



UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION III

STATEMENT OF BASIS

THOMAS and BETTS CORPORATION  
1501 WEST PARK AVENUE

PERKASIE, PENNSYLVANIA

EPA ID NO. PAD002498699

Prepared by  
Office of Pennsylvania Remediation  
Land and Chemicals Division  
August 2015

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## List of Acronyms

AOC	Areas of Concern
AR	Administrative Record
COI	Contaminants of Interest
EPA	Environmental Protection Agency
FDRTC	Final Decision Response to Comments
GPRA	Government Performance and Results Act
MCL	Maximum Contaminant Level
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SB	Statement of Basis
VOC	Volatile Organic Compound
CVOC	Chlorinated Volatile Organic Compound
COCs	Contaminants of Concern

## **Section 1: Introduction**

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The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the Thomas & Betts Corporation's (T&B) facility located at 1501 West Park Avenue in Perkasio, Pennsylvania (hereinafter referred to as the Facility or Site). EPA's proposed remedy for the Facility consists of the following components: 1) long term groundwater monitoring and reporting of contaminants of concern (COCs) conditions and hydraulic control of groundwater; 2) compliance with and maintenance of groundwater use restrictions to be implemented through institutional controls; 3) testing to investigate the potential for vapor intrusion and implementing mitigation measures, as necessary. This SB highlights key information relied upon by EPA in proposing its remedy for the Facility.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 *et seq.* The Corrective Action program requires that facilities subject to certain provisions of RCRA investigate and address releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from their property. The Commonwealth of Pennsylvania is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the State of Pennsylvania for the Corrective Action Program.

EPA is providing a thirty (30) day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found by navigating <http://www.epa.gov/reg3wcmd/correctiveaction.htm>. The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See Section 8, Public Participation, below, for information on how you may review the AR.

## **Section 2: Facility Background**

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The Facility, formerly known as either Ansley Electronics or Ansley Manufacturing facility, manufactured printed circuit boards from 1966 to 1986. The Facility is an approximate 5-acre parcel located at 1501 West Park Avenue, Perkasio, Pennsylvania. It is bounded by Orbit Manufacturing to the east, the former Doelp residence to the south, Park Avenue and residential dwellings to the west, a paved driveway and wooded/vegetated parcel that included a PP&L electrical substation to the north. The Facility is occupied by an approximate 6,000 square foot building that once housed the former manufacturing operations and office space. The building is bordered by asphalt paved parking areas to the east and southeast and asphalt paved driveway to the north and southwest. Beyond the paved parking area and driveway to the east-southwest is a vegetated /wooded area with a noticeable clear cut area. This clear-cut area leads to an area historically referred to as, the "Swampy Field" area. The Facility's site location map is shown

on Figure 1 (Attachment 1).

In November 1979, groundwater underneath the Facility was discovered to be contaminated with trichloroethylene (TCE). In 1980, private drinking water wells in the vicinity of the Facility and onsite soil near a former drum storage area adjacent to the northeastern wall of the manufacturing building were also found contaminated with TCE and 1,1,1-trichloroethane (1,1,1-TCA). In 1981, the Facility initiated a groundwater remediation program. The active groundwater remediation system, or Pump and Treat System, includes groundwater extraction from two onsite former water supply wells, treatment via a counter current air stripper, and discharge of treated groundwater to a tributary to the East Branch of Perkiomen Creek pursuant to a National Pollutant Discharge Elimination System (NPDES) Permit No. PA0040321. In November 1984, T&B excavated approximately 225 cubic yards of TCE contaminated soil from the former drum storage area.

In May 2000, EPA became aware that private drinking water wells in a nearby residential development (Crest Drive, located approximately 1000 feet northeast of the Facility) were contaminated with TCE and 1,1,1-TCA.

In June 2001, EPA and T&B entered into an Administrative Order on Consent (AOC) pursuant to Section 7003 of the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6973. The Order requires T&B to perform Interim Measures (IM) related to private drinking water supplies, complete a RCRA Facility Investigation (RFI), conduct a Corrective Measures Study (CMS) and implement corrective measures at the Site.

### **Section 3: Summary of Environmental Investigations and Remediation**

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For all environmental investigations conducted at the Facility, groundwater concentrations were screened against federal Maximum Contaminant Levels (MCLs) promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141, or if there was no MCL, EPA Region III Screening Levels (RSL) for tap water for chemicals. Soil concentrations were screened against EPA RSLs for residential soil and industrial soil. EPA also has RSLs to protect groundwater and soil concentrations were also screened against these RSLs.

#### **3.1 Interim Measures**

In spring of 2002, T&B implemented an EPA-approved IM workplan under which it identified drinking water wells within ¼ -mile radius of the Facility, began monitoring the drinking water quality at the identified wells, and provided an alternate drinking water supply to residences at which Facility-related contaminants were found to exceed their applicable MCLs. As a result, two residences were placed on public water. In 2003, EPA approved an IM Report for the Facility. The IM Report calls for monitoring wells that serve as the primary drinking water supply for properties that are located within a ¼ mile radius of the Facility and that have agreed to participate. Pursuant to the EPA-approved IM Report, T&B has been collecting drinking water samples from private wells since March 2002 and analyzing them for Facility

COCs, TCE, 1,1,1-TCA, and chlorinated degradation by-products. For the past 12 years, the drinking water sample results under T&B's IM sampling program have shown that there are no contaminants in concentrations that exceed their respective MCLs.

### **3.2 RCRA Facility Investigations (RFI)**

The objective of the RFI was to determine the nature and extent of releases of TCE (and associated degradation products), 1,1,1-TCA and other hazardous waste or hazardous constituents related to the Facility's manufacture of printed circuit boards. Beginning in the summer of 2003, the RFI was completed in three phases and the Final RFI Report was approved by EPA in March 2011.

#### **Soil**

The RFI soil investigations focused on the former groundwater recovery system piping leak areas, former drum storage area, process water sump tank area, septic tank area, and the discharge point and Swampy Field area. Three soil investigations were conducted in 2003, 2004, and 2008. Results from the Former Drum Storage/Soil Removal Area demonstrated that soil concentrations are below EPA residential standard for TCE (1600 ug/kg). No other constituents were detected in any other soil samples at concentrations above the EPA RSLs for residential use. In March 2011, EPA determined no further soil investigation was warranted. The Facility's Site Plan and Soil Borings Locations are shown on Drawing 2 (Attachment 2).

#### **Groundwater**

Groundwater investigations at the Facility were conducted from July 2003 to 2008. The historical records of on-site concentrations of TCE in groundwater suggest the presence of dense non-aqueous phase liquid (DNAPL). DNAPLs are liquid substances that are more dense than water and that have a tendency to sink to the bottom of groundwater aquifers. Specifically, concentrations of TCE have not substantially changed over the 30 year period of groundwater recovery operations. TCE in excess of 1,000 ug/l remains on-site while off-site concentrations are orders of magnitude lower and appear to have slightly decreased since the inception of groundwater recovery. 1,1,1-TCA and degradation products were not found in concentrations above their respective MCLs.

The ongoing groundwater remediation system continues to contain the plume while removing dissolved chlorinated VOC mass. The effects of pumping of recovery wells MW-4 and MW-5 extend beyond the Facility property boundary. The lateral extent of impacts above MCLs appears delineated but may require additional wells during the post remedial period. The Facility's Monitoring Well and Recovery Well Locations Drawing are shown on Drawing 6 (Attachment 3).

#### **Soil Vapor**

Buildings located above a contaminated groundwater plume are vulnerable to subsurface vapor intrusion coming from the plume and entering through cracks, joints and utilities openings.

T&B sampled inside existing structures to evaluate the vapor intrusion pathway for the potential migration of TCE. The indoor air analytical results were compared to the EPA Region III Industrial Air RBCs.

In 2004, EPA conducted an area-wide vapor pathway investigation. Results indicated that the groundwater conditions do not appear to pose a threat of vapor intrusion to potential off-site receptors.

In November 2008, three baseline indoor air samples were collected at the Facility. The indoor air concentrations for TCE in sample TBVP-01, exceeded indoor air standards for TCE in a building known as the "Addition." In August, 2009, T&B sealed cracks and openings in the floor slab in the Addition as initial vapor mitigation measure.

In January 2013, T&B conducted further testing to better characterize the potential vapor intrusion pathway in the former manufacturing building. Three soil gas and three indoor air samples were collected. Sample results indicated exceedances of EPA Region 3 RBC for soil gas criteria for cis-1,2-dichloroethene, TCE, vinyl chloride, and 1,1-dichloroethane. In February 2014, two soil gas and three indoor air samples were collected at the Facility and results indicated that the concentrations of all CVOC constituents of concern have decreased compared to the previous sampling events. Only cis-1,2-dichloroethene and TCE remain above their respective EPA soil gas criteria at sample location TBVP-02, however, those contaminants were at concentrations lower than the 2013 concentrations by an order of magnitude. Indoor Air Sampling Locations and Results are shown on Drawing 14 (Attachment 4).

### **3.3 Corrective Measures Study**

The Facility's June 12, 2015 CMS report identified the remedial action objectives (RAOs) for groundwater and soil vapor pathway and evaluated corrective action alternatives that meet these RAOs. These corrective action alternatives for groundwater include Monitor Only, Pump and Treat, In-Situ anaerobic bioremediation, In-Situ Chemical Reduction, and In-Situ Chemical Oxidation. The CMS Report recommended Pump and Treat with upgrades as a proposed remedial action alternative for groundwater for the Facility. Although the current Pump and Treat system effectively controls migration, an upgrade of the existing Pump and Treat system will remove iron and manganese more effectively to minimize fouling and enhance performance of the contaminant recovery at the Facility. For soil vapor intrusion pathway, the CMS calls for IMs, including further testing to investigate and better characterize the potential vapor intrusion pathway, before evaluating and selecting mitigation measures. In July, 2015, EPA approved the CMS Report.

### **3.4 Environmental Indicators**

Under the Government Performance and Results Act ("GPRA"), EPA has set national goals to address RCRA corrective action facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control, and (2) Migration of Contaminated Groundwater Under Control. The Facility met both of these indicators on September 16, 2009.

## Section 4: Corrective Action Objectives

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EPA's Corrective Action Objectives for the specific environmental media at the Facility are the following:

### 1. Soils

EPA's Corrective Action Objective for soils is to attain EPA's residential soil Screening Level of 1600 ug/kg. Sampling results demonstrate this residential standard has been met.

### 2. Groundwater

EPA expects final remedies to return usable groundwater to its maximum beneficial use, where practicable, within a timeframe that is reasonable. Where returning contaminated groundwater to its maximum beneficial use is not technically practicable, EPA generally expects facilities to prevent or minimize the further migration of a plume, prevent exposure to the contaminated groundwater, and evaluate further risk reduction. Technical impracticability (TI) for contaminated groundwater refers to a situation where achieving groundwater cleanup standards associated with final cleanup standards is not practicable from an engineering perspective. The term "engineering perspective" refers to factors such as feasibility, reliability, scale or magnitude of a project, and safety.

EPA has determined that restoration of groundwater to drinking water standards known as Maximum Contaminant Levels (MCLs), promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, at the Facility is technically impracticable for the following reasons:

- 1) COCs are present as unrecoverable DNAPL;
- 2) The permeability beneath the Facility at depth below 210 feet where high concentrations of COCs detected appears to be low;
- 3) Currently available remedial technologies proved to be ineffective in reducing COCs to MCLs; and
- 4) Removal or destruction of source mass is not feasible from an engineering perspective.

Therefore, EPA's Corrective Action Objectives for Facility groundwater are to control exposure to the hazardous constituents remaining in the groundwater; ensure that the dissolved groundwater plume is contained and will not migrate beyond the extent of the current groundwater plume; and meet MCLs for COCs beyond the TI Zone.

A TI Monitoring and Sampling and Analysis Plan as part of the Corrective Measures Implementation (CMI) will be prepared for EPA's approval. The Facility's proposed Technical Impracticability Boundary is shown on Figure 15 (Attachment 5).

## 5) Soil Vapor

EPA's Corrective Action Objective for soil vapor is to prevent exposure to TCE and its degradation products that have the potential to migrate into structures as a vapor. Prevention includes the on-going assessment of the soil vapor pathway and indoor air conditions and the implementation of engineering controls to mitigate vapor intrusion, as necessary.

## **Section 5: Proposed Remedy**

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### **1. Introduction**

Under this proposed remedy, some contaminants remain in the groundwater at the Facility at levels which exceed residential use. EPA's proposed remedy requires the compliance with and maintenance of groundwater use restrictions and the establishment of a TI zone. EPA proposes to implement the groundwater use restrictions within this zone to prevent human exposure to contaminants at the Facility. These restrictions will be implemented through an enforceable mechanism such as a permit, order, or environmental covenant.

### **2. Soils**

EPA has made a Corrective Action Complete without Controls determination for Facility soils because based on the available information, there are currently no unacceptable risks to human health and the environment from Facility soils for the present and anticipated use of Facility property. However, T&B has proposed to place residential land use restrictions on the Facility property while groundwater remediation continues.

### **3. Groundwater – TI Zone with Long Term Monitoring**

EPA's proposed remedy for Facility groundwater consists of:

- a. establishment of a TI Zone with long-term monitoring to demonstrate that the plume continues to be contained within the TI boundary;
- b. continued operation of the existing Pump and Treat System with upgrades designed to more effectively remove iron and manganese to enhance performance of contaminants recovery;
- c. submission, for EPA review and approval, of a TI Zone Monitoring and Sampling and Analysis Plan;
- d. implementation and compliance with the following groundwater use restrictions:
  - i. Groundwater at the Facility shall not be used or extracted for any purpose other than to conduct the operation, maintenance, and monitoring required by EPA, unless it is demonstrated to EPA, that such use will not pose a threat to human health or the environment or adversely affects or interfere with the selected remedy and EPA provides prior written approval for such uses and

- ii. No new wells will be installed on Facility property unless it is demonstrated to EPA that such wells are necessary to implement the final remedy and EPA provides prior written approval to install such wells.

#### **4. Soil Vapor Intrusion**

EPA's proposed remedy for soil vapor consists of continued assessment of the soil vapor pathway to evaluate the potential for vapor intrusion at the existing building. This assessment shall identify areas where mitigation controls may be necessary in the future in the existing building. Additionally, EPA's proposed remedy requires that all buildings to be constructed at the Facility include EPA-approved mitigation measures to prevent potential vapor intrusion into occupied building spaces unless EPA determines that such measures are not necessary. Therefore, EPA proposes implementation of and compliance with the following land use restriction:

- a. Future construction of buildings on the Facility property will include appropriate measures, approved by EPA, to prevent potential vapor intrusion into occupied building spaces unless testing and evaluation is performed that demonstrates to EPA that vapor intrusion from soil and/or groundwater will not exceed applicable criteria in place when the building(s) is constructed and EPA provides prior written approval of such demonstration.

#### **5. Additional Requirements**

EPA's proposed remedy includes implementation and compliance with the use restrictions and requirements for the duration of the remedial action and continued operation of the Facility's existing Pump and Treat System:

- a. The Facility property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the final remedy, including, but not limited to the Pump and Treat System and associated wells and piping, and
- b. EPA, PADEP and/or their authorized agents and representatives, shall have access to the Facility property to inspect and evaluate the continued effectiveness of the final remedy and if necessary, to conduct additional remediation to ensure the protection of the public health and safety and the environment upon the final remedy selection in the FDRTC.

In addition, the Facility shall provide EPA with a coordinate survey as well as a metes and bounds survey, of the Facility boundary. Mapping the extent of the land use restrictions will allow for presentation in a publicly accessible mapping program such as Google Earth or Google Maps.

## Section 6: Evaluation of Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria.

Threshold Criteria	Evaluation
<p>1) Protect human health and the environment</p>	<p>With respect to soil, the Facility soils meet EPA’s residential soil SL of 1600 ug/kg, so there are currently no unacceptable risks to human health and the environment from Facility’s soils.</p> <p>With respect to groundwater, EPA’s proposed remedy for the Facility protects human health and the environment based on reasonable anticipated current and future land use(s). The Site is currently zoned for non-residential use and onsite potable water wells cannot be installed. Based on Perkasio Borough Ordinance 186-14, if public water is accessible to a resident within Perkasio Borough, then Perkasio Borough Authority will not issue a permit for a private well. According to Perkasio Borough Authority, public water is available to all residences in Perkasio Borough; therefore, no new private wells may be drilled. The current IMs allow for this threshold criterion to be met without further remediation.</p> <p>With respect to future uses, the proposed remedy requires groundwater use restrictions to minimize the potential for human exposure to contamination and protect the integrity of the remedy.</p> <p>With respect to vapor intrusion pathway, EPA’s proposed remedy protects human health and the environment by requiring further assessment and characterization of the soil vapor pathway. If the additional indoor air sampling data affirms a risk related to the vapor intrusion pathway for COCs, mitigation approaches will be evaluated and a mitigation approach will be implemented, if needed. Additionally, EPA’s proposed remedy requires the implementation and maintenance of land use restrictions to ensure that future construction of buildings on the Facility property will require appropriate measures to prevent potential vapor intrusion into occupied building spaces as necessary.</p>

<p>2) Achieve media cleanup objectives</p>	<p>EPA's cleanup goal for groundwater is to return usable groundwater to its maximum beneficial use wherever practicable. Media cleanup objectives consistent with this goal, for this aquifer, are Maximum Contaminant Levels (MCLs) in drinking water throughout the groundwater contaminant plume. However, T&amp;B has demonstrated that it is not technically practicable to achieve MCLs throughout the plume. T&amp;B will establish a TI boundary, within which the MCLs cannot be met, but outside of which MCLs will be met. The TI boundary is smaller than the Facility property area and will be monitored to demonstrate that the final remedy (e.g. on-site pump and treat) continues to contain the plume within the TI boundary. COCs concentrations for groundwater samples collected from on-site wells (within the Facility property boundary) that are outside the proposed TI boundary currently meet and, and must continue to meet, MCLs. The current Pump and Treat System is working to meet MCLs outside the TI boundary. For groundwater outside the TI boundary, MCLs are cleanup objectives that are protective of current and potential beneficial uses of groundwater. The Facility meets EPA risk guidelines for human health and the environment. EPA's proposed remedy requires the implementation and maintenance of use restrictions to ensure that groundwater beneath Facility property is not used for any purpose except to conduct the operation, maintenance, and monitoring activities required by EPA.</p>
<p>3) Remediating the Source of Releases</p>	<p>In all proposed remedies, EPA seeks to eliminate or reduce further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment and the Facility met this objective.</p> <p>T&amp;B remediated a source of releases at the Facility in 1984 when it excavated approximately 225 cubic yards of TCE contaminated soil from the former drum storage area. In addition, T&amp;B has been operating a Pump and Treat System at the Facility for approximately 30 years. Further remediation of the source material has been demonstrated to be technically impracticable. However, the groundwater treatment system will continue to capture the plume, preventing migration of COCs from the Facility property.</p>

## Section 6: Evaluation of Proposed Remedy (continued)

Balancing Criteria	Evaluation
1) Long-term effectiveness	The proposed remedy will maintain protection of human health and the environments over time. The Pump and Treat System will continue to contain the plume and the groundwater use restrictions will control exposure to the hazardous constituents remaining in groundwater.
2) Reduction of toxicity, mobility, or volume of the Hazardous Constituents	The reduction of toxicity, mobility and volume of hazardous constituents will continue by the continued operation of the Pump and Treat System. While TCE remains above its MCL at the source, reduction has already been achieved, as demonstrated by the data from the groundwater monitoring.
3) Short-term effectiveness	On a short term basis, the Pump and Treat System can be effective, particularly as a means to address mass flux and plume containment.
4) Implementability	EPA's proposed remedy is readily implementable. The Pump and Treat System is already in place and operational. Additionally, EPA does not anticipate any regulatory constraints in implementing the ICs.
5) Cost	EPA's proposed remedy is cost effective. Short term costs involve the design and installation of upgrades to the Pump and Treat System. Long term costs can be considerable, as the system will continue to operate for an additional undefined period. Since the Pump and Treat System is currently functional at the Facility, periodic system maintenance and groundwater monitoring costs are incurred. Capital upgrades could cost up to \$500,000 or more. A periodic cost of \$97,000 per year will be incurred during the first five years and approximately \$83,000 per year will be incurred for the remainder of the 15 years of the operation and maintenance of the upgraded Pump and Treat System at the Facility.
6) Community Acceptance	The existing Pump and Treat System has been effective in controlling the migration of contaminants and has been acceptable to the community. EPA will evaluate comments received during the public comment period and respond, as appropriate, in the Final Decision and Response to Comments.
7) State/Support Agency Acceptance	PADEP will continue to receive quarterly discharge monitoring reports and grants the permits to discharge from the Pump and Treat System. The effective operation of the existing Pump and Treat System has been acceptable to the State. EPA, therefore, expects State acceptance of an upgraded system.

**Section 7: Financial Assurance**

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T&B is required to demonstrate and maintain financial assurance for completion of the remedy pursuant to Section VII of the Administrative Order on Consent RCRA-03-2001-0327.

**Section 8: Public Participation**

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Interested persons are invited to comment on EPA’s proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or electronic mail to Ms. Tran Tran the contact information listed below.

A public meeting will be held upon request. Requests for a public meeting should be submitted to Ms. Tran Tran in writing at the contact information listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by EPA for the proposed remedy at this Facility. The Administrative Record is available at the following location:

U.S. EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103  
Contact: Ms. Tran Tran (3LC30)  
Phone: (215) 814-2079  
Fax: (215) 814 - 3113  
Email: [tran.tran@epa.gov](mailto:tran.tran@epa.gov)

**Attachments:**

- Attachment 1 - Figure 1: Site Location Map
- Attachment 2 – Drawing 2: Facility’s Site Plan and Soil Borings Locations
- Attachment 3 – Drawing 6: Facility’s Monitoring Wells and Recovery Wells Locations
- Attachment 4 – Drawing 14: Indoor Air Sampling Locations and Results
- Attachment 5 – Figure 15 – Technical Impracticability Boundary

Date: 6.24.15

  
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John A. Armstead, Director  
Land and Chemicals Division  
US EPA, Region III

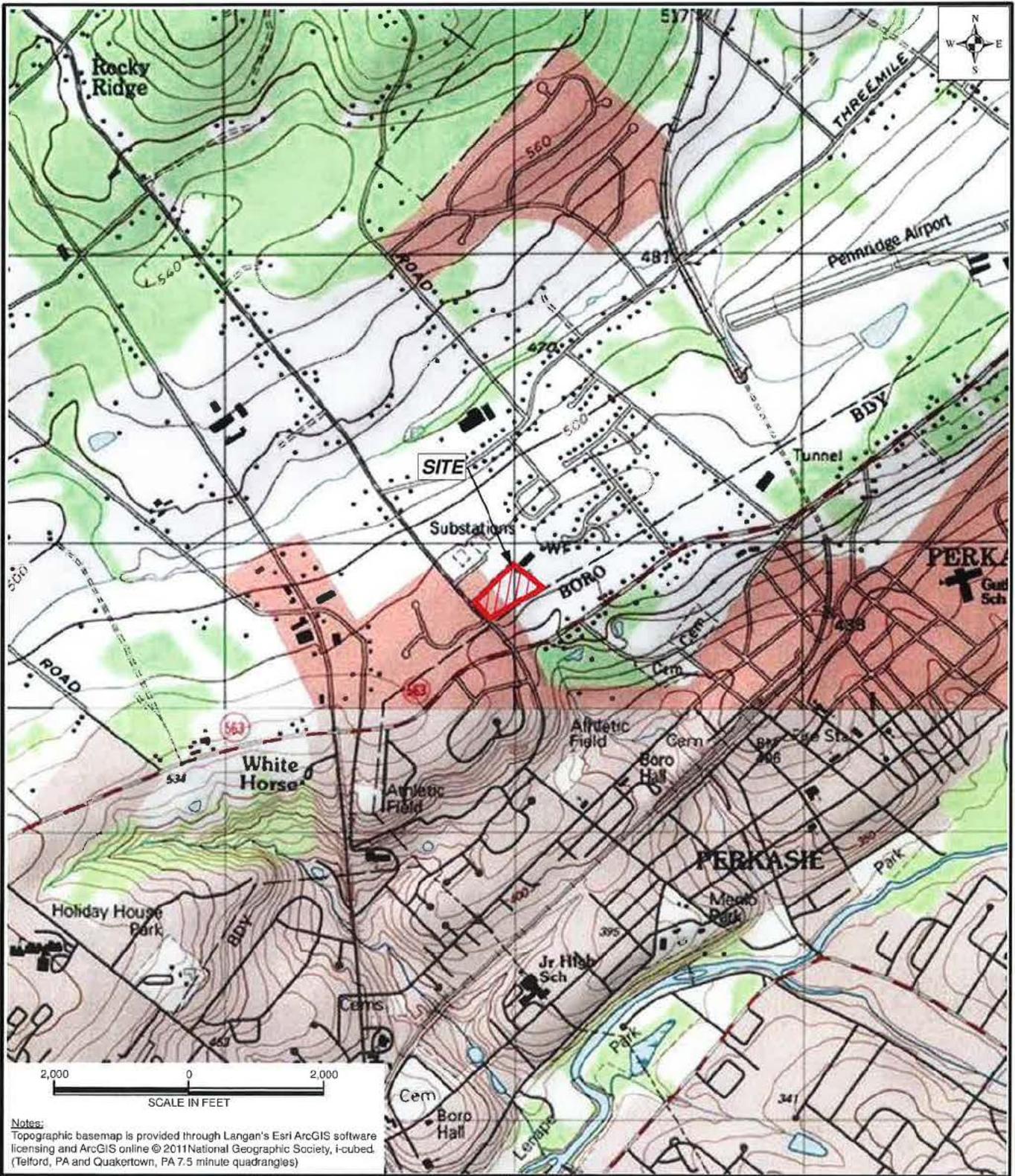
## **Section 9: Index to Administrative Record**

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1. Administrative Order on Consent RCRA-03-2001-0327
2. Interim Measures Status Report, Thomas & Betts/Ansley Facility, Perkasio, PA prepared by Langan Engineering and Environmental Services, Inc., October 18, 2004
3. Focused RCRA Facility Investigation Report, RFI Report Thomas & Betts/Ansley Facility, Perkasio, PA prepared by Langan Engineering and Environmental Services, Inc., March, 2011
4. Final Corrective Measures Study Report, Thomas & Betts/Ansley Facility, Perkasio, PA prepared by Langan Engineering and Environmental Services, Inc., July 8, 2015

**Attachment 1**

**Figure 1 – Site Location Map**



Notes:  
 Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online © 2011 National Geographic Society, i-cubed. (Telford, PA and Quakertown, PA 7.5 minute quadrangles)

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Project  
**FORMER THOMAS  
 AND BETTS  
 ANSLEY FACILITY**  
 PERKASIE  
 BUCKS COUNTY PENNSYLVANIA

Drawing Title  
**SITE LOCATION  
 MAP**

Project No. 2529101	Figure  1
Date 2/13/2015	
Scale 1"=2,000'	
Drawn By MH	
Submission Date	

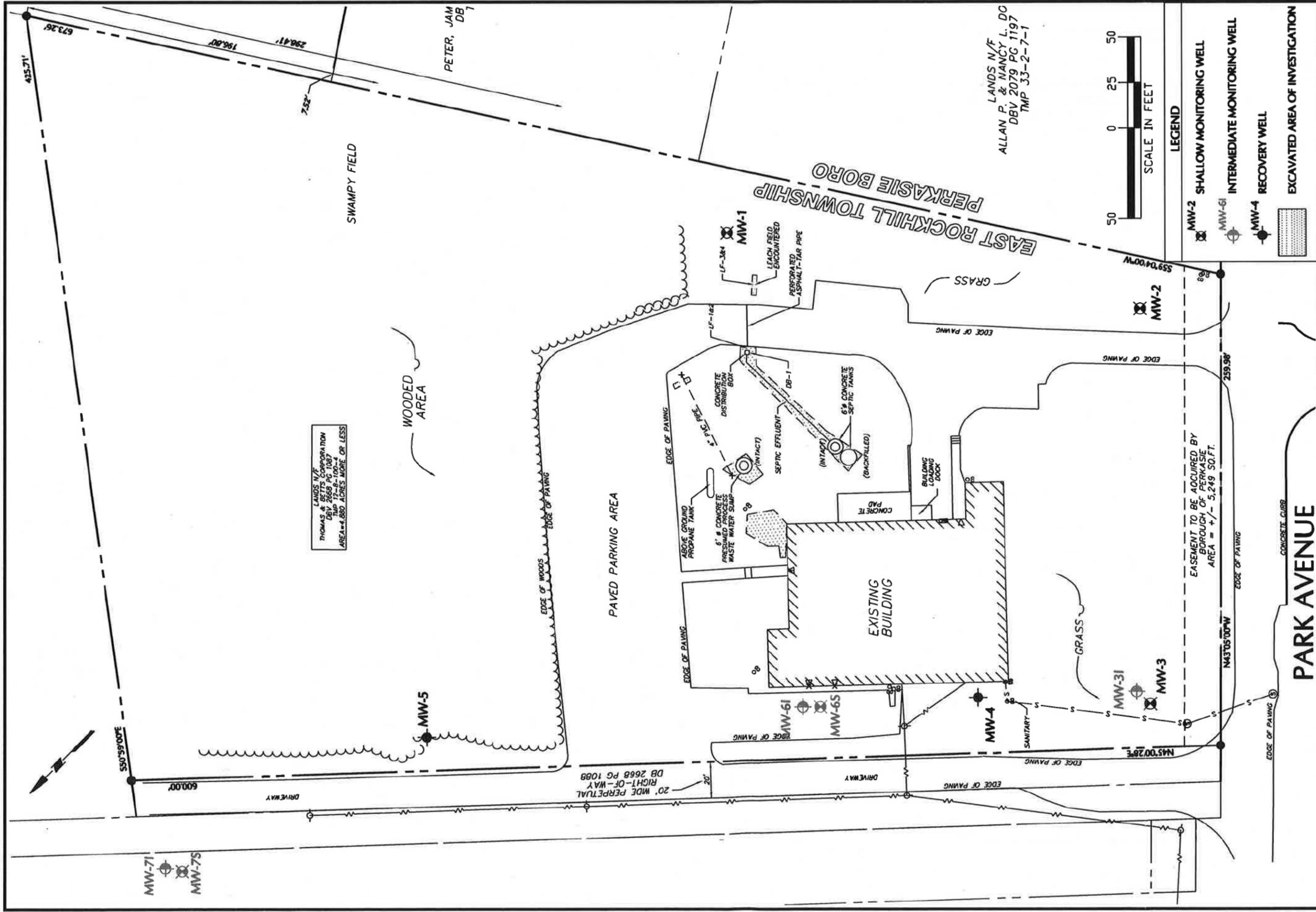
**Attachment 2**

**Drawing 2 – Site Plan and Soil Boring Locations**



**Attachment 3**

**Drawing 6 – Monitoring Well and Recovery Well Locations Drawing**

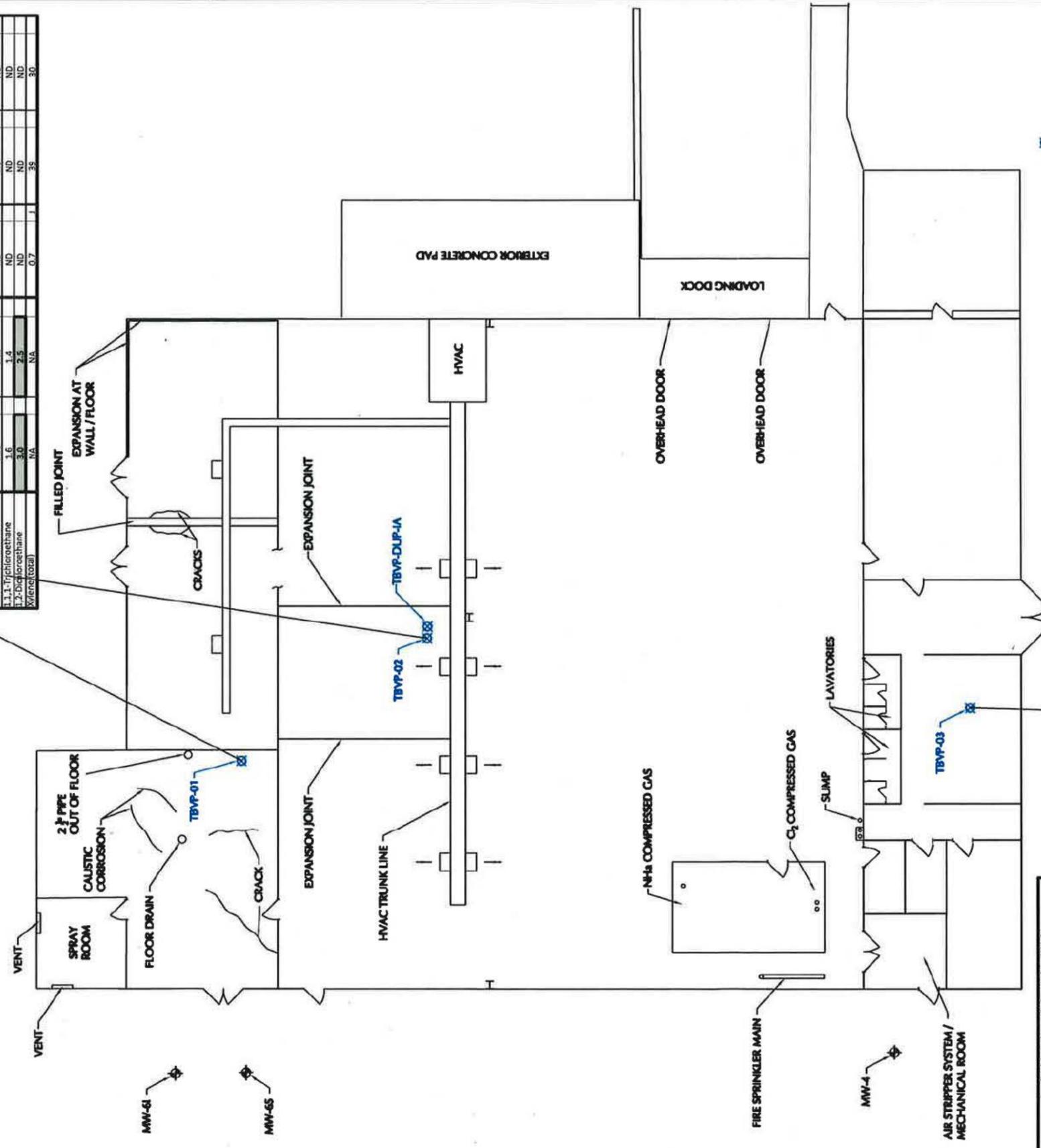


**Attachment 4**

**Drawing 14 – Indoor Air Sampling Locations and Results**

TO-15	TBVP-01		TBVP-DUP-01		TBVP-01A	
	Indoor Air	Indoor Air	Indoor Air - Duplicate	Sample	Indoor Air	Indoor Air
11/9/2008 11:50	1/23/2013 16:00	1/23/2013 00:00	1/23/2013 00:00	1/23/2013 12:20	2/20/2013 12:20	2/20/2013 12:20
Analyte	Q	Result	Q	Result	Q	Result
1,2,4-trimethylbenzene	NA	ND	ND	20	J	55
Benzene	NA	0.79	J	0.77	J	0.77
Ethylbenzene	NA	0.39	J	0.12	J	0.12
Trichloroethene	5.6	4.5	J	3.6	J	3.6
1,1,1-trichloroethane	1.0	ND	ND	ND	ND	ND
1,1,2-trichloroethane	2.8	ND	ND	ND	ND	ND
1,2-dichloroethane	2.7	ND	ND	ND	ND	ND
Xylenes (total)	NA	1.8	ND	ND	ND	176

TO-15	TBVP-02		TBVP-DUP-02		TBVP-02A	
	Indoor Air	Indoor Air	Indoor Air - Duplicate	Sample	Indoor Air	Indoor Air
11/9/2008 13:12	1/23/2013 16:45	1/23/2013 16:45	1/23/2013 12:24	1/23/2013 12:24	2/20/2013 12:24	2/20/2013 12:24
Analyte	Q	Result	Q	Result	Q	Result
1,2,4-trimethylbenzene	NA	ND	ND	5.7	J	3.9
Benzene	NA	0.82	J	1.5	J	1.5
Ethylbenzene	NA	0.17	J	1.9	J	1.5
Trichloroethene	2.8	3.7	J	3.8	J	3.8
1,1,1-trichloroethane	0.99	ND	ND	ND	ND	ND
1,1,2-trichloroethane	1.6	ND	ND	ND	ND	ND
1,2-dichloroethane	3.0	ND	ND	ND	ND	ND
Xylenes (total)	NA	0.7	J	3.5	J	3.0



Applicable Indoor Air Screening Criteria		
TO-15	PADEP Non-Residential Indoor Air MSC for Industrial Air	EPA Region III RBC for Industrial Air
1,2,4-trimethylbenzene	17	31
Benzene	11	1.6
Ethylbenzene	73	4.9
Trichloroethene	48	3.0
1,1,2-dichloroethene	100	NS
1,1,1-trichloroethane	580	880
1,2-dichloroethane	6,100	22,000
Xylenes (total)	3.1	0.67
	300	440

**LEGEND**

- 34 - Exceedance of EPA Region III Industrial Air RBC and PADEP Non-Residential Indoor Air MSCs
- 34 - Exceedance of EPA Region III Industrial Air RBC
- 20 - Exceedance of PADEP Non-Residential Indoor Air MSC
- Q - Qualifier
- J - Compound was detected above laboratory MDL but below RL; concentration should be considered an approximate value.
- PADEP - Pennsylvania Department of Environmental Protection
- EPA - Environmental Protection Agency
- RBC - Risk-Based Concentration
- MSC - Medium Specific Concentration
- ug/m<sup>3</sup> - micrograms/meter cubed
- NS - No regulatory standard available
- NA - Compound Not Analyzed
- ND - Compound not detected above laboratory Method Detection Limit

TO-15	TBVP-03		TBVP-03-1A		TBVP-03A	
	Indoor Air					
11/9/2008 13:01	1/23/2013 16:57	1/23/2013 16:57	2/20/2013 12:05	2/20/2013 12:05	2/20/2013 12:05	2/20/2013 12:05
Analyte	Q	Result	Q	Result	Q	Result
1,2,4-trimethylbenzene	NA	ND	ND	1.8	J	1.8
Benzene	NA	0.9	J	5.4	J	5.4
Ethylbenzene	NA	0.15	J	2.8	J	2.8
Trichloroethene	4.7	1.8	J	1	J	1
1,1,1-trichloroethane	2.8	0.73	J	0.73	J	0.73
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND
Xylenes (total)	NA	0.52	J	1.4	J	1.4

TO-15	TBVP-04		TBVP-04-1A		TBVP-04A	
	Indoor Air					
11/9/2008 13:06	1/23/2013 16:55	1/23/2013 16:55	2/20/2013 12:12	2/20/2013 12:12	2/20/2013 12:12	2/20/2013 12:12
Analyte	Q	Result	Q	Result	Q	Result
1,2,4-trimethylbenzene	NA	ND	ND	0.74	J	0.74
Benzene	NA	ND	ND	0.14	J	0.14
Ethylbenzene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND
1,1,2-dichloroethane	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND
Xylenes (total)	NA	ND	ND	ND	ND	ND

TO-15	TBVP-05		TBVP-05-1A		TBVP-05A	
	Indoor Air					
11/9/2008 13:06	1/23/2013 16:55	1/23/2013 16:55	2/20/2013 12:12	2/20/2013 12:12	2/20/2013 12:12	2/20/2013 12:12
Analyte	Q	Result	Q	Result	Q	Result
1,2,4-trimethylbenzene	NA	ND	ND	0.74	J	0.74
Benzene	NA	ND	ND	0.14	J	0.14
Ethylbenzene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND
1,1,2-dichloroethane	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND
Xylenes (total)	NA	ND	ND	ND	ND	ND

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 Collectively known as Langan

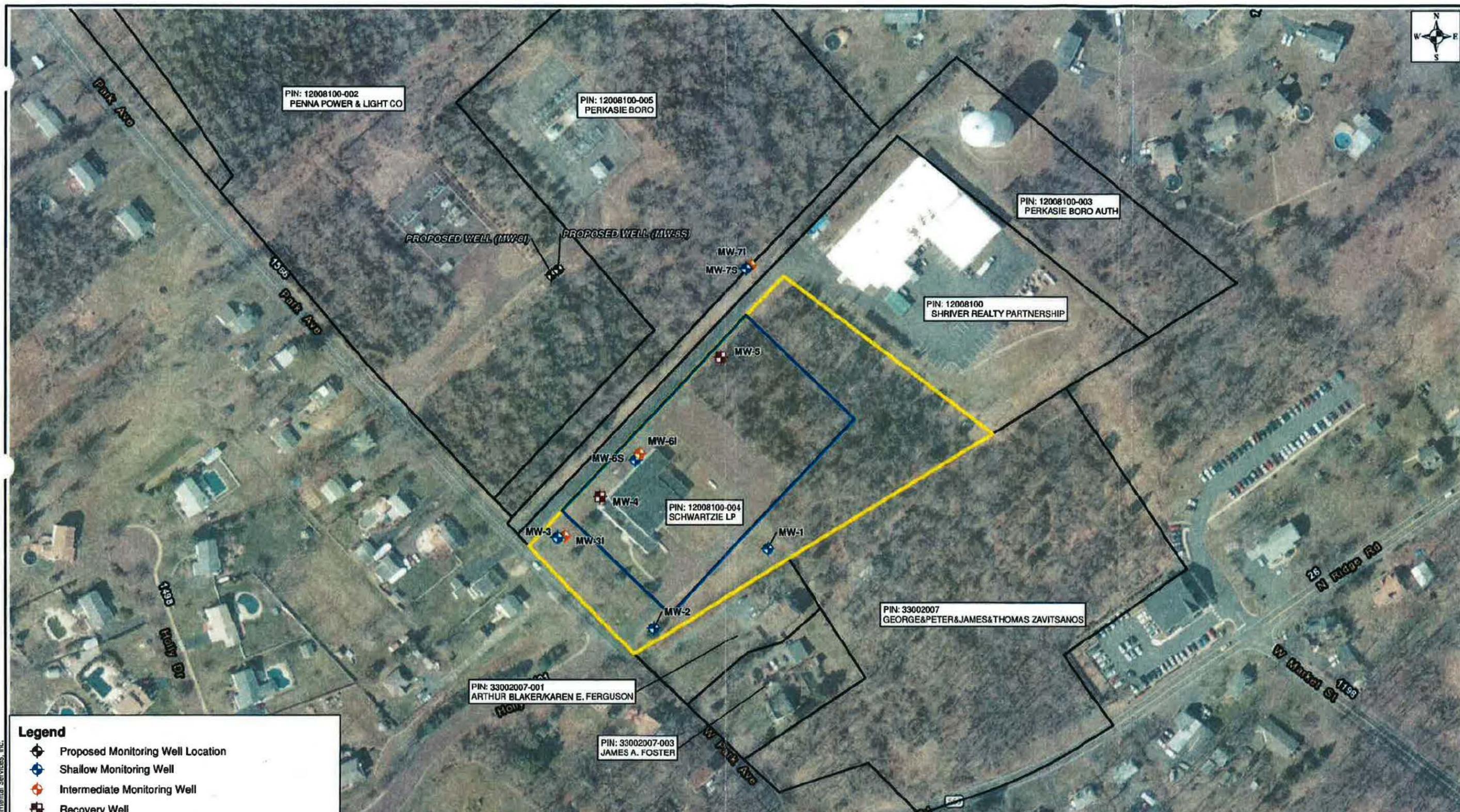
Project  
**FORMER THOMAS  
 AND BETTS  
 ANSLEY FACILITY**  
 PERKASIE  
 PENNSYLVANIA  
 BUCKS COUNTY

Drawing Title  
**INDOOR AIR  
 SAMPLING  
 LOCATIONS AND  
 RESULTS**

Project No.  
 002529101  
 Date  
 5/8/2014  
 Scale  
 1"=16'  
 Drawn By/Checked By  
 MH CS  
 Submission Date  
 Drawing No.  
 14

**Attachment 5**

**Figure 15 – Technical Impracticality Boundary**



**Legend**

- Proposed Monitoring Well Location
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Recovery Well
- Surrounding Parcel Boundaries
- Technical Impracticability Boundary
- Site Property Boundary

**Notes:**

1. Aerial basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Microsoft, 3/19/11. Additional Credits: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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Project  
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 BUCKS COUNTY PENNSYLVANIA

Drawing Title  
**TECHNICAL IMPRACTICABILITY BOUNDARY**

Project No.	2529101	<b>15</b>
Date	2/10/2015	
Scale	1"=150'	
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Submission Date		

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