nearby receptors will be evaluated, as well as mitigation measures, if necessary.

4.12 Schedule

SES proposes the following task schedule.

Task	Duration of Task (months)*
Remediation Work Plan (RWP) Approval by Program and USEPA	--
RWP Implementation – Removals, Abatement, Disposal	1-2 months
Demolition	2-3 months
RWP Implementation Continued – Groundwater Treatment and SVE Install	2-3 months
Interim Completion Report	1-2 months
Groundwater Monitoring	24 months
Site Closure	30 to 34 months

*duration is subject to the demolition schedule, residential redevelopment schedule, and how quickly contamination concentrations diminish with time, as well as the need for remedial amendments.

5.0 HEALTH AND SAFETY PLAN

A *Health and Safety Plan* was provided previously. The plan specifies a site safety coordinator, job task delegation, emergency procedures, and directions to the nearest emergency care facility.

All field personnel conducting on-site activities will have completed OSHA 1910.120 40-hour Health and Safety Training, as well as annual eight-hour refresher training updates. All site personnel will be enrolled in a medical monitoring program.

The site safety coordinator will review the health and safety plan with all site personnel prior to beginning work. Daily toolbox meetings will be conducted at the beginning of each day thereafter to assess unforeseen hazards and/or make modifications due to changes in site conditions. All site personnel will acknowledge participation in the safety meeting by signing and dating the health and safety plan.

6.0 QUALITY ASSURANCE

The overall QA objective is to develop and implement procedures for field sampling, chain of custody, laboratory analysis, and reporting that will provide results that are scientifically valid, and the levels of which are sufficient to meet Level IV DQOs. Field and quality assurance procedures are detailed in a report titled *"Quality Assurance Project Plan (QAPP) – Revision 0"* dated March 2022.

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Indiana Department of Environmental Management, Virtual File Cabinet Records

Roberts Environmental Services, LLC, *Phase I Environmental Site Assessment,* June 16, 2020

Metric Environmental, *Asbestos and LBP Survey Report,* September 14, 2020

Roberts Environmental Services, LLC, *Limited Soil and Groundwater Screening Investigation,* November 19, 2020

Roberts Environmental Services, LLC, *Further Site Investigation,* October 1, 2021

SES Environmental, *Analysis of Brownfield Cleanup Alternatives,* March 2022

USGS Topographic Map, 7.5 Minute Series, Warsaw, Indiana Quadrangle Map, Published 1957, Photorevised 1981

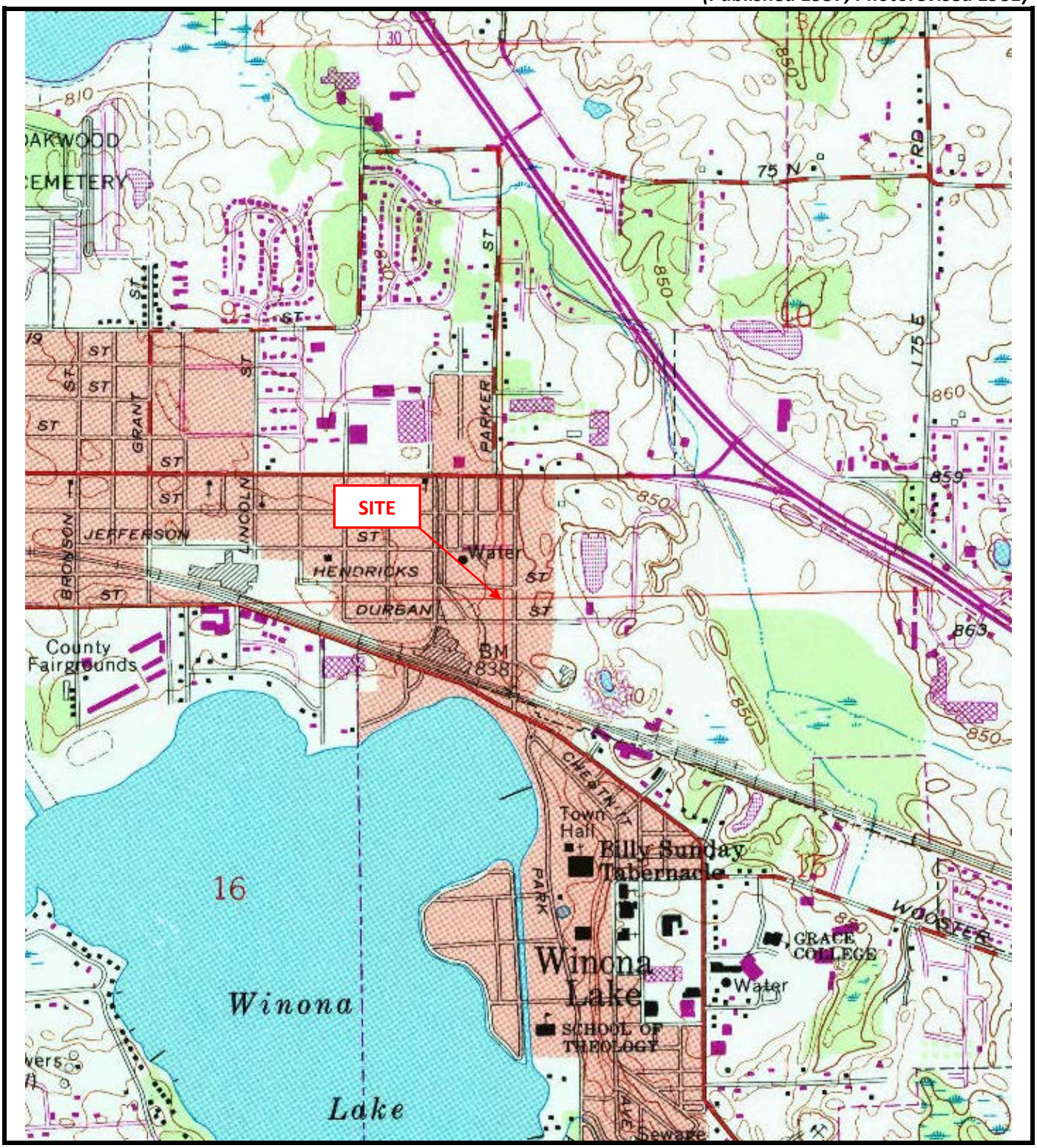
U.S. Fish and Wildlife Service, Wetlands Map

REMEDIATION WORK PLAN

FIGURES

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

Warsaw, Indiana 7.5 Minute Quadrangle Map
(Published 1957, Photorevised 1981)

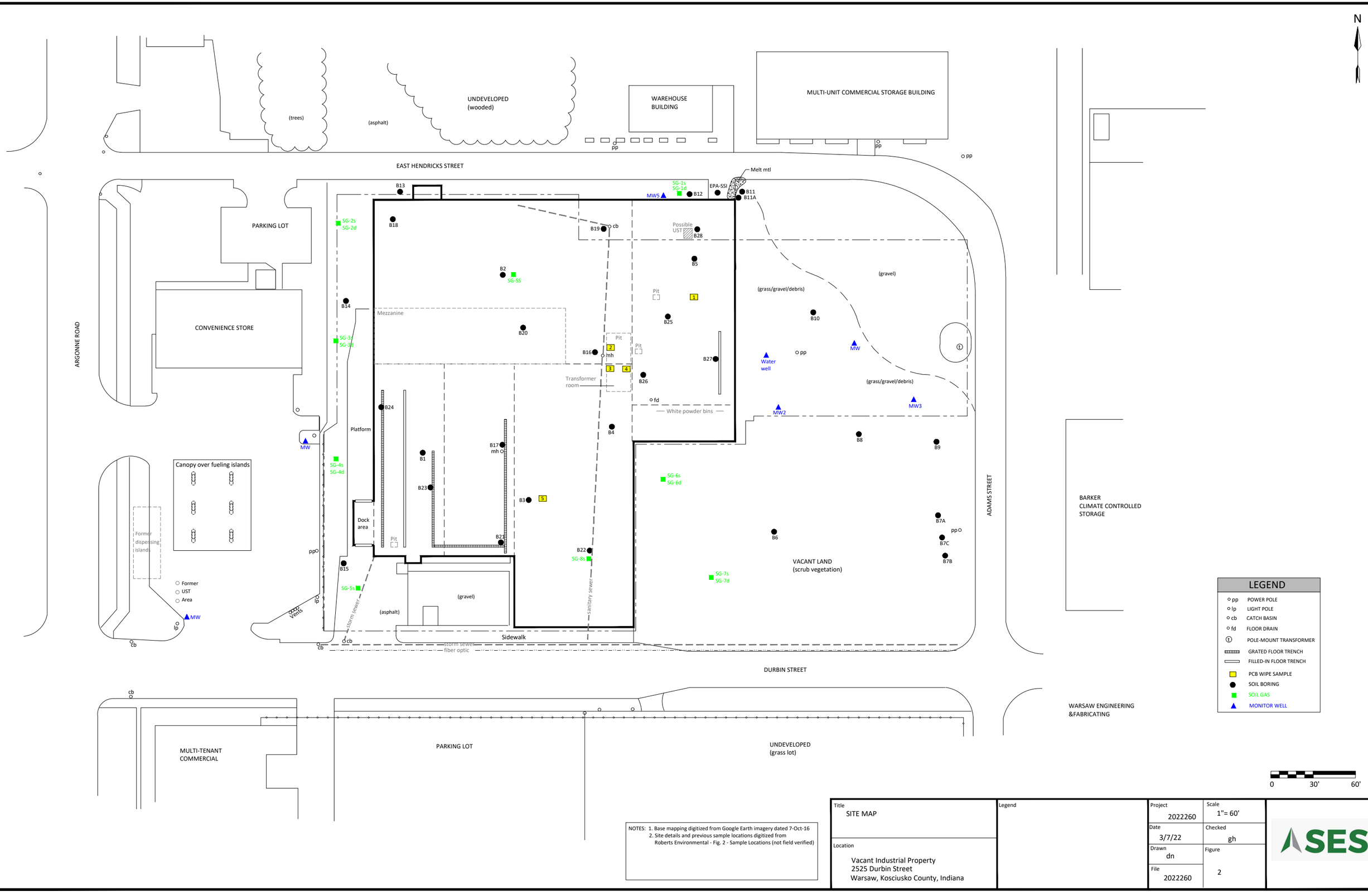


CONTOUR INTERVAL 10 FEET
Site Boundaries Shown are Approximate

Topographic Map **Figure 1**

Former Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
SES Project No.: 2022-200

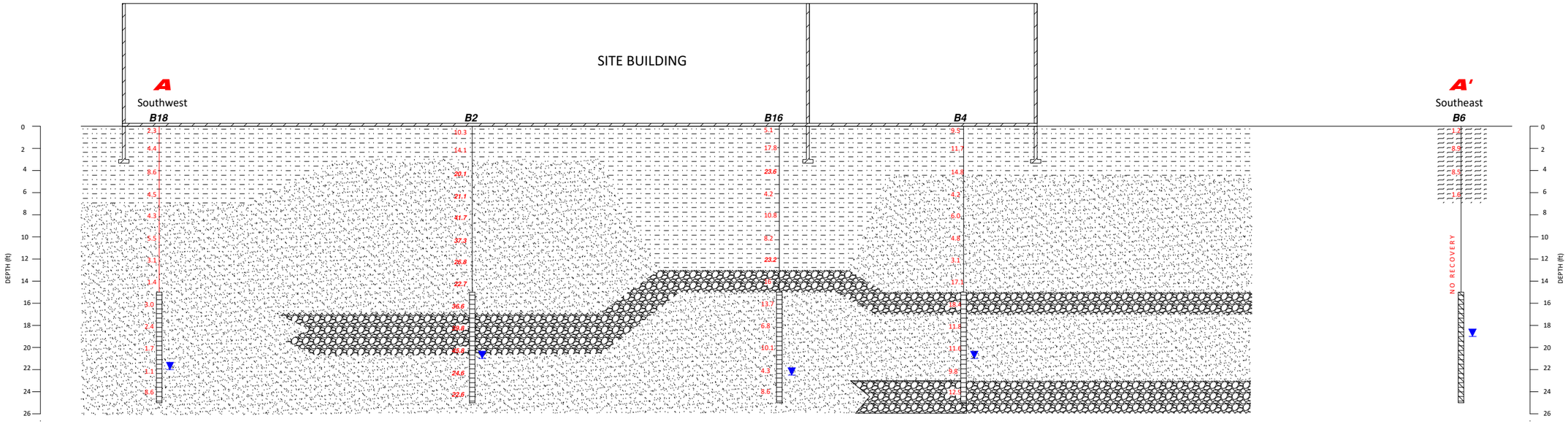
SES

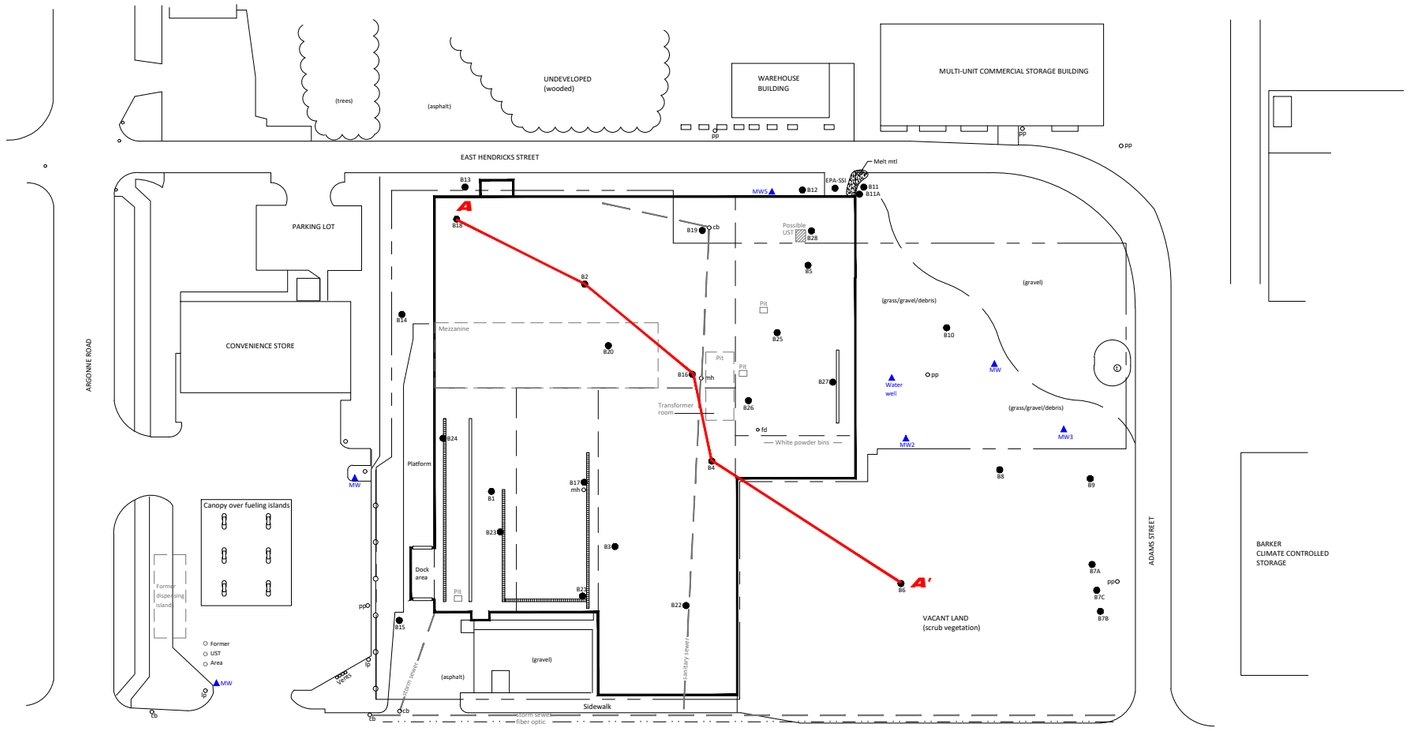


NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

Title: SITE MAP	Legend	Project: 2022260	Scale: 1"= 60'
Location: Vacant Industrial Property 2525 Durbin Street Warsaw, Kosciusko County, Indiana		Date: 3/7/22	Checked: gh
		Drawn: dn	Figure: 2
		File: 2022260	

SES





LEGEND

- GRAVEL/FILL/COAL FRAGMENTS
- SILTY SAND
- FINE SAND
- COARSE SAND
- 8.6 PID INSTRUMENT RESPONSE (bold <20 ppmv)
- RECORDED DEPTH TO WATER

HORIZONTAL SCALE 1" = 30'

HORIZONTAL SCALE 1" = 30'

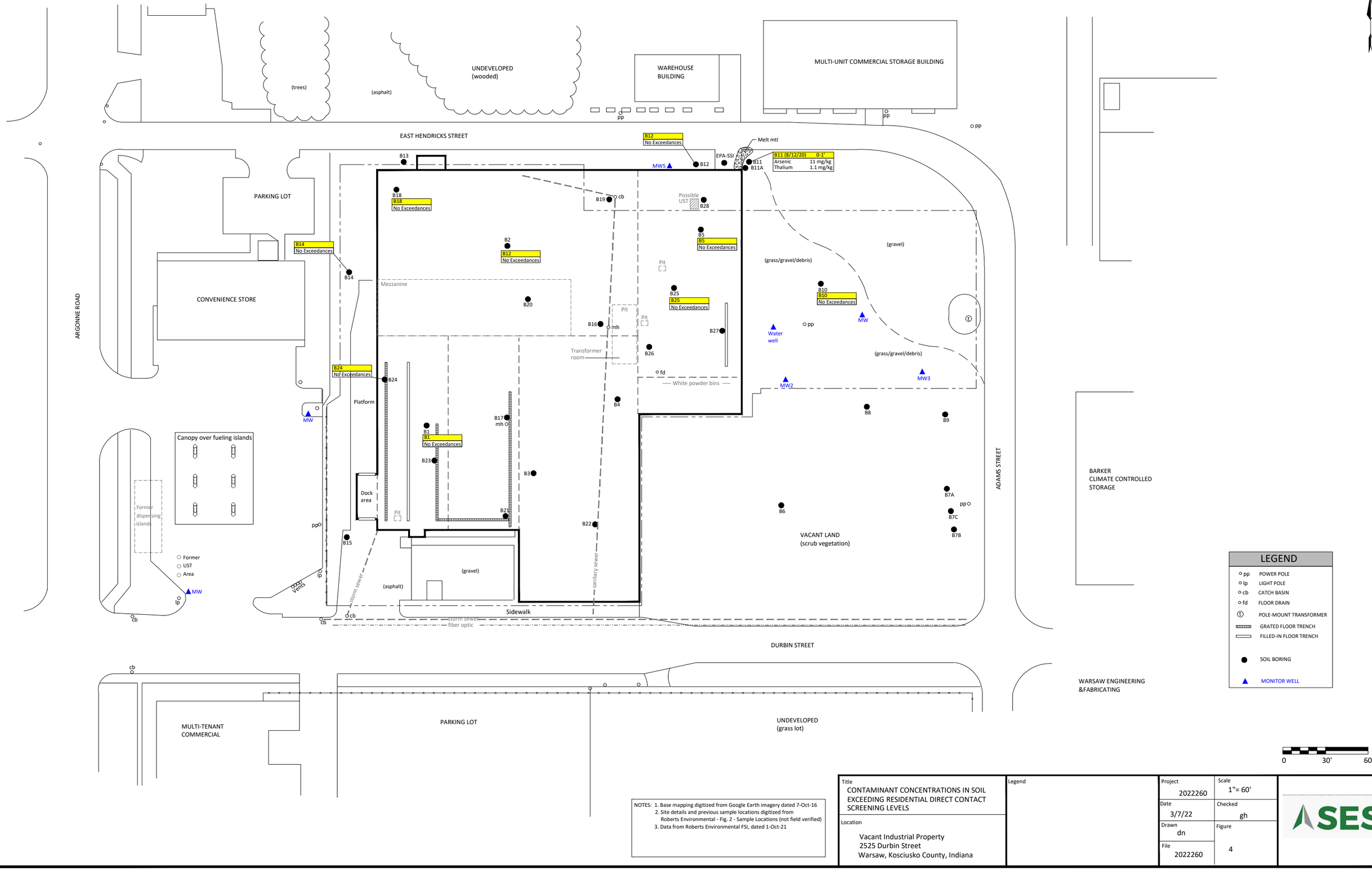
VERTICAL SCALE 1" = 10'

VERT. EXAG x3

NOTE: Log data from Roberts Environmental - FSI Reporting

Title: LINE OF SECTION	Legend	Project: 2022260	Scale: Noted
Location: Vacant Industrial Property, 2525 Durbin Street, Warsaw, Kosciusko County, Indiana		Date: 3/7/22	Checked: gh
		Drawn: dn	Figure: 3
		File: 2022260	

SES



NOTES:
1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)
3. Data from Roberts Environmental FSI, dated 1-Oct-21

Title
CONTAMINANT CONCENTRATIONS IN SOIL EXCEEDING RESIDENTIAL DIRECT CONTACT SCREENING LEVELS

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project	2022260
Scale	1"= 60'
Date	3/7/22
Checked	gh
Drawn	dn
Figure	4
File	2022260

SES

N

(trees)

(asphalt)

UNDEVELOPED
(wooded)

WAREHOUSE
BUILDING

MULTI-UNIT COMMERCIAL STORAGE BUILDING

pp

EAST HENDRICKS STREET

B28
TCE 120 mg/L

Melt mtl

EPA-SSI

B11
B11A

B13

MW5

B12

PARKING LOT

B18
B18
TCE 270 mg/L

B19
cb
B16
TCE 290 mg/L

Possible
UST

B28
B28
TCE 50 mg/L

B14
TCE 250 mg/L

B14

B2
B2
TCE 500 mg/L

B5
B5
TCE 140 mg/L

(gravel)

(grass/gravel/debris)

Pit

Mezzanine

B25

B10
B10
No Exceedances

MW

CONVENIENCE STORE

B20

Pit

Pit

B16
mh
B16
TCE 290 mg/L

B27

Water
well

pp

ARGONNE ROAD

Transformer
room

B26

(grass/gravel/debris)

fd

MW3

MW2

White powder bins

B24

Platform

B4
B4
TCE 200 mg/L

B8

B9
B9
No Exceedances

B17
mh
B17
TCE 120 mg/L

B1
B1
TCE 270 mg/L

INFERRED TCE
EXCEEDANCE (9.1 mg/L)

B23

B3
B3
No Exceedances

ADAMS STREET

B7A

pp

B6
B6
No Exceedances

B7C
No Exceedances

B7C

B7B

Dock
area

Pit

B21

B22

VACANT LAND
(scrub vegetation)

BARKER
CLIMATE CONTROLLED
STORAGE

Canopy over fueling islands

Former
dispensing
islands

Former
UST
Area

MW

lp

pp

B15
B15
No Exceedances

Vent

storm sewer

(asphalt)

(gravel)

sanitary sewer

Sidewalk

cb

storm sewer
fiber optic

DURBIN STREET

WARSAW ENGINEERING
&FABRICATING

MULTI-TENANT
COMMERCIAL

PARKING LOT

UNDEVELOPED
(grass lot)

LEGEND

- pp POWER POLE
- lp LIGHT POLE
- cb CATCH BASIN
- fd FLOOR DRAIN
- POLE-MOUNT TRANSFORMER
- GRATED FLOOR TRENCH
- FILLED-IN FLOOR TRENCH
- SOIL BORING
- MONITOR WELL

0 30' 60'

NOTES:
1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)
3. Data from Roberts Environmental FSI, dated 1-Oct-21

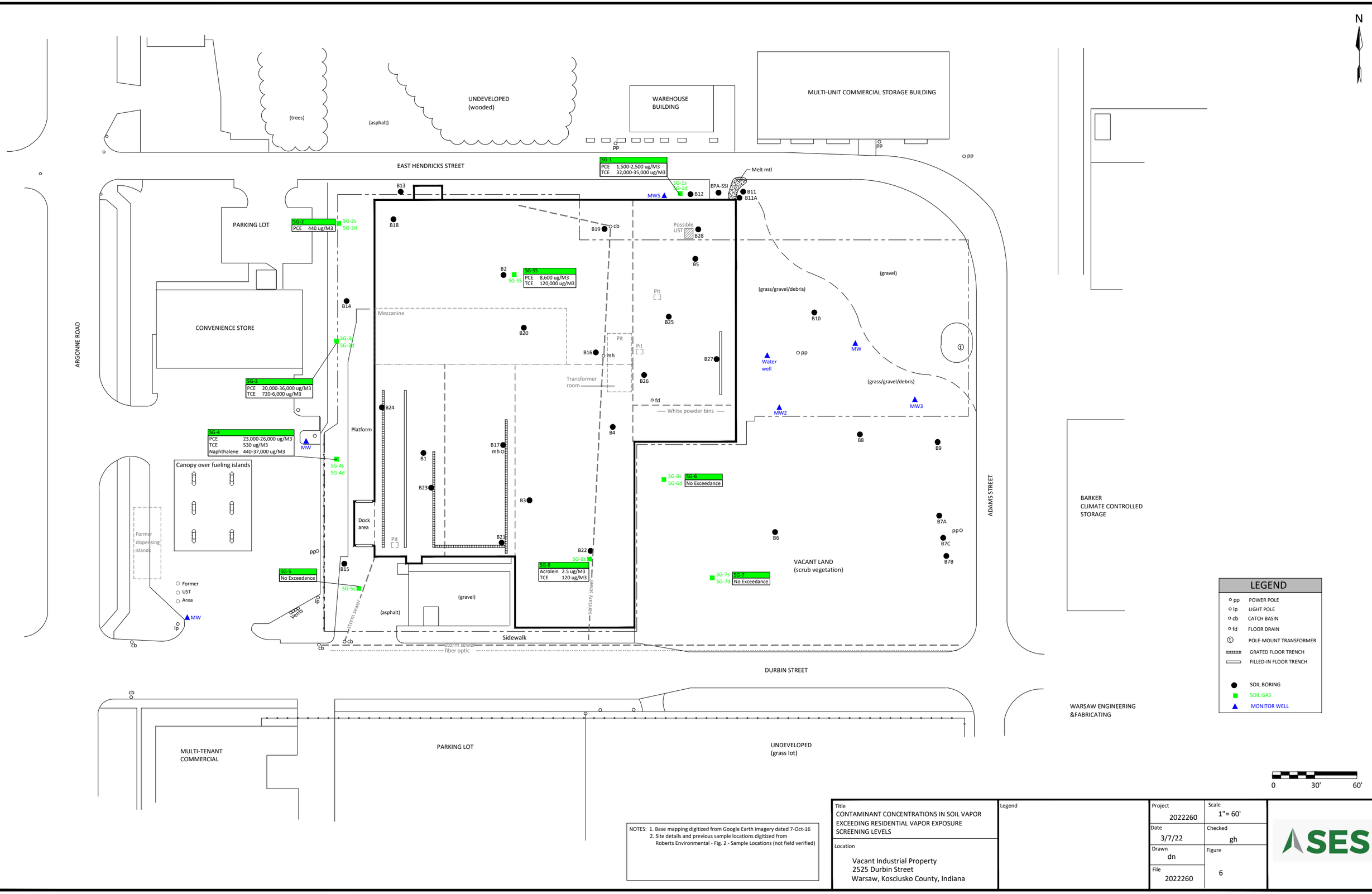
Title
CONTAMINANT CONCENTRATIONS IN GROUNDWATER EXCEEDING RESIDENTIAL VAPOR EXPOSURE SCREENING LEVELS

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project 2022260	Scale 1"= 60'
Date 3/7/22	Checked gh
Drawn dn	Figure 5
File 2022260	

SES



NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

Title
CONTAMINANT CONCENTRATIONS IN SOIL VAPOR EXCEEDING RESIDENTIAL VAPOR EXPOSURE SCREENING LEVELS

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project	2022260
Scale	1"= 60'
Date	3/7/22
Checked	gh
Drawn	dn
Figure	6
File	2022260

SES

N

UNDEVELOPED (wooded)

(trees)

(asphalt)

WAREHOUSE BUILDING

MULTI-UNIT COMMERCIAL STORAGE BUILDING

pp

EAST HENDRICKS STREET

Melt mtl

PARKING LOT

CONVENIENCE STORE

ARGONNE ROAD

cb

Possible UST

Pit

Mezzanine

Pit

Pit

mh

Transformer room

fd

White powder bins

Platform

mh

INFERRED TCE EXCEEDANCE (0.1 mg/L)

(grass/gravel/debris)

(gravel)

(grass/gravel/debris)

Canopy over fueling islands

Former dispensing islands

Former UST Area

lp

Dock

Pit

(gravel)

(asphalt)

Vents

storm sewer

sanitary sewer

Sidewalk

storm sewer fiber optic

VACANT LAND (scrub vegetation)

ADAMS STREET

BARKER CLIMATE CONTROLLED STORAGE

DURBIN STREET

MULTI-TENANT COMMERCIAL

PARKING LOT

UNDEVELOPED (grass lot)

WARSAW ENGINEERING &FABRICATING

pp	POWER POLE
lp	LIGHT POLE
cb	CATCH BASIN
fd	FLOOR DRAIN
1	POLE-MOUNT TRANSFORMER
	GRATED FLOOR TRENCH
	FILLED-IN FLOOR TRENCH

0 30' 60'

NOTES:
1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)
3. Proposed redevelop is shown as dashed lines and digitized from The 2525 Real America draft submittal

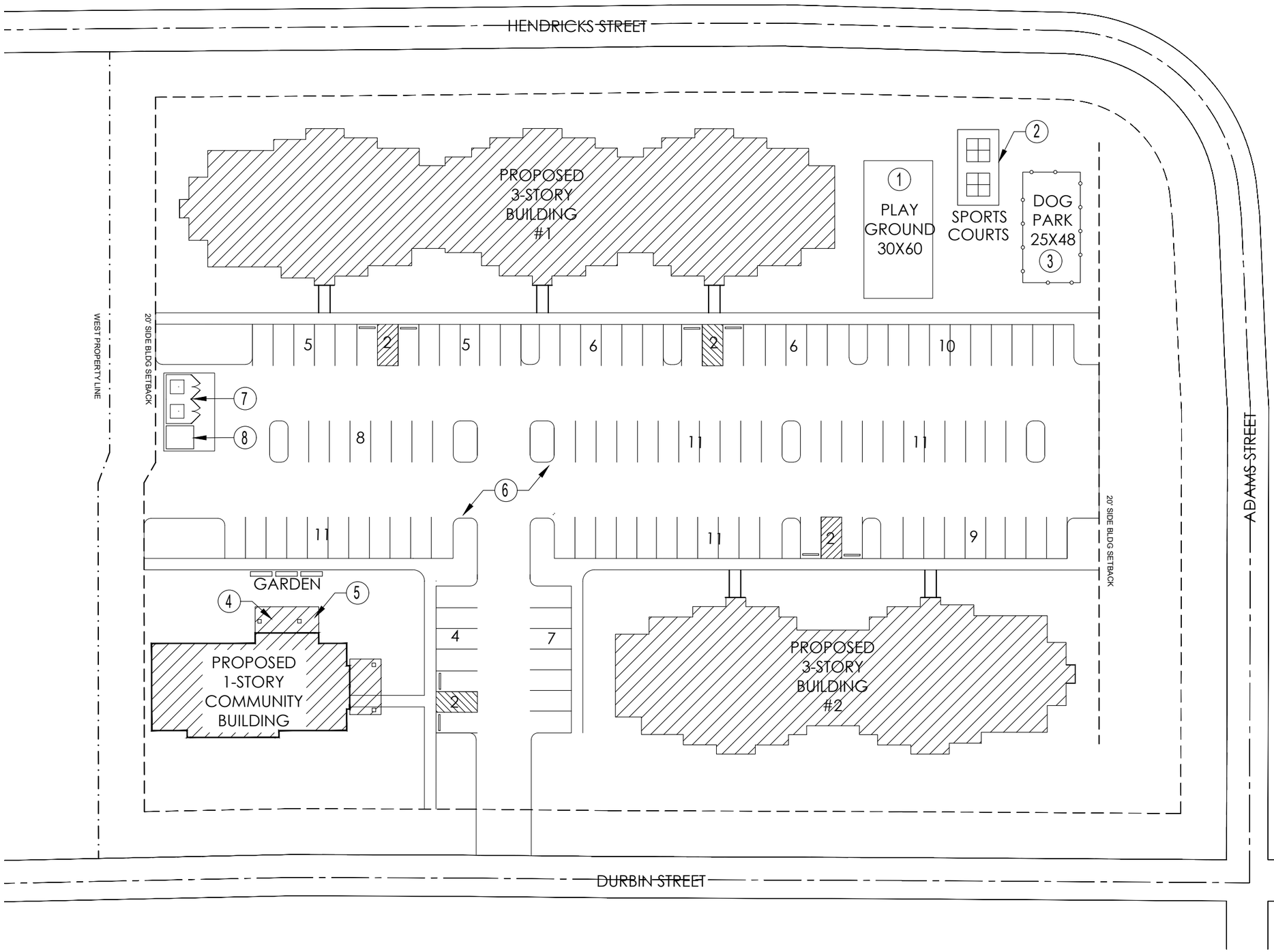
Title
REMEDIATION AREA (SHOWING EXISTING SITE FEATURES AND PLANNED RESIDENTIAL REDEVELOPMENT)

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project	2022260
Scale	1"= 60'
Date	3/7/22
Checked	gh
Drawn	dn
Figure	7
File	2022260

ASES



NOTE:

- SITE IS NOT LOCATED IN A FLOOD PLAIN
- NO WETLANDS EXIST ON THE SITE
- NO STREAMS, RAVINES, GULLIES, DRAINAGE PROBLEMS, OR OTHER CONSTRUCTION DETERRENTS LOCATED ON PROPERTY.

SITE = 3.8 ACRES

UNITS / MIXES: 60 TOTAL
1BR- 6 UNITS
2BR- 24 UNITS
3BR- 18 UNITS
4 BR- 12 UNITS

PARKING: 112
104 STD SPACES
08 HC

SITE NOTES (X)

1. PLAYGROUND
2. SPORTS COURT(PICKLE BALL & FOUR SQUARE)
3. FENCED DOG WALKING AREA
4. COVERERD PORCH WITH BIKE RACKS
5. PERMANENT GRILL AND PICNIC AREA
6. ONE PARKING SPOT PER UNIT
7. TRASH DUMPSTER ENCLOSURE
8. MAINTENANCE SHED

N

SCALE : NONE

REALAMERICA

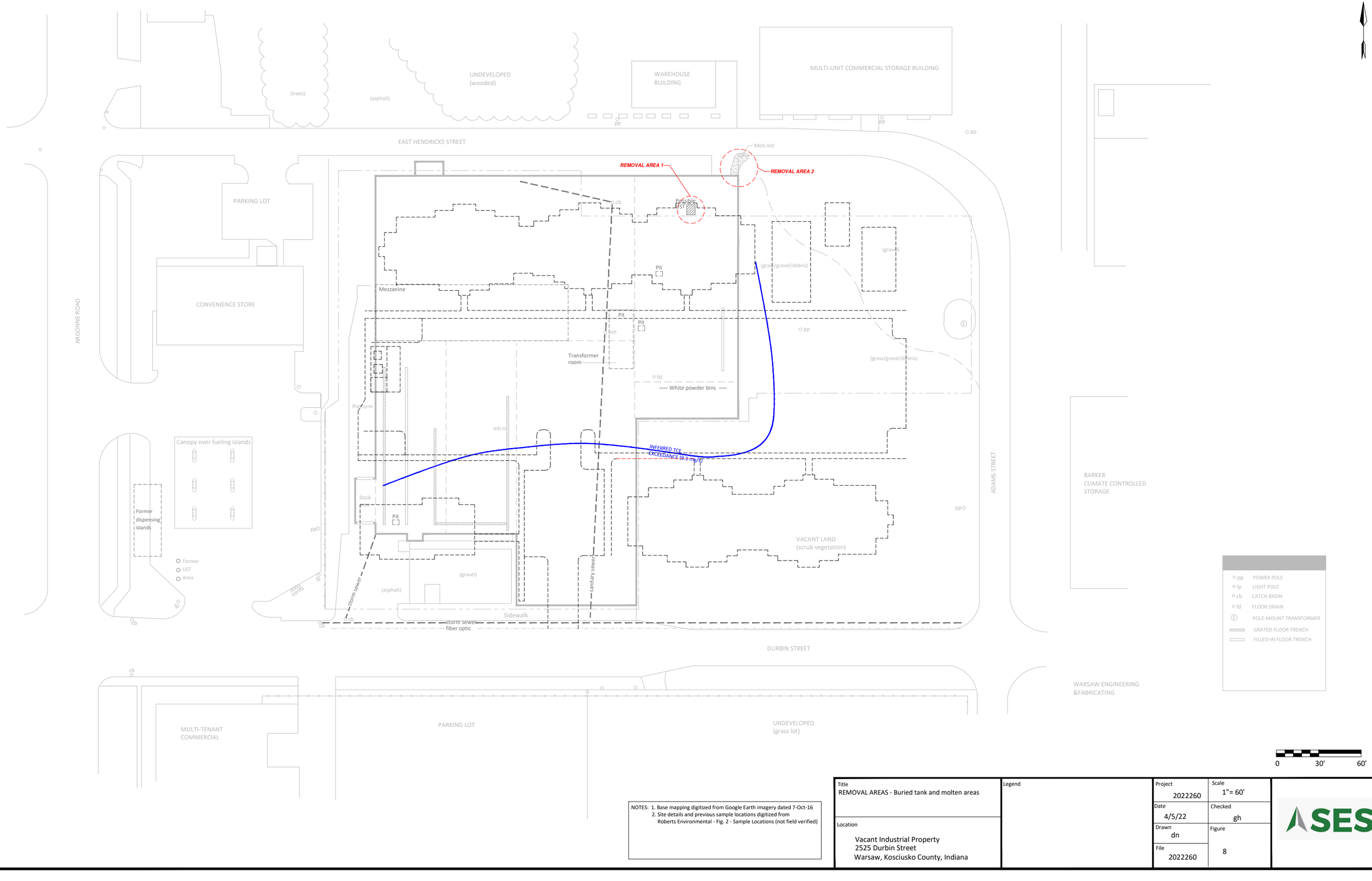
THE 2525

2525 DURBIN STREET
WARSAW, INDIANA 46580

2021 LIHTC SUBMITTAL- DRAFT

A011 ARCH. SITE PLAN

JULY 1, 2021



NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

Title
REMOVAL AREAS - Buried tank and molten areas

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project: 2022260	Scale: 1"= 60'
Date: 4/5/22	Checked: gh
Drawn: dn	Figure: 8
File: 2022260	

SES

N

UNDEVELOPED
(wooded)

(trees)

(asphalt)

WAREHOUSE
BUILDING

MULTI-UNIT COMMERCIAL STORAGE BUILDING

pp

EAST HENDRICKS STREET

Melt mtl

MW5

PARKING LOT

cb

Possible
UST

(gravel)

(grass/gravel/debris)

SCATTERED
CONTAINERS
(remove)

ARGONNE ROAD

CONVENIENCE STORE

Mezzanine

Pit

mh

3 TRANSFORMERS
(remove)

Transformer
room

COMPRESSOR
(remove)

fd

DRUM
(remove)

White powder bins

DRUM
(remove)

Water
well

MW

MW2

MW3

DECOMMISSION WELLS

POTENTIAL PCB IMPACT AREA (Removal area)

Platform

MW

CONTAINERS
(remove)

Canopy over fueling islands

Former
dispensing
islands

Former
UST
Area

MW

lp

cb

Dock
area

Pit

Vents

(asphalt)

(gravel)

Sidewalk

ADAMS STREET

VACANT LAND
(scrub vegetation)

BARKER
CLIMATE CONTROLLED
STORAGE

LEGEND

pp	POWER POLE
lp	LIGHT POLE
cb	CATCH BASIN
fd	FLOOR DRAIN
T	POLE-MOUNT TRANSFORMER
	GRATED FLOOR TRENCH
	FILLED-IN FLOOR TRENCH
▲	MONITOR WELL

DURBIN STREET

MULTI-TENANT
COMMERCIAL

PARKING LOT

UNDEVELOPED
(grass lot)

WARSAW ENGINEERING
&FABRICATING

0 30' 60'

NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)
3. Asbestos abatement of fire doors, TSI, floor tile, and roofing

Title
ABATEMENT, DISPOSAL, AND WATER WELL DECOMMISSIONING

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend
Proposed PCB wipe sample locations

Project 2022260	Scale 1"= 60'
Date 4/5/22	Checked gh
Drawn dn	Figure 9
File 2022260	

SES

N

(trees)

(asphalt)

UNDEVELOPED
(wooded)

WAREHOUSE
BUILDING

MULTI-UNIT COMMERCIAL STORAGE BUILDING

pp

EAST HENDRICKS STREET

Melt mtl

EPA-SSI

B11
B11A

B12

B13

B18

PARKING LOT

B19 cb

Possible
UST
B28

B5

APPLICATION AREA
APPROX 2,750 SF
10'X10' SPACING
(see Regenesis design)

B2

(gravel)

(grass/gravel/debris)

Pit

B14

Mezzanine

B25

B10

B20

Pit

Pit

B16 mh

B27

pp

ARGONNE ROAD

CONVENIENCE STORE

B26

(grass/gravel/debris)

Transformer
room

fd

White powder bins

B24

Platform

B4

B8

B9

B17
mh

B1

B23

B3

B7A

Dock
area

Pit

B21

pp

B6

B7C

B22

VACANT LAND
(scrub vegetation)

ADAMS STREET

BARKER
CLIMATE CONTROLLED
STORAGE

B7B

Canopy over fueling islands

Former
dispensing
islands

pp

B15

Former
UST
Area

lp

Vents

lp

(gravel)

(asphalt)

cb

cb

Sidewalk

DURBIN STREET

cb

MULTI-TENANT
COMMERCIAL

PARKING LOT

UNDEVELOPED
(grass lot)

WARSAW ENGINEERING
&FABRICATING

LEGEND

pp	POWER POLE
lp	LIGHT POLE
cb	CATCH BASIN
fd	FLOOR DRAIN
t	POLE-MOUNT TRANSFORMER
	GRATED FLOOR TRENCH
	FILLED-IN FLOOR TRENCH
	SOIL BORING

0 30' 60'

NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

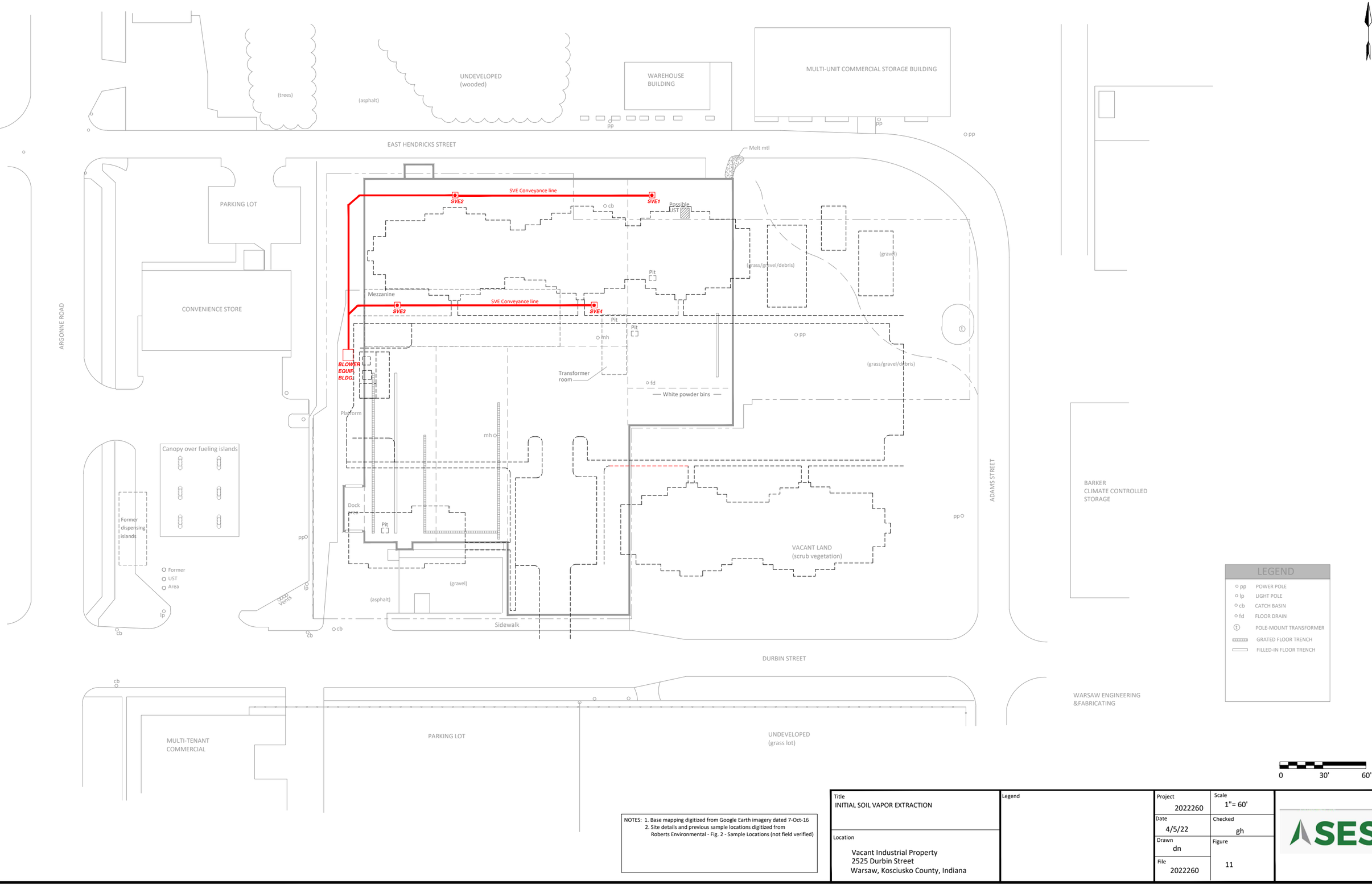
Title
GROUNDWATER TREATMENT

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project 2022260
Scale 1"= 60'
Date 4/5/22
Checked gh
Drawn dn
Figure 10
File 2022260

SES



NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

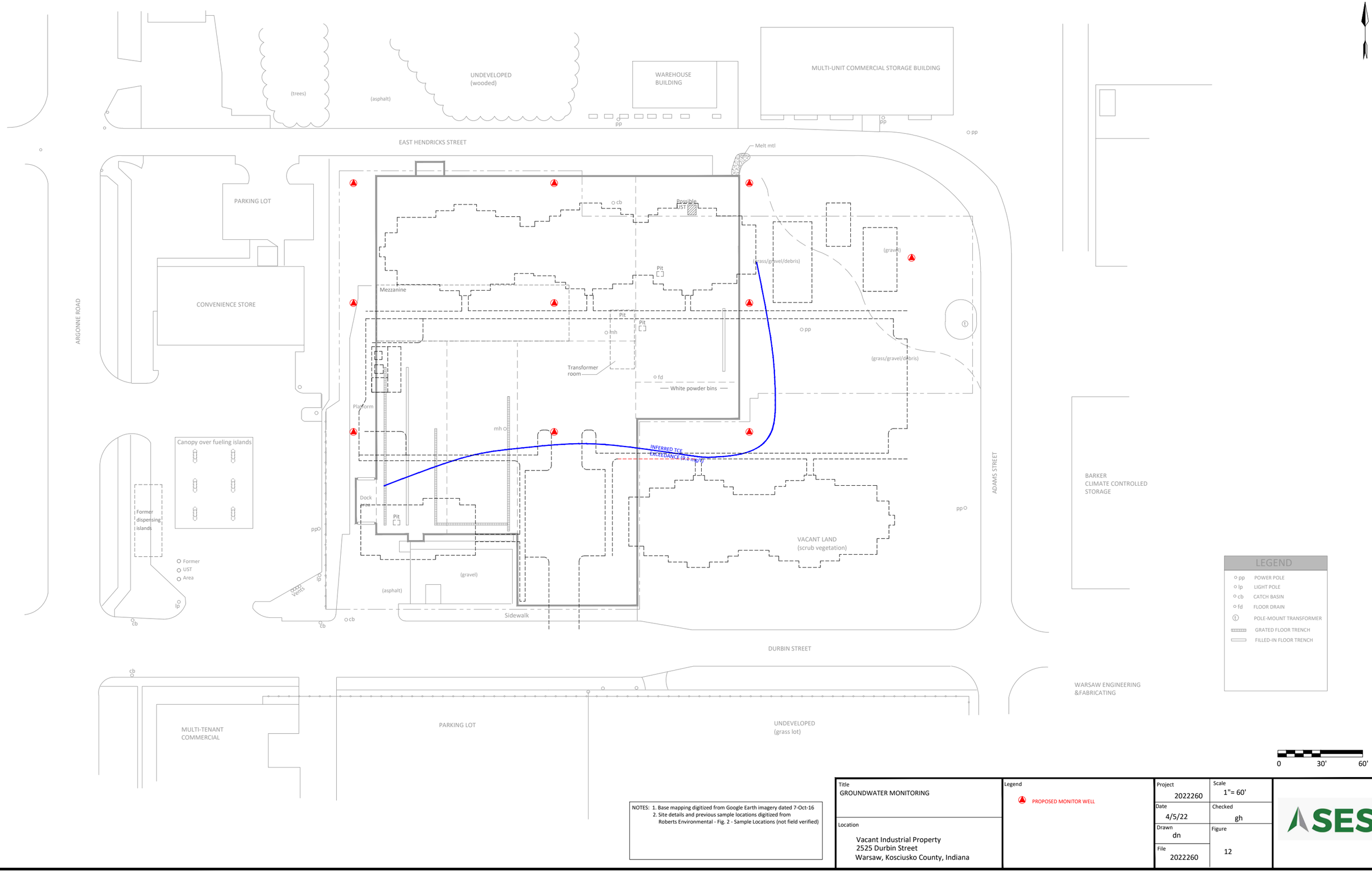
Title
INITIAL SOIL VAPOR EXTRACTION

Location
Vacant Industrial Property
2525 Durbin Street
Warsaw, Kosciusko County, Indiana

Legend

Project: 2022260	Scale: 1"= 60'
Date: 4/5/22	Checked: gh
Drawn: dn	Figure: 11
File: 2022260	

SES



NOTES: 1. Base mapping digitized from Google Earth imagery dated 7-Oct-16
2. Site details and previous sample locations digitized from Roberts Environmental - Fig. 2 - Sample Locations (not field verified)

Title: GROUNDWATER MONITORING	Legend: PROPOSED MONITOR WELL	Project: 2022260	Scale: 1"= 60'
Location: Vacant Industrial Property, 2525 Durbin Street, Warsaw, Kosciusko County, Indiana		Date: 4/5/22	Checked: gh
		Drawn: dn	Figure: 12
		File: 2022260	

SES

REMEDIATION WORK PLAN

APPENDIX A. DATA COMPILATION TABLES AND FIGURES FROM ROBERTS' REPORTS

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

TABLE 1 - PCB Wipe Sampling Results Summary
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT NUMBER: BF-00E02717-0

SAMPLE I.D.	Sample Date	Interior Location	Polychlorinated Biphenyls (PCBs)									
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs
UNITS			micrograms per 100 square centimeters of surface area (ug/100cm^2)									
PCBW-1	7/21/21	Far East Area	ND	ND	ND	ND	ND	**11**	ND	ND	ND	**11**
PCBW-2	7/21/21	Transformer Room	<-----All ND----->									
PCBW-3	7/21/21	Electrical Switches	<-----All ND----->									
PCBW-4	7/21/21	Old Air Compressor	ND	ND	ND	ND	ND	**2.1**	ND	ND	ND	**2.1**
PCBW-5	7/21/21	Floor Cuts Area	<-----All ND----->									
***EPA PCB Surface Wipe Standard**			**<10 ug/100cm^2**									

See laboratory reports for complete analytical results.
Bold = Concentration of analyte or parameter greater than or equal to laboratory reporting limit ("RL").
*PCB Wipe Standard per various EPA Guidance (EPA, 2005 & PCB Q&A 2014).
ND = Not Detected at or above reporting limit ("RL").

ROBERTS ENVIRONMENTAL SERVICES, LLC

TABLE 2 - Soil Sampling Results Summary (VOCs)
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT NUMBER: BF-00E02717-0

		Volatile Organic Compounds ("VOCs")															
SAMPLE I.D. (depth interval)	**Sample Date**	Tetrachloroethylene ("PERC")	Trichloroethylene ("TCE")	cis-1,2-Dichloroethylene ("cis-DCE")	Bromomethane	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	2-Butanone (MEK)	4-Methyl-2pentanone (MIK)	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Xylenes
UNITS		milligrams per kilogram ("mg/kg")															
B-1 (5-7)	8/13/20	0.16	0.039	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-1 (15-17)	8/13/20	0.30	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-2 (7-9)	8/13/20	0.036	0.84	0.004	0.0018	ND	0.0018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-2 (15-17)	8/13/20	0.029	0.53	0.0046	0.0016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-3 (5-7)	8/13/20	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-3 (9-11)	8/13/20	0.0017	0.041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-4 (3-5)	8/13/20	0.0067	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-4 (15-17)	8/13/20	0.02 (0.024)	0.52 (0.49)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-5 (9-11)	8/13/20	0.026	0.57	ND	ND	0.058	0.049	ND	0.015	0.021	ND	ND	ND	ND	0.0022	0.0021	0.0043
B-5 (15-17)	8/13/20	0.021	0.80	ND	ND	ND	0.0046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-6 (1-3)	8/12/20	ND	ND	ND	ND	ND	0.0012	ND	0.0055	ND	ND	ND	0.0034	0.0022	0.013	0.0065	0.02
B-7A (1-3)	8/12/20	ND	ND	ND	ND	2.2	4.0	3.1	1.6	0.55	0.43	0.55	0.41	0.60	4.1	2.2	6.3
B-7B (1-3)	8/12/20	ND	ND	ND	ND	ND	ND	ND	0.0038	0.0027	0.008	ND	0.0021	0.0019	0.0052	0.0022	0.0074
B-7C (5-7)	7/28/21	<-----All VOCs ND----->															
B-7C (9-11)	7/28/21	<-----All VOCs ND----->															
B-8 (1-3)	8/12/20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0015	ND	0.0024	0.0015	0.0039
B-9 (0-1)	8/12/20	ND	ND	ND	ND	ND	ND	ND	0.0014	ND	ND	ND	0.0023	ND	0.0039	0.0018	0.0057
B-10 (5-7)	8/14/20	<-----All VOCs ND*----->															
B-11 (0-1)	8/12/20	ND	0.0015	ND	ND	ND	ND	ND	ND	ND	0.0041	ND	0.0013	ND	ND	ND	ND
B-12 (3-5)	8/14/20	0.17	1.1	0.0046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-13 (1-3)	8/12/20	0.0061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-14 (11-13)	8/14/20	0.14	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-15 (5-7)	8/12/20	0.0026	ND	ND	ND	ND	0.00099	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-16 (3-5)	7/27/21	0.017	4.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-16 (13-15)	7/27/21	0.016	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17 (3-5)	7/27/21	0.045	0.70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2 - Soil Sampling Results Summary (VOCs)
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT NUMBER: BF-00E02717-0

SAMPLE I.D. (depth interval)	Sample Date	Volatile Organic Compounds ("VOCs")															
		Tetrachloroethylene ("PERC")	Trichloroethylene ("TCE")	cis-1,2-Dichloroethylene ("cis-DCE")	Bromomethane	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	2-Butanone (MEK)	4-Methyl-2pentanone (MIK)	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Xylenes
UNITS		milligrams per kilogram ("mg/kg")															
B-17 (13-15)	7/27/21	0.0069 (0.010)	0.079 (0.13)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18 (3-5)	7/27/21	0.0085	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18 (9-11)	7/27/21	0.010	0.020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-19 (1-3)	7/27/21	ND	0.050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-19 (15-17)	7/27/21	0.012	0.77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-20 (3-5)	7/28/21	0.013	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-20 (7-9)	7/28/21	0.015	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-21 (3-5)	7/28/21	<-----All VOCs ND----->															
B-22 (3-5)	7/28/21	<-----All VOCs ND----->															
B-23 (3-5)	7/28/21	0.073	0.0045	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-23 (7-9)	7/28/21	0.036	0.0071	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-24 (5-7)	7/28/21	0.70	0.045	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-24 (7-9)	7/28/21	0.75	0.082	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-25 (0-1)	7/28/21	0.032	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-25 (3-5)	7/28/21	0.0066	0.046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-26 (3-5)	7/28/21	0.021	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-26 (7-9)	7/28/21	0.017	0.65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-27 (3-5)	7/28/21	0.0058	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-27 (5-7)	7/28/21	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28 (9-11)	7/30/21	0.0054	0.078	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28 (15-17)	7/30/21	0.0082	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MTG	0.045	0.036	0.41	0.038	1.2	3.7	0.11	1.6	1.7	23	28	0.051	16	3.7	3.7	200
IDEM	**RDC**	110	5.7	220	9.5	250	340	53	220	180	28,000	3,400	17	81	390	390	260
	C/I DC	170	19	2,300	30	390	3,000	170	220	180	28,000	3,400	51	250	390	390	260
	EXC	170	95	2,400	160	390	6,800	3,100	220	180	28,000	3,400	1,800	480	390	390	260

See laboratory reports for complete analytical results (not all analytes listed).
*Acetone, methylene chloride, and toluene were detected at trace concentrations (below SLs) in several soil samples, which are likely laboratory artifacts.
Bold = Concentration of analyte or parameter greater than or equal to laboratory reporting limit ("RL").
SL = Screening Level per IDEM 2021 Remediation Closure Guide update (March 1, 2021). MEK = Methyl Ethyl Ketone. MIK = Methyl Isobutyl Ketone.
DNE = IDEM SL for this analyte does not currently exist. Field Duplicate ("FD") results shown in parentheses (XX).
MTG = Migration to Ground Water (exceedances highlighted in light blue). RDC = Residential Direct Contact.
C/I DC = Commercial/Industrial Direct Contact. EXC = Excavation Direct Contact.
ND = Not Detected at or above reporting limit ("RL"). Underlined results are greater than or equal to 10X the MTG SL.

ROBERTS ENVIRONMENTAL SERVICES, LLC

TABLE 3 - Ground Water Sampling Results Summary (VOCs)
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT NUMBER: BF-00E02717-0

SAMPLE I.D.	Sample Date	Volatile Organic Compounds ("VOCs")														
		Tetrachloroethylene ("PERC")	Trichloroethylene ("TCE")	cis-1,2-Dichloroethylene ("cis-DCE")	trans-1,2-Dichloroethylene ("trans-DCE")	Vinyl Chloride ("VC")	1,1-Dichloroethylene	1-Methylnaphthalene	2-Methylnaphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Ethylbenzene	Toluene	m,p-Xylene	Total Xylenes	Acetone
UNITS		micrograms per liter ("ug/l")														
B-1 (GW)	8/13/20	9.6	270	0.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-2 (GW)	8/13/20	2.4	500	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.7
B-3 (GW)	8/13/20	ND	3.2	ND	ND	ND	ND	0.36	0.27	1.2	0.28	39	0.51	25	25	ND
B-4 (GW)	8/13/20	2.8	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37	ND	ND	7.2
B-5 (GW)	8/14/20	1.9	140	0.92	ND	ND	ND	0.46	ND	ND	ND	ND	ND	ND	ND	ND
B-6 (GW)	8/12/20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36	ND	ND	ND
B-7C (GW)	7/28/21	<-----All VOCs ND----->														
B-9 (GW)	8/12/20	<-----All VOCs ND-----> (FD All ND)														
B-10 (GW)	8/14/20	ND	0.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32	ND	ND	2.3
B-12 (GW)	8/14/20	1.8	120	0.77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1
B-14 (GW)	8/14/20	18	250	23	0.53	ND	0.25	ND	ND	ND	ND	ND	ND	ND	ND	1.9
B-15 (GW)	8/12/20	0.71	ND	6.3	0.66	ND	ND	ND	ND	ND	ND	ND	0.37	ND	ND	1.9
B-16 (GW)	7/27/21	9.1	290	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17 (GW)	7/27/21	ND	120 (110)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18 (GW)	7/27/21	7.3	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-19 (GW)	7/27/21	5.7	290	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28 (GW)	7/30/21	ND	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	TAP	5.0	5.0	70	100	2.0	7.0	11	36	56	60	700	1,000	190	10,000	14,000
IDEM	VE Res	110	9.1	DNE	DNE	2.1	300	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE
	VE C/I	470	38	DNE	DNE	35	1,300	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE

See laboratory reports for complete analytical results (not all analytes listed). (xx) = Field Duplicate ("FD") results.
IDEM RCG = Indiana Department of Environmental Management - Remediation Closure Guide (March 2021 Screening Levels - "SLs").
Bold results = Concentration of analyte or parameter greater than or equal to laboratory reporting limit ("RL").
ND = Not Detected at or above reporting limit. DNE = Not applicable, IDEM SL does not currently exist.
TAP = IDEM RCG Ground Water Screening Level (exceedances highlighted with light blue shading).
VE Res = IDEM RCG Residential Vapor Exposure Ground Water Screening Level (exceedances highlighted in yellow).
VE C/I = Commercial/Industrial Vapor Exposure Ground Water Screening Level (magenta highlighted exceedances)..

ROBERTS ENVIRONMENTAL SERVICES, LLC

TABLE 4 - Ground Water Sampling Results Summary (VOCs)
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT NUMBER: BF-00E02717-0

SAMPLE I.D.	Sample Date	Hex Chrome	PFAS/PFOA																	
			Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUdA)	Perfluorododecanoic acid (PFDoA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutane sulfonate (PFBS)	Perfluorohexane sulfonate (PFHxS)	N-methylperfluorooctane sulfonamidoacetic acid	N-ethylperfluorooctane sulfonamidoacetic acid	9-chlorohexadecafluoro -3-oxanone-1-sulfonic acid	11Cl-PF3OUdS	Hexafluoropropylene oxide dimer acid (HFPO-DA)	4,8-dioxa-3H-perfluoro nonanoic acid (NaDONA)
UNITS		ug/l	nanograms per liter ("ng/l")																	
B-1 (GW)	7/30/21	ND (<0.30)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.8	<20	<20	<2.0	<2.0	<12.5	<2.0
			<-----All PFAS Substances ND (FD All ND)----->																	
B-2 (GW)	7/30/21	ND (<0.30)	**4.98**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.8	<20	<20	<2.0	<2.0	<12.5	<2.0
B-28 (GW)	7/30/21	ND (<0.30)	**2.40**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.8	<20	<20	<2.0	<2.0	<12.5	<2.0
	TAP	0.35	U.S. EPA Health Advisory Level = 70 ng/l (individual or total)																	
	VE Res	DNE																		
	VE C/I	DNE																		

See laboratory reports for complete analytical results. (xx) = Field Duplicate ("FD") results.
IDEM RCG = Indiana Department of Environmental Management - Remediation Closure Guide (March 2021 Screening Levels - "SLs").
Bold results = Concentration of analyte or parameter greater than or equal to laboratory reporting limit ("RL").
ND = Not Detected at or above reporting limit. DNE = Not applicable, IDEM SL does not currently exist. ug/l=micrograms per liter.
TAP = IDEM RCG Ground Water Screening Level.
VE Res = IDEM RCG Residential Vapor Exposure Ground Water Screening Level.
VE C/I = Commercial/Industrial Vapor Exposure Ground Water Screening Level.

TABLE 5 - Soil Gas Sampling Results Summary
Fmr. Arnolt/Delta Properties - 2525 E. Durbin St. - Warsaw, Indiana

U.S. EPA BROWNFIELDS COALITION GRANT
Michiana Area Council of Governments, Indiana
GRANT No.: BF-00E02717-0

	RESULTS (micrograms per cubic meter - "ug/m^3") - Samples collected August 25, 2021																Commercial SLs		Residential SLs	
ANALYTE	**SG-1s**	**SG-1d**	**SG-2s**	**SG-2d***	**SG-3s**	**SG-3d**	**SG-4s**	**SG-4d**	**SG-5s**	**SG-6s**	**SG-6d**	**SG-7s**	**SG-7d**	**SG-8s**	**SG-SS**	**BG**	**Sub-Slab**	**Indoor Air**	**Sub-Slab**	**Indoor Air**
LOCATION	Northeast Exterior		Northwest Exterior		West Exterior		West Exterior		Southwest Sewer Line	Southeast Exterior (Delta Lots)		Southeast Exterior (Delta Lots)		Interior SE Sewer Line	North Interior	South Exterior				
1,1,1-Trichloroethane	15	8.6	40	ND	56	43	100	75	ND	ND	ND	ND	ND	6.1	44	ND	733,333	22,000	173,333	5,200
1,2,4-Trimethylbenzene	21	7.7	8.8	ND	35	6.6	12	21	4.2	8.3	4.9	5.6	2.8	18	2.6	**6.6**	8,667	260	2,100	63
1,3,5-Trimethylbenzene	6.1	2.7	ND	ND	11	ND	6.0	12	ND	ND	ND	ND	ND	5.2	ND	ND	8,667	260	2,100	63
2-Butanone (MEK)	9.6	ND	ND	ND	ND	ND	32	ND	ND	47	ND	ND	ND	50	ND	11	733,333	22,000	173,333	5,200
4-Ethyltoluene	5.3	ND	ND	ND	9.1	ND	2.8	3.9	ND	ND	ND	ND	ND	4.4	ND	ND	NA	NA	NA	NA
Acetone	150	34	16	340	510	ND	87	38	16	220	33	37	8.1	370	16	380	4,666,667	140,000	1,066,667	32,000
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.5**	ND	ND	2.93	0.088	0.70	0.021
Benzene	11	7.7	3.0	ND	27	4.9	2.1	3.2	2.4	7.7	9.7	1.9	2.0	5.7	ND	**13**	533	16	120	3.6
Carbon disulfide	12	3.2	3.4	ND	58	4.0	ND	3.1	ND	ND	ND	ND	ND	ND	ND	ND	103,333	3,100	24,333	730
Chloroform	6.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	177	5.3	40	1.2
Cyclohexane	4.8	6.8	ND	22	34	8.5	ND	2.4	ND	12	7.4	ND	ND	ND	ND	14	866,667	26,000	210,000	6,300
Dichlorodifluoromethane	4.0	5.3	11	ND	13	20	18	22	13	58	110	4.2	8.7	840	54	ND	14,667	440	3,333	100
Ethylbenzene	17	10	4.3	ND	32	5.6	4.3	6.3	2.7	5.0	4.7	2.4	2.2	8.8	ND	6.5	1,633	49	367	11
Heptane	9.3	11	2.5	26	66	14	ND	8.4	2.4	4.3	7.7	ND	2.5	ND	ND	13	60,000	1,800	14,000	420
Hexane	130	110	89	780	220	130	100	130	110	190	93	ND	87	140	97	82	103,333	3,100	24,333	730
m,p-Xylene	62	20	15	ND	90	13	12	18	7.3	22	20	9.1	6.5	36	4.7	23	14,667	440	3,333	100
o-Xylene	24	7.5	5.7	ND	29	4.8	5.0	6.6	2.7	12	13	3.7	2.9	12	ND	8.4	14,667	440	3,333	100
Methylene chloride	54	53	39	270	55	52	57	53	140	60	50	48	52	67	54	ND	86,667	2,600	21,000	630
Propylene	9.9	ND	ND	160	560	43	ND	5.4	2.5	2.9	3.7	ND	ND	ND	3.0	2.6	433,333	13,000	103,333	3,100
Styrene	2.2	ND	ND	ND	2.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	146,667	4,400	33,333	1,000
Tetrachloroethene	**2,800**	**1,500**	**4,400**	260	**20,000**	**38,000**	**26,000**	**23,000**	1,000	84	9.0	29	36	51	**8,600**	ND	6,000	180	1,400	42
Trichloroethene	**32,000**	**38,000**	43	ND	**720**	**6,000**	37	**330**	ND	21	9.9	ND	1.8	**120**	**120,000**	ND	293	8.8	70	2.1
cis-1,2-Dichloroethene	120	71	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84	ND	NA	NA	NA	NA
trans-1,2-Dichloroethene	7.2	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	78	ND	6,000	180	1,400	42
Tetrahydrofuran	6.0	ND	4.2	ND	12	ND	2.4	ND	ND	7.3	ND	ND	ND	28	ND	3.7	293,333	8,800	70,000	2,100
Toluene	51	30	18	35	150	20	9.4	21	9.6	35	49	9.5	9.3	40	4.6	72	733,333	22,000	173,333	5,200
Trichlorofluoromethane	5.3	3.4	11	ND	19	13	8.5	8.9	3.4	ND	ND	ND	ND	ND	9.7	ND	NA	NA	NA	NA
Isopropylbenzene (cumene)	ND	ND	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	60,000	1800	14,000	420
Naphthalene	5.8	2.6	3.4	ND	7.3	ND	**440**	**3,700**	3.4	12	2.7	3.8	ND	ND	3.6	ND	120	3.6	28	0.83
2-Propanol ("IPA") - Soil Gas	<4.9	12	8.7	<44	<4.9	<4.9	5.4	1,000	<4.9	800	19	3,600	<4.9	1,200	750	29				
2-Propanol ("IPA") - Shroud	43,000		41,000		44,000		29,000		25,000	33,000		32,000		40,000	50,000	---				
†Leakage Rate (%)	0.01%	0.03%	0.02%	0.05%	0.01%	0.01%	0.02%	3.4%	0.01%	2.4%	0.06%	11.3%	0.01%	3.0%	1.5%	---				

ROBERTS ENVIRONMENTAL SERVICES, LLC

See laboratory report for complete analytical results and reporting limits.

BG = Background ambient air sample. Shroud IPA concentrations are estimated (the concentration reported exceeds instrument calibration).

NA = No IDEM Remediation Closure Guide ("RCG") Screening Level ("SL") Available. SG = Soil Gas. SS = Sub-Slab. "s"=shallow (5.5 to 6.0-feet depths). "d"=deeper (17-feet depths)

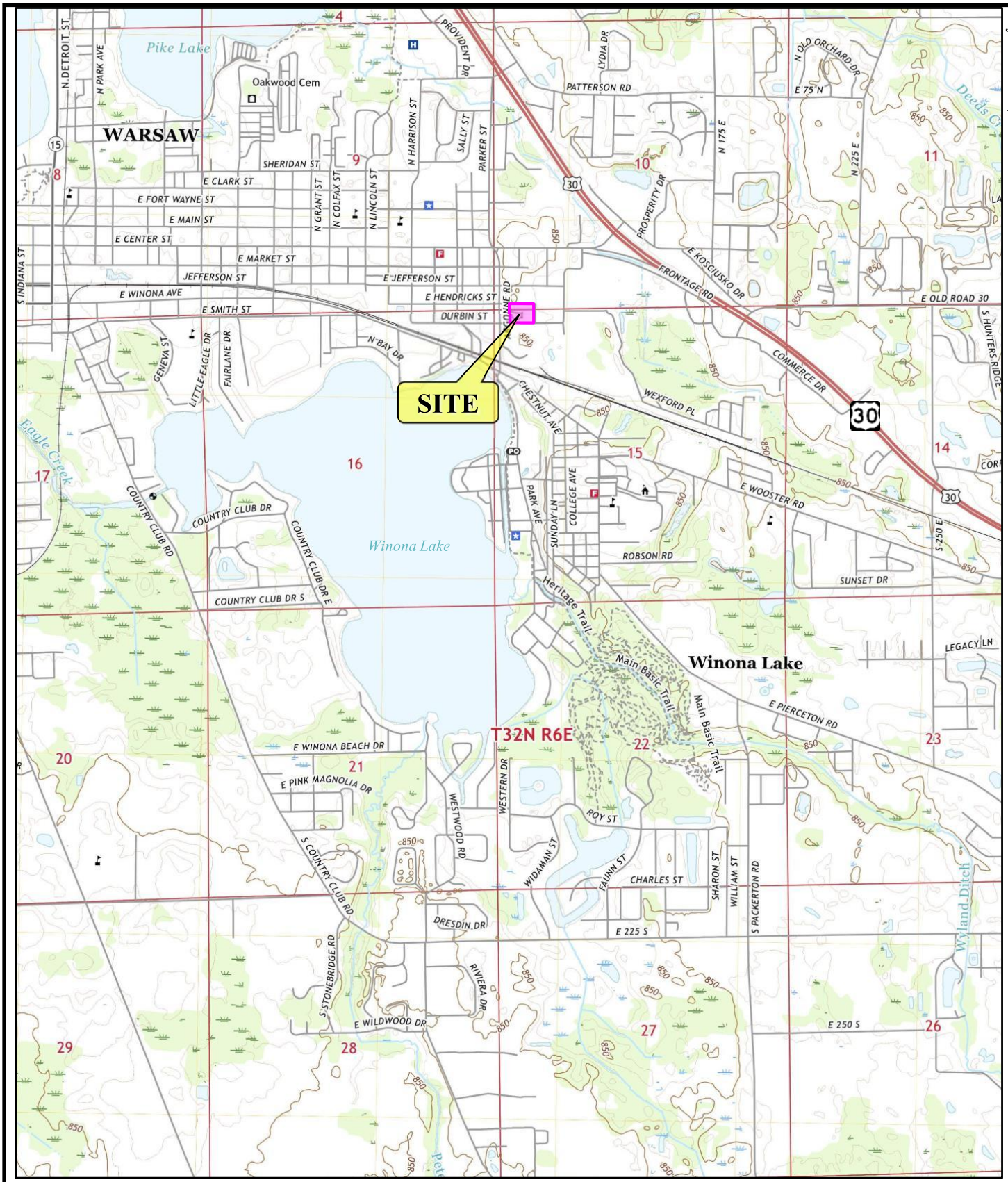
IDEM RCG Residential and Commercial Sub-Slab soil gas Screening Level ("SL" - March 2021) calculated with an attenuation factor of 0.03.

Yellow highlighted and Bold results exceed the IDEM RCG commercial sub-slab SL. Orange highlighted and bold results exceed the IDEM RCG residential sub-slab SL.

ND = not detected at or above the laboratory reporting limit, which is below SLs. IPA = Isopropyl Alcohol. MEK = Methyl Ethyl Ketone. MIBK = Methyl Isobutyl Ketone.

† = Leakage rates of approximately 10% or less are generally considered acceptable. Quantified by dividing sub-slab IPA concentration by shroud air IPA concentration (at 1/2 detection limit when ND).

* Water observed in sample tubing. As such, sample may not be an accurate representation of the subsurface vapors above the water table.



SCALE
0 2,500 5,000
1-Inch ~ 2,500-Feet

Site Boundary is Approximate Only

Prepared By:	Date Prepared:
DDJ	*May 2020*

USGS 7.5-Minute Topographic Map
Warsaw, Indiana, 2019

ROBERTS ENVIRONMENTAL SERVICES, LLC
2112 Carmen Court • Goshen, Indiana
101 W. Ohio Street, Ste. 2000 • Indianapolis, Indiana
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FIGURE 1
SITE VICINITY MAP
FORMER ARNOLT CORP. PROPERTY
2525 EAST DURBIN STREET
WARSAW, INDIANA

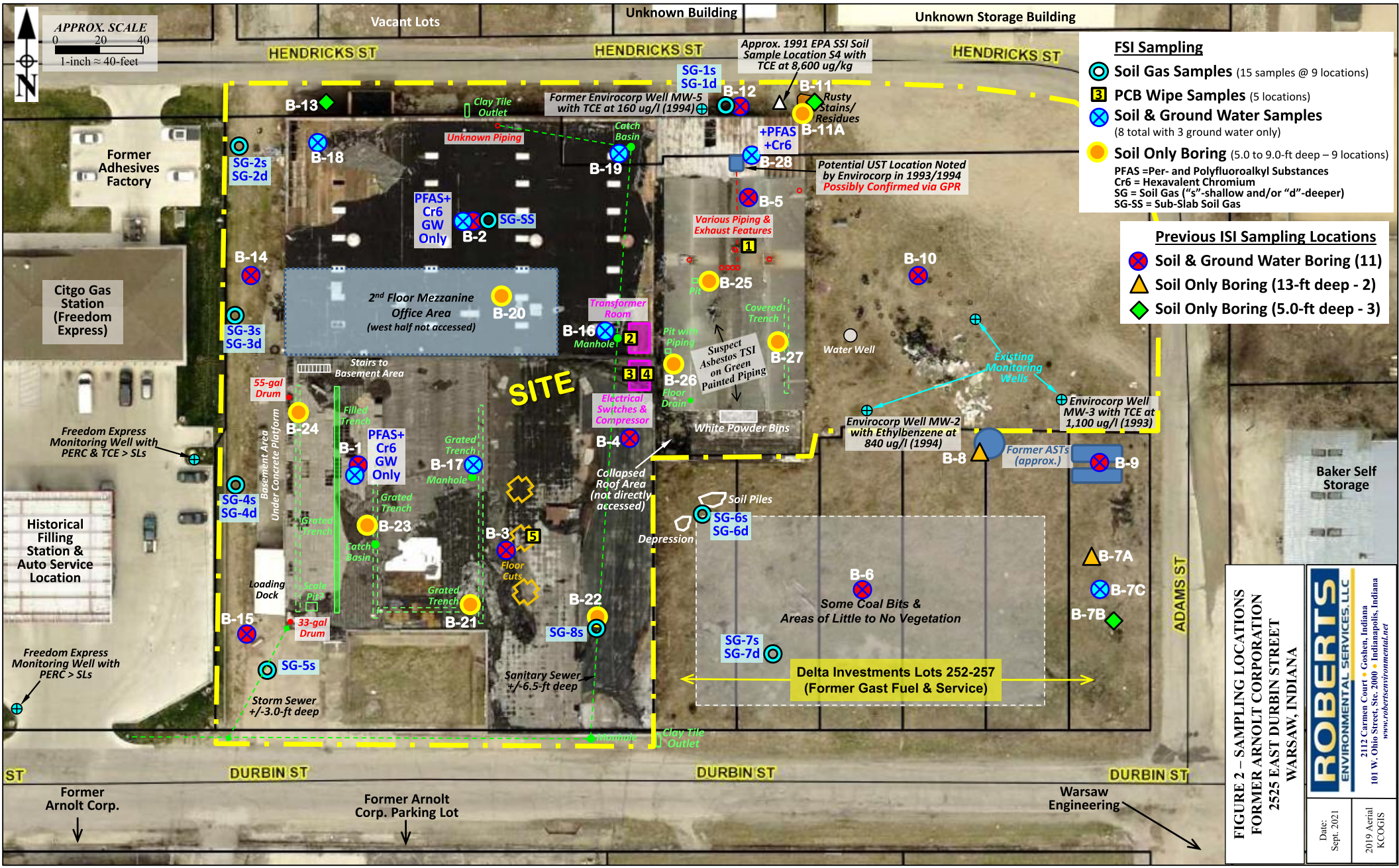

FIGURE 2 – SAMPLING LOCATIONS
FORMER ARNOLT CORPORATION
2525 EAST DURBIN STREET
WARSAW, INDIANA

ROBERTS ENVIRONMENTAL SERVICES, LLC
2112 Carmen Court • Goshen, Indiana
101 W. Ohio Street, Ste. 2000 • Indianapolis, Indiana
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Date: Sept. 2021

2019 Aerial KCOGIS

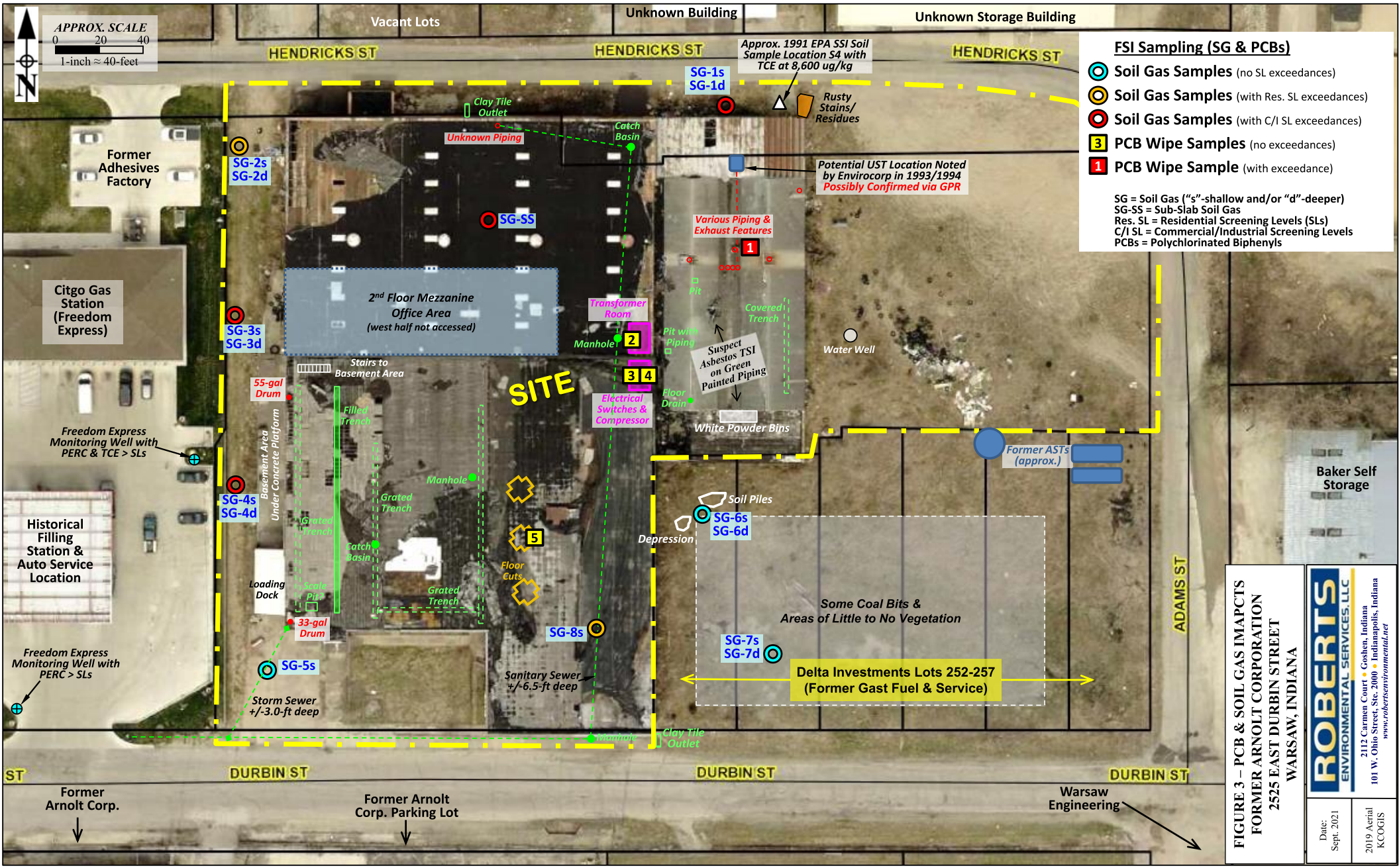
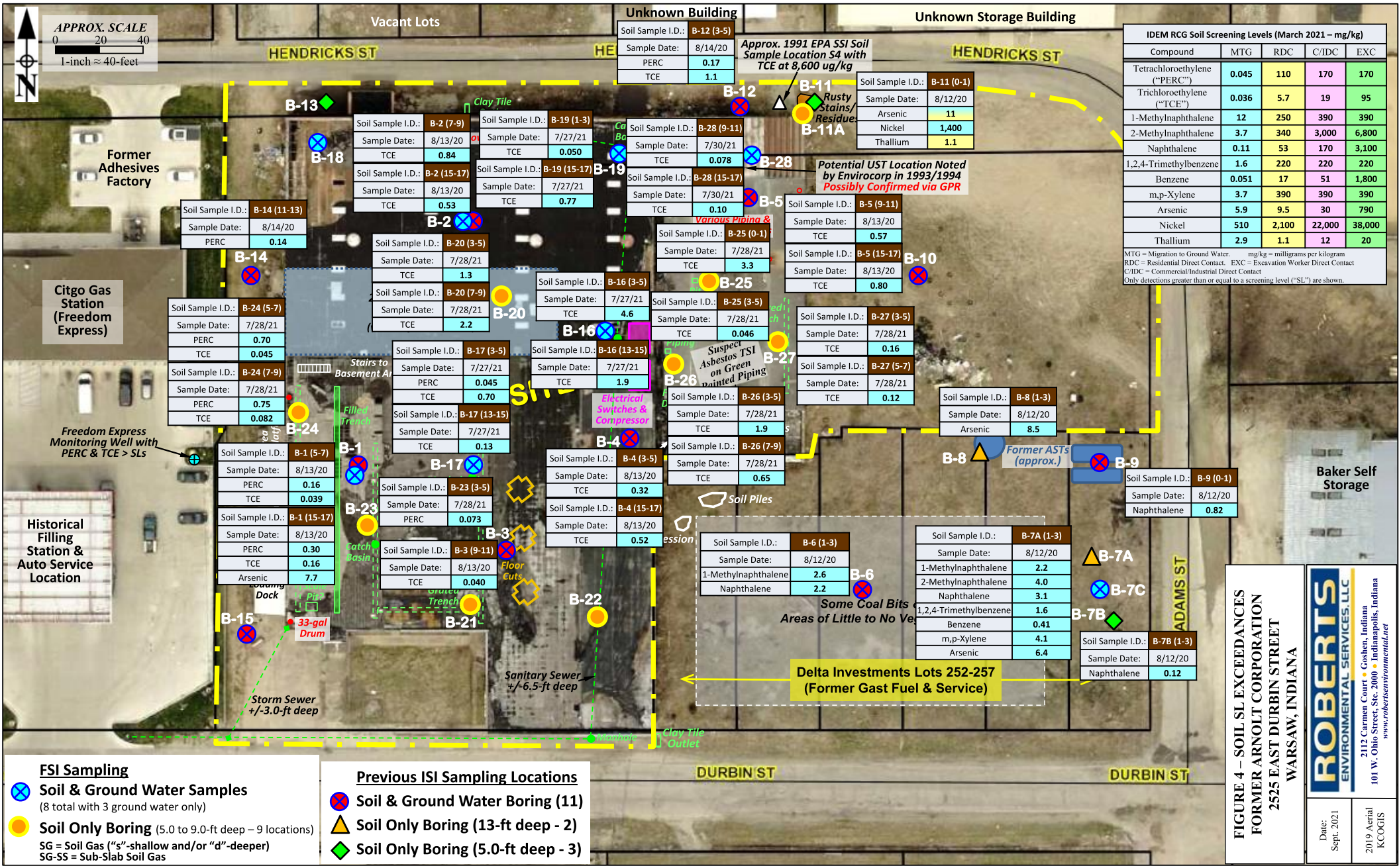


FIGURE 3 – PCB & SOIL GAS IMAPCTS
FORMER ARNOLT CORPORATION
2525 EAST DURBIN STREET
WARSAW, INDIANA

ROBERTS ENVIRONMENTAL SERVICES, LLC
2112 Carmen Court • Goshen, Indiana
101 W. Ohio Street, Ste. 2000 • Indianapolis, Indiana
www.robertsenvironmental.net

Date: Sept. 2021

2019 Aerial KCOGIS



IDEM RCG Soil Screening Levels (March 2021 – mg/kg)

Compound	MTG	RDC	C/IDC	EXC
Tetrachloroethylene ("PERC")	0.045	110	170	170
Trichloroethylene ("TCE")	0.036	5.7	19	95
1-Methylnaphthalene	12	250	390	390
2-Methylnaphthalene	3.7	340	3,000	6,800
Naphthalene	0.11	53	170	3,100
1,2,4-Trimethylbenzene	1.6	220	220	220
Benzene	0.051	17	51	1,800
m,p-Xylene	3.7	390	390	390
Arsenic	5.9	9.5	30	790
Nickel	510	2,100	22,000	38,000
Thallium	2.9	1.1	12	20

MTG = Migration to Ground Water. mg/kg = milligrams per kilogram
RDC = Residential Direct Contact. EXC = Excavation Worker Direct Contact
C/IDC = Commercial/Industrial Direct Contact
Only detections greater than or equal to a screening level ("SL") are shown.

FSI Sampling

- Soil & Ground Water Samples (8 total with 3 ground water only)
- Soil Only Boring (5.0 to 9.0-ft deep – 9 locations)

SG = Soil Gas ("s"-shallow and/or "d"-deeper)
SG-SS = Sub-Slab Soil Gas

Previous ISI Sampling Locations

- Soil & Ground Water Boring (11)
- Soil Only Boring (13-ft deep - 2)
- Soil Only Boring (5.0-ft deep - 3)

FIGURE 4 – SOIL SL EXCEEDANCES
FORMER ARNOLT CORPORATION
2525 EAST DURBIN STREET
WARSAW, INDIANA

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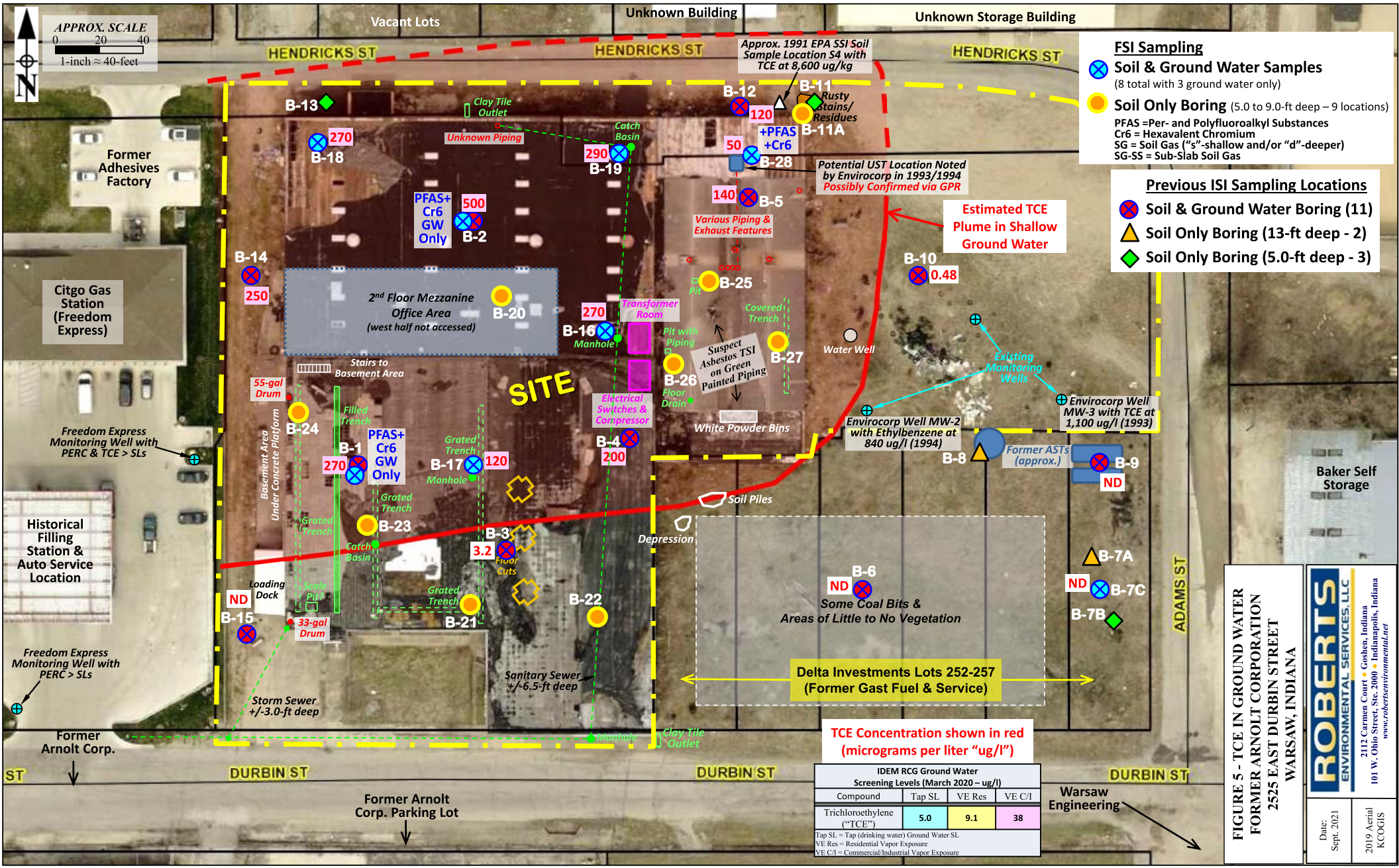
Date: Sept. 2021
2019 Aerial KCOGIS


APPROX. SCALE
0 20 40
1-inch ≈ 40-feet
Vacant Lots
Unknown Building
Unknown Storage Building
HENDRICKS ST
HENDRICKS ST
HENDRICKS ST
Approx. 1991 EPA SSI Soil Sample Location S4 with TCE at 8,600 ug/kg
FSI Sampling
Soil & Ground Water Samples
(8 total with 3 ground water only)
Soil Only Boring (5.0 to 9.0-ft deep – 9 locations)
PFAS =Per- and Polyfluoroalkyl Substances
Cr6 = Hexavalent Chromium
SG = Soil Gas ("s"-shallow and/or "d"-deeper)
SG-SS = Sub-Slab Soil Gas
Previous ISI Sampling Locations
Soil & Ground Water Boring (11)
Soil Only Boring (13-ft deep - 2)
Soil Only Boring (5.0-ft deep - 3)
Former Adhesives Factory
Citgo Gas Station (Freedom Express)
Historical Filling Station & Auto Service Location
Baker Self Storage
B-13
B-18 270
Clay Tile Outlet
Unknown Piping
Catch Basin
B-19 290
B-12
120
B-11
Rusty Stains/ Residues
B-11A
+PFAS +Cr6
50
B-28
Potential UST Location Noted by Envirocorp in 1993/1994 Possibly Confirmed via GPR
140
B-5
PFAS+ Cr6 GW Only
500
B-2
Various Piping & Exhaust Features
Estimated TCE Plume in Shallow Ground Water
B-14
250
2nd Floor Mezzanine Office Area (west half not accessed)
B-20
B-25
Pit
B-10
0.48
Transformer Room
270
B-16
Manhole
Pit with Piping
Covered Trench
B-27
Water Well
Existing Monitoring Wells
Stairs to Basement Area
55-gal Drum
B-24
SITE
B-26
Floor Drain
Suspect Asbestos TSI on Green Painted Piping
Electrical Switches & Compressor
White Powder Bins
Envirocorp Well MW-3 with TCE at 1,100 ug/l (1993)
Envirocorp Well MW-2 with Ethylbenzene at 840 ug/l (1994)
Filled Trench
Basement Area Under Concrete Platform
Freedom Express Monitoring Well with PERC & TCE > SLs
B-1
270
PFAS+ Cr6 GW Only
Grated Trench
B-17
120
Manhole
B-4
200
B-8
Former ASTs (approx.)
B-9
ND
Grated Trench
Grated Trench
B-23
Catch Basin
B-3
3.2
Floor Cuts
Soil Piles
Depression
B-6
ND
Some Coal Bits & Areas of Little to No Vegetation
B-7A
ND
B-7C
B-7B
Loading Dock
Scale Pit
ND
B-15
33-gal Drum
Grated Trench
B-21
B-22
Sanitary Sewer +/-6.5-ft deep
Storm Sewer +/-3.0-ft deep
Freedom Express Monitoring Well with PERC > SLs
Clay Tile Outlet
Former Arnolt Corp.
DURBIN ST
DURBIN ST
DURBIN ST
Former Arnolt Corp. Parking Lot
Delta Investments Lots 252-257 (Former Gast Fuel & Service)
ADAMS ST
Warsaw Engineering
TCE Concentration shown in red (micrograms per liter "ug/l")
IDEM RCG Ground Water Screening Levels (March 2020 – ug/l)
Compound | Tap SL | VE Res | VE C/I
Trichloroethylene ("TCE") | 5.0 | 9.1 | 38
Tap SL = Tap (drinking water) Ground Water SL
VE Res = Residential Vapor Exposure
VE C/I = Commercial/Industrial Vapor Exposure
FIGURE 5 - TCE IN GROUND WATER
FORMER ARNOLT CORPORATION
2525 EAST DURBIN STREET
WARSAW, INDIANA
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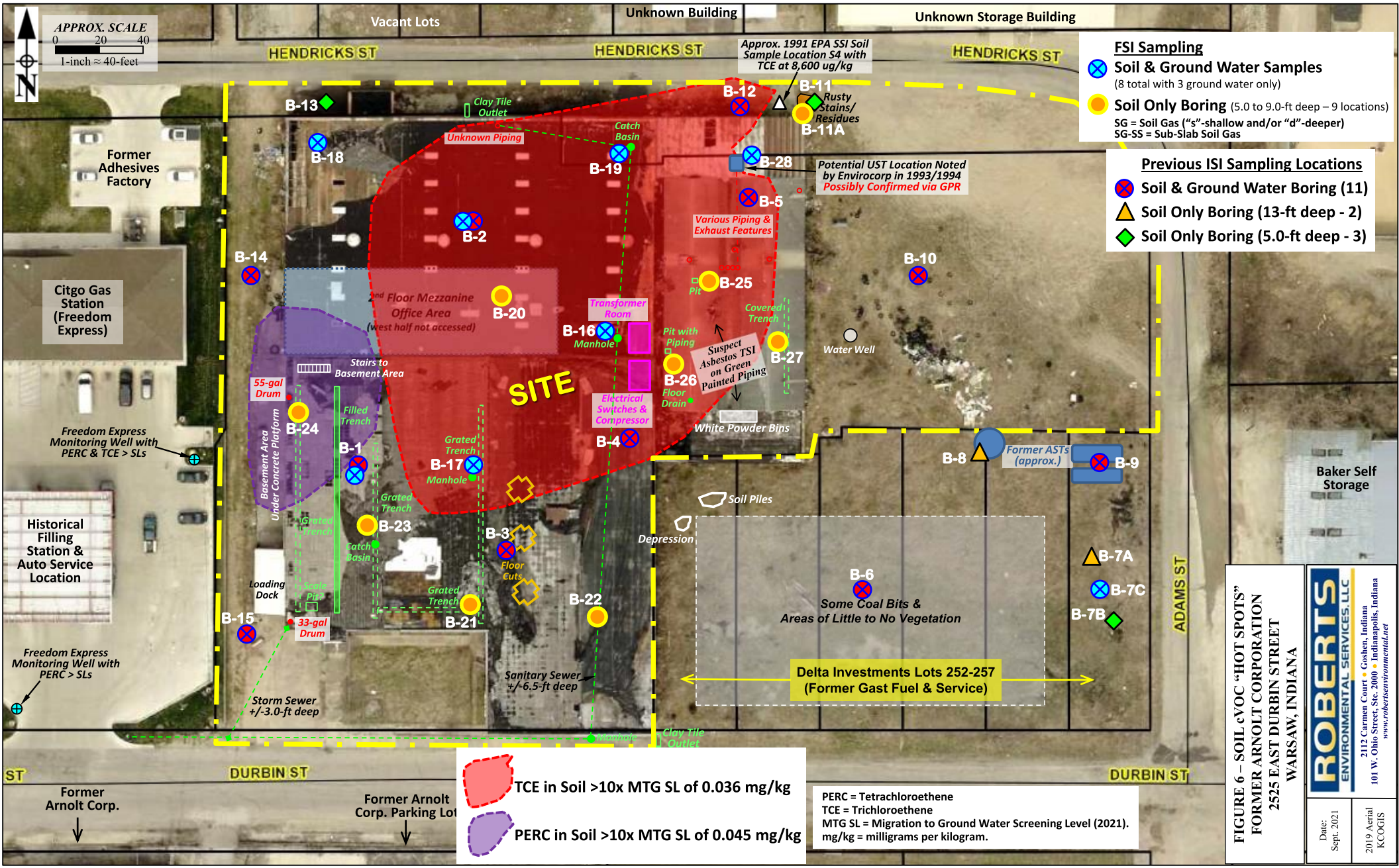

FIGURE 6 – SOIL cVOC "HOT SPOTS"
FORMER ARNOLT CORPORATION
2525 EAST DURBIN STREET
WARSAW, INDIANA

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Date: Sept. 2021

2019 Aerial KCOGIS

REMEDIATION WORK PLAN

APPENDIX B. SOIL BORING LOGS

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-1

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 13, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	13:12	60	4.8
1 - 3	13:13		7.4
3 - 5	13:14		7.1
			Soil Sample Submitted from 5'-7' for Lab Analysis
5 - 7	13:18	70	11.3
7 - 9	13:19		10.5
9 - 11	13:22	70	6.3
11 - 13	13:23		7.2
13 - 15	13:26	70	6.2
15 - 17	13:27		10.7
			Soil Sample Submitted from 15'-17' for Lab Analysis
17 - 19	13:32	80	6.7
19 - 21	13:33		4.9
21 - 23	13:39	90	5.3
23 - 25	13:40		7.6

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 22.0'. Ground Water Sample B-1 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Sand and Gravel mix
40% fine sand, 10% gravel, moderate yellowish brown (10YR 5/4), dry

Fine Sand
moderate yellowish brown, very moist-wet silt/very fine sand @ 12.5'

Coarse Sand and Gravel mix
60% fine sand, trace gravel, some large gravel, moderate yellowish brown, dry

Fine Sand
moderate yellowish brown, wet @ 21'

Coarse Sand and Gravel mix
60-70% fine sand, trace gravel, wet

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-2

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 13, 2020

Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Depth
				Ground Surface Elevation: Elevation not surveyed	
0 - 1	8:52	80	10.3	**Concrete**	0
1 - 3	8:53		14.1	**Silty Sand and Gravel** stiff, moderate brown (5YR 4/4), dry	
3 - 5	8:54		20.1	**Fine-Medium Sand** 60% fine sand, some coarse sand and gravel, some cobble and large gravel @ 7', moderate yellowish brown (10YR 5/4), dry	4
5 - 7	8:57	40	21.1		
7 - 9	8:58		41.7		8
9 - 11	9:00	70	37.3	**Fine Sand** 90% fine sand, trace coarse sand and gravel, 2" coarse sand and gravel layers @ 15' and 16.5', dry	
11 - 13	9:01		26.8		12
13 - 15	9:05	70	28.7		
15 - 17	9:06		36.6		16
17 - 19	9:12	70	39.8	**Coarse Sand and Gravel mix** fine/medium/coarse sand mix, trace to 10% gravel, moderate yellowish brown, some silt and iron 20'-20.5', wet @ ~21'	
19 - 21	9:13		45.8		20
21 - 23	9:18	80	24.6	**Fine Sand** moderate yellowish brown, some iron 24'-24.5', gray 24.5'-25'	
23 - 25	9:19		22.6		24
				End of Boring @ 25'	
					28
					32

Soil Sample Submitted from 7'-9' for Lab Analysis

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 21.6'. Ground Water Sample B-2 (GW) Submitted for Lab Analysis

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-3

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 13, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	11:27	60	2.6
1 - 3	11:28		2.3
3 - 5	11:29		2.7
Soil Sample Submitted from 5'-7' for Lab Analysis			
5 - 7	11:34	80	4.6
7 - 9	11:35		4.5
Soil Sample Submitted from 9'-11' for Lab Analysis			
9 - 11	11:38	70	5.0
11 - 13	11:39		4.1
13 - 15	11:43	70	3.1
15 - 17	11:44		3.3
17 - 19	11:47	80	1.4
19 - 21	11:48		2.4
21 - 23	11:54	70	1.1
23 - 25	11:55		0.9

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 21.9'. Ground Water Sample B-3 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Sand and Gravel mix
50% fine sand, 10% gravel, moderate brown (5YR 4/4), dry

Fine Sand
90% fine sand, moderate yellowish brown (10YR 5/4), dry, 3" coarse sand and gravel layer @ 6', 2" moist very fine sand layer @ 8.5', more medium-coarse sand 11'-13'

Coarse Sand and Gravel
80% fine-medium sand, 10-20% gravel, moderate yellowish brown, dry

Fine Sand
90% fine sand, moderate yellowish brown, very moist, 6" very fine with silt @ 17', wet @ 21'

Coarse Sand and Gravel mix
10% gravel, wet, 2" gravel layer @ 24', gray @ 24.5'

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-4

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 13, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	10:20	80	9.5
1 - 3	10:21		11.7
3 - 5	10:22		14.8
5 - 7	10:23	20	4.2
7 - 9	10:24		6.0
9 - 11	10:25	20	4.8
11 - 13	10:26		3.1
13 - 15	10:28	60	17.1
15 - 17	10:29		18.4
17 - 19	10:33	60	11.8
19 - 21	10:34		11.6
21 - 23	10:38	70	9.8
23 - 25	10:39		12.9

Soil Sample Submitted from 3'-5' for Lab Analysis

Soil Sample Submitted from 15'-17' for Lab Analysis

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 21.5'. Ground Water Sample B-4 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Silt
with clay, gravel, and sand, cohesive, slightly plastic, stiff, moderate brown (5YR 4/4), moist

Fine Sand
10-20% silt, slightly cohesive, moderate brown to moderate yellowish brown (10YR 5/4), dry

Coarse Sand and Gravel mix
60% fine sand, trace to 10% gravel, moderate yellowish brown

Fine Sand
moderate yellowish brown, wet @ 20.5', 2" silty fine sand layer @ 20.5'

Coarse Sand and Gravel mix
60% fine sand, 10% gravel, moderate yellowish brown to pale gray, 2" iron stains @ 24', wet

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-5

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 13, 2020

Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	14:42		14.2	**Concrete**		0	
1 - 3	14:43	50	8.8	**Silty Gravel** with sand, slightly cohesive, possible fill, moderate brown (5YR 4/4), moist			
3 - 5	14:44		8.0			4	
5 - 7	14:52	50	14.5				
7 - 9	14:53		12.6	**Coarse Sand and Gravel mix** 50% fine sand, 10% gravel, moist		8	
Soil Sample Submitted from 9'-11' for Lab Analysis							
9 - 11	15:28	60	147	**Fine Sand** 70% fine sand, 20% medium-coarse sand, trace to 10% gravel, petroleum odor 9'-13'			
11 - 13	15:29		21.1			12	
13 - 15	15:34	90	18.6	**Coarse Sand and Gravel mix**			
15 - 17	15:35		23.2			16	
Soil Sample Submitted from 15'-17' for Lab Analysis				**Fine Sand** some very fine sand layers @ 19.5', wet @ 20.5', petroleum odor 21'-25', 6" coarse sand and gravel layer @ 24', 6" very fine-fine sand layer @ 24' gray with odor			
17 - 19	15:42	80	16.6			20	
19 - 21	15:43		14.9				
21 - 23	15:50	60	6.8			24	
23 - 25	15:51		53.5				
				End of Boring @ 25'		28	
						32	

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 19.5'. Ground Water Sample B-5 (GW) Submitted for Lab Analysis

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-6

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	9:50	20	1.2
1 - 3	9:51		8.9
3 - 5	9:53		8.5
5 - 7	9:54	1	1.6
7 - 9	NA		NA
9 - 11	NA	0	NA
11 - 13	NA		NA
13 - 15	NA	0	NA
15 - 17	NA		NA
17 - 19	NA	0	NA
19 - 21	NA		NA
21 - 23	NA	0	NA
23 - 25	NA		NA

Soil Sample Submitted from 1'-3' for Lab Analysis

Temporary Ground Water Sample Point Installed at 25' bgs with 10' of Screen. Static Water Level measured 19.1'. Ground Water Sample B-6 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Gravelly Silt
with little to no topsoil, moderate yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/2)

Coal Bits
some fine sand and silt, black, dry

Gravel
with silt and sand, moderate yellowish brown, dry

***No recovery 3'-7', offset 3' West, ~1% recovery**

***Offset boring 4' north, pushed rock 7'-25'**

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-7A

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	12:09	80	2.0
1 - 3	12:10		2.5
3 - 5	12:11		2.1
5 - 7	12:14	70	0.9
7 - 9	12:15		0.9

Soil Sample Submitted from 1'-3' for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
with sand, dark yellowish brown (10YR 4/2)

Silt
with fine sand and coal bits, dark brown-gray, dry

Fine Sand
80-90% fine sand, gravel 4.25'-4.5', pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4)

Coarse Sand and Gravel
10% gravel, some large gravel, moderate yellowish brown

End of Boring @ 9'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-7B

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	12:33	80	26.2
1 - 3	12:34		30.1
3 - 5	12:35		1.9

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Coal Bits
with silt and sand, black

Silty Sand
slightly cohesive, some gravel, old concrete
3.75'-4.25', moist
Gray from 1'-1.5' with slight petroleum odor

End of Boring @ 5'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-8

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	11:35		2.2
Soil Sample Submitted from 1'-3' for Lab Analysis			
1 - 3	11:36	90	2.3
3 - 5	11:38		1.0
5 - 7	11:44	80	1.1
7 - 9	11:45		0.6

SUBSURFACE PROFILE

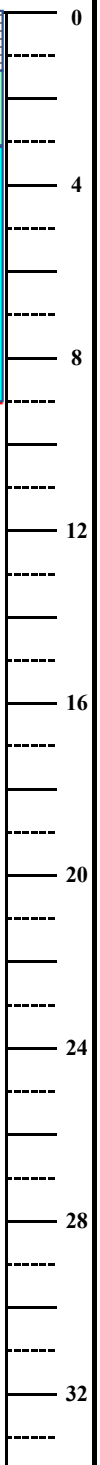
Ground Surface Elevation: Elevation not surveyed

Topsoil
sandy with silt, slightly cohesive, dark yellowish brown (10YR 4/2), dry

Silty Sand
with gravel, 2" silt layer @ 2.5', moderate yellowish brown, dry

Fine Sand
90% fine sand, some medium-coarse sand, trace silt, moderate yellowish brown
Some very fine sand varves, blackish and iron staining 7'-8'

End of Boring @ 9'



Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-9

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	13:28		5.1
			Soil Sample Submitted from 0'-1' for Lab Analysis
1 - 3	13:29	100	3.1
3 - 5	13:30		1.7
5 - 7	13:36	90	1.0
7 - 9	13:37		1.2
9 - 11	13:40	80	0.9
11 - 13	13:41		2.8
13 - 15	13:50	80	2.0
15 - 17	13:51		0.6
17 - 19	14:04	80	0.2
19 - 21	14:05		0.6
21 - 23	14:15	70	0.2
23 - 24	14:16		0.4

Temporary Ground Water Sample Point Installed at 24' bgs with 10' of Screen. Static Water Level measured 18.8'. Ground Water Sample B-9 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
with silt and sand, dark yellowish brown (10YR 4/2), dry

Silt
with some fine sand, slightly cohesive, 20% fine sand 4'-5', some clay 6'-6.5', dry

Clay
with some silt and fine-coarse sand, cohesive, plastic, orangish brown 9'-10', dry

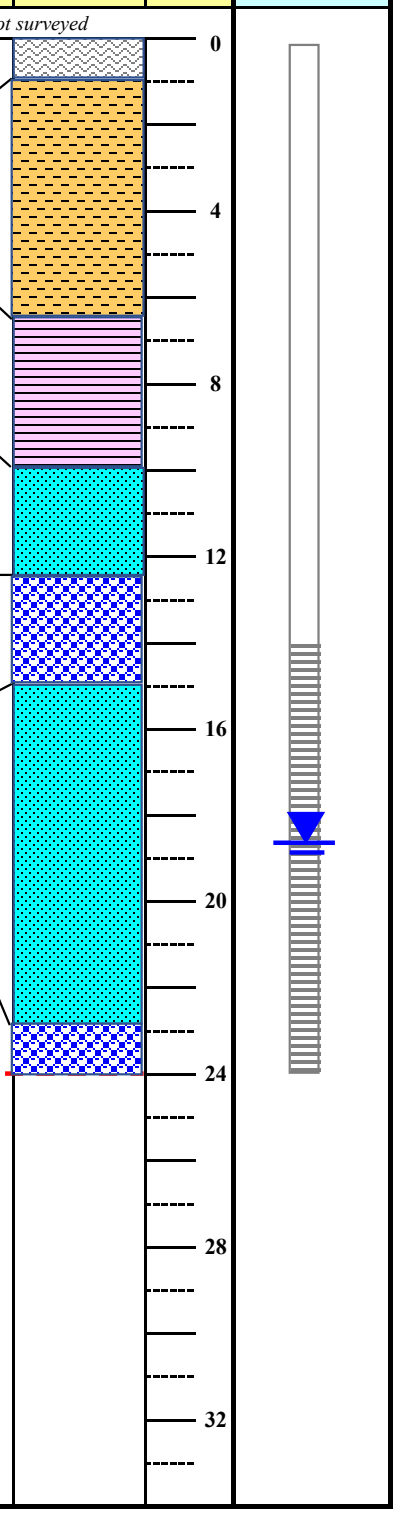
Fine Sand
some coarse sand and gravel 12.5'-12.75', moderate yellowish brown (10YR 5/4) to pale yellowish brown (10YR 6/2)

Coarse Sand and Gravel mix
fine/medium/coarse sand mix, 10% to trace gravel, moderate yellowish brown, dry

Fine Sand
90% fine sand, moderate yellowish brown, 1" coarse sand and gravel @ 19', wet @18'

Coarse Sand and Gravel
trace gravel, ~20% coarse sand, gray to moderate yellowish brown

End of Boring @ 24'



Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-10

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 14, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	11:57	70	1.2
1 - 3	11:58		2.0
3 - 5	11:59		2.4
5 - 7	12:03	80	3.8
7 - 9	12:04		2.8
9 - 11	12:08	80	2.6
11 - 13	12:09		2.1
13 - 15	12:12	70	2.8
15 - 17	12:13		1.9
17 - 19	12:20	80	1.7
19 - 21	12:21		2.1
21 - 23	12:30	60	2.6
23 - 25	12:31		1.6

Soil Sample Submitted from 5'-7' for Lab Analysis

Temporary Ground Water Sample Point Installed at 24' bgs with 10' of Screen. Static Water Level measured 21.0'. Ground Water Sample B-10 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Gravel
with sand and silt, dry

Silty Gravel
with sand, moderate brown (5YR 4/4), moist

Fine Sand
coarse sand and gravel layers, some large gravel, 6" coarse sand and gravel layer @ 6', moderate yellowish brown (10YR 5/4) to pale yellowish brown (10YR 6/2)

Coarse Sand and Gravel mix
50% fine sand, 10% gravel, moderate yellowish brown, dry

Fine Sand
wet @ 19', some coarse sand and gravel 23'-25'

End of Boring @ 25'

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-11

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	15:10	70	1.9
			Soil Sample Submitted from 0'-1' for Lab Analysis
1 - 3	15:11		0.5
3 - 5	15:12		0.9

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Silty Sand
rusty, moist

Silt
with sand and gravel, some large gravel, moderate brown (5YR 4/4)

End of Boring @ 5'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-12

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 14, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	10:07	60	19.7
1 - 3	10:08		32.5
3 - 5	10:09		35.2
5 - 7	10:13	70	22.1
7 - 9	10:14		22.7
9 - 11	10:18	70	16.4
11 - 13	10:19		19.3
13 - 15	10:22	62	19.5
15 - 17	10:23		23.5
17 - 19	10:27	70	16.6
19 - 21	10:28		19.9
21 - 23	10:34	90	8.9

Soil Sample Submitted from 3'-5' for Lab Analysis

Temporary Ground Water Sample Point Installed at 23' bgs with 10' of Screen. Static Water Level measured 18.0'. Ground Water Sample B-12 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
dark brown, sandy

Silt/Sand/Gravel mix
slightly cohesive, dark yellowish brown (10YR 4/2) to moderate brown (5YR 4/4), moist

Fine Sand
60-70% fine sand, some coarse sand and gravel layers, 6" coarse sand and gravel layer @ 9'

Coarse Sand and Gravel mix
50% fine sand, 10% gravel, moderate yellowish brown (10YR 5/4), dry

Fine Sand
100% fine sand 21.5'-22.5', orange iron stains to 20', then pale gray to 22.5', then brown orange with trace gravel

End of Boring @ 23'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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20-10768-21

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-13

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION				SUBSURFACE PROFILE			
Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	15:31	70	1.6	**Asphalt and Gravel**		0	
Soil Sample Submitted from 1'-3' for Lab Analysis							
1 - 3	15:32		2.2	**Coarse Sand and Gravel mix** fine/medium/coarse sand mix, some large gravel, moderate yellowish brown (10YR 5/4), dry		4	
3 - 5	15:33		1.9				
				End of Boring @ 5'		8	
						12	
						16	
						20	
						24	
						28	
						32	

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-14

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 14, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	8:32	80	1.9
1 - 3	8:33		3.1
3 - 5	8:34		3.5
5 - 7	8:37	70	4.4
7 - 9	8:38		4.4
9 - 11	8:41	70	3.6
11 - 13	8:42		5.8
13 - 15	8:47	70	4.3
15 - 17	8:48		5.1
17 - 19	8:52	70	3.0
19 - 21	8:53		3.4
21 - 23	8:57	60	2.6
23 - 24	8:58		13.0

Soil Sample Submitted from 11'-13' for Lab Analysis

Temporary Ground Water Sample Point Installed at 24' bgs with 10' of Screen. Static Water Level measured 20.5'. Ground Water Sample B-14 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
with gravel, dark yellowish brown (10YR 4/2), dry

Silty Gravel and Sand
some rocks, slightly cohesive, moderate brown (5YR 4/4), moist

Fine Sand
90% fine sand, thin coarse sand and gravel layers throughout, moderate yellowish brown (10YR 5/4), dry

6" coarse sand and gravel layer @ 11.5'

3" coarse sand and gravel layer @ ~15'

Wet @ 19.5'
1/2" clay layer @ 19.5'

Coarse Sand and Gravel mix
60% fine sand, trace to 10% gravel, Iron stains 23'-24'

End of Boring @ 24'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-15

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	8:31	90	0.2
1 - 3	8:32		0.8
3 - 5	8:33		0.4
5 - 7	8:36	80	2.2
7 - 9	8:37		0.6
9 - 11	8:41	80	1.6
11 - 13	8:42		1.7
13 - 15	8:45	90	1.5
15 - 17	8:46		0.8
17 - 19	8:49	70	1.4
19 - 21	8:50		0.5
21 - 24	8:55	90	NA

Soil Sample Submitted from 5'-7' for Lab Analysis

Temporary Ground Water Sample Point Installed at 24' bgs with 10' of Screen. Static Water Level measured 18.5'. Ground Water Sample B-15 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
with grass, dark yellowish brown (10YR 4/2), cohesive, dry

Coarse Sand and Gravel
with 20% silt, moderate yellowish brown (10YR 5/4), dry

Coarse Sand and Gravel
10% gravel, 60% fine sand, some silt, dry

Fine Sand
80-90% fine sand, some medium-coarse sand, trace gravel, moderate yellowish brown, dry

Very Fine Sand
with 20% silt, moderate yellowish brown, moist to wet

Fine-Medium Sand
some coarse sand, trace gravel, moderate yellowish brown, moist

Fine Sand
80-90% fine sand, moderate yellowish brown to pale yellowish brown (10YR 6/2)

Wet @ 16'
Some very fine sand layers 19'-21'
Some iron stains 19'-24'
6" very fine-fine sand layer @ 22'

End of Boring @ 24'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-7C

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	9:00	60	5.1
1 - 3	9:01		5.8
3 - 5	9:01		2.4
Soil Sample Submitted from 5'-7' for Lab Analysis			
5 - 7	9:03	80	2.6
7 - 9	9:04		1.7
Soil Sample Submitted from 9'-11' for Lab Analysis			
9 - 11	9:07	90	3.4
11 - 13	9:08		2.6
13 - 15	9:11	80	2.8
15 - 17	9:13		0.6
17 - 19	9:17	80	0.6
19 - 21	9:18		0.8
21 - 23	9:24	90	1.1

Temporary Ground Water Sample Point Installed at 23.5' bgs with 10' of Screen. Static Water Level measured 19.5'. Ground Water Sample B-7C (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Topsoil
sandy, dry, dark yellowish brown (10YR 4/2)

Topsoil and Sand
bits of coal and wood

Fine-Medium Sand
60% fine sand, 30% medium sand, 10% coarse sand and gravel, moderate yellowish brown (10YR 5/4), dry, 6" fine sand @ 5", 2" fine sand @~5'

Fine Sand
~80% fine sand, 20% medium sand, trace coarse sand and gravel, moderate yelowish brown, dry, slightly more coarse sand 14'-16', wet @ 19'

Fine-Coarse Sand
~50% fine sand, 30% medium sand, 20% coarse sand, moderate yellowish brown, wet, some iron @ 23'

End of Boring @ 23.5'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-11A

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 30, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	13:10	60	8.4
1 - 3	13:11		4.7
3 - 5	13:12		6.3

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Rusty Colored Sand (Fill)

Silty Coarse Sand and Gravel
with fine sand, moist, dark yellowish brown (10YR 4/2) to moderate brown (5YR 4/4)

Fine-Medium Sand
with gravel and coarse sand, dark yellowish brown to moderate yellowish brown (10YR 5/4)

End of Boring @ 5'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-16

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 27, 2021

SAMPLE INFORMATION				SUBSURFACE PROFILE			
Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	9:02	60	5.1	**Concrete and Gravel**		0	
1 - 3	9:03		17.8	**Silty Fine-Medium Sand** ~50% fine sand, 50% medium sand, some coarse sand and gravel, moderate brown (5YR 4/4), moist, more coarse sand and gravel 5'-9', some dark gray mottles			
Soil Sample Submitted from 3'-5' for Lab Analysis							
3 - 5	9:04		23.6			4	
5 - 7	9:09	10	4.2	**pushed rock from 5'-13'**			
7 - 9	9:10		10.8			8	
9 - 11	9:15	5	7.2				
11 - 13	9:16		8.2			12	
Soil Sample Submitted from 13'-15' for Lab Analysis							
13 - 15	9:22	80	23.2	**Coarse Sand and Gravel** ~20% coarse sand, 10% gravel, 40% medium sand, 30-40% fine sand, moderate yellowish brown (10YR 5/4), dry			
15 - 17	9:23		16			16	
17 - 19	9:33	90	13.7	**Fine Sand** ~70% fine sand, 30% medium sand, trace coarse sand and gravel, moderate yellowish brown, dry, wet 21.5'-22'			
19 - 21	9:34		6.8			20	
21 - 23	9:41	80	10.1				
23 - 25	9:43		4.3	**Fine-Medium Sand** ~50% fine sand, 30% medium sand, 20% very fine sand, trace gravel, moderate yellowish brown, wet		24	
				End of Boring @ 25'			
						28	
						32	

Temporary Ground Water Sample Point Installed at 25.5' bgs with 10' of Screen. Static Water Level measured 22.8'. Ground Water Sample B-16 (GW) Submitted for Lab Analysis

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-17

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 27, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	10:55	70	0.9
1 - 3	10:56		1.7
		Soil Sample Submitted from 3'-5' for Lab Analysis	
3 - 5	10:57		10.9
5 - 7	11:00	90	3.0
7 - 9	11:01		3.7
9 - 11	11:07	90	2.1
11 - 13	11:08		4.0
		Soil Sample Submitted from 13'-15' for Lab Analysis (FD-S)	
13 - 15	11:13	80	4.0
15 - 17	11:14		3.1
17 - 19	11:19	80	1.8
19 - 21	11:20		2.6
21 - 23	11:26	90	1.4
23 - 25	11:27		3.3

Temporary Ground Water Sample Point Installed at 25.5' bgs with 10' of Screen. Static Water Level measured 22.5'. Ground Water Sample B-17 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete and Gravel

Coarse Sand and Gravel
~50% fine sand, 30% medium sand, 20% coarse sand and gravel, moderate yellowish brown (10YR 5/4), dry, some silt 1'-2', sweet odor 1'-4'

Fine-Medium Sand
~60-70% fine sand, 30% medium sand, some coarse sand and gravel, moderate yellowish brown, dy, some thin layers of coarse sand and gravel 11'-13'

Fine-Medium Sand
~40% fine sand, 40% medium sand, 20% coarse sand and gravel, moderate yellowish brown, 10-20% gravel in sports, 3" fine sand @ 17'

Fine-Medium Sand
~80-90% fine sand, 20% medium sand, some coarse sand and gravel, moderate yellowish brown, moist, slightly coarser 23'-25', wet @ 22'

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-18

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 27, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	12:44	60	2.3
1 - 3	12:45		4.4
		Soil Sample Submitted from 3'-5' for Lab Analysis	
3 - 5	12:57		8.6
5 - 7	12:58	5	4.5
7 - 9	13:06		4.3
		Soil Sample Submitted from 9'-11' for Lab Analysis	
9 - 11	13:07	80	5.5
11 - 13	13:10		3.1
13 - 15	13:11	80	1.4
15 - 17	13:16		3.0
17 - 19	13:17	80	2.4
19 - 21	13:17		1.7
21 - 23	13:24	90	1.1
23 - 25	13:25		8.6

Temporary Ground Water Sample Point Installed at 25.5' bgs with 10' of Screen. Static Water Level measured 22.5'. Ground Water Sample B-18 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete and Gravel

Silty Medium Sand
some coarse sand and gravel, moderate brown (5YR 4/4) to moderate yellowish brown (10YR 5/4), some dark mottles, dry to slightly moist, liner stuck and crumbled 3'-7', 5% recovery

Fine-Medium Sand
60-70% fine sand, 30% medium sand, some coarse sand and gravel, moderate yellowish brown, 2" gravelly layer @14.5', coarse sand layer 16.5'-17'

Fine-Coarse Sand
~30% coarse sand, 40% medium sand, 30-40% fine sand, trace gravel, moderate yellowish brown

Fine Sand
~70-80% fine sand, 20% medium sand, trace coarse sand and gravel, wet @~22', moderate yellowish brown

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-19

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 27, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	14:16		2.6
Soil Sample Submitted from 1'-3' for Lab Analysis			
1 - 3	14:17	20	5.5
3 - 5	14:18		4.6
5 - 7	14:20	70	3.0
7 - 9	14:21		5.6
9 - 11	14:26	70	6.8
11 - 13	14:27		7.5
13 - 15	14:31	70	4.3
Soil Sample Submitted from 15'-17' for Lab Analysis			
15 - 17	14:32		8.7
17 - 19	14:36	70	6.5
19 - 21	14:37		11.3
21 - 23	14:42	80	8.8
23 - 25	14:43		9.7

Temporary Ground Water Sample Point Installed at 25.5' bgs with 10' of Screen. Static Water Level measured 22.5'. Ground Water Sample B-19 (GW) Submitted for Lab Analysis

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete and Gravel

Silty Medium Sand
moist

Silt with Fine Sand
~20-40% fine sand, trace coarse sand and gravel, slightly cohesive, moderate brown (5YR 4/4), moist to very moist

Very Fine Sand
some silt, moist to very moist, moderate yellowish brown (10YR 5/4)

Fine-Medium Sand
~40% fine sand, 30-40% medium sand, 20% coarse sand, trace gravel, moderate yellowish brown, moist to dry, more fine sand 80% at 9'-10' and 11'-12'

Fine-Medium Sand
70% fine sand, 30% medium sand, trace coarse sand and gravel, moderate yellowish brown, moist starting at ~15'

6" layer with ~ 50% coarse sand and gravel (10% gravel) @ 19.5',

wet @ 22', 80-90% fine sand 23'-25'

End of Boring @ 25'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-20

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	10:34	60	1.4
1 - 3	10:35		9.5
Soil Sample Submitted from 3'-5' for Lab Analysis			
3 - 5	10:36		25.8
5 - 7	10:44	60	10.6
Soil Sample Submitted from 7'-9' for Lab Analysis			
7 - 9	10:45		14.9

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete and Gravel

Silty Medium-Coarse Sand
some gravel, slightly cohesive, moderate brown (5YR 4/4)

Fine-Medium Sand
~40% fine sand, 40% medium sand, 20% coarse sand and gravel, moderate yellowish brown (10YR 5/4), dry, ~3" concrete @ 5'

End of Boring @ 9'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-21

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION				SUBSURFACE PROFILE			
Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	11:20	20	0.6	**Concrete and Gravel**		0	
Soil Sample Submitted from 1'-3' for Lab Analysis							
1 - 3	11:21		0.6	**Fine-Medium Sand** 40% fine sand, 40% medium sand, 20% coarse sand and gravel			
3 - 5	11:22		0.6			4	
5 - 7	No Recovery	0 Pushed rock	NA	**Pushed rock from 5'-9', no recovery**			
7 - 9	No Recovery		NA			8	
				End of Boring @ 9'			
						12	
						16	
						20	
						24	
						28	
						32	

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-22

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	11:48	60	0.6
1 - 3	11:49		0.6
Soil Sample Submitted from 3'-5' for Lab Analysis			
3 - 5	11:50		1.5

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete and Gravel

Fine-Medium Sand
40% fine sand, 40% medium sand, trace large gravel

Fine-Medium Sand
~60% fine sand, 30% medium sand, 10% coarse sand and gravel, moderate yellowish brown (10YR 5/4), dry

End of Boring @ 5'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-23

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: August 12, 2020

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	12:36	60	0.7
1 - 3	12:37		1.6
Soil Sample Submitted from 3'-5' for Lab Analysis			
3 - 5	12:38		2.5
5 - 7	12:45	50	1.9
Soil Sample Submitted from 7'-9' for Lab Analysis			
7 - 9	12:46		2.9

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Fine Sand
with medium sand and large gravel, moderate yellowish brown (10YR 5/4), sweet odor 1'-3'

Fine Sand
~70-80% fine sand, 20% medium sand, some coarse sand and gravel, sweet odor 3'-7', 2" coarse sand and gravel layer @ 6', 3" coarse sand and gravel layer @~8'

End of Boring @ 9'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

ROBERTS ENVIRONMENTAL SERVICES, LLC
2112 Carmen Court • Goshen, Indiana
101 W. Ohio Street, Ste. 2000 • Indianapolis, Indiana
www.robertsenvironmental.net

20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-24

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION				SUBSURFACE PROFILE			
Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	13:17	60	2.4	**Concrete and Gravel**		0	
1 - 3	13:18		3.6	**Coarse Sand and Gravel** 30% with fine/medium sand matrix, moderate yellowish brown (10YR 5/4), dry.			
3 - 5	13:19		7.6			4	
Soil Sample Submitted from 5'-7' for Lab Analysis							
5 - 7	13:22	60	12.1	**Fine Sand** ~70% fine sand, 20% medium sand, 10% coarse sand and gravel, moderate yellowish brown, dry			
7 - 9	13:23		8.9			8	
Soil Sample Submitted from 7'-9' for Lab Analysis				**End of Boring @ 9'**			
						12	
						16	
						20	
						24	
						28	
						32	

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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20-10768-22

BORING NUMBER: B-25

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION				SUBSURFACE PROFILE			
Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	14:00	60	13.4	**Concrete**		0	
Soil Sample Submitted from 0'-1' for Lab Analysis							
1 - 3	14:01		4.5	**Silty Coarse Sand and Gravel** 60% fine sand, some large gravel, moderate brown (5YR 4/4), moist to very moist		4	
Soil Sample Submitted from 3'-5' for Lab Analysis							
3 - 5	14:02		12.1				
5 - 7	No recovery	0 pushed rock	NA	**Fine Sand** ~70-80% fine sand, 20% medium sand, some coarse sand and gravel, moderate yellowish brown (10YR 5/4), moist		8	
7 - 9	No recovery		NA	**End of Boring @ 9'**		12	
						16	
						20	
						24	
						28	
						32	

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-26

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	14:28	60	4.7
1 - 3	14:29		7.4
Soil Sample Submitted from 3'-5' for Lab Analysis			
3 - 5	14:30		18.5
5 - 7	14:33	70	11.8
Soil Sample Submitted from 7'-9' for Lab Analysis			
7 - 9	14:34		9.7

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Fine-Coarse Sand
~30% fine sand, 40% medium sand, 30% coarse sand with some gravel, moderate yellowish brown (10YR 5/4), dry, less coarse sand 5'-9', 2" fine sand @ ~6' and at 9'

End of Boring @ 9'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ

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20-10768-22

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

BORING NUMBER: B-27

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 28, 2021

SAMPLE INFORMATION

Screening Interval	Time	Recovery (%)	PID (ppm)
0 - 1	15:00	50	5.1
1 - 3	15:01		5.3
Soil Sample Submitted from 3'-5' for Lab Analysis			
3 - 5	15:02		7.7
Soil Sample Submitted from 5'-7' for Lab Analysis			
5 - 7	15:06	70	9.6
7 - 9	15:07		7.1

SUBSURFACE PROFILE

Ground Surface Elevation: Elevation not surveyed

Concrete

Silty Coarse Sand and Gravel
mottled, dark brown to moderate brown (5YR 4/4), moist

Concrete and Brick

Fine-Medium Sand
~60-70% fine sand, 30% medium sand, 10% coarse sand, moderate yellowish brown (10YR 5/4), dry, 2"-3" fine sand @ ~8'

End of Boring @ 9'

Graphic Display

Depth: 0, 4, 8, 12, 16, 20, 24, 28, 32

Well Completion

Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

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101 W. Ohio Street, Ste. 2000 • Indianapolis, Indiana
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20-10768-22

BORING NUMBER: B-28

Surveyed (check if yes): ☐
TOC Elev.:
X=
Y=

Client: MACOG
Project: Arnolt
Location: Warsaw, Indiana
Date: July 30, 2021

Screening Interval	Time	Recovery (%)	PID (ppm)	Lithologic Description	Graphic Display	Depth	Well Completion
				Ground Surface Elevation: Elevation not surveyed			
0 - 1	12:01		2.2	**Concrete and Gravel**		0	
1 - 3	12:02	70	2.6	**Silty Coarse Sand and Gravel with Fine-Medium Sand** moderate brown (5YR 4/4)			
3 - 5	12:03		5.8			4	
5 - 7	12:08	80	7.3	**Fine-Coarse Sand** 30% fine sand, 30% medium sand, 30% coarse sand, trace to 10% gravel, some large gravel, moderate yellowish brown (10YR 5/4), 3" fine sand layer @ 4', 1" very fine sand @~8.75'			
7 - 9	12:09		8.1			8	
Soil Sample Submitted from 9'-11' for Lab Analysis							
9 - 11	12:13	80	13.9	**Fine-Medium Sand** grade to 60-70% fine sand, 30% medium sand, trace to 10% coarse sand and gravel, moderate yellowish brown, dry, coarse sand and gravel layer 12.75'-13.5', 70-80% fine sand by 15', moist			
11 - 13	12:14		7.8			12	
13 - 15	12:18	80	11.5				
15 - 17	12:19		14.3			16	
Soil Sample Submitted from 15'-17' for Lab Analysis							
17 - 19	12:24	80	13.1	**Fine-Coarse Sand** 30-40% coarse sand, 10-20% gravel, with FS/MS, moderate yellowish brown, some large gravel, some iron stains, dry			
19 - 21	12:25		12.2			20	
21 - 23	12:31	70	17.1	**Fine Sand** 80-90% fine sand, 20% medium sand, trace coarse sand, little gravel, wet @ 22', moderate yellowish brown to slight light gray, pale yellowish brown (10 YR 6/2)			
23 - 25	12:32		7.2			24	
				End of Boring @ 25'			
						28	
						32	

Temporary Ground Water Sample Point Installed at 25.5' bgs with 10' of Screen. Static Water Level measured 22.5'. Ground Water Sample B-28 (GW) Submitted for Lab Analysis

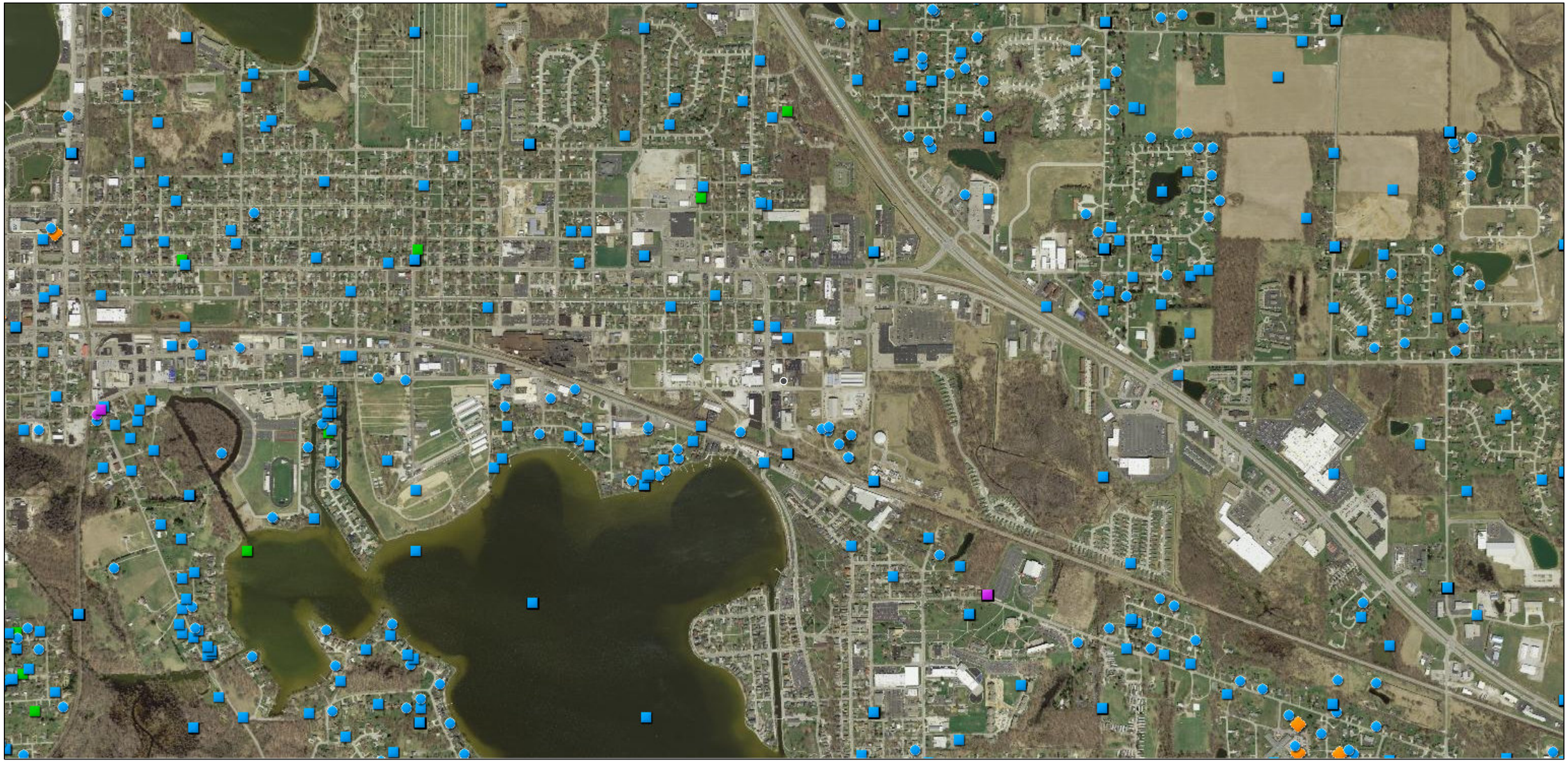
Drilling Method: 6620DT Geoprobe *Logged By:* DDJ *Page:* 1 of 1

REMEDIATION WORK PLAN

APPENDIX C. WATER WELL LOGS

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

Indiana DNR Water Well Viewer



3/25/2022, 10:51:30 AM

1:18,056

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Boreholes Drilled to Bedrock

- Other
- Field Located

Unconsolidated Wells

- Other
- Field Located

Unspecified Well Type

- Other
- Significant Withdraw Wells

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

InDNRMaps

IN Dept. of Natural Resources 2018

Indiana DNR Water Well Viewer

3/15/2022, 2:46:05 PM

Unconsolidated Wells

- Other
- Field Located

Unspecified Well Type

- Other
- Red: Band_1
- Green: Band_2
- Blue: Band_3

1:9,028

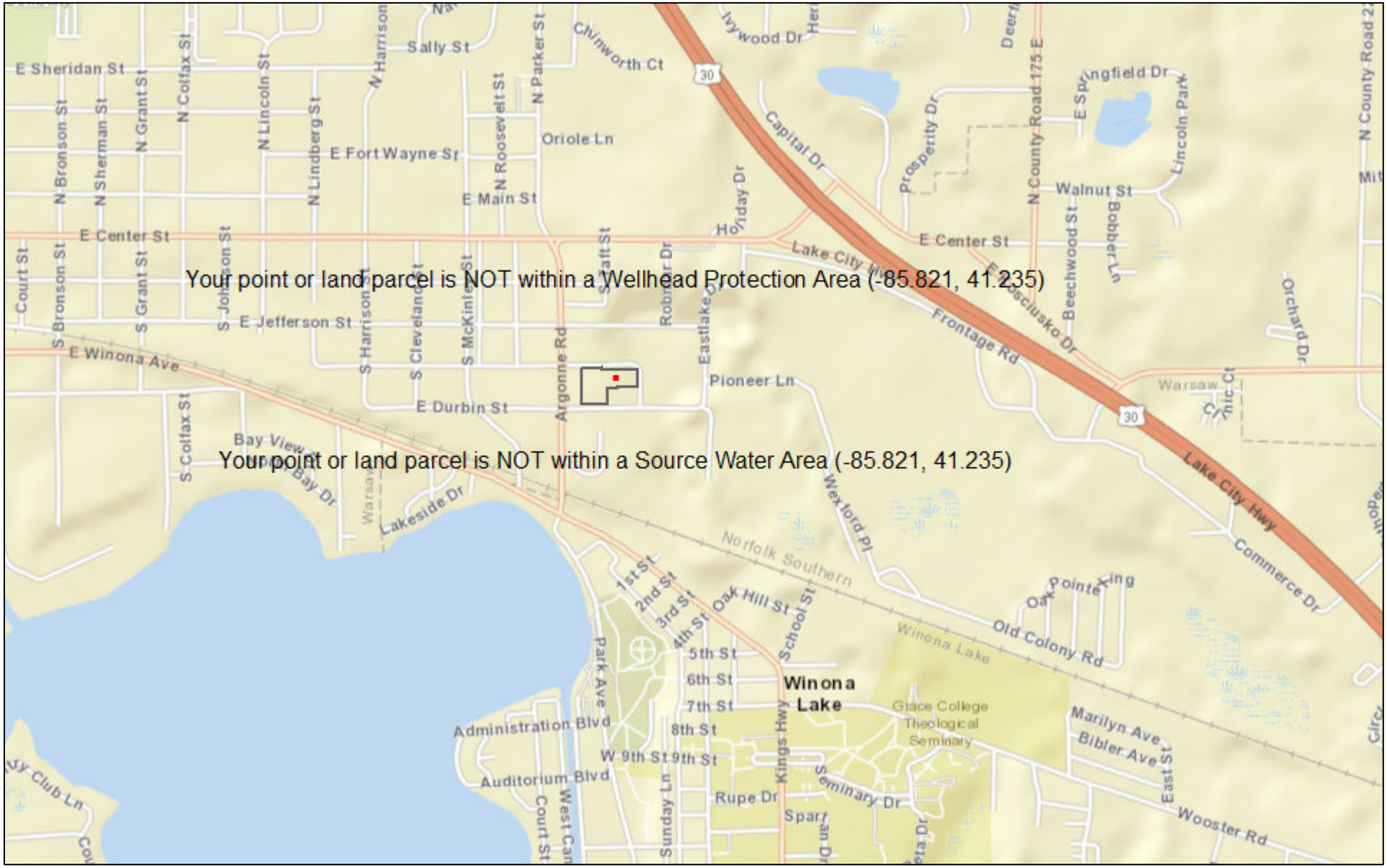
0 0.1 0.2 0.4 mi

0 0.175 0.35 0.7 km

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

InDNRMaps
IN Dept. of Natural Resources 2018

IDEM Source Water Proximity



March 15, 2022

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Record of Water Well

Indiana Department of Natural Resources

Reference Number	**Driving directions to well**	**Date completed**
257105	OFF ARGONNE RD TURN BY RABB SOFT WATER 1ST BLDG ON L	

Owner-Contractor	**Name**	**Address**	**Telephone**
Owner	DICK WOODS	SR 25, MENTNE, IN	
Driller	KENNEDY WELL SERVICE	103 RAMAR DR, WARSAW, IN	
Operator	HUBERT KENNEDY	License: 47	

Construction Details

Well	**Use:** Other	**Drilling method:** Jet	**Pump type:** Shallow-Well Jet
	Depth: 105.0	**Pump setting depth:**	**Water quality:** CLEAR
Casing	**Length:** 102.0	**Material:** STEEL	**Diameter:** 2.0
Screen	**Length:** 3.0	**Material:** SS	**Diameter:** 1.25 **Slot size:** .010

Well Capacity Test

Type of test: Pumping **Test rate:** 10.0 gpm for hrs. **BailTest rate:** gpm for hrs.
Drawdown: ft. **Static water level:** 15.0 ft. **Bailer Drawdown** ft.

Grouting Information

Material: BNSL **Depth:** from to
Installation Method: GRAVITY **Number of bags used:** 70.0

Well Abandonment

Sealing material: **Depth:** from to
Installation Method: **Number of bags used:**

Administrative

County: KOSCIUSKO **Township:** 32N **Range:** 6E
Section: SW of the SW of the SW of Section 10 **Topo map:** WARSAW
Grant Number:
Field located by: **on:**
Courthouse location by: **on:**
Location accepted w/o verification by: **on:**
Subdivision name: **Lot number:**

Ft W of EL:	**Ft N of SL:**	**Ft E of WL:**	**Ft S of NL:**
Ground elevation:	**Depth to bedrock:**	**Bedrock elevation:**	**Aquifer elevation:**
UTM Easting:		**UTM Northing:**	

Well Log

Top	Bottom	Formation
0.0	4.0	TOPSOIL
4.0	18.0	YEL CLAY SAND
18.0	35.0	WATER SAND
35.0	80.0	BLUE CLAY & SAND
80.0	95.0	FINE SAND
95.0	105.0	WATER GRAV

Comments SEE MAP ;

Record of Water Well

Indiana Department of Natural Resources

Reference Number	Driving directions to well	Date completed
19071	W PAST WARSAW ST ON US 30 TO CLEVELAND ST	Aug 24, 1992

Owner-Contractor	Name	Address	Telephone
Owner	R & G AUTO & TRUCK REPAIR INC	475 S CLEVELAND ST WARSAW IN	(000) 269-4331
Driller	PAULUS WELL DRILLING INC	P O BOX 346 NORTH WEBSTER IN	(000) 834-2141
Operator	JAY JOHNSON	License: 920	

Construction Details

Well	**Use:** Other	**Drilling method:** Rotary	**Pump type:** Submersible
	Depth: 100.0	**Pump setting depth:** 40.0	**Water quality:** CLEAR
Casing	**Length:** 96.0	**Material:** PVC	**Diameter:** 4.0
Screen	**Length:** 4.0	**Material:** PVC	**Diameter:** 4.0 **Slot size:** .015

Well Capacity Test

Type of test: Air **Test rate:** 40.0 gpm for 1.0 hrs. **BailTest rate:** gpm for hrs.
Drawdown: 0.0 ft. **Static water level:** 20.0 ft. **Bailer Drawdown** ft.

Grouting Information

Material: BNSL **Depth:** from 91.0 to 41.0
Installation Method: PRESSURE **Number of bags used:** 2.0

Well Abandonment

Sealing material: HOLE PLUG **Depth:** from to
Installation Method: GRAVITY **Number of bags used:** 1.0

Administrative

County: KOSCIUSKO **Township:** 32N **Range:** 6E
Section: SW of the SE of the SE of Section 9 **Topo map:** WARSAW
Grant Number:
Field located by: B.HALL **on:** May 10, 1994
Courthouse location by: **on:**
Location accepted w/o verification by: **on:**
Subdivision name: **Lot number:**
Ft W of EL: 725.0 **Ft N of SL:** 100.0 **Ft E of WL:** **Ft S of NL:**
Ground elevation: 834.0 **Depth to bedrock:** **Bedrock elevation:** **Aquifer elevation:** 734.0
UTM Easting: 598380.0 **UTM Northing:** 4565308.0

Well Log

Top	Bottom	Formation
0.0	28.0	FINE GRAVEL AND SAND
28.0	89.0	GRAY CLAY
89.0	100.0	WATER GRAVEL

Comments

SKETCH MAP; VERIFIED BY OWNER; WELL 3 FT EAST OF OUT BUILDING ON HENDRICKS STREET; MC 734

Record of Water Well

Indiana Department of Natural Resources

Reference Number	Driving directions to well	Date completed
89488	WINONA AVE W OF STOP LIGHT (INTERSECTION OF WINONA & ARGONNE RD) ONE BLOCK TRAILER COURT (LEFT SIDE)	Jun 17, 1982

Owner-Contractor	Name	Address	Telephone
Owner	JERRY SMITH	1701 WILLOW LANE WARSAW, IND	
Driller	MEADOWS WELL DRILLING	RR #2 BOX 60 N MANCHESTER, IND	
Operator	TOMMY MEADOWS	License: null	

Construction Details

Well	**Use:** Home	**Drilling method:** Rotary	**Pump type:**
	Depth: 150.0	**Pump setting depth:**	**Water quality:**
Casing	**Length:** 140.0	**Material:**	**Diameter:** 4.0
Screen	**Length:** 10.0	**Material:**	**Diameter:** 4.0 **Slot size:** .030

Well Capacity Test

Type of test: **Test rate:** 100.0 gpm for 3.0 hrs. **BailTest rate:** gpm for hrs.
Drawdown: ft. **Static water level:** 16.0 ft. **Bailer Drawdown** ft.

Grouting Information

Material: **Depth:** from to
Installation Method: **Number of bags used:**

Well Abandonment

Sealing material: **Depth:** from to
Installation Method: **Number of bags used:**

Administrative

County: KOSCIUSKO **Township:** 32N **Range:** 6E
Section: SE of the NE of the NE of Section 16 **Topo map:** WARSAW
Grant Number:
Field located by: CDE **on:** Aug 10, 1983
Courthouse location by: **on:**
Location accepted w/o verification by: **on:**
Subdivision name: **Lot number:**
Ft W of EL: 200.0 **Ft N of SL:** **Ft E of WL:** **Ft S of NL:** 650.0
Ground elevation: 838.0 **Depth to bedrock:** **Bedrock elevation:** **Aquifer elevation:** 688.0
UTM Easting: 598535.0 **UTM Northing:** 4565052.0

Well Log

Top	Bottom	Formation
0.0	3.0	SOIL
3.0	9.0	YEL CLAY
9.0	35.0	GRAY CLAY
35.0	50.0	GRAV
50.0	135.0	GRAY CLAY

Comments BY TENANT NOT VISIBLE

Record of Water Well

Indiana Department of Natural Resources

Reference Number
89217

Driving directions to well

Date completed
Aug 17, 1959

Owner-Contractor	**Name**	**Address**	**Telephone**
Owner	WATER UTILITY	WARSAW	
Driller	LAYNE - NORTHERN	MISHAWAKA	
Operator	EDWARD NOSSMAN	License: null	

Construction Details

Well	**Use:** Other	**Drilling method:** Cable Tool	**Pump type:**
	Depth: 102.5	**Pump setting depth:**	**Water quality:**
Casing	**Length:**	**Material:**	**Diameter:** 2.0
Screen	**Length:**	**Material:**	**Diameter: Slot size:**

Well Capacity Test **Type of test:** **Test rate:** gpm for hrs. **BailTest rate:** gpm for hrs.
Drawdown: ft. **Static water level:** 20.0 ft. **Bailer Drawdown** ft.

Grouting Information **Material:** **Depth:** from to
Installation Method: **Number of bags used:**

Well Abandonment **Sealing material:** **Depth:** from to
Installation Method: **Number of bags used:**

Administrative

County: KOSCIUSKO **Township:** 32N **Range:** 6E
Section: SE of the NW of the NW of Section 15 **Topo map:** WARSAW
Grant Number:
Field located by: JW **on:** Jun 04, 1979
Courthouse location by: **on:**
Location accepted w/o verification by: **on:**
Subdivision name: **Lot number:**
Ft W of EL: **Ft N of SL:** **Ft E of WL:** 700.0 **Ft S of NL:** 700.0
Ground elevation: 830.0 **Depth to bedrock:** **Bedrock elevation:** **Aquifer elevation:** 728.0
UTM Easting: 598821.0 **UTM Northing:** 4565065.0

Well Log

Top	Bottom	Formation
0.0	5.0	MISC FILL
5.0	19.0	MUDDY SAND
19.0	30.0	S & G
30.0	55.0	GRAY CLAY
55.0	63.0	S & G
63.0	73.0	GRAY CLAY
73.0	84.0	CLAY W/ SMALL STRIPS S & G
84.0	93.0	HARD GRAY CLAY
93.0	102.5	S & G

Comments PLANT OPERATOR MC TEST HOLE - 2 INCH CASING USED FOR DRAWDOWN TEST.

Record of Water Well

Indiana Department of Natural Resources

Reference Number	**Driving directions to well**	**Date completed**
88894	SEE MAP ON BACK	Aug 13, 1984

Owner-Contractor	**Name**	**Address**	**Telephone**
Owner	DOUGLAS HARMAN	PO 1017, WARSAW, IND	
Driller	MC WHEELER & SONS	RR 6, COLUMBIA CITY, IN	
Operator	KIM WHEELER	License: null	

Construction Details

Well	**Use:** Home	**Drilling method:** Other	**Pump type:** Submersible
	Depth:	**Pump setting depth:** 60.0	**Water quality:** CLEAR
Casing	**Length:** 107.0	**Material:**	**Diameter:** 3.0
Screen	**Length:** 4.0	**Material:**	**Diameter:** 4.0 **Slot size:** 20

Well Capacity Test **Type of test:** **Test rate:** 10.0 gpm for 1.0 hrs. **BailTest rate:** gpm for hrs.
Drawdown: ft. **Static water level:** 42.0 ft. **Bailer Drawdown** ft.

Grouting Information **Material:** **Depth:** from to
Installation Method: **Number of bags used:**

Well Abandonment **Sealing material:** **Depth:** from to
Installation Method: **Number of bags used:**

Administrative

County: KOSCIUSKO **Township:** 32N **Range:** 6E
Section: SW of the SE of Section 10 **Topo map:** WARSAW
Grant Number:
Field located by: **on:**
Courthouse location by: **on:**
Location accepted w/o verification by: GG **on:**
Subdivision name: **Lot number:**

Ft W of EL:	**Ft N of SL:**	**Ft E of WL:**	**Ft S of NL:**
Ground elevation:	**Depth to bedrock:**	**Bedrock elevation:**	**Aquifer elevation:**
UTM Easting:		**UTM Northing:**	

Well Log

Top	Bottom	Formation
0.0	7.0	RED GRAV
7.0	94.0	GRAV-BLUE CLAY
94.0	110.0	GRAV

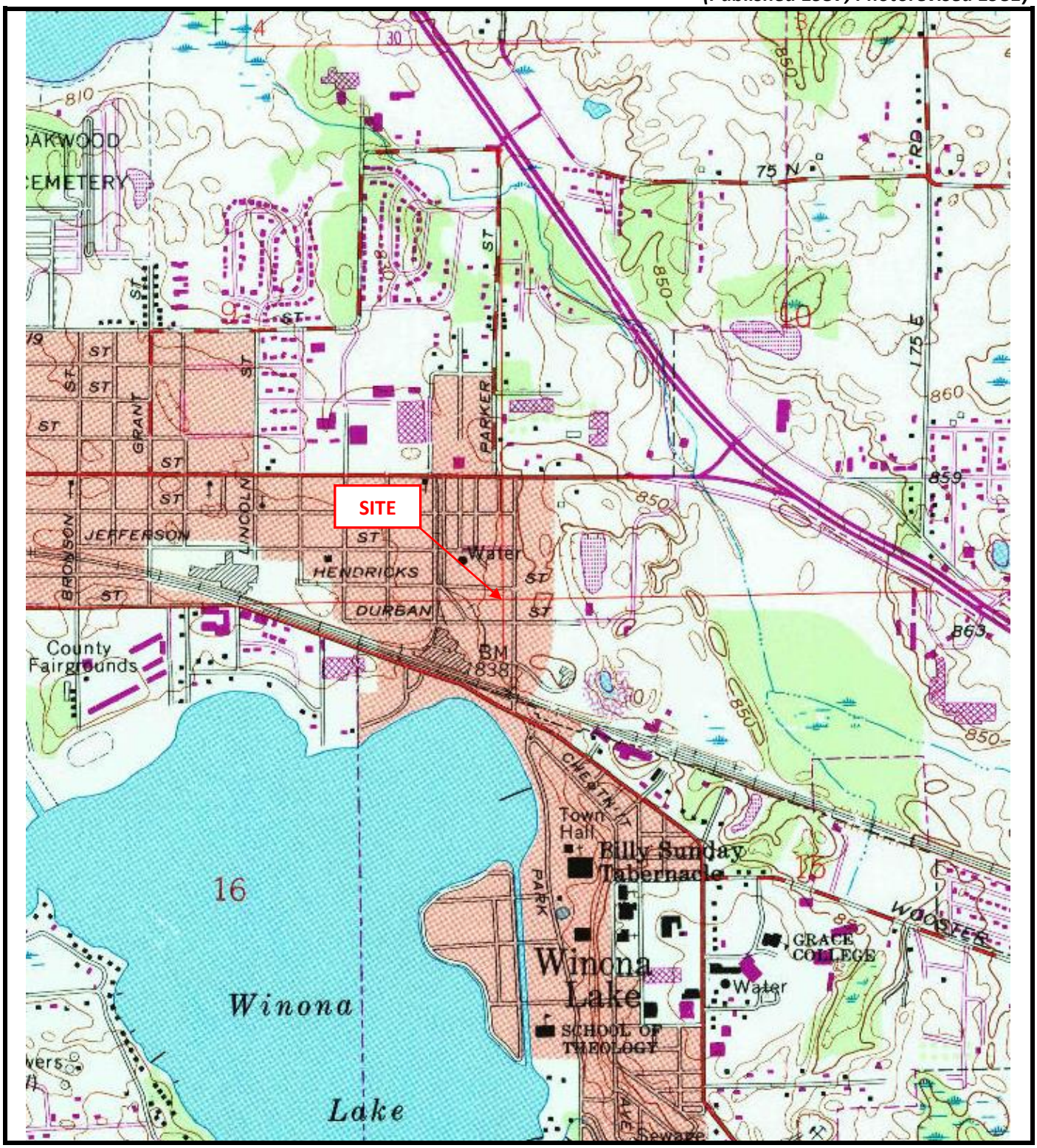
Comments SHOPPING CENTER , EAST EDGE WARSAW - MAP

REMEDIATION WORK PLAN

APPENDIX D. EXPOSURE ASSESSMENT DATA

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

Warsaw, Indiana 7.5 Minute Quadrangle Map
(Published 1957, Photorevised 1981)



CONTOUR INTERVAL 10 FEET
Site Boundaries Shown are Approximate

Topographic Map **Figure 1**

Former Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
SES Project No.: 2022-260

SES

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland Mapper

March 15, 2022

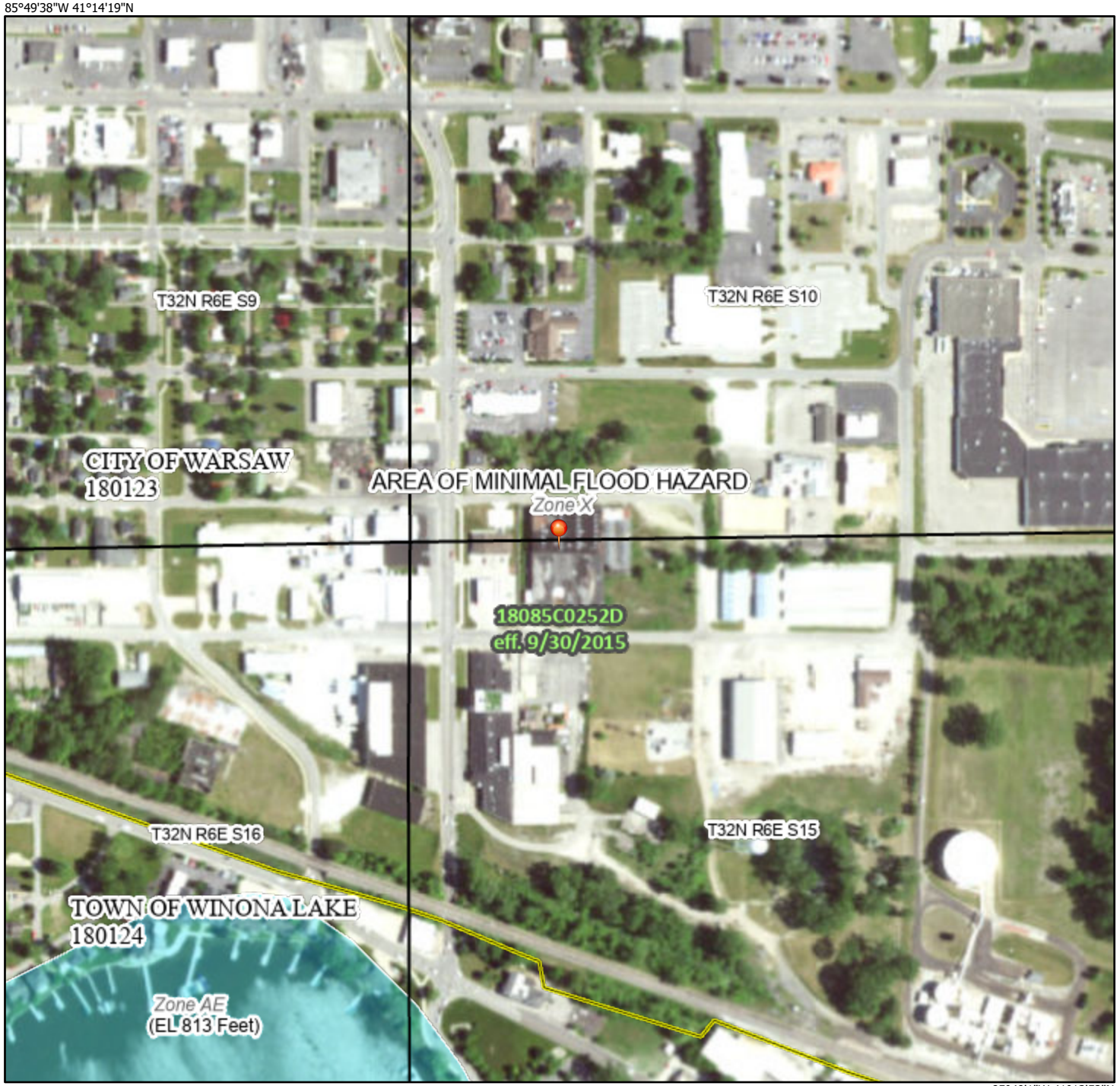
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

National Flood Hazard Layer FIRMette

FEMA

85°49'38"W 41°14'19"N



85°49'1"W 41°13'52"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2022 at 11:43 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Indiana County Endangered, Threatened and Rare Species List

County: Kosciusko

Indiana Department of Natural Resources

Species Name	Common Name	FED	STATE	GRANK	SRANK
Mollusk: Bivalvia (Mussels)					
Alasmidonta viridis	slippershell mussel		SSC	G4G5	S3
Epioblasma perobliqua	white catspaw	E	SE	G1	SX
Epioblasma rangiana	northern riffleshell	E	SE	G1	S1
Eurynia dilatata	spike		SSC	G5	S4
Lampsilis fasciola	wavyrayed lampmussel		SSC	G5	S3
Lampsilis ovata	pocketbook		SSC	G5	S2
Ligumia recta	black sandshell		SSC	G4G5	S2
Obovaria subrotunda	round hickorynut	PT	SE	G4	S1
Pleurobema clava	Clubshell	E	SE	G1G2	S1
Ptychobranchus fasciolaris	Kidneyshell		SSC	G4G5	S2
Simpsonaias ambigua	Salamander Mussel	C	SSC	G3	S2
Theliderma cylindrica	Rabbitsfoot	T	SE	G3G4	S1
Toxolasma lividus	Purple Lilliput		SSC	G3	S2
Villosa fabalis	Rayed Bean	E	SE	G2	S1
Villosa iris	Rainbow		SSC	G5	S3
Villosa lienosa	Little Spectaclecase		SSC	G5	S3
Insect: Lepidoptera (Butterflies & Moths)					
Capis curvata	curved halter moth		ST	G5	S3S4
Catocala praeclara	Praeclara underwing		SR	G5	S3S4
Dasychira cinnamomea	cinnamon tussock moth		SE	G4	S1S2
Euphyes bimacula	Two-spotted Skipper		ST	G4	S1S2
Exyra fax	pitcher window moth		SE	G4	S1S2
Hemileuca nevadensis ssp. 3	midwestern fen buckmoth		SR	G5T3T4	S2S3
Hesperia leonardus	Leonard's Skipper		SR	G4	S2S3
Hypocoena inquinata	tufted sedge moth		ST	G5	S1S2
Iodopepla u-album	white-eyed sedge-borer		SR	G5	S2S3
Leucania multilinea	many-lined wainscot		SE	G5	S1
Lycaena helloides	Purplish Copper		SR	G5	S2S3
Lytrosis permagnaria	charcoal lytrosis		SE	G3G4	S1
Papaipema appassionata	pitcher plant borer moth		SE	G4	S1
Papaipema speciosissima	royal fern borer moth		ST	G4	S3S4
Pieris oleracea	Eastern Veined White		SE	G5	S1S2
Fish					
Acipenser fulvescens	Lake Sturgeon		SE	G3G4	S1
Coregonus artedi	cisco		SE	G5	S2
Ichthyomyzon fossor	Northern Brook Lamprey		SSC	G4	S1
Notropis anogenus	Pugnose Shiner		SSC	G3	S1
Percina evides	Gilt Darter		SE	G4	S1
Amphibian					

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

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Indiana County Endangered, Threatened and Rare Species List

County: Kosciusko

Indiana Department of Natural Resources

Species Name	Common Name	FED	STATE	GRANK	SRANK
Acris blanchardi	Blanchard's cricket frog		SSC	G5	S4
Ambystoma laterale	blue-spotted salamander		SSC	G5	S2
Hemidactylium scutatum	four-toed salamander		SSC	G5	S3
Necturus maculosus	common mudpuppy		SSC	G5	S3
Reptile					
Clemmys guttata	spotted turtle	C	SE	G5	S2
Clonophis kirtlandii	Kirtland's snake		SE	G2	S3
Emydoidea blandingii	Blanding's turtle	C	SE	G4	S2
Nerodia erythrogaster neglecta	copperbelly water snake	PS:LT	SE	G5T3	S2
Sistrurus catenatus	eastern massasauga	T	SE	G3	S2
Terrapene carolina carolina	woodland box turtle		SSC	G5T5	S3
Bird					
Antigone canadensis	sandhill crane		SSC	G5	S2B,S1N
Botaurus lentiginosus	American Bittern		SE	G5	S2B
Certhia americana	Brown Creeper			G5	S2B
Chlidonias niger	Black Tern		SE	G4G5	S1B
Circus hudsonius	Northern Harrier		SE	G5	S2
Cistothorus palustris	marsh wren		SE	G5	S3B
Cistothorus stellaris	sedge wren		SE	G5	S3B
Empidonax alnorum	Alder Flycatcher			G5	S2B
Falco peregrinus	Peregrine Falcon		SSC	G4	S2B
Haliaeetus leucocephalus	bald eagle			G5	S3
Ixobrychus exilis	Least Bittern		SE	G4G5	S3B
Mniotilta varia	Black-and-white Warbler		SSC	G5	S1S2B
Nycticorax nycticorax	Black-crowned Night-heron		SE	G5	S1B
Pandion haliaetus	Osprey		SSC	G5	S1B
Rallus elegans	King Rail		SE	G4	S1B
Rallus limicola	Virginia Rail		SE	G5	S3B
Setophaga cerulea	Cerulean Warbler		SE	G4	S3B
Vermivora chrysoptera	Golden-winged Warbler	C	SE	G4	S1B
Mammal					
Condylura cristata	Star-nosed Mole		SSC	G5	S2?
Mustela nivalis	Least Weasel		SSC	G5	S2?
Myotis lucifugus	little brown myotis	C	SE	G3G4	S2
Myotis sodalis	Indiana Bat	E	SE	G2	S1
Nycticeius humeralis	Evening Bat		SE	G5	S1
Taxidea taxus	American Badger		SSC	G5	S2
Vascular Plant					
Actaea rubra ssp. rubra	red baneberry		ST	G5T5	S1?

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Andromeda glaucophylla	bog rosemary		ST	G5T5	S2
Anticlea elegans var. glaucus	white camas		ST	G5T4T5	S3
Arethusa bulbosa	swamp-pink		SX	G5	SX
Azolla caroliniana	Carolina mosquito-fern		ST	G5	S3
Bidens beckii	Beck's water-marigold		SE	G5	S1
Carex atlantica ssp. atlantica	Atlantic sedge		SE	G5T5	S1
Carex aurea	golden-fruited sedge		ST	G5	S3
Carex chordorrhiza	creeping sedge		SE	G5	S1
Carex disperma	softleaf sedge		SE	G5	S1
Carex echinata	little prickly sedge		SE	G5	S1
Carex flava	yellow sedge		ST	G5	S2
Carex pseudocyperus	cyperus-like sedge		SE	G5	S1
Cornus amomum ssp. amomum	silky dogwood		SE	G5	S1
Cornus canadensis	bunchberry		SE	G5	S1
Cypripedium candidum	small white lady's-slipper		ST	G4	S3
Cypripedium parviflorum var. makasin	small yellow lady's-slipper		ST	G5T4T5	S3
Dichanthelium boreale	northern witchgrass		ST	G5	S3
Drosera intermedia	spoon-leaved sundew		ST	G5	S3
Eleocharis geniculata	capitate spike-rush		ST	G5	S2
Eriophorum angustifolium	narrow-leaved cotton-grass		ST	G5	S3
Eriophorum gracile	slender cotton-grass		ST	G5	S2
Eriophorum viridicarinatum	green-keeled cotton-grass		ST	G5	S3
Geranium robertianum	herb-Robert		ST	G5	S3
Ilex mucronata	mountain holly		ST	G5	S3
Juglans cinerea	butternut		ST	G3	S2
Lathyrus ochroleucus	pale vetchling peavine		SE	G5	S1
Lemna perpusilla	minute duckweed		SX	G5	SX
Lemna valdiviana	pale duckweed		SE	G5	S1
Malaxis unifolia	green adder's-mouth		SE	G5	S1
Matteuccia struthiopteris	ostrich fern		ST	G5	S3
Myriophyllum verticillatum	whorled water-milfoil		ST	G5	S3
Platanthera psycodes	small purple-fringe orchid		ST	G5	S3
Potamogeton epihydrus	Nuttall pondweed		SE	G5	S1
Potamogeton friesii	Fries' pondweed		SE	G5	S1
Potamogeton oakesianus	Oakes' pondweed		SE	G5	S1
Potamogeton praelongus	white-stem pondweed		ST	G5	S1
Potamogeton richardsonii	redheadgrass		ST	G5	S3
Potamogeton strictifolius	straight-leaf pondweed		ST	G5	S2
Prunus pensylvanica	fire cherry		ST	G5	S3
Scheuchzeria palustris ssp. americana	American scheuchzeria		SE	G5T5	S1

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Schoenoplectus subterminalis	water bulrush		ST	G5	S3
Sparganium androcladum	branching bur-reed		ST	G4G5	S2
Spiranthes lucida	shining ladies'-tresses		ST	G4	S3
Stenanthium gramineum	eastern featherbells		ST	G4G5	S1
Symphyotrichum boreale	rushlike aster		ST	G5	S2
Triantha glutinosa	false asphodel		ST	G5	S2
Utricularia geminiscapa	hidden-fruited bladderwort		SE	G4G5	S1
Utricularia resupinata	northeastern bladderwort		SE	G4	S1
Vaccinium macrocarpon	large cranberry		ST	G5	S3
Vaccinium oxycoccos	small cranberry		ST	G5	S2
Wolffiella gladiata	sword bogmat		SE	G5	S1
High Quality Natural Community					
Forest - upland dry-mesic Northern Lakes	Northern Lakes Dry-mesic Upland Forest		SG	GNR	S1
Forest - upland mesic Central Till Plain	Central Till Plain Mesic Upland Forest		SG	GNR	S3
Forest - upland mesic Northern Lakes	Northern Lakes Mesic Upland Forest		SG	GNR	S1
Lake - lake	Lake		SG	GNR	S2
Wetland - beach marl	Marl Beach		SG	G3	S2
Wetland - bog acid	Acid Bog		SG	G3	S2
Wetland - bog circumneutral	Circumneutral Bog		SG	G3	S3
Wetland - fen	Fen		SG	G3	S3
Wetland - fen forested	Forested Fen		SG	G3	S1
Wetland - marsh	Marsh		SG	GU	S4
Wetland - meadow sedge	Sedge Meadow		SG	G3?	S1
Wetland - swamp shrub	Shrub Swamp		SG	GU	S2

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REMEDIATION WORK PLAN

APPENDIX E. REGENISIS DESIGN FOR GROUNDWATER TREATMENT AT THE B2 AREA

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

REGENESIS
REMEDIATION SERVICES
Technology-Based Solutions for the Environment

April 4, 2022

To:	Glen Howard | SES Environmental | 3807 Transportation Drive, Fort Wayne, Indiana 46818 | g.howard@sesadvantage.com
Project #:	BrH71863
Subject:	Proposal for Remediation Application Services of 3-D Microemulsion®, S-MicroZVI®, and BDI Plus® – Arnolt Corp in Warsaw, Indiana

REGENESIS Remediation Services (RRS) appreciates the opportunity to provide SES Environmental (SES) with this proposal for in situ remedial treatment of chlorinated solvents at the Arnolt Corp Site in Warsaw, Indiana (the Site). In this proposal we summarize our design and present our implementation scope of work including cost estimates.

RRS has successfully completed hundreds of similar remediation applications across the country and has the product knowledge and implementation expertise to actively manage this field application. RRS will provide custom built injection equipment and a team of experienced personnel who specialize in applying REGENESIS' remedial technologies. Our team will ensure a high probability of success, while minimizing risks with our institutional in-house knowledge. Our best-in-class remediation design team and application services ensures proper placement, distribution, and performance of the remedial technologies being applied. With the information provided by SES, RRS is estimating it will take a total of three (3) days on-site to safely complete this application.

If you have any questions regarding the application details provided within this proposal, please contact Brian Henderson at 442.257.0062 (bhenderson@regenesis.com); for design questions please contact Brett Hicks at 765.256.0272 (bhicks@regenesis.com).

Sincerely,

Brett Hicks
Ohio Valley District Manager

Brian Henderson
RRS Proposal Manager

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Summary of Relevant Design Information

REGENESIS recommends using 3-D Microemulsion® (3DME), S-MicroZVI® (S-MZVI), and BDI Plus® (BDI) remediation technologies for in situ treatment at this site. The technologies will be mixed with water to the specified concentration and injected into the subsurface via direct-push injection techniques.

3DME is an injectable liquid material specifically designed for in situ remediation projects where the anaerobic biodegradation of chlorinated compounds through the enhanced reductive dechlorination (ERD) process is possible. ERD is the primary anaerobic biological process by which problematic chlorinated solvents such as tetrachloroethylene (PCE) and trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) in groundwater are biologically transformed into less harmful end products such as ethene. Due to its purposefully engineered structure, 3DME exhibits unique subsurface distribution characteristics which allow it to propagate widely within the subsurface.

S-MicroZVI, an advanced zero-valent iron (ZVI) product proven to accomplish In Situ Chemical Reduction (ISCR) of contaminants within the subsurface environment. S-MZVI is delivered as a colloidal suspension 40% ZVI by weight in glycerol with a particle size of less than 5 microns. S-MZVI is manufactured using a state-of-the-art sulfidation process resulting in a particle coating which increases activation toward specific contaminants and extends performance longevity. S-MZVI promotes the destruction of many organic pollutants and is most commonly used with chlorinated hydrocarbons. S-MZVI will also stimulate anaerobic biological degradation by rapidly creating a reducing environment that is favorable for reductive dechlorination

Bio-Dechlor INOCULUM® Plus (BDI Plus) is designed for use at sites where chlorinated contaminants are present and unable to be completely biodegraded via the existing microbial communities. BDI Plus is an enriched, natural microbial consortium containing species of *Dehalococcoides sp.* (DHC) which are capable of completely dechlorinating contaminants during *in situ* anaerobic bioremediation processes. BDI Plus has been shown to stimulate the rapid dechlorination of chlorinated compounds such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC). It also contains microbes capable of dehalogenating halomethanes (e.g. carbon tetrachloride and chloroform) and haloethanes (e.g. 1,1,1 TCA and 1,1, DCA) as well as mixtures of these halogenated contaminants. BDI Plus can be used at most any stage of a project to ensure the rapid and complete degradation of chlorinated compounds.

A tabulated summary of pertinent design assumptions is provided in **Table 1**. The injection area is delineated in **Figure 1**. Product technical description sheets have been provided in **Appendix A**.

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Table 1: Remedial Design Summary

3-D Microemulsion®, S-MZVI®, BDI® Plus Application Design Summary		
Dissolved Plume		
Treatment Type	**Grid**	
Treatment Areal Extent (sq ft)	2,750	
Spacing Within Rows (ft)	10	
Spacing Between Rows (ft)	10	
DPT Injection Points	28	
Top Application Depth (ft bgs)	20	**Field Mixing Ratios**
Bottom Application Depth (ft bgs)	25	3DME Concentrate per Pt (gals)
3DME to be Applied (lbs)	**800**	3
3DME to be Applied (gals)	96	Mix Water per Pt (gals)
3DME Mix %	3%	111
Volume Water (gals)	**3,100**	3DME Mix Volume per Pt (gals)
3DME Mix Volume (gals)	3,196	114
S-MZVI to be Applied (lbs)	**1,000**	S-MZVI Volume per Pt (gals)
S-MZVI Volume (gals)	66	2
BDI Plus to be Applied (L)	**18**	BDI Volume per Pt (L)
BDI Plus Mix Water Volume (gals)	180	0.6
Total Application Volume (gals)	**3,447**	Volume per pt (gals)
		123
Prepared by: Brett Hicks		Volume per vertical ft (gals)
Date: 3/31/2022		25

Please note that the application volumes and injection points are estimated and may require in-field modification due to obstructions and/or limitations of volumetric acceptance in the treatment areas.

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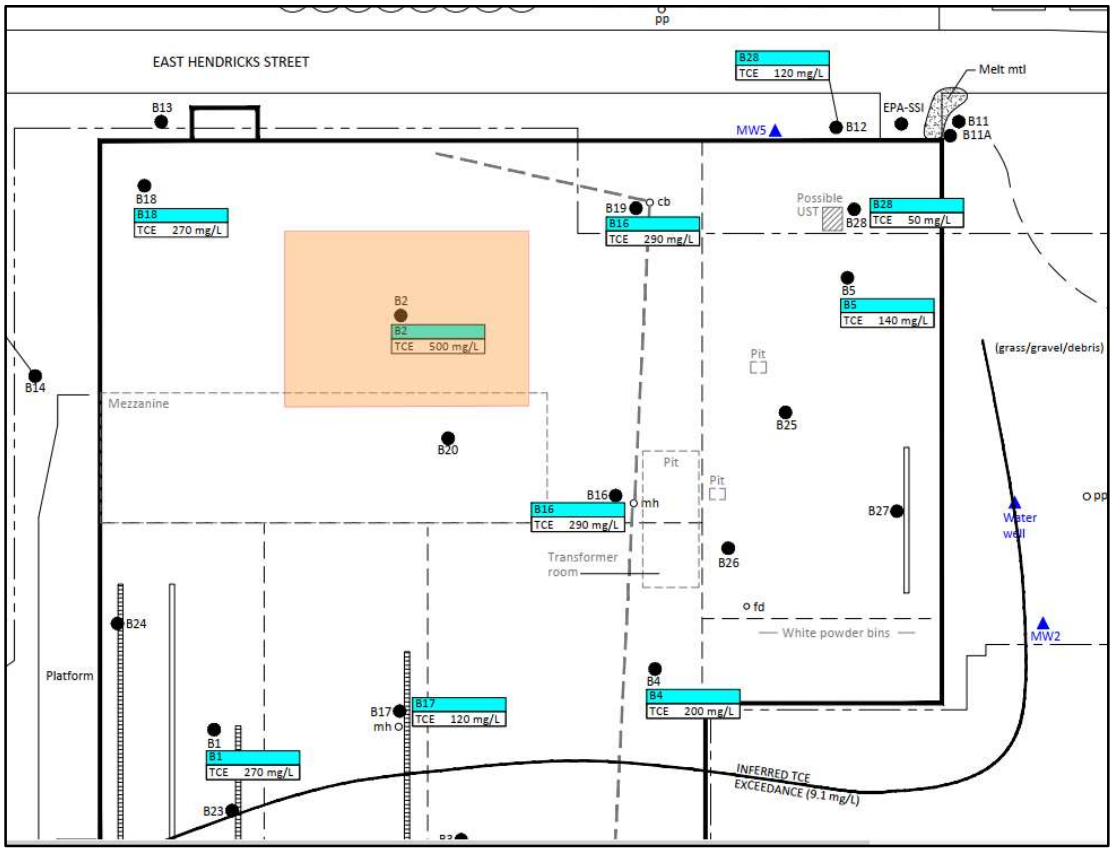
Figure 1: Injection Area Map

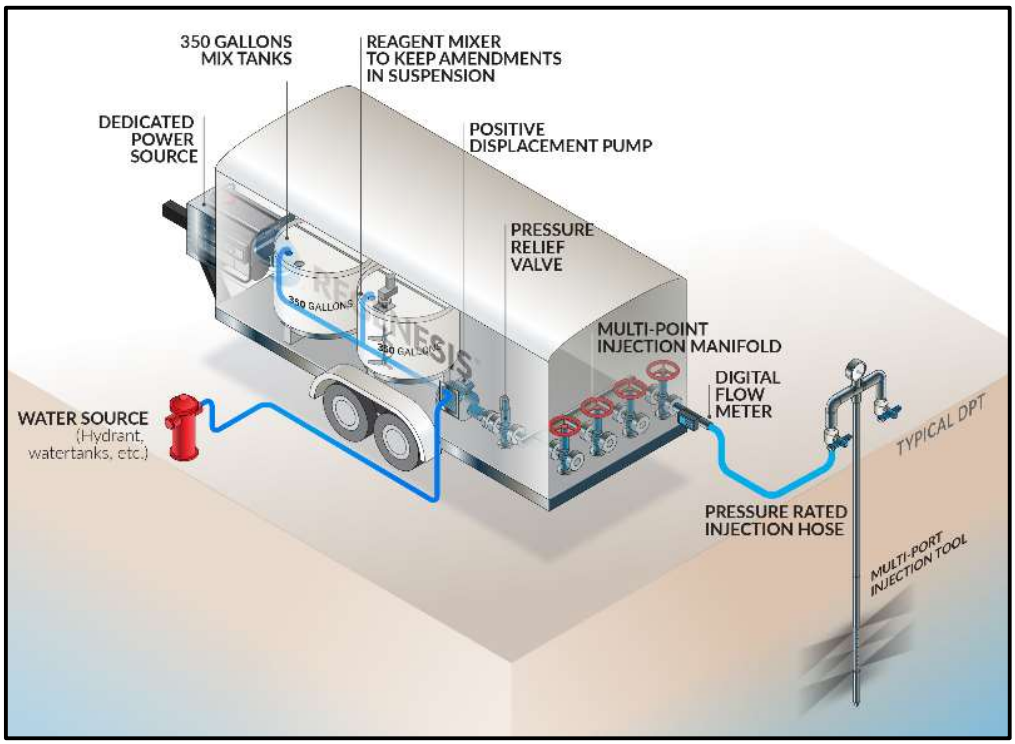


Work Plan Summary

RRS will work under the direction of SES to implement the field work associated with the application of the selected remediation technologies. Responsibilities for the implementation of this scope of work will be shared between RRS and SES. Responsibilities for each are outlined in this section and further under the Assumptions/Qualification section.

At the beginning of each day a safety tailgate meeting will be conducted and an overview of the procedures, responsibilities and goals for the day will be discussed. RRS will be equipped with multiple injection tool options to use with 1.5-inch diameter DPT rods. The injection tool string will be advanced to the top or bottom of the TTZ and injections will be performed in a bottom-up or top-down method depending on site and lithology conditions. The remediation technologies will be mixed in an injection trailer (**Figure 2**) with water in batches at the designated solution percentage and kept in constant suspension throughout the injection application. Pressures, flow rates and total volume will be monitored and digitally documented for each injection interval. Multiple injection points may be injected into simultaneously to increase efficiencies on-site. The injection points and surrounding areas will be monitored for any signs of surfacing and a spill response kit will be on standby.

Figure 2: RRS Application Trailer



During the application, real-time information will be collected and analyzed to help verify design assumptions and subsurface reagent distribution. Depending on the primary product applied, data collected and analyzed may consist of groundwater quality parameters (i.e., pH, conductivity, DO, ORP, etc.), depth to water measurements, visual indicators through groundwater or soil samples, and in-field injection concentration test kits. This information is typically collected during the application when within 10 feet of an appropriately screened monitoring well. Based on the information collected, the project team may choose to modify the remediation design to further optimize the injection application. This includes modification to injection concentrations, volume per vertical foot, injection intervals, etc.

Once the injection event is completed, RRS will demobilize all equipment and personnel off-site. A detailed injection summary report which includes injection point data (interval depths, injection pressure/flow rates, reagent volume, time elapsed and if surfacing occurred), field observations and any other noteworthy information will be generated and made available to SES.

RRS Responsibilities

- **RRS** will provide and ship the specified quantities of the remediation reagents to the site address provided by SES. RRS shipping estimates assume all products will be shipped to the site at the same time. RRS will coordinate with SES prior to any shipment of product. Alternative shipping locations or phases could lead to an increase in freight costs.
- **RRS** will mobilize a 40-hour HAZWOPER certified crew experienced in the proper application of REGENESIS remediation technologies.
- **RRS** will contract with a private utility locating service to mark utilities on the first day of the project.
- **RRS** will provide a forklift to maneuver the product containers for the duration of the project.
- **RRS** will contract a qualified, licensed DPT drilling operator equipped with the necessary tooling and

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materials to safely complete the application scope of work outlined within this proposal.

- **RRS** will coordinate an 811 public utility locate with drilling firm.
- **RRS** will provide mix water for the duration of the application via a water delivery service. RRS will accept the delivery and coordinate staging of the water trailer on the setup day.
- **RRS** will perform site reconnaissance and pre-application activities that include H&S orientation, sensitive receptor identification and protection, treatment area layout, point location placement assistance, and equipment staging.
- **RRS** will provide site safety equipment including cones and caution tape to delineate the work area (efforts will be made to limit the impact on business operations at the site).
- **RRS** will supply and operate a custom-built injection system (**Figure 2**) equipped with:
    - Self-sufficient, dedicated power
    - Onboard mixing tanks
    - Positive displacement pump (or similar) for injecting into the TTZ
    - Injection manifold and hosing capable of injecting into multiple points simultaneously
    - Pressure and flow gauges to monitor injection data for individual points
    - Adjustable pressure relief bypass valve for safe operations and precise fluid control
    - Diaphragm pump for fluid transfer operations
    - Site safety equipment and spill response kit (including wet vac)
- **RRS** will perform real-time reagent distribution diagnostics during injection activities to allow for field modifications, as needed, to ensure optimal results.
- **RRS** will work directly with our design team to fill any data gaps identified during the injection application to more effectively maintain the project objectives and goals.

SES Responsibilities

- **SES** will coordinate project schedule and reagent order with REGENESIS to ensure adequate shipping and mobilization time.
- **SES** will coordinate site access with property owner to coincide with project schedule and identify a secure product staging area.
- **SES** will accept the product delivery at the jobsite a week prior to RRS mobilization to ensure any shipping delays don't affect the project schedule.
- **SES** will procure any necessary permits needed to complete the project including right of way, UIC and municipal.
- **SES** is responsible for all soil, air and groundwater sampling and analysis.
- **SES** is responsible for transportation and disposal of any contaminated waste generated on-site during injection activities, though we do not anticipate generating any such waste during injection activities.
- All empty product containers will be the responsibility of **SES** for proper disposal/recycling. General refuse will be collected and disposed of in a **SES** provided refuse container on-site.
- **SES** will provide a depth to water meter and field water quality meter similar to a YSI 556 with a down- hole sensor capable of reaching the water table and well screen interval while on-site for injection activities.
- **SES** will provide access to a restroom during on-site hours.

Once an executed agreement has been established and a work schedule has been agreed upon, RRS will begin to implement the assigned responsibilities and work with SES accordingly.

Safety Program

REGENESIS is committed to providing a safe and healthy working environment for all employees, SESs and contractors on-site. Prior to mobilization RRS will develop a site-specific Health and Safety Plan (HASP) and designate an on-site safety officer. All personnel on-site are required to participate in daily safety tailgate meetings with the goal of proactively identifying potential hazards and mitigating risks to the full extent possible. In addition to the hours of rigorous safety training courses all personnel are required to complete, REGENESIS also incorporates a behavior-based safety program by utilizing our DoneSafe® mobile application (app) interface on every site. This app encourages our personnel to actively search for potential on-site risks and document mitigation actions taken. The effectiveness of our safety program can be seen in our industry leading EMR ratings listed in **Table 2**.

Table 2: REGENESIS EMR Rating 2017-2021

Year	Total Hours	EMR
2021	125,592	0.71
2020	162,037	0.64
2019	169,964	0.66
2018	144,600	0.70
2017	140,706	0.70

Health and Safety Plan

RRS safety tailgate meetings and HASP will include the following:

- Site map with entrance and exit points and best possible muster points depending on conditions.
- List of personnel and contact information for employees on-site and supporting the project.
- Route to the nearest occupational treatment facility and hospital along with contact information.
- Job Hazard Analysis (JHA) detailing each job task on-site with its potential hazards and best practices to avoid those hazards.
- COVID-19 precautions will be discussed, and personnel will be equipped with face coverings.
- Description and hazards of the contaminants of concern (COC) with appropriate Personal Protection Equipment (PPE) requirements.
- List and description of REGENESIS chemicals on-site including a Safety Data Sheet (SDS) for each chemical.
- Checklist of site safety equipment including fire extinguishers, eyewash station, first aid kit, spill prevention kit and any site-specific equipment needed.
- Daily Tailgate safety meeting sheet with identified hazards and risks associated with the site and job tasks for that day, along with shared learning observations from the previous day.

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Project Cost Estimate

Below is the cost estimate for RRS to provide the remediation technologies and execute the application design provided in this proposal. Please also see the assumptions and qualifications section.

Arnolt Corp	
Description	**Price**
Total	

The cost provided above is inclusive of all product, estimated product freight, product mixing, injection services as outlined within this proposal, tax and materials to complete the work. We will submit invoice(s) when product ships and upon project completion or end of calendar month for RRS services. Payment terms are Net 30 days upon invoice submittal. Should payment terms be extended beyond 30 days, finance charges may be applied.

***Please note that this pricing is contingent upon completion of this scope of work without delays or work stoppages once mobilization occurs. RRS has allotted one (1) setup day to coordinate the private utility locate and water delivery service, and two (2) on-site working days (10-hr days, Monday through Friday) to apply the remediation technologies, for a total of three (3) consecutive days to complete the scope of work. RRS believes the scope of work provided above can be completed in this timeframe, however, if the project is delayed due to circumstances beyond our control, RRS will utilize a daily rate of $3,200.00 plus applicable tax to the invoice price. Should the project be completed ahead of schedule, a portion of the daily rate may be credited to the final invoice after review. RRS reserves the right to modify the design and associated cost if additional information gathered warrants modification.**

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Assumption/Qualifications

In generating this proposal, REGENESIS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site. The attached design summary tables specify the assumptions used in preparation for this technical design. We request that these modeling input assumptions be verified by your firm prior to application of the product. Other assumptions and qualifications related to this proposal are as follows:

- The product and services cost outlined will be valid for 60 days from date of proposal. If beyond 60 days, REGENESIS reserves the right to update cost.
- The freight charges included for product delivery above are estimated at the time of proposal generation. Actual freight charges are neither set nor guaranteed by REGENESIS and are calculated when the product order is placed. This price may vary from what is estimated above. Actual freight charges for product delivery will be invoiced.
- Freight delivery time frames cannot be guaranteed and RRS will not be responsible for any delays or any resulting increase in cost associated with those delays.
- If applicable, sales tax charges for product, freight, and services are considered estimated at the time of proposal submittal. The appropriate sales tax category (i.e., product, freight, and services) and actual sales tax rate is finalized at the time of invoice and may change from date of proposal submittal.
- SES personnel will take delivery of the remediation chemistry prior to RRS mobilization and arrange for secure storage where the material will not be affected by inclement weather. During application activities, the SES will locate the product in a nearby area that is accessible by the RRS-rented forklift.
- SES is responsible for disposal or recycling of totes, drums, pails and pallets. All nonhazardous refuse will be collected and placed in a SES-provided on-site refuse container for disposal. RRS will collect project related refuse and empty treatment chemistry containers daily to keep the site clean.
- RRS will have access to the site for equipment operation and secure storage of materials and equipment throughout the duration of the project. All access to each work area location will be clear and free of obstructions. RRS also assumes the injection trailer will be staged within 80 feet of the furthest injection point location.
- SES will provide field water quality meter similar to a YSI 556 with a down-hole sensor, a water level meter, bailers and a technician while on-site for injection activities to assist RRS in assessing groundwater from monitoring wells.
- SES is responsible for securing any permits prior to mobilizing to the site.
- SES is responsible for all soil, air, and groundwater sampling and analysis.
- SES is responsible for transportation and disposal of any contaminated waste generated on-site, though we do not anticipate generating any such waste during direct push injection activities.
- For safety reasons, access to the treatment area will be limited to RRS and SES personnel.
- The remediation design and injection procedures contain the necessary precautions to minimize the likelihood of surfacing of the treatment chemistry. RRS will monitor treatment chemistry application flow rates and pressures as well as observe for signs of reagent surfacing around active injection areas. If surfacing is detected, RRS will stop or slow down injection activities at that location to stop additional surfacing and remove/vacuum up recoverable surfaced fluid. RRS is not be responsible for treatment chemistry infiltration into undesired locations beyond our visible control.

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- RRS is not responsible for damage to unmarked utilities and subsurface structures. SES will review as-built drawings with RRS to confirm clearance prior to advancing DPT injection tooling and marking injection point locations.
- RRS personnel will have access to the site for work up to 12 hours per day Monday through Friday (daylight hours). However, the standard workday does not exceed 10 hours with travel time Monday through Friday. A 10-hour workday does not mean 10 hours on-site and/or injection pumping. Additional charges may apply for Saturday and/or Sunday work schedules.
- Pricing and work schedule assume union labor and prevailing wages (Davis-Bacon) are not required.
- This proposal assumes probing and drilling will begin at the ground surface. If hand auger, concrete/asphalt coring, or air knife services are required, additional charges, including surface restoration charges could apply.
- RRS assumes that direct-push style drill rig can access all injection point locations and drive injection tooling to the required depth. If site conditions limit the use of the provided direct-push rig for any injection point and other drilling methods are required to complete the task, additional charges will apply.
- All traffic control requirements will be provided by SES.
- All injection points will be closed/backfilled with bentonite to ground surface by RRS. Additional costs associated with restoration of the ground surface have not been included. If restoration of the ground surface is needed, additional charges will apply.
- Site conditions can change over time and should be monitored post injection. REGENESIS is not responsible for changing site conditions after completing the scope of work and demobilizing from the site. This includes but is not limited to changes related to borehole abandonment (i.e., swelling of backfill material), surface restoration, well conditions, and on-site utilities.

Acknowledgment

Please sign below to acknowledge acceptance of proposal **BrH71863** for the **Arnolt Corp Site** and authorize REGENESIS to proceed with a final contract and work authorization:

SES Environmental

Authorized Signature Date

Name (print) P.O. or Project Number

Signature above confirms signee has reviewed the proposal and agrees with all outlined responsibilities and assumptions/qualifications. Please also see our terms and conditions located in **Appendix B**. Below is a list of next steps toward implementation of this project. Please note these steps may take 4-6 weeks to complete depending upon the complexity of the project and previous experience with your company. REGENESIS Remediation Services will contact you soon to begin the implementation process.

Steps to Project Implementation

- Sign acceptance of proposal
- Finalize contract documents incorporating this proposal or formal REGENESIS Subcontract Agreement
- Confirm account credit status
- Complete remediation services logistics evaluation
- Confirm delivery address and date
- Schedule application

Appendix A

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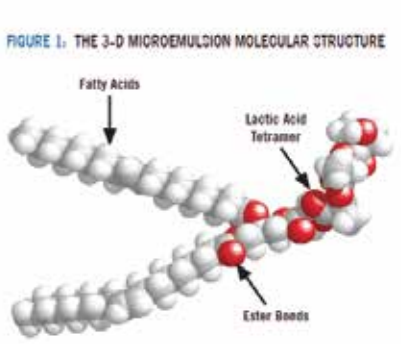
3-D Microemulsion® Factory Emulsified Technical Description

3-D Microemulsion (3DME®) is comprised of a patented molecular structure containing oleic acids (i.e., oil component) and lactates/polylactates, which are molecularly bound to one another (figure 1). The 3DME molecule contains both a soluble (hydrophilic) and in-soluble (lipophilic) region. These two regions of the molecule are designed to be balanced in size and relative strength. The balanced hydrophilic/lipophilic regions of 3DME result in an electron donor with physical properties allowing it to initially adsorb to the aquifer material in the area of application, then slowly redistribute via very small 3DME "bundles" called micelles. These 3DME micelles spontaneously form within sections of the aquifer where concentrations of 3DME reach several hundred parts per million. The micelles' small size and mobility allow it to move with groundwater flow through the aquifer matrix, passing easily through the pore throats in between soil grains resulting in the further redistribution of 3DME within the aquifer. This allows for advective distribution of the oleic acids which are otherwise insoluble and unable to distribute in this manner, allowing for increased persistence of the lactate/polylactates component due to their initial attachment to the oleic acids.

Example of 3-D Microemulsion



Due to its patented molecular structure, 3DME offers far greater transport when compared to blended emulsified vegetable oil (EVO) products, which fail to distribute beyond the limits of pumping. 3DME also provides greater persistence when compared to soluble substrates such as lactates or simple sugars. The 3DME molecular structures capitalize on the best features of the two electron-donor types while at the same time, minimize their limitations. 3DME is delivered to the site as a ready-to-apply emulsion that is simply diluted with water to generate a large volume of a 3DME colloidal suspension.

Suspension of 3DME generated by this mixing range from micelles on the order of .02 microns to .05 microns in diameter, to "swollen" micelles, (termed "microemulsions") which are on the order of .05 to 5 microns in diameter. Once injected into the subsurface in high volumes, the colloidal suspension mixes and dilutes in existing pore waters. The micelles/microemulsions on the injection front will then begin to sorb onto the surfaces of soils as a result of zeta potential attraction and organic matter within the soils themselves. As the sorption continues, the 3DME will "coat" pore surfaces developing a layer of molecules and in some cases a bilayer. This sorption process continues as the micelles/microemulsion moves outward and disassociates into their hydrophilic/hydrophobic components. The specialized chemistry of 3DME results in a staged release of electron donors: free lactate (immediate); polylactate esters (mid-range) and free fatty acids & fatty acid esters (long-term). Material longevity of three years or greater has been seen at most sites as determined from biogeochemical analyses.

For a list of treatable contaminants with the use of 3DME, view the Range of Treatable Contaminants Guide

Chemical Composition

- Hydrogen Release Compound Partitioning Electron Donor – CAS #823190-10-9
- Sodium Lactate – CAS# 72-17-3
- Water – CAS# – 7732-18-5

3-D Microemulsion® Factory Emulsified Technical Description

Properties

- Density – Approximately 1.0 grams per cubic centimeter (relative to water)
- pH – Neutral (approximately 6.5 to 7.5 standard units)
- Solubility – Soluble in Water
- Appearance – White emulsion
- Odor – Not detectable
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store in a cool, dry, well-ventilated place
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Handling
Avoid contact with eyes, skin, and clothing
Provide adequate ventilation
Wear appropriate personal protective equipment
Observe good industrial hygiene practices

Applications

- 3DME is diluted with water prior to application. Resulting emulsion has viscosity similar to water.
- Easily injects into formation through direct push injection points, injection wells or other injection delivery systems.

Application instructions for this product are contained here 3DME FE Application Instructions.

Health and Safety

Material is food grade and relatively safe to handle. We recommend avoiding contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including vinyl or rubber gloves, and eye protection are recommended when handling this product. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: SDS-3DME FE.

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S-MicroZVI Specification Sheet

S-MicroZVI Technical Description

S-MicroZVI® is an *In Situ* Chemical Reduction (ISCR) reagent that promotes the destruction of many organic pollutants and is most commonly used with chlorinated hydrocarbons. It is engineered to provide an optimal source of micro-scale zero valent iron (ZVI) that is both easy to use and delivers enhanced reactivity with the target contaminants via multiple pathways. S-MicroZVI can destroy many chlorinated contaminants through a direct chemical reaction (**see Figure 1**). S-MicroZVI will also stimulate anaerobic biological degradation by rapidly creating a reducing environment that is favorable for reductive dechlorination.

Sulfidated ZVI

S-MicroZVI is composed of colloidal, sulfidated zero-valent iron particles suspended in glycerol using proprietary environmentally acceptable dispersants. The passivation technique of sulfidation, completed using proprietary processing methods, provides unparalleled reactivity with chlorinated hydrocarbons like PCE and TCE and increases its stability and longevity by minimizing undesirable side reactions.

S-MicroZVI is Best in Class For

- ☑ Longevity
- ☑ Reactivity
- ☑ Transport

In addition to superior reactivity, S-MicroZVI is designed for easy handling that is unmatched by any ZVI product on the market. Shipped as a liquid suspension, S-MicroZVI requires no powder feeders, no thickening with guar, and pneumatic or hydraulic fracturing is not mandatory. When diluted with water prior to application, the resulting suspension is easy to inject using either direct push or permanent injection wells.

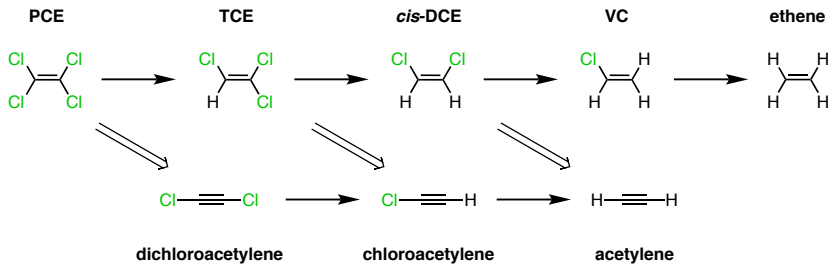

Figure 1: *Chlorinated ethene degradation pathways and products. The top pathway with single line arrows represent the reductive dechlorination (hydrogenolysis) pathway. The lower pathway with downward facing double line arrows represent the beta-elimination pathway.*

To see a list of treatable contaminants, view the S-MicroZVI treatable contaminants guide.

S-Micro ZVI
Sulfidated Zero-Valent Iron

S-MicroZVI Specification Sheet

Chemical Composition

Iron, powders CAS 7439-89-6
Iron (II) sulfide CAS 1317-37-9
Glycerol CAS 56-81-8

Properties

Physical State: Liquid
Form: Viscous metallic suspension
Color: Dark gray
Odor: Slight
pH: Typically 7-9 as applied
Density: 15 lb/gal

Storage and Handling Guidelines

Storage:

- Use within four weeks of delivery
- Store in original containers
- Store at temperatures below 95F°
- Store away from incompatible materials

Handling:

- Never mix with oxidants or acids
- Wear appropriate personal protective equipment
- Do not taste or swallow
- Observe good industrial hygiene practices

Applications

S-MicroZVI is diluted with water on site and easily applied into the subsurface through low-pressure injections. S-MicroZVI can also be mixed with products like 3-D Microemulsion® or PlumeStop® prior to injection.

Health and Safety

The material is relatively safe to handle; however, avoid contact with eyes, skin and clothing. OSHA Level D personal protection equipment including: vinyl or rubber gloves and eye protection are recommended when handling this product. Please review the Safety Data Sheet for additional storage, and handling requirements here: S-MicroZVI SDS.

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BDI PLUS® Technical Description

Bio-Dechlor INOCULUM Plus (BDI PLUS®) is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI PLUS has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water.

The culture also contains microbes capable of dehalogenating halomethanes (e.g., carbon tetrachloride and chloroform) and haloethanes (e.g., 1,1,1-TCA and 1,1-DCA) as well as mixtures of these contaminants.

Species of Dehalococcoides sp. (DHC)

For a list of treatable contaminants with the use of BDI PLUS, view the Range of Treatable Contaminants Guide

Chemical Composition

- Non-hazardous, naturally-occurring, non-altered anaerobic microbes and enzymes in a water-based medium.

Properties

- Appearance – Murky, yellow to grey water
- Odor – Musty
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Soluble in Water
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass
Store in a cool, dry area at 4-5°C (39 - 41°F)
Material may be stored for up to 3 weeks at 2-4°C without aeration

Handling
Avoid prolonged exposure
Observe good industrial hygiene practices
Wear appropriate personal protective equipment

BDI PLUS® Technical Description

Applications

- BDI PLUS is delivered to the site in liquid form and is designed to be injected directly into the saturated zone requiring treatment.
- Most often diluted with de-oxygenated water prior to injection into either hydraulic push injection points or properly constructed injection wells.
- The typical dilution rate of the injected culture is 10 gallons of deoxygenated water to 1 liter of standard BDI PLUS culture.

Application instructions for this product are contained here BDI PLUS Application Instructions.

Health and Safety

Material is non-hazardous and relatively safe to handle; however avoid contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including: vinyl or rubber gloves and safety goggles or a splash shield are recommended when handling this product. An eyewash station is recommended. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: BDI PLUS SDS.

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Appendix B

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REGENESIS
1011 Calle Sombra
San Clemente, CA 92673-6244
Tel: 949.366.8000 • Fax: 949.366.8090

Terms and Conditions
Products and Services

1. PAYMENT TERMS. Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.

2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.

3 FORCE MAJEURE. Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.

4. LIMITED WARRANTY. Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.

5. DISCLAIMER. Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.

6. LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY. Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the forgoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.

7. INDEMNIFICATION. Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. EXPENSES OF ENFORCEMENT. In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.

9. TAXES. Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.

10. ASSISTANCE AND ADVICE. Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.

11. SITE SAFETY. Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.

12. INDEPENDENT CONTRACTOR. Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.

13. REIMBURSEMENT. Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity which seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity which seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.

14. APPLICABLE LAW/JURISDICTION AND VENUE. The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.

15. ENTIRE AGREEMENT. This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

REMEDIATION WORK PLAN

APPENDIX F. POTENTIAL TO EMIT CALCULATIONS

RLF Subgrant – Arnolt Corporation
2525 Durbin Street
Warsaw, Kosciusko County, Indiana
Brownfield Site #4211002
Revolving Loan Fund RLF BF-00E48101-D

Potential To Emit Calculation

RLF Subgrant – Arnolt Corporation, Warsaw, IN

Qc = (Cc) * (F) * (MWc) * (60 minutes/hour) * (24 hours/day) (106) * (V)															
		SG-3d Conc (ug/m3)	**SG-3d (ppmv)**	**SCFM**	**MW**	**60 min/hr**	**24 hr/day**			**conversion**	**V**			**Qc (pounds per day)**	**Qc (tons/year)**
1,1,1-TCA	= 133.4 g/mole for 1,1,1-TCA	43	0.00788	157	133.4	60	24	237653.4874		1000000	385.3	385300000		0.000616801	0.000112566
1,2,4-TMB	= 120.19 g/mol for 1,2,4-TMB	6.6	0.0013425	157	120.19	60	24	36479.15536						9.46773E-05	1.72786E-05
1,3,5-TMB	= 120.2 g/mol for 1,3,5-TMB			157	120.2	60	24	0						0	0
MEK	= 72.11 g/mole for MEK			157	72.11	60	24	0						0	0
Acetone	= 58.08 g/mole for Acetone			157	58.08	60	24	0						0	0
Benzene	= 78.11 lb/lb-mol for Benzene	4.9	0.0015338	157	78.11	60	24	27085.54108						7.02973E-05	1.28293E-05
Carbon Disulfide	= 76.14 g/mole for Carbon Disulfide	4	0.0012845	157	76.14	60	24	22111.03773						5.73866E-05	1.0473E-05
Chloroform	= 119.4 lb/lb-mol for Chloroform			157	119.4	60	24	0						0	0
Cyclohexane	= 84.16 g/ mole for Cyclohexane	8.5	0.0024694	157	84.16	60	24	46985.00908						0.000121944	2.22548E-05
Dichlorodifluoromethane	= 120.91 g/ mole for Dichlorodifluoromethane	20	0.0047513	157	120.91	60	24	129878.3667						0.000337084	6.15178E-05
Ethylbenzene	= 106.16 g/ mole for Ethylbenzene	5.6	0.0012898	157	106.16	60	24	30956.04198						8.03427E-05	1.46625E-05
Heptane	= 100.21 g/ mole for Heptane	14	0.0034162	157	100.21	60	24	77395.63984						0.000200871	3.6659E-05
Hexane	= 86.17 g/ mole for Hexane	130	0.0368864	157	86.17	60	24	718595.526						0.001865029	0.000340368
mp-Xylene	= 106.16 g/ mole for mp-Xylene	13	0.0029938	157	106.16	60	24	71853.15435						0.000186486	3.40337E-05
o-Xylene	= 106.16 g/ mole for o-Xylene	4.8	0.0011054	157	106.16	60	24	26530.32161						6.88563E-05	1.25663E-05
Methylene Chloride	= 84.93 lb/lb-mol for Methylene Chloride	52	0.0149682	157	84.93	60	24	287404.025						0.000745923	0.000136131
Propylene	= 42.08 g/ mole for Propylene	43	0.0249846	157	42.08	60	24	237689.6529						0.000616895	0.000112583
Styrene	= 104.15 g/ mole for Styrene			157	104.15	60	24	0						0	0
Tetrachloroethylene	= 165.8 lb/lb-mol for Tetrachloroethylene (Perchloroethylene, PCE)	38000	5.6	157	165.8	60	24	209910758.4						0.544798231	0.099425677
Trichloroethylene (TCE)	= 131.4 lb/lb-mol for Trichloroethylene (TCE)	6000	1.12	157	131.4	60	24	33271741.44						0.08635282	0.01575939
cis-12-DCE	= 96.95 g/ mole for cis-12-DCE			157	96.95	60	24	0						0	0
trans-12-DCE	= 96.95 g/ mole for trans-12-DCE			157	96.95	60	24	0						0	0
Tetrahydrofuran	= 72.11 g/mole for Tetrahydrofuran			157	72.11	60	24	0						0	0
Toluene	= 92.14 g/ mole for Toluene	20	0.0053077	157	92.14	60	24	110564.7581						0.000286958	5.23698E-05
Trichlorofluoromethane	= 134.37 g/ mole for Trichlorofluoromethane	13	0.0030883	157	134.37	60	24	93817.51884						0.000243492	4.44373E-05
Cumene	= 120.19 g/ mole for Cumene			157	120.19	60	24	0						0	0
Naphthalene	= 128.17 g/ mole for Naphthalene			157	128.17	60	24	0						0	0
														Tons	**0.116205797**

eurofins Unit Conversion calculator; https://www.eurofinsus.com/environment-testing/services/air-and-vapor/unit-conversion-calculator/

(max of 157 cfm per the proposed blower)