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REVISED FINAL COMPLIANCE STATUS REPORT

Voluntary Remediation Program
Legion Industries
370 Mills Road
Waynesboro, Burke County, Georgia
HSI Site No. 10614

Wood Environment & Infrastructure Solutions, Inc.
2677 Buford Hwy NE
Atlanta, Georgia 30324
USA
T: 404-873-4761
www.woodplc.com

October 15, 2018

Mr. David Hayes
Environmental Protection Division
Hazardous site Response Program
Suite 1462 East Tower
205 Butler Street, S.E.
Atlanta, Georgia 30334

Subject: **Revised Final Compliance Status Report**
Voluntary Remediation Program
Legion Industries
370 Mills Road
Waynesboro, Burke County, Georgia
HSI Site No. 10614

Dear Mr. Hayes:

Wood Environment & Infrastructure Solutions, Inc. (Wood – formerly Amec Foster Wheeler) is pleased to submit this Revised Compliance Status Report (CSR) for the Legion Industries property on behalf of 370 Mills Road, Inc., current owner of the subject site located on Mills Road in Waynesboro, Georgia (site). This CSR documents the delineation of soil conditions to the appropriate risk reduction standards and summarizes the current status of groundwater conditions and vapor risk at the subject site.

This Revised CSR is submitted in response to comments received from the Georgia Environmental Protection Division dated April 12, 2018. Please contact us if further information or clarification is necessary.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Stephen R. Foley, P.G.
Senior Geologist

Charles T. Ferry, P.E.
Senior Principal Engineer

cc: Mr. Charles A. Brown, 370 Mills Road, Inc.

CERTIFICATION STATEMENT

I certify under penalty of law that this report and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous site Response, Rule 391-3-19-.07, I have determined that the site is in compliance with Type 3 or 4 risk reduction criteria for all constituents in soil and with Type 4 with controls risk reduction criteria for all constituents in groundwater.

Charles A. Brown
Mr. Charles A. Brown
370 Mills Road, Inc.*

10/12/2018
Date

*The Legion Industries, Inc. business was purchased on July 25, 2016. The building and land was retained by Mr. Brown under the name of 370 Mills Road, Inc.

GROUNDWATER SCIENTIST STATEMENT

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared in conjunction with others working under my direction.

Mr. Stephen R. Foley, P.G.
Georgia Registration No. 1057

STEPHEN ROBERT FOLEY
No. 001057
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST

TABLE OF CONTENTS

1.0 BACKGROUND

The Legion Industries property ("subject site" or "property") consists of an 11.31-acre tract of land located at 370 Mills Road (aka Waynesboro Bypass) in Waynesboro, Burke County, Georgia (see Figures 1 and 2). The property is developed with an approximately 75,000 square-foot manufacturing facility, a small one-story outbuilding and unpaved parking areas on the north and west sides of the building. Other areas of the property are largely grassed. A tree line is present along much of the eastern property boundary. A shallow ditch traverses eastward from the southeast corner of the main building and then northward along the eastern property boundary to a culvert that directs drainage under Mills Road to the north.

The subject site is located within an area characterized by a combination of undeveloped land and light industrial development. The property is bound to the east by an approximately 25-foot wide, grassed easement, which was deeded to the Burke County Development Authority by Legion Industries in 1997. The property located east of the easement contains a large building previously occupied by Sunbeam Outdoor Products and currently used as a warehouse by Synergy Group, LLC. The property is bound to the south by a rail line; McKinney Wholesale Products is located south of the rail line. The subject site is bound to the west by Davis Road. Across Davis Road opposite the southern portion of the site is Helena Chemical Company, a manufacturer of dry fertilizers. A large undeveloped parcel of land owned by the Burke County Development Authority is located across Davis Road opposite the northern portion of the site. The subject site is bound to the north by Mills Road (a.k.a. Waynesboro Bypass), beyond which is undeveloped wooded property to the north and northeast and industrial property to the northwest.

The subject site was first developed in the late 1950s and was originally occupied by Atlas Chemical Company (Atlas), a manufacturer of agricultural pesticides. The facility was acquired by Legion Utensil Company (LUC) in 1971 and utilized for the manufacture of commercial grade kitchen appliances. LUC made several modifications to the site, including extending the building southward for a distance of approximately 25 feet and constructing a degreaser pit. Legion Industries, Inc., the current property owner, acquired the property in 1988 and has continued to manufacture commercial grade kitchen appliances on the premises.

1.1 PREVIOUS ASSESSMENTS

Previous environmental assessments were performed at the subject site between 1993 and 2015.

1.1.1 Pre-HSRA Listing

In December 1993, Dames & Moore performed a Phase I Environmental Survey of the subject site for First Eastern Bank, N.A. According to the report, several above-ground storage tanks (ASTs) and suspected portable trailer-mounted tanks were reportedly present in the area south of the main building on the property during Atlas' occupancy. The report identified a former drum storage area reportedly utilized by LUC south of the main building in the 1970s and 1980s. According to Mr. Scavullo, owner of LUC, the drums in this area only stored machine parts and never hazardous materials. When the property was purchased by Legion Industries in 1988 the drums were removed.

In May 1994, CSRA Testing and Engineering Co., Inc. (CSRA) performed a Phase II Environmental Site Assessment for Legion Industries. CSRA reported impacts to soil and groundwater from volatile organic compounds (VOCs) and metals. The data collected by CSRA is not included in this Final CSR due to the age of the data (greater than 20 years), uncertainty regarding VOC findings and questionable sampling procedures (collecting metals samples in groundwater from open boreholes). Amec Foster Wheeler's subsequent assessments have included sampling and testing of soil and groundwater in the former drum storage area and in each of the areas previously investigated by CSRA.

The groundwater concentrations detected by CSRA were submitted in a Release Notification to the Georgia Environmental Protection Division (EPD) pursuant to the Hazardous Site Response Act (HSRA). The site was subsequently listed on the Hazardous Site Inventory (HSI) as site No. 10614. The listing identified the subject site as a 10.54-acre property; however, a survey dated March 11, 2002 shows the site as 11.31 acres (refer to Appendix I).

1.1.2 Post-HSRA Listing

Subsequent to the site's listing on the HSI, Legion Industries contracted Law Engineering and Environmental Services, Inc. (LAW, predecessor to Amec Foster Wheeler) to collect groundwater samples to check the findings of the CSRA assessment. In October 2000, three groundwater monitoring wells (MW-1 through MW-3) were installed to collect groundwater samples and to assess general groundwater flow direction.

On March 21, 2001, EPD issued a letter directing Legion Industries to submit a Compliance Status Report (CSR). EPD's request for a CSR prompted a series of additional assessments in 2001/2002 and again in 2009/2010 which are documented herein and which resulted in the preparation of a 2002 CSR and a 2010 Revised CSR. The 2001/2002 assessments consisted of the resampling of existing monitoring wells, a ground-penetrating radar survey in an area of suspected drum burial, hand auger borings to sample soils, the advancement of a series of soil borings to sample soil and groundwater and the installation of eight additional wells.

The 2001/2002 data obtained by Amec Foster Wheeler was consolidated and presented in a CSR which was submitted to EPD on March 29, 2002. EPD subsequently reviewed the CSR and on June 19, 2009 issued a Notice of Deficiency (NOD) letter to Legion Industries which requested that a revised CSR be submitted. EPD subsequently visited the site and on November 3, 2009 issued a follow-up letter with additional comments.

Based on the comments received, additional assessment of the site was conducted in 2009/2010 which included sampling groundwater from all existing wells on site and two new wells and the installation of three piezometers, sampling soil at 16 of the previous soil boring locations and ten new soil locations and sampling of surface water. These activities were described in a revised CSR, dated March 31, 2010.

EPD issued a letter dated October 27, 2011 commenting on the Revised CSR and requesting submittal of a Corrective Action Plan (CAP). The letter also mentioned the option to submit a Voluntary Remediation Program (VRP) application.

1.1.3 VRP Implementation

Amec Foster Wheeler prepared a VRP application for the Legion Industries site which was approved by EPD in a letter dated July 25, 2012. Under the VRP, the following activities have been conducted at the site:

1. Soil delineation sampling conducted in December 2012;
2. Remediation of solvent and pesticide-impacted soils within the degreaser pit and immediately south of the building in June 2013;
3. Semi-annual sampling and testing in six events between December 2012 and June 2015;
4. Installation and sampling of seven additional on-site wells to further delineate the plume and to aid in groundwater modeling efforts;
5. Fate and transport model calculations to predict future plume migration and the potential for impact to downgradient receptors;
6. Completion of a water usage survey to identify potential groundwater/surface water receptors in the site vicinity;
7. Soil vapor testing and vapor intrusion modeling to assess the potential for adverse impacts to site workers related to exposure to volatiles;
8. Preparation of six Semi-Annual Progress Reports (SAPRs) documenting activities completed during each period; and
9. Preparation of a CSR following the June 2015 sampling event.
10. Preparation of this Revised CSR following receipt of EPD comments regarding the semi-annual reports and the January 2016 CSR.

2.0 PURPOSE

This Final CSR has been prepared on behalf of Legion Industries, Inc. for the site located in Waynesboro, Burke County, Georgia. A Voluntary Investigation and Remediation Plan (VIRP) and VRP Application were submitted for this site on January 26, 2012 and EPD accepted the site into the VRP by letter dated July 25, 2012. Since that time, the VIRP was implemented and the work was summarized in six semi-annual progress reports submitted to EPD from January 2013 through July 2015 and a VRP CSR submitted in January 2016. Legion Industries is submitting this Revised CSR which addresses EPD's comments regarding the 2016 CSR and which documents compliance with the provisions, purposes, standards, and policies of the VRP and certifying compliance with applicable cleanup standards.

3.0 CONCEPTUAL SITE MODEL

Groundwater assessment activities on site have been conducted by Amec Foster Wheeler and others between 2001 and 2015. A total of 20 groundwater monitoring wells and six piezometers have been installed on site. Most of the piezometers have been destroyed. Refer to Figure 3 for a plan of the existing monitoring well locations.

3.1 CHARACTERIZATION OF SUBSURFACE GEOLOGY

The geology and hydrogeology of the site discussed below are based on the data obtained and review of published literature.

The property is located in the Coastal Plain Physiographic Province which consists of interlayered sequences of sand, clay and limestone formed from marine deposits of Mesozoic and Cenozoic age. The subject site is mapped as being underlain by the Altamaha Grit, Citronelle Formation and Hawthorne Formation. The Hawthorne Formation, which is composed of interlayered sands and sandy clay, is the dominant formation in the area. The native soils present in this geologic area were originally deposited as marine sediments during ancient fluctuations of the seal level. The soils are mapped as Dothan loamy sand, described as a well drained soil with moderate to low permeability in the lower part of the subsoil.

The soil test borings generally encountered a thin layer of fill soil at the surface overlying native soils. Fill depths ranged up to approximately four feet (see Boring Logs in Appendix E for soil descriptions). Soils on site generally consisted of clayey sands and sandy clays with limited zones of clay, particularly at depth in the deep wells, MW-4 and MW-12. See Figures 4 and 5 in Appendix B for cross-sections through the subject site.

3.2 CHARACTERIZATION OF HYDROGEOLOGY

In the Coastal Plain Physiographic Province, groundwater can occur under water table (unconfined) or confined conditions and multiple hydrologic units may be present over relatively limited depth ranges. Most of Burke County is underlain by an artesian aquifer which provides water for domestic, industrial and agricultural uses. Most supply wells in the area are at least 200 feet deep. Recharge to the shallow water table is primarily by precipitation infiltrating the upper soils and percolating downward, under the influence of gravity, to the water table.

Typically, the water table of unconfined aquifer is not a level surface, but a subdued reflection of the land surface while that of deeper unconfined or confined units may vary. Also, depth to the water table is variable, being dependent on many factors which include: the amount of rainfall, the permeability of the aquifer material and the amount of groundwater being pumped from the area. Depth to the water table in deeper units will be dependent upon the hydraulic head within that aquifer unit, particularly in the case of confined aquifers.

3.2.1 Surface Water Drainage

Surface water drainage in the surrounding area is controlled by drainage ditches along the streets and a drainage ditch located along the eastern property boundary within a narrow strip of land owned by the Burke County Development Authority. In general, the surface drainage of the site is to the north following the path of a north-trending drainage swale that formerly crossed the site. The nearest perennial stream is an unnamed tributary of Brier Creek, located approximately 2.5 miles north of Mills Road.

The site's upgradient watershed is interpreted to extend approximately 600 feet to the south, approximately 1,500 feet to the east and approximately 1,000 feet to the west.

3.2.2 Aquifer

Based on our observations of soils obtained from the logged boreholes, subsurface materials beneath the site can be characterized as predominantly clayey fine to medium grained sand interlayered with occasional lenses of sand, sandy clay, or clay at various depths.

Based on the measured groundwater elevations, the interpreted groundwater flow direction within the shallow zone of the aquifer across the subject site is in a generally northerly direction (see Figure 6).

During previous assessments, monitoring well MW-2 was screened at a greater depth and exhibited a noticeably lower water table elevation than other shallow wells in the area. In its November 2009 NOD letter, EPD requested additional investigation into the possibility of a separate intermediate depth aquifer. In order to further assess this possibility, Amec Foster Wheeler installed three additional piezometers (PZ-4 through PZ-6). PZ-4 and PZ-5 were located in the areas north and south of MW-2, respectively while PZ-6 was located immediately west of the building. The borings were advanced to depths similar to that of MW-2 and the piezometers were screened over similar intervals. Soils encountered in the piezometer borings were typical of those present throughout the site, consisting of fine to medium grained sandy clays and clayey sands. During the 4th VRP semi-annual period ending July 2014, three additional intermediate depth wells (MW-14, MW-17 and MW-18) were installed.

The elevations of the piezometers and wells installed in the 2001 assessments were surveyed by a Georgia registered land surveyor. Elevations of wells installed during subsequent investigations were surveyed by Wood personnel. Water levels in each well were measured during each sampling event. Measured groundwater elevations from the most recent event (June 2015) indicate a northeasterly groundwater flow direction in the intermediate depth zone (see Figure 7); whereas the flow direction of the upper zone in the area is in a northerly or northwesterly direction. These results indicate a separate flow regime may be present. As illustrated on cross-sections presented in Figures 4 and 5, shallow and intermediate depth wells in the area south of the building (MW-18 and PZ-2) did not indicate the presence of significant confining layers forming separate hydrogeologic units. In addition, analytical results from these two wells and from MW-2 and MW-17, which indicated the presence of similar suites of both VOCs and pesticides, indicates that there is significant communication between the two aquifer zones. In our opinion, the only difference between the two zones is the change in the flow direction with depth. There is no other significant difference noted and the shallow and intermediate zones do not represent distinct hydrogeologic units or aquifers.

Two deep Type III monitoring wells (MW-4 and MW-12) have been installed on site. These wells were terminated at depths of 64 and 66 feet below grade, respectively. Groundwater elevations measured in these two wells were significantly lower than in other wells on site, possibly indicating a separate or minimally connected hydrologic unit. In each boring a clay-rich layer was identified at depth which appears to act as an aquitard, limiting the migration of water from the overlying zones. The detection of very low levels of VOCs in MW-4 in the 2002 assessment and very low levels of VOCs and pesticides in MW-12 indicates that there is some communication between the upper and lower aquifer zones.

3.2.3 Hydraulic Conductivity

In-situ hydraulic conductivity tests were performed in monitoring wells MW-1, MW-2 and MW-3 in February 2002 and in MW-4 and MW-12 in January 2010. The tests were performed using the slug-test procedures described by Bouwer and Rice (1976, 1989). In the slug-test method, hydraulic conductivity is estimated from the rate of rise of fall of the groundwater level in a well after a solid of know volume, or "slug" is inserted or removed from well. The static water levels in each monitoring well were measured and recorded prior to the tests. For the "slug-in" test, the water level was raised by inserting the slug and the change in water level was measured. Water level measurements were taken over regular intervals the next 15 minutes to 60 minutes to monitor recovery of the water table. For the "slug-out" test, the water level was lowered by removing the slug and monitoring the water level recovery as described above.

Subsequent to the completion of the test, the data were analyzed using the Bouwer and Rice (1976, 1989) method. The results of the "slug-in" and "slug-out" tests were averaged to derive in-situ hydraulic conductivity values for the shallow and deep aquifers. The results of the slug tests are summarized below in Table 3-1.

Table 3-1 – Summary of Slug Test Results

Well No.	Depth	Slug-In	Slug-Out	Depth
MW-1	Shallow	$4.55x10^{-3}$	$4.4x10^{-3}$	Shallow
MW-2	Intermediate	$1.79x10^{-4}$	$1.08x10^{-4}$	Intermediate
MW-3	Shallow	$1.75x10^{-4}$	$1.97x10^{-4}$	Shallow
MW-4	Deep	$4.21x10^{-4}$	$4.32x10^{-4}$	Deep
MW-12	Deep	$4.47x10^{-4}$	$4.55x10^{-4}$	Deep

The average hydraulic conductivity of the shallow wells, MW-1 and MW-3, based on the slug-test data, was 2.3×10^{-3} cm/sec. We note the hydraulic conductivity calculated for MW-1 is significantly higher than that measured in the any of the other wells located on site, which were all relatively consistent with one another. MW-1 is located outside of the flow path from the contaminant source area to potential downgradient receptors, which coincides with the path of a former swale through the site.

The hydraulic conductivity measured in the intermediate depth well, MW-2 is $1.4x10^{-4}$ cm/sec. The hydraulic conductivities of the deep wells, MW-4 and MW-12 were very similar to one another and averaged 4.4×10^{-4} cm/sec.

Based on the limited migration of groundwater impacts across the site since Legion's operations began in the 1970s, in our opinion, this hydraulic conductivity measured in MW-1 is not representative of actual site conditions in the impacted area and the site-wide average value of 1.13×10^{-3} cm/sec is a more representative value for hydraulic conductivity across the site. This value was utilized during the modeling of the shallow groundwater zone, as discussed in Section 10.0 and in Appendix D.

3.2.4 Groundwater Flow

A summary of the well depths, screened intervals, depth to groundwater and water table elevations is presented in Table 8. A potentiometric surface map of the shallow aquifer zone was prepared based on the groundwater elevation data measured in June 2015 (see Figure 6). Based on these data, shallow groundwater flow is generally to the north. To calculate the average horizontal groundwater gradient, groundwater elevations measured in MW-13 in the southern portion of the site and MW-9 in the northern portion of the site were averaged over the last six groundwater monitoring events and divided by the distance between the two wells. The average gradient was measured to be 0.84%.

Effective porosity was assumed to be 20% (Applied Hydrology, C.W. Fetter, 1994). The formula used to calculate the groundwater flow rate is as follows (Applied Hydrology, C.W. Fetter, 1994):

$$\text{Velocity} = \frac{K\,i}{n_e}$$

where: K = hydraulic conductivity (feet per day) = 3.2 ft/day
i = hydraulic gradient (feet per foot) = 0.0084 ft/ft
n_e = effective porosity (unitless) = 0.20

Utilizing the average hydraulic conductivity, an estimated groundwater velocity ranging of approximately 0.13 feet/day or approximately 49 feet per year was calculated for the site. Note that organic constituents do not migrate at the same rate as groundwater and also attenuate as they migrate. The calculated flow rate does appear to be consistent with contaminant distribution observed across the site as illustrated in Appendix D.

Groundwater generally flows in directions subparallel to the ground surface slopes and under the influence of gravity toward points of discharge such as creeks, swamps, drainage swales or pumped groundwater wells. The depth to groundwater on site has ranged from approximately three to fifteen feet.

3.2.5 Vertical Hydraulic Gradient

The vertical hydraulic gradient at the site was calculated by comparing groundwater elevations within the deep well MW-4 and the adjacent shallow well, MW-13, as measured on June 2, 2015. The difference in groundwater elevation was 23.62 feet. Dividing the difference in groundwater elevation by the difference between the well screen elevations yields a vertical hydraulic gradient of 0.44 ft/ft with the deeper well exhibiting the lower groundwater elevation, indicating a downward hydraulic gradient.

4.0 DESCRIPTION OF THE RELEASE SOURCE

Results of soil and groundwater assessment activities indicate a release of regulated substances in soil and groundwater has occurred at the subject site. This section of the CSR provides a description of the source of the release.

4.1 SOURCE INVESTIGATION

The property was originally listed on the HSI for a known release of vinyl chloride in groundwater and a suspected release in soil exceeding a reportable quantity based on 1994 Phase II findings reported by CSRA.

4.1.1 VOC Source

Amec Foster Wheeler was subsequently contracted by Legion in 2000 and tested the groundwater for trichloroethene (TCE) which had not previously been included in the testing program. TCE was detected in MW-1 at a concentration of 350 µg/l. The source of TCE in MW-1 was eventually related to the manufacture of commercial kitchen equipment, a process that involved the use of chlorinated solvent degreasers until the early 1990s. Previous environmental assessment reports also noted the possible presence of tanks or buried materials in the area immediately south of the building. Based on the findings of solvent constituents in the groundwater south of the building, this area was investigated as a potential source area.

In May 2001, Amec Foster Wheeler contracted RED-R Services, Inc. to perform a ground-penetrating radar (GPR) survey to explore for possible buried source(s) of the detected TCE. The GPR survey indicated one geophysical anomaly up to 10 feet deep located about 150 feet from the southeast area of the main building. In June 2001, Amec Foster Wheeler advanced four Geoprobe borings (GP-1 though GP-4) in the vicinity of the anomaly to investigate whether it was the source of the TCE detected in MW-1, and additional Geoprobe borings (GP-5 through GP-10) to evaluate the extent of TCE in groundwater around monitoring well MW-1. The results of the groundwater analyses from the Geoprobe borings indicated TCE was present in the shallow groundwater in two borings (GP-5 and GP-10), located east and west of MW-1. TCE was not detected in soil or groundwater in the area of the geophysical anomaly.

In August 2001, monitoring well MW-1 was resampled and TCE was detected in groundwater at a concentration of 180 µg/L. Additional Geoprobe borings (GP-11 through GP-19) were installed to further delineate the extent of TCE in groundwater and to assist in identification of a source. TCE was detected in shallow groundwater samples from all nine of the samples at concentrations ranging from 6.7 µg/L in GP-15 to 7,200 µg/L in GP-14 (converted to PZ-2). PZ-2 was resampled on September 25, 2000 and found to contain TCE at a concentration of 7,800 µg/L.

As the highest levels of TCE in groundwater were detected in an area located immediately south of the main building, five shallow (0.5 – 1.0 foot) soil samples (SS-8 through SS-12) were collected in this area in November 2001 to assist in identification of a source area. The soil samples were analyzed for TCE and its degradation products. TCE was detected in all of the soil samples at concentrations ranging from 8.9 µg/kg in SS-9 to 190,000 µg/kg in SS-12. The only degradation product detected in those soil samples was cis-1,2-dichloroethene which was detected at concentrations up to 18,000 µg/kg (SS-12).

The most likely source of TCE release at the property was thought to be small undocumented releases of solvents in connection with general solvent handling practices and, in particular, practices associated with the former non-contained drum storage area reportedly utilized by the former owners (LUC). This conclusion was based on a number of factors, including:

- The location of the highest concentrations of TCE in groundwater and soil were in the immediate vicinity of the former solvent drum storage area used by the prior owner to store waste. Drums in this area were reportedly stored directly on the ground in an unpaved area with no containment or other procedures to prevent releases.
- The distance of migration of the TCE (600 feet downgradient at a calculated groundwater velocity of 29 feet per year) and the degree of biodegradation of the TCE (to cis-1,2-dichloroethene and vinyl chloride) were consistent with releases that occurred at least 20 years prior to the 2001/2002 assessment.
- Amec Foster Wheeler's systematic efforts to identify a subsurface source indicated no remaining subsurface objects acting as a source.

Use of TCE was terminated at the facility by Legion Industries in the early 1990s. Suspected sources of the release to soil and groundwater in the southern area of the property identified in the 2002 CSR were: past handling practices of spent solvents, the former storage of drums in this area by LUC and possibly the former ASTs reportedly maintained by Atlas Chemicals; however it is not known whether Atlas utilized TCE in its on-site processes. Small undocumented releases of spent solvents would account for the presence of the detected compounds in shallow soil in the southern portion of the site.

Additional soil assessment conducted by Amec Foster Wheeler in 2010 identified impacts around the former degreaser pit which had been installed in the early 1970s.

In response to EPD's NOD letters in 2009/2010, Amec Foster Wheeler conducted additional assessment in the area south of the building. As discussed in more detail in Section 4.3, a number of previous boring locations were resampled at greater depth and/or for a wider range of regulated constituents. The 2010 findings for VOCs were generally consistent with previous Amec Foster Wheeler data. TCE and its breakdown products cis-1,2-DCE and vinyl chloride, along with tetrachloroethene (PCE) were identified in several borings located immediately south of the building at generally low to moderate concentrations. The concentrations detected tended to be significantly lower than had previously been detected in very shallow samples collected in 2001. Results of additional testing conducted in the vicinity of the previously identified geophysical anomaly were consistent with previous findings of no VOC impacts to soil in this area.

4.1.2 Pesticide Source

The subject site had been used for approximately 15 years (late 1950s – 1971) for the manufacture of pesticides by Atlas Chemicals. Atlas reportedly stored quantities of these materials within and just outside the southern portion of the building (an area now within the building following the building expansion by LUC). Limited testing conducted by CSRA in 1994 did not identify pesticides in soil or groundwater. In response to EPD's NOD letters in 2009/2010, Amec Foster Wheeler conducted additional assessment within the southern end of the building and in the area immediately south of the building. As discussed in more detail in Section 4.3, four borings were installed inside the building and a number of previous boring locations were resampled at greater depth and/or for a wider range of regulated constituents. The 2010 findings identified a number of pesticides in soil and groundwater in the area immediately south of the building and inside the building in the vicinity of the former degreasing pit. Pesticide concentrations in soil were highest in the area of the degreasing pit, which had been the outside pesticide storage area before building expansion by LUC. Moderate pesticide concentrations were detected immediately south of the building. Testing conducted in the vicinity of the previously identified geophysical anomaly identified only very limited pesticide impacts in soil.

4.2 REGULATED SUBSTANCES RELEASED FROM THE SOURCE

The substances identified in soil at the site include: 1,4-dichlorobenzene, chlorobenzene, cis-1,2-dichloroethene, ethylbenzene, isopropylbenzene, tetrachloroethene, toluene, trichloroethene, vinyl chloride, xylenes, barium, chromium, lead, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, alpha-BHC, alpha chlordane, beta-BHC, delta-BHC, dieldrin, endrin, endrin ketone, gamma-BHC, gamma-chlordane, heptachlor, heptachlor epoxide and toxaphene.

The substances identified in groundwater at the site include: 1,1-dichloroethane, 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, benzene, chlorobenzene, cis-1,2-dichloroethene, ethylbenzene, isopropylbenzene, methylene chloride, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride, xylenes, 4,4'-DDD, 4,4'-DDT, alpha-BHC, alpha chlordane, beta-BHC, delta-BHC, dieldrin, endrin, endrin ketone, gamma-BHC, gamma-chlordane and toxaphene.

4.3 CHRONOLOGY OF THE RELEASES

Other than the assumption that the pesticide and VOC releases occurred in association with different businesses, specific information regarding the chronology of the releases is not available. As discussed in Section 1.0, the former Atlas Chemical facility operated as a pesticide manufacturer on site from the late 1950s until the early 1970s. It is likely that the releases of pesticides occurred during this time period. It is not known whether Atlas utilized chlorinated solvents during its operation at the site. LUC began operation on site in 1971 and utilized chlorinated solvents in its manufacturing process. Legion acquired the site in 1988 and operated in a capacity very similar to LUC until the early 1990s when it discontinued the use of chlorinated solvents, substituting a detergent rinse process. Following the change in the degreasing process, the degreasing equipment was removed from the site and the concrete-lined degreaser pit that formerly housed the equipment was filled in and covered with a concrete slab in the early 1990s.

5.0 DELINEATION OF SOIL CONTAMINATION

Soil samples were collected for laboratory analysis during several phases of investigation conducted between 2001 and 2010. These assessments included soil sampling from 19 groundwater monitoring wells, six piezometers, 42 soil borings. Refer to Figures 8 and 9 for a plan of the sampling locations and Tables 1-5 for a summary of the soil laboratory data.

5.1 ANALYTICAL PARAMETERS SELECTED

Soil samples collected during previous sampling activities conducted between 2001 and 2010 by Amec Foster Wheeler were analyzed for a limited number of volatile organic compounds (VOCs, SW-846 Test Method 8260B) and metals (SW-846 Test Method 6010).

Due to the former use of the site by Atlas Chemicals, a manufacturer of pesticides, at EPD's request, during the assessments conducted at the site by Amec Foster Wheeler in 2010, soil samples were tested for the presence of the full suite of VOCs (SW-846 Test Method 8260B), Pesticides (SW-846 Test Method 8081B), Herbicides (SW-846 Test Method 8151A) and RCRA metals (SW-846 Test Method 6010C and 7471B). Herbicides were removed from the suite of analytes during post-2010 assessments as no herbicides had been detected in soil or groundwater.

5.2 SAMPLING AND ANALYSIS PROCEDURES

5.2.1 Sampling Equipment and Collection Techniques

Soil samples from direct-push (Geoprobe) borings were collected using a four-foot long stainless steel sampling tube which is lined with a polyethylene sleeve and driven into the ground to the desired sampling depth. Soil samples collected from auger borings during groundwater monitoring well installation were collected using a split-spoon sampler and the standard penetration test method. Other samples were collected during the 2001 assessments using a stainless steel hand auger. Several of these boring locations were resampled using a Geoprobe.

5.2.2 Soil Sample Handling and Preservation Techniques

The collected soil samples were removed from the sampling device and placed in clean sample containers supplied by the laboratory. Soil samples for laboratory testing of VOCs were collected in accordance with SW-846 Method 5035 (the syringe method) and preserved in the field with sodium bisulfate and methanol. Samples were collected for metals, pesticide and herbicide analysis in unpreserved containers. Clean nitrile gloves were worn during all sampling activities and the gloves were then discarded. Following sample collection, the samples were maintained on ice in a cooler until they were transferred to the laboratory.

5.2.3 Equipment Decontamination Procedures

Soil sampling tools and equipment, including drill rigs were decontaminated prior to beginning work on the site. During drilling operations, only clean drilling tools were used in each borehole. The split spoons and direct-push sampling tubes were decontaminated between samples and clean polyethylene liners were used for each Geoprobe sample. Clean nitrile gloves were used during the collection of all soil samples. Gloves were changed prior to the collection of each soil sample.

5.2.4 Chain-of-Custody Procedures

All collected samples were logged on a chain-of-custody form that was signed by the Amec Foster Wheeler field representative and the laboratory representative upon release of the samples to the laboratory. Chain-of-custody documentation are provided with the laboratory reports in Appendix A.

5.2.5 Laboratory Analytical Procedures

5.2.5.1 Standard Analytical Methods

Following delivery to the laboratory, selected soil samples collected by Amec Foster Wheeler were analyzed for VOCs using SW-846 Test Method 8260B, Pesticides using SW-846 Test Method 8081, Herbicides using SW-846 Test Method 8151 and RCRA metals using SW-846 Test Method 6010C and 7471B.

5.2.5.2 Quality Control Procedures

Quality control samples were prepared and analyzed during the assessment. Duplicate soil and groundwater samples were tested. Trip blanks and field blanks were included with the samples submitted to the laboratory. The trip blanks were provided by the laboratory and consisted of 40-ml vials filled with water. Results of the trip blank analyses are included in the laboratory reports. Results of Surrogate analysis are also included in the laboratory reports. Backup QA/QC data for these samples were included in laboratory reports for each assessment phase.

The soil samples collected by Amec Foster Wheeler were submitted to Analytical Environmental Services, Inc. (AES) for laboratory analysis. AES maintains a National Environmental Laboratory Accreditation Conference (NELAC) certification for the analysis of volatile organics, pesticides, herbicides and metals.

5.3 SUMMARY OF PERTINENT SOIL TESTING DATA

A number of assessments have been completed on site by Amec Foster Wheeler and its predecessors since 2001. The laboratory data are summarized on Tables 1 through 5 and on Figures 8 and 9.

All downhole equipment, tools and materials were decontaminated prior to use and between each boring to minimize the potential for introduced and/or cross contamination. Decontamination of equipment and appropriate sampling protocols were observed throughout the drilling operation to preclude the introduction of contaminants. The field work was supervised by environmental professionals and the work was conducted under the provisions of our Health and Safety Plan.

Soils beneath the building slab consisted primarily of a layer of fill soil approximately two to four feet thick overlying virgin soils which consisted of interbedded sandy clays and clayey sands. Similar virgin soils were encountered outside the building but were overlain by a thinner layer of fill material (see attached boring logs in Appendix B). The soil borings were terminated near the water table.

5.3.1 2001/2002 Assessments

In June 2001, Amec Foster Wheeler advanced four Geoprobe borings (GP-1 though GP-4) in the vicinity of the identified geophysical anomaly to investigate whether it was the source of the TCE detected in MW-1. TCE was not detected in soil samples collected from these borings.

In accordance with EPD's request for additional soil sampling to assess the lateral extent of VOCs reported by CSRA in May 1994, seven shallow soil samples (SS-1 through SS-7) were collected in July 2001 from a depth of three feet each in seven hand auger borings located along the eastern site boundary, in the area of the former septic drain field and west of the main building. The borings were positioned to delineate the 1994 CSRA soil borings B-5, B-6 and B-7. VOCs were not detected in these seven borings.

As the highest levels of TCE in groundwater had been detected in an area located immediately south of the main building, five shallow (0.5 – 1.0 foot) soil samples (SS-8 through SS-12) were collected in this area in November 2001 to assist in identification of a source area. The soil samples were analyzed for TCE and its degradation products. TCE was detected in all of the soil samples at concentrations ranging from 8.9 µg/kg in SS-9 to 190,000 µg/kg in SS-12. The only degradation product detected in those soil samples was cis-1,2-dichloroethene which was detected at concentrations up to 18,000 µg/kg (SS-12).

5.3.2 2010 Assessment

Following the submission of the CSR in 2002 and EPD's subsequent review and comments, additional soil testing was requested in areas previously assessed. Much of the additional testing involved sampling at previous boring locations, either testing deeper samples and/or testing for a wider range of constituents. On January 26-27, 2010, Amec Foster Wheeler installed a total of 16 direct-push borings on site for the purpose of collecting additional soil samples at previous boring locations. Note that the same boring designation was used for the resampling of previous borings.

Soil samples were collected from former boring locations GP-1 through GP-4 (around the GPR anomaly) at a depth of three feet and tested for VOCs, pesticides, herbicides and RCRA metals. This sampling depth was selected for GP-1 through GP-4 because it corresponded to the previous sampling depth and the purpose was simply to expand the testing scope. The results obtained very low concentrations of pesticides in GP-1 and GP-4. All concentrations detected were below applicable risk reduction standards (RRS). Neither VOCs nor herbicides were detected in these four borings. Low concentrations of the metals barium, chromium and lead were also detected in each boring at concentrations consistent with Coastal Plain soils and two on-site background samples.

At EPD's request, Amec Foster Wheeler installed a series of soil borings (DP-1 through DP-4) around the former degreaser pit location inside the facility. Each boring was sampled at a depth of approximately three feet and tested for VOCs, pesticides, herbicides and RCRA metals. The results from DP-1 through DP-4 identified concentrations of numerous VOCs that exceeded the least stringent RRS. These included: TCE, cis-1,2-DCE, vinyl chloride, ethylbenzene and xylenes. Elevated concentrations of both toluene and isopropylbenzene were also detected but at concentrations below applicable RRS.

A number of pesticides were also detected in excess of applicable RRS in this area. These include: 4,4'-DDT, aldrin, alpha-BHC, beta-BHC, delta-BHC, gamma-BHC, dieldrin, heptachlor, heptachlor epoxide and toxaphene.

No herbicides were detected in the DP borings and the metals concentrations detected were again consistent with naturally occurring background conditions.

5.3.3 2013 VRP Assessment

Following the site's acceptance into the VRP, additional assessment activities were conducted which included soil sampling and testing inside the building and in the area immediately south of the building. The purpose of this additional sampling was to delineate the lateral extent of VOCs and pesticides above risk reduction standards in each of these areas as requested by EPD in their 2011 CSR comment letter.

On January 3 and 4, 2013, Amec Foster Wheeler oversaw the installation of a series of soil test borings using a direct-push sampling device. Degreaser pit borings DP-9 through DP-19 were located inside the building, in the areas generally north, west and southwest of the former degreaser pit. These borings supplemented previous DP borings installed in 2010. These borings were intended to complete the delineation of the lateral extent of VOCs and pesticides which had previously been detected in the degreaser pit area at concentrations that exceeded non-residential RRS. Partial delineation had previously been achieved along the east wall of the building and immediately south of the former pit.

Four interior delineation borings (GP-9 through GP-12) were installed in the areas surrounding the previous borings that exhibited VOC and pesticide RRS exceedences (DP-1, DP-2, DP-5 and DP-8) at a distance of approximately 10 to 12 feet from the impacted borings. Additional borings (GP-13 through GP-19) were then installed a distance of approximately 15 feet farther out from the initial delineation borings to be tested in the event that the samples closer to the pit exhibited exceedences of applicable RRS. Of these seven borings, only two (GP-15 and GP-17) required testing to complete the interior delineation. In response to a comment by EPD regarding the spacing of confirmation samples on the eastern side of the interior soil excavation area, in August 2018, Wood installed an additional soil boring (DP-9) in the area between borings DP-6 and DP-7 to confirm adequate removal of impacted soils in this area. As illustrated on Figure 12, neither VOCs nor pesticides were detected in the sample collected from boring DP-9.

Borings SS-13 through SS-17 were installed in the area south of the building to delineate the lateral extent of VOC soil impacts previously detected in this area in excess of non-residential RRS. Borings SS-13 through SS-17 were installed in the area surrounding previous borings SS-8 and SS-12, in which VOC exceedances had previously been detected above. A single series of delineation borings was installed in this area as previous testing had largely determined the maximum extent of impacts. The purpose of the SS borings was to attempt to narrow the scope of required soil removal in this portion of the site.

The GP borings (located inside the building) were extended to a depth of 10 feet below the floor slab. Groundwater was encountered in these borings at a depth of approximately 4 to 4.5 feet. The SS borings (located outside the building) were extended to depth of five feet below ground surface. Groundwater was encountered at a slightly shallower depth outside the building because the building slab is elevated slightly above the surrounding grade.

One soil sample collected from above the water table from each of the four borings located closest to the former degreaser pit (GP-9 through GP-12) was selected for laboratory testing. The soil samples were analyzed for VOCs (EPA Method 8260B) and pesticides (EPA Method 8081A). The results of the soil testing are summarized on the attached Table 3 and on Figure 9, which also includes previous soil testing data in the immediate vicinity of the delineation borings.

SS-1 through SS-12 were sampled at depths of approximately three feet and tested for VOCs, pesticides, herbicides and RCRA metals. In the case of SS-8 through SS-12, the purpose was to both expand the testing scope and to obtain deeper samples for vertical delineation as the previous samples from these borings were collected from a depth of 0.5 – 1 foot. Note that the sampling depth was limited to approximately three feet below ground surface as the groundwater depth on site is very shallow (less than four feet). None of the SS borings exhibited detectable concentrations of herbicides and the metals concentrations detected were consistent with naturally occurring background conditions.

Results of the VOC testing from the SS borings confirmed the presence of VOCs in the area south of the building. Constituents detected included TCE, tetrachloroethene (PCE), cis-1,2-DCE, vinyl chloride, 1,4-dichlorobenzene and chlorobenzene. The VOC concentrations detected were below applicable risk reduction standards with the exception of TCE in boring SS-8-3’ (1,900 ug/kg). Borings SS-1 through SS-7, located away from the area immediately south of the building did not exhibit VOCs.

Several pesticides were identified in borings SS-8, SS-10, SS-11 and SS-12 which had not previously been detected on site. The pesticide concentrations detected were generally low to moderate and in all cases were below at least one applicable RRS as discussed in Section 9.1. and Table 9-1. Borings SS-4 through SS-7 were located in the northern and western portions of the site and did not exhibit VOCs or pesticides.

5.4 BACKGROUND SOIL CONCENTRATIONS

Because the suspected VOC, and pesticide constituents in soil are not characteristic of naturally occurring conditions in Georgia soils, naturally occurring background conditions on the affected property were assumed to be below laboratory detection limits for these constituents. The metals that had previously been detected on site, barium, chromium and lead are naturally occurring. In order to evaluate local background conditions, two shallow background soil samples (Background-1 and Background-2) were collected during Amec Foster Wheeler’s 2010 assessment. These samples were collected from the grassy field in the northern portion of the site, well away from plant activities which might be expected to impact shallow soil metals concentrations. The results of the analyses showed low levels of barium, chromium and lead in one sample and barium and chromium in the other. The concentrations were typical of those exhibited by Georgia soils and are consistent with metals concentrations detected elsewhere on the subject site.

6.0 DELINEATION OF GROUNDWATER CONTAMINATION

The wells installed on site were intended to evaluate the horizontal and vertical extent of contamination.

6.1 ANALYTICAL PARAMETERS SELECTED

Groundwater samples were initially analyzed only for a very limited number of VOCs. During Amec Foster Wheeler's 2009/2010 assessments, groundwater samples were tested for VOCs, pesticides and herbicides. Due to the lack of detection of herbicides in groundwater and the lack of elevated metals concentrations in soil, groundwater samples collected during the VRP monitoring events were limited to VOCs and pesticides.

6.2 MONITORING WELL LOCATIONS AND CONSTRUCTION METHODS

Groundwater assessments were conducted at the site by Amec Foster Wheeler between June 2001 and March 2002 for preparation of the original CSR. Additional groundwater assessment was conducted by Amec Foster Wheeler in December 2009 and January 2010 in response to EPD's comments on the CSR. Much of the initial groundwater sampling was conducted using direct-push borings. Some of these borings were sampled directly while others, due to the slow recharge of the site's soils were sampled through temporary one-inch diameter PVC casing. The purpose of the direct-push sampling was to obtain preliminary groundwater data which would allow for better placement of permanent monitoring wells which would be utilized to obtain data for preparation of the CSR. A total of 36 Geoprobe borings were installed for the sampling of groundwater. Two of these were unable to be sampled. The remaining 34 borings were tested for a limited spectrum of VOCs. Based on the results obtained, Amec Foster Wheeler installed eight additional wells (MW-4 through MW-11) on site and in the immediately surrounding area, including two in the Burke County easement east of the site and two in the Davis Road right-of-way west of the site. Two additional wells (MW-12 and MW-13) were installed by Amec Foster Wheeler in January 2010 to address EPD comments. Six more wells (MW-14 through MW-19) were installed in June 2014 under the VRP to provide additional source area data or to fill perceived data gaps as requested by EPD. One additional well (MW-20) was installed by Wood near the northern site boundary in August 2018 in response to an EPD comment after submittal of the 2016 CSR. The locations of these groundwater monitoring wells are shown on Figure 10.

Note that Legion Industries has attempted to gain access to Helena Chemical Company property west of the site and the Synergy Group, LLC property east of the site in order to conduct additional groundwater sampling in these areas. In each case, permission to access the off-site properties was denied. Documentation of these contacts is attached in Appendix H.

The shallow wells on site were installed as Type II wells as described below. The two deep wells on site (MW-4 and MW-12) were installed as deep Type III wells to reduce the potential for shallow groundwater contamination to influence the testing results from the deeper aquifer. Well construction consisted of six-inch outer casings which were grouted in place at depths of 47.5 and 52 feet, respectively. After setting overnight, the casing interior was reamed and the boring extended to the final depth. The wells were completed with two-inch diameter well casings installed through the outer casing and finished as described below.

6.2.1 Type of Well Casing Material

The monitoring wells installed on site consist of Schedule 40 PVC well casing and screen with threaded joints. Monitoring wells MW-1 through MW-4, and MW-12 through MW-20 consist of two-inch diameter PVC pipe. Monitoring wells MW-5 through MW-11 were constructed with one-inch diameter PVC.

6.2.2 Description of Well Intake Design

6.2.2.1 Screen Slot Size and Length

Each of the drilled wells on site was constructed with 0.01-inch factory slotted PVC well screen. Monitoring wells MW-1 through MW-3 and MW-14 through MW-19 utilized a 5-foot screen length. Monitoring wells MW-4 through MW-13 and MW-20 utilized a 10-foot screen length.

6.2.2.2 Filter Pack Materials and Length

Washed 20/30 sieve size quartz sand was used to create the filter pack around the well screen in each of the wells. The sand extended to a height of approximately one to two feet above the top of the screen (see boring logs in Appendix B).

6.2.2.3 Method of Filter Pack Emplacement

The sand pack in the augered wells was placed around the screen by pouring the sand through the hollow-stem augers while simultaneously raising the augers to prevent bridging of the sand within the augers. Sand was placed around the Geoprobe well screen by pouring the sand around the well screen from the surface. The filter pack was then sealed from above with a one to two-foot layer of hydrated bentonite clay.

6.2.2.4 Surface Seal

The wells were grouted to within approximately six inches of the ground surface with Portland cement grout (Type II well construction). These wells were then topped with lockable steel covers, either flush-mount or stick-up.

6.2.2.5 Well Development Methods and Procedures

During the 2001 assessments, monitoring wells MW-1 through MW-3 and MW-5 through MW-11 were developed at least 24 hours following installation using a peristaltic pump and polyethylene tubing. MW-4 was developed using a decontaminated bailer. Monitoring well MW-12 was developed using a submersible pump and wells MW-13 through MW-20 were developed using a peristaltic pump and Teflon-lined tubing at least 24 hours after installation. The parameters temperature, pH, specific conductivity and turbidity were periodically monitored during well development. Development continued until these parameters stabilized pursuant to EPA methodology and a minimum of five well volumes of water were removed during well development.

6.3 SAMPLING AND ANALYSIS PROCEDURES

6.3.1 Groundwater Elevation

During each groundwater monitoring event, groundwater levels were measured in each well from the top of the well or piezometer casing. As discussed in Section 5.4, a survey was conducted to measure the elevation of the top of each well casing for preparation of potentiometric surface maps (see Figures 6 and 7).

6.3.2 Well Evacuation Procedures

Well purging was accomplished using a peristaltic pump and Teflon tubing for all wells except MW-4 and MW-12 which utilized submersible pumps. During purging, the parameters temperature, pH, specific conductivity and turbidity were monitored and submitted in the previous reports. Purging continued until these parameters stabilized pursuant to EPA methodology and a minimum of three well volumes were removed or the well went dry.

6.3.3 Groundwater Sampling, Handling and Preservation

Immediately following purging, groundwater samples were collected using a peristaltic pump and low-flow sampling procedures. Clean latex gloves were worn during all development and sampling activities and were changed between each well location.

Samples were collected in clean sample containers, supplied by the laboratory, which contained the appropriate preservative. 40ml glass vials were used for the collection of groundwater samples for VOC analysis. VOC samples obtained by Amec Foster Wheeler were collected using a peristaltic pump by allowing the tubing to fill and then sealing the end near the pump, removing the tubing from the well and allowing it to gravity drain into the VOC vials to minimize turbulence and reduce the potential for volatilization (the straw method). The vials were completely filled, with no bubbles or headspace. Samples to be tested for pesticides and herbicides were collected using a low flow peristaltic pump with the discharge line discharging directly into the sample container. Following sample collection, the bottles were stored on ice in a cooler until they were transferred to the laboratory. The samples were maintained under strict chain-of-custody control from the time they were collected until they were relinquished to the laboratory.

6.3.4 Decontamination Procedures

Decontamination procedures consisted of the use of clean, unused tubing at each sampling location. Nitrile gloves were also worn and changed between each sampling location. Tubing was disposed of after each use. No equipment was used to sample more than one well.

6.3.5 Laboratory Analytical Techniques

6.3.5.1 Analytical Procedures

The samples collected during the 2001 assessments were submitted to Severn Trent Laboratories in Savannah, Georgia and tested for the presence of a limited range of VOC constituents using SW-846 Test Method 8260B.

Groundwater samples collected by Amec Foster Wheeler in 2009/2010 were submitted to Analytical Environmental Services, Inc. in Atlanta, Georgia and tested for the presence of the full suite of VOCs, plus 1,4-dioxane, pesticides (SW-846 Test Method 8081) and herbicides (SW-846 Test Method 8151).

Groundwater samples collected by Amec Foster Wheeler in 2013-2018 VRP sampling events were submitted to either Analytical Environmental Services, Inc. or Pace Analytical Services, Inc. and tested for the presence of VOCs and pesticides.

6.3.5.2 Quality Control Samples

The groundwater samples were maintained under chain-of-custody control and submitted to the analytical laboratory for testing. Duplicate samples and field blanks were tested. Trip blanks prepared by the laboratory were also submitted for testing. QA/QC was conducted in accordance with the laboratory analysis selected. Backup QA/QC data for these samples was included in the laboratory reports.

6.3.5.3 Chain-of-Custody Procedures

Samples collected during the assessment were delivered to the analytical laboratory under strict chain-of-custody protocol. From the time of collection until they were released to the laboratory, the samples were stored in ice-filled coolers. Chain-of-Custody records documenting the transfer of the samples to the laboratory were maintained and are included in the laboratory reports in Appendix A.

6.4 BACKGROUND GROUNDWATER QUALITY

Because the VOCs, pesticides and herbicides in question are not typical of naturally occurring substances in the Coastal Plain, naturally occurring background conditions for these constituents at the subject property were assumed to be below laboratory detection limits.

6.5 SUMMARY OF GROUNDWATER TESTING RESULTS

The groundwater testing results are summarized in Table 7 and on Figure 10.

6.5.1 Pre-VRP Sampling and Testing

The first groundwater assessment on site was conducted by CSRA in 1994 as part of an assessment related to a refinancing transaction. Groundwater samples were obtained from open boreholes and were of questionable quality. In order to confirm the 1994 findings, three monitoring wells (MW-1 through MW-3) were installed on site by Amec Foster Wheeler in 2000 and sampled for a very limited suite of VOCs and metals that CSRA had reportedly identified in groundwater. Barium was the only regulated constituent identified and it was considered to be representative of background conditions.

On April 25, 2001, Amec Foster Wheeler purged and resampled monitoring wells MW-1 and MW-3. TCE was detected in groundwater from MW-1 at a concentration of 350 µg/L. TCE was not detected in the groundwater sample from MW-3.

Between June 2001 and March 2002, in response to EPD's requirement that a CSR be submitted for the site, Amec Foster Wheeler conducted extensive sampling of groundwater in preparation for submittal of the CSR. These activities included additional confirmation sampling of the three existing monitoring wells (MW-1 through MW-3), the advancement of 36 Geoprobe borings and the installation, development and sampling of eight additional groundwater monitoring wells (MW-4 through MW-11).

The assessments were executed in several phases and the Geoprobe borings were advanced in a step-out fashion. If target analytes were encountered in groundwater, additional borings were advanced at greater distance from the point of detection. This approach was used to develop the placement of the groundwater monitoring wells necessary for the preparation of the 2002 CSR.

Because of the slow recharge of the site's clayey soils, one-inch PVC casing, sanded in place, was placed in many of the Geoprobe borings and the casings were purged prior to sampling. Three Geoprobe borings GP-14, GP-17 and GP-18) were converted to piezometers (PZ-2, PZ-3 and PZ-1, respectively). These piezometers were purged and sampled several times with consistent results. PZ-1 and PZ-3 were subsequently destroyed while PZ-2 remains in place.

Twenty Geoprobe borings (GP-1 through GP-20) were advanced at the site between June and August 2001 in order to identify potential sources of TCE in MW-1 which was believed to be an upgradient well, and to delineate the horizontal and vertical extent of TCE in groundwater. Borings GP-14, GP-17 and GP-18 were converted to piezometers PZ-2, PZ-1 and PZ-3, respectively. Boring GP-20 was advanced to assess groundwater at greater depth (15 feet) in a suspected release area identified during a geophysical survey as discussed in Section 3.1.

In September 2001, Amec Foster Wheeler advanced four additional Geoprobe borings (GP-21 through GP-24) along the eastern site boundary to further delineate the extent of TCE in groundwater. TCE was detected in groundwater sampled from each of these borings at concentrations ranging from 28 to 830 µg/l. In addition, piezometer PZ-2 was resampled and the presence of TCE was confirmed at 7,800 µg/L.

In November 2001, groundwater was sampled from eight additional Geoprobe borings (GP-25 through GP-32), the three piezometers (PZ-1 through PZ-3) and monitoring well MW-2. Boring GP-32 was advanced to an approximate depth of 15 feet in the vicinity of PZ-2 to assess the vertical extent of the target constituents in groundwater. All samples were analyzed for TCE and its degradation products (1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride and chloroethane). TCE was detected in the groundwater sample from piezometer PZ-1 at a concentration of 130 µg/l, similar to that which had been detected in August 2001. TCE was not detected in PZ-3, whereas it had been detected at a low concentration (10 µg/l) in August 2000. TCE was detected in PZ-2 at a concentration of 3,800 µg/l, significantly lower than the previous sampling events (7,200 and 7,800 µg/l). TCE was detected in MW-2 at a concentration of 25 µg/l and in GP-32 (the deeper Geoprobe boring located in the source area) at a concentration of 16,000 µg/l. VOC compounds were not detected in the groundwater samples from GP-25, GP-26 or GP-27. The borings GP-28 and GP-29 were dry and could not be sampled.

The TCE degradation products cis-1,2-DCE and vinyl chloride were also detected in groundwater during the November 2001 sampling event. Vinyl chloride was detected at concentrations ranging from 630 to 6,800 µg/l while cis-1,2-DCE concentrations ranged from 480 to 16,000 µg/l.

Due to the presence of TCE degradation products in groundwater, in December 2001, MW-3, which had previously been tested only for TCE, was resampled and tested for both TCE and its degradation products. Neither TCE nor its degradation products were detected at that time.

Based on these findings, in January 2002, four additional Geoprobe borings were installed. Three of these borings (GP-33 through GP-35) were intended to delineate the lateral extent of groundwater impacts in the southwest, northwest and northeast areas of the site while the fourth (GP-36) was intended to delineate the vertical extent of groundwater impacts in the suspected source area. In addition, GP-29, which had previously been dry, contained water and was sampled.

TCE and its degradation products were not detected in either GP-29 or GP-34. TCE and cis-1,2-DCE were detected in groundwater from the remaining borings, including samples from depths of 25 and 35 feet in GP-36. Vinyl chloride was also detected in the two samples collected from GP-36.

Based on the data obtained from the Geoprobe groundwater testing program, several locations were selected for the installation of groundwater monitoring wells. In February 2002 eight additional groundwater monitoring wells (MW-4 through MW-11) were installed on site. MW-4 was installed as a deep Type III well, intended to vertically delineate groundwater impacts in the suspected source area. MW-5 through MW-11 were installed as Type II wells at depths ranging from 13 to 25 feet to assess shallow groundwater conditions.

TCE and its degradation products were not detected in MW-4, indicating that vertical delineation had been accomplished in the suspected source area. TCE was detected in shallow groundwater from monitoring wells MW-1, MW-2, MW-6, MW-7 and MW-10 at concentrations ranging from 11 to 140 µg/L. Cis-1,2-DCE was detected in shallow groundwater from monitoring wells MW-1, MW-2, MW-6 and MW-7 at concentrations ranging from 6 to 270 µg/L. Vinyl chloride was not detected in any of the monitoring well samples.

Based on the groundwater testing results obtained and the risk reduction standards calculated for the site and included in the 2002 CSR, Amec Foster Wheeler concluded that concentrations of TCE, cis-1,2-DCE and vinyl chloride were present in groundwater at concentrations in excess of the Type 4 RRS for groundwater. This conclusion was documented in the CSR submitted to EPD in March 2002.

Following their review of the 2002 CSR, EPD commented that existing wells should be sampled for the full suite of VOCs, pesticides and herbicides. EPD also requested a shallow well be paired with MW-4 in the suspected source area and a second deep well be installed downgradient of the suspected source area. In response to EPD's comments regarding the 2009 CSR, Amec Foster Wheeler conducted additional assessment of the groundwater conditions on site between November 2009 and January 2010. The assessment included the resampling of all existing wells on site (except for MW-7 and MW-8, which could not be located) and the installation of two additional wells (MW-12 and MW-13). At EPD's request the wells were sampled for a wider range of regulated constituents, including the full spectrum of VOCs, pesticides and herbicides. The results of the 2009/2010 groundwater sampling identified a variety of VOCs as well as pesticides in a number of wells located in the southern and central portion of the site.

The highest concentrations of VOCs were detected in the suspected source area immediately south of the building. These results were consistent with earlier findings at the site. However, in the past, only TCE, cis-1,2-DCE and vinyl chloride were detected. During the recent testing, these same three compounds exhibited the highest concentrations, notably TCE as high as 57,000 µg/L, cis-1,2-DCE as high as 8,000 µg/L and vinyl chloride as high as 3,300 µg/L. The TCE concentration in PZ-2 was significantly higher in 2009 than had been detected previously; however, concentrations of both cis-1,2-DCE and vinyl chloride were substantially lower in 2009 than in 2001.

Lower concentrations of other VOCs were also detected in groundwater in MW-13 and/or PZ-2 including: 1,1-dichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, benzene, isopropyl benzene, chlorobenzene, methylene chloride, tetrachloroethene, trans-1,2-dichloroethene and xylenes. Regulated constituents were not detected in the deep well, MW-4, located in this area.

A variety of pesticides were also detected in groundwater on site. Again, the most significant impacts, both in concentration and the number of constituents detected, were in MW-13 and PZ-2, in the suspected source area. The pesticides detected in groundwater on site include: 4,4'-DDD, 4,4'-DDT, alpha-BHC, alpha chlordane, beta-BHC, delta-BHC, dieldrin, endrin, endrin ketone, gamma-BHC, gamma chlordane and toxaphene.

All of the groundwater samples collected during the 2009/2010 assessment were tested for herbicides. None of the samples tested exhibited detectable concentrations of herbicides.

In addition to the groundwater sampling and testing that was performed in 2009/2010, at EPD's request, Amec Foster Wheeler collected two surface water samples from the drainage ditch located along the northern site boundary. The two samples, SW-1 and SW-2 were tested for the presence of VOCs, pesticides and herbicides. No regulated constituents were detected in the two surface water samples tested.

6.5.1 Post-VRP Sampling and Testing

Beginning in December 2013, following completion of the soil remediation, all wells which could be located were sampled under the VRP on a semi-annual basis. Four such sampling events have occurred, in December 2013, June 2014, December 2014 and June 2015. The results of the semi-annual monitoring are summarized below. In response to an EPD comment after submittal of the 2016 CSR, in August 2018, Wood installed another shallow well (MW-20) near the northern (downgradient) boundary of the site to confirm the delineation of regulated constituents in this area. Cumulative testing results are illustrated on Figure 10 and summarized in Table 7. Appendix F contains figures depicting isopleths of the constituents detected in in groundwater. Contaminant trend graphs are also included in Appendix F.

6.5.1.1 Volatile Organic Compounds

The laboratory results obtained during the VRP monitoring events indicated variability in VOC concentrations in groundwater throughout the site with some areas showing limited increases and others showing decreases. VOC concentrations increased in the area immediately south of the building, near the impacted soil area that was excavated in 2013 around PZ-2 but decreased significantly in nearby MW-13. The highest recent TCE concentration of 46,300 μg/L was detected in PZ-2. This concentration remains below the historic high of 57,000 detected in 2009 as do the concentrations of other chlorinated VOCs (CVOCs). VOC concentrations in MW-4 were very low and remained stable since testing began in 2001. MW-4 is a deep well located in the assumed source area. This well has not exhibited VOC concentrations in excess of their Type 1 RRS since it was first sampled in 2002, indicating vertical delineation has been achieved. VOC concentrations in MW-18 have decreased slightly during the three sampling events for this well, with TCE, cis-DCE, and vinyl chloride remaining above their respective RRS.

Non-chlorinated VOCs at the soil remediation area inside the building in MW-19 decreased substantially since the highest concentrations observed in this well in December 2014. The concentrations of CVOCs in MW-19 also decreased significantly compared to the previous monitoring event, although not nearly to the extent observed with the non-chlorinated VOCs. Concentrations of both ethylbenzene and xylenes were the highest on site during the December 2014 monitoring event. The most recent results were 16 µg/L for ethylbenzene and 67.1 µg/L for xylenes, well below their RRS.

In the western portion of the site, VOC concentrations in MW-1 have remained relatively stable since 2001, though recent concentrations are lower than the historic highs. VOC concentrations in MW-6 were lower than the previous event, with only one constituent (TCE) detected at the reporting limit of 1 µg/L. VOC concentrations in MW-7 have decreased significantly since 2002 and are currently below applicable RRS. VOC concentrations in MW-16 remained generally consistent with results from the previous sampling event and significantly lower than the June 2014 results. Low concentrations of cis-1,2-DCE and TCE have been detected in MW-9 at concentrations well below the applicable RRS.

In the southern portion of the site, VOCs have not been detected in MW-5 since sampling began in 2002. Only very low concentrations of cis-1,2-DCE and TCE have been detected in MW-14, well below the applicable RRS. MW-15, a shallow well located adjacent to MW-14, exhibited both cis-1,2-DCE and TCE with TCE exceeding its RRS.

In the eastern portion of the site, VOC concentrations were typically very low and were generally consistent with the December 2014 testing results with the exception of MW-17, which exhibited a significantly decreased concentration of TCE, while cis-1,2-DCE and vinyl chloride concentrations increased slightly in the most recent sampling event (June 2015). Most VOC concentrations in MW-2 remained consistent, with the exception that both cis-1,2-DCE and TCE concentrations increased to levels comparable to those observed in June 2014. TCE and toluene were detected just above their reporting limits in MW-3. VOCs have not been detected above RRS in MW-10 or MW-11 since monitoring began in these wells in 2001. VOCs were not detected in MW-20 located in the north-central portion of the site.

6.5.2 Pesticides

Pesticide concentrations in groundwater have been monitored since 2009. Since that time, the pesticide concentrations have remained relatively consistent, with some constituent concentrations slightly higher and others slightly lower than during the previous event. No large scale (order of magnitude) variations in pesticide concentrations were observed.

The highest pesticide concentrations in soil were found inside the building and these soils were removed in 2013. Several pesticides have been detected in MW-19 in the interior excavation area with only endrin ketone and dieldrin exceeded applicable RRS. In the area immediately south of the building, pesticide concentrations were generally low, with slight RRS exceedances for endrin ketone (MW-13, MW-18 and PZ-2) and beta BHC (MW-13). Pesticides have not been detected in MW-4 (the deep well) since monitoring began in 2002.

In the western portion of the site pesticides have not been detected in recent sampling events in MW-6 and MW-7. Endrin ketone has been detected just above its RRS in MW-1. Other pesticides detected in MW-1 include alpha-BHC, beta-BHC and dieldrin, all at concentrations below their respective RRS. Pesticides have also been detected in MW-16 and MW-9. Only beta-BHC and Delta BHC have exceeded RRS in these two wells.

Pesticides have been detected at low levels in MW-2, MW-11, MW-12 and MW-17 in the eastern portion of the site. RRS exceedances have been observed for alpha-BHC, delta-BHC and endrin ketone.

Pesticides have not been detected in MW-5, MW-14 or MW-15, located in the southern and southeastern portions of the site since monitoring began. Likewise, they have not been detected in MW-10 or MW-3 in the northeastern portion of the site or in MW-20 in the north-central portion of the site.

7.0 SOIL VAPOR SAMPLING AND TESTING

In response to EPD's April 2018 comment letter, on August 9, 2018, soil vapor sampling points were installed in five locations (SS-1 through SS-5) within the building. Each soil vapor sampling point was installed in a hole drilled to a depth slightly below the floor slab. The sampling tube was installed and backfilled with sand around the tube inlet, then sealed to the surface with hydrated bentonite. After equilibration overnight, the sampling points were helium tested to check for short circuiting and soil vapor samples collected using Summa canisters. The Summa canisters were submitted to H&P Mobile Geochemistry, Inc. and tested for the presence of VOCs (EPA Method TO-15). At that time, paired radon samples were also collected at two locations (SS-1 and SS-5) from beneath the slab and within the indoor air using Tedlar bags. The Tedlar bags were submitted to the University of Southern California for radon analysis via scintillation cell counting.

The soil vapor testing results are summarized on the attached Table 9 and on Figure 13. The vapor testing identified a variety of VOCs in each sample, including petroleum constituents, refrigerants, and chlorinated solvents. The VOCs detected on site include 1,1-dichloroethane, 1,1,1-trichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-butanone, 2-hexanone, 4-ethyltoluene, 4-methyl-2-pentanone, benzene, chloroform, ethylbenzene, tetrachloroethene, toluene, trichloroethene, cis-1,2-dichloroethene, vinyl chloride and xylenes. Sample SS-2 was the only sample collected that contained any VOCs at concentrations that exceeded applicable commercial sub-slab screening values. Trichloroethene was detected at 520 ug/m^3 in SS-2, which exceeded the commercial screening value of 292 ug/m^3.

The purpose of the radon testing was to measure sub-slab and indoor air radon concentrations to allow the calculation of a site-specific attenuation factor for incorporation into the vapor intrusion modelling included in Appendix G. The floor slab in the two areas tested appeared to be in good condition and varied slightly in thickness from approximately six inches at SS-1 to five inches at SS-5. The calculated attenuation factors for the two locations were 9.9×10^{-5} and 6.7×10^{-5}, respectively.

See Appendix G for more detailed discussion regarding the soil vapor testing and vapor intrusion modelling results.

8.0 DESCRIPTION OF RESPONSIBLE PERSON FOR THE CONTAMINATION DETECTED AT THE PROPERTY

During the course of the various assessments conducted at the site, the extent of soil contamination and the groundwater contamination plume have been delineated within the property boundaries but not necessarily within the HSI site boundaries. Based on the available data, it is apparent that the VOC and pesticide contamination in soil and groundwater at the site is the result of releases within the southern portion of the building and outside the southern building entrance. The groundwater plume emanating from these areas has been mapped as migrating generally to the north, consistent with shallow groundwater flow. Low levels of VOCs constituents were previously detected off site, across Davis Road and pesticides have been detected in groundwater along the site's eastern boundary. Therefore, it is apparent that historical on-site industrial operations have contributed to the contamination detected at the property.

Following is a summary of information currently known about the three separate industrial entities that have operated on the site addressed at 370 Mills Road, Waynesboro, Georgia.

Late 1950s – 1971:	Atlas Chemical Company Mr. Fuchs, Owner Last known residence, Charleston, SC Formulation of agricultural pesticides
1971 – December 1988:	Legion Utensil Company Mr. Charles Scavullo, CEO and Shareholder Last known residence: 2709 McDowell Street Augusta, GA 30904 Manufacture of commercial grade kitchen equipment, used chlorinated solvents during full period of operation
December 1998- Present:	Legion Industries, Inc. Mr. Charles A. Brown, President, CEO, Chairman 373 Huntsville Road Dallas, Pennsylvania 18612 (570) 574-3362 Continued the manufacture of commercial kitchen equipment, terminated use of regulated chlorinated solvents circa 1992

The former owners/operators of the facility should also be considered responsible parties. Atlas Chemical Company reportedly operated on the property from the late 1950s until the property was purchased by Legion Utensil Company (LUC) in 1970. Atlas Chemical Company was a pesticide manufacturing facility and was reportedly involved in the production of DDT and presumably, other pesticides. According to a memo prepared by Mr. Scavullo, the LUC CEO/owner, Atlas stored the pesticides loose on the floor and on the ground outside the building.

After LUC took ownership of the property, they expanded the building southward in the early 1970s for a distance of approximately 25 feet, which covered the area where Atlas had reportedly stored their materials on the ground. Atlas Chemical is no longer present in Waynesboro and it is not known if the company still exists. Because neither LUC nor Legion Industries was ever involved in the formulation, packaging or storage of pesticides at the subject site, Atlas Chemical Company operations are considered solely responsible for the pesticide impacts identified at the site.

In 1970, the facility was purchased by Legion Utensil Company, the CEO of which was Mr. Charles Scavullo. Legion Utensil Company operated at the site until the late 1980s when it was purchased by Mr. Brown operating as Legion Industries, Inc. in 1988. The facility operations and materials used by Legion Industries were similar in nature to those employed by Legion Utensil Company. Legion Industries did discontinue the use of TCE in its process and filled in the degreaser pit with concrete a few years after taking over operation of the facility.

9.0 ACTIONS TAKEN TO ELIMINATE, CONTROL, OR MINIMIZE ANY POTENTIAL RISK AT THE SITE

Current facility operations no longer involve the use or production of the regulated constituents that have been detected on site in excess of their applicable RRS. Pesticide formulation ceased on site in the early 1970s and the use of solvent-based degreasing operations was discontinued in the early 1990s. Therefore, the potential for additional release of a regulated substance has been negligible for many years.

Remediation at the site was performed to address soil impacts related to previous site operations. Impacted soils from three areas within and immediately south of the building were excavated and disposed of in June 2013 as summarized below (described in more detail in the 2nd Semi-Annual Progress Report, dated July 24, 2013) and an amendment was applied to the interior excavation to degrade constituents in the underlying groundwater regime.

Amec Foster Wheeler coordinated and scheduled all planned activities with plant personnel so that soil removal work could be performed with limited impact to plant operations. In order to provide access to the interior excavation area, it was necessary to move a significant amount of materials and equipment, including a toggle press, out of the interior work area. Several trash and scrap metal containers were moved prior to the commencement of exterior soil excavation activities.

Previous soil leachability testing of both interior and exterior soil samples demonstrated the impacted soil was characteristically non-hazardous. Based on submittal of a waste profile signed by Legion Industries, approval was obtained from a permitted Subtitle D landfill (Augusta Deans Bridge Road Landfill) for disposal of impacted soils as non-hazardous waste.

Amec Foster Wheeler mobilized the required personnel and equipment during the week of June 17, 2013. Due to the disruption to normal work procedures in the soil removal area, plant operations were shut down shortly after soil removal activities began.

9.1 PRE-EXCAVATION CONFIRMATION SAMPLING AND TESTING

Limited additional soil sampling was necessary to supplement previous test results and to provide the confirmation data spacing specified in the VRP application. The additional confirmation samples were collected to complete the delineation of the areas requiring excavation and to ensure that adequate confirmation sampling frequency (every 25 feet along excavation perimeters) had been achieved. On June 17, 2013, 11 soil confirmation samples (CS-1 through CS-7 and CS-10 through CS-13) were collected from the area of the exterior excavations and two samples (CS-8 and CS-9) were collected from the area of the interior excavation. The samples were collected using a decontaminated hand auger and were submitted to Analytical Environmental Services, Inc. in Atlanta, Georgia for testing on a 24-hour basis. The exterior delineation/confirmation samples were tested for TCE only as it was the only constituent that had been detected outside the building above its RRS. The interior samples were tested for both VOCs and pesticides as multiple constituents from each of these analyte suites had been identified in excess of applicable RRS in the area around the former degreaser pit, which was also the area of former pesticide drum storage. The soil confirmation data is summarized on Figures 11 and 12. Note that two of the interior samples (GP-15 and GP-17) were not tested for both VOCs and pesticides. GP-10, located inboard of GP-15, demonstrated compliance with VOCs while GP-12, located inboard of GP-17, demonstrated compliance with pesticides. Therefore, those constituents were not included in the analyses of the outermost samples.

Several of the samples collected during the June 2013 sampling event were located outside of the anticipated excavation area and were held by the laboratory in the event that certain of the initial samples did not meet the applicable RRS. The results of the confirmation sampling indicated that exterior samples CS-3, CS-4 and CS-5 exceeded RRS for TCE and interior sample CS-9 exceeded the RRS for dieldrin and toxaphene. Based on these results, exterior samples CS-10, CS-11 and CS-12 were analyzed and another interior sample, CS-9A, was collected. Of these, only CS-10 still exceeded a RRS. Additional samples were collected south of CS-10. The next sample, CS-14 2′, met the applicable RRS, thereby completing the confirmation sampling.

The results of the confirmation testing are presented in Tables 4, 5 and 6 and on Figures 11 and 12. Complete laboratory reports are documented in Appendix A.

9.2 SOIL REMOVAL

Excavation of impacted soils began on June 18, 2013 and was completed on June 28, 2013 by Amec Foster Wheeler.

Inside the building, an irregularly shaped section of the concrete floor measuring roughly 50 feet by 60 feet was marked with spray paint and broken out using a concrete breaker. The northwest portion of this excavation butted up against the pit located beneath the clearing press while the eastern portion extended to the footing of the eastern exterior wall of the building. The pit was a concrete structure that extended approximately 8 feet below the water table. The broken slab concrete was removed and disposed of along with the impacted soil.

The soil inside the building was excavated to a depth of approximately 4.5 feet where groundwater was encountered. This excavation was extended laterally to the previous sample locations where soil concentrations were documented to be below applicable RRS. The soil was removed from the building using a backhoe and skid steer loader and transferred to the stockpile location south of the building.

The interior excavation also encountered a large mass of concrete, approximately three feet thick that filled the former degreaser pit. This concrete was broken up and disposed of along with the excavated soil. Another subsurface concrete slab was identified in the southern portion of the excavation at a depth approximately 2 feet below the floor level. This slab measured approximately 10 feet by 25 feet and was also broken up and removed for disposal. The total amount of soil and concrete removed from the interior excavation is estimated to be approximately 700 tons.

The limits of the exterior excavations were marked on the ground with spray paint by connecting the confirmation sample locations. The exterior excavations were slightly larger than the 30 x 30 foot areas originally estimated and included some concrete associated with a walkway and a driveway. The bulk of the exterior excavation areas were unpaved. Soils in the exterior excavations were removed to a depth of approximately 2.5 feet below grade, at which point the water table was encountered. A total of approximately 130 tons of soil and concrete were removed from the western exterior excavation and approximately 150 tons of soil and concrete were removed from the eastern exterior excavation. No subsurface structures or other obstructions were encountered in the exterior excavations.

All excavated material was placed in a stockpile located south of the building. The stockpile was constructed on 6 mil polyethylene sheeting and covered daily with polyethylene sheeting.

9.3 AMENDMENT APPLICATION

At the recommendation of EPD in a letter dated May 20, 2013, prior to placing any backfill material in the interior excavation area, Amec Foster Wheeler amended the exposed soil using an oxygen releasing compound (ORC). A pelletized version of ORC designed specifically for direct application into excavations was used. This pelletized, dry application material was selected as it minimizes airborne dust while eliminating the need for specialized equipment. The primary function of the ORC pellets is to provide a controlled-release oxygen source for the enhanced aerobic bioremediation of aerobically degradable compounds. Approximately 1,000 pounds of the ORC pellets were spread over the base of the interior excavation at the water table elevation prior to backfilling the excavation.

9.4 TRANSPORTATION AND DISPOSAL

The soil had been previously analyzed for disposal and was characterized as non-hazardous. The excavated soil was stockpiled in the southern portion of the site until a sufficient quantity had accumulated, at which point the transporter was called to remove the accumulated material. Soils were loaded from the stockpile into end dump trucks using an excavator. Dry decontamination procedures, consisting of the use of brooms and other hand tools were used on vehicles and equipment, as necessary before they left the site.

A total of 979.9 tons of material (soil and concrete) were removed from the site and transported to the Augusta Deans Bridge Road Landfill in Augusta, Richmond County, Georgia. Disposal manifests are attached in Appendix J.

9.5 BACKFILLING AND GRADING

Following soil removal, the interior excavation was backfilled with No. 57 stone and topped with graded aggregate to sub-grade elevation. The floor area was then restored by installing a new concrete pad. The exterior excavations were backfilled with No. 57 stone, topped with an approximate six-inch layer of compacted graded aggregate and leveled to match the surrounding grade.

10.0 RISK REDUCTION STANDARDS

The subject site is located in Waynesboro, Georgia in an area of industrial properties. The subject site is zoned for industrial use and, is classified as "non-residential" property as defined under HSRA.

As discussed in Section 4.2, HSRA-regulated substances were detected in soil and groundwater samples obtained during various assessments conducted by Amec Foster Wheeler. Therefore, risk reduction standards (RRS) were calculated for these substances in accordance with the HSRA Rules and are summarized below. See Appendix C for complete RRS calculations.

10.1 SOIL CRITERIA

A total of 28 HSRA-regulated constituents were detected in soil during Amec Foster Wheeler's assessments. Type 1-4 RRS for all constituents detected in soil on site are presented below in Table 9-1 along with the highest concentration of each constituent remaining in soil on site after remediation.

TABLE 10-1 - RISK REDUCTION STANDARDS FOR SOIL

Regulated Substance	Highest Remaining Concentration, mg/kg	Location	Non-Residential	
			Type 3 RRS Criteria, mg/kg	Type 4 RRS Criteria, mg/kg
Metals				
Barium	34.7	SS-7-3′	1,000	17,000
Chromium	29.6	PDL-3-3′	1,200	38
Lead	9.75	SS-7-3′	400	270
VOCs				
1,4-dichlorobenzene	0.011	SS-10-3″	7.5	1.0
Chlorobenzene	0.038	SS-10-3′	10	0.78
Cis-1,2-dichloroethene	0.014	SS-16-2-2.5′	7.0	6.0
Ethylbenzene	0.007	DP-2-3′*	70	16
Isopropylbenzene	BRL	NA	22	33
Tetrachloroethene	BRL	NA	0.5	0.045
Toluene	BRL	NA	100	72
Trichloroethene	0.16	SS-16-2-2.5′	0.50	0.27
Vinyl Chloride	0.029	DP-7-2-2.5′	0.20	0.014
Xylenes	0.021	GP-17-2-2.5′	1,000	200
Pesticides				
4,4-DDD	4.6	SS-10-3′	0.66	56.0
4,4′-DDE	0.22	SS-10-3′	0.66	40.0
4,4′-DDT	6.6	SS-10-3′	0.66	57.0
Aldrin	0.12	SS-10-3′	0.66	0.55
Alpha-BHC	0.15	DP-7-2-2.5′	0.66	0.053
Beta-BHC	0.03	SS-10-3′	0.66	0.19
Delta-BHC	0.041	SS-10-3′	0.005	0.19
Gamma-BHC	0.55	GP-12	0.66	0.30
Chlordane	7.6	DP-3-3′	9.2	11.0
Dieldrin	0.22	SS-10-3′	0.66	0.14
Endrin	0.011	SS-11-3′	10.0	25.0
Endrin Ketone	0.033	SS-11-3′	10.0	0.081
Heptachlor	0.0024	SS-11-3′	0.66	1.1
Heptachlor Epoxide	0.012	SS-11-3′	1.7	0.13
Toxaphene	3.7	SS-17-0.5-1′	11.0	15.0

mg/kg - milligrams per kilogram (equivalent to parts per million)
Note: All soil concentrations remaining after soil remediation are below Type 3 or 4 RRS or both.

Based on the soil testing data collected to date and following the soil remediation measures described in Section 8.0, the subject site is currently in compliance with applicable non-residential RRS for regulated constituents in soil.

10.2 GROUNDWATER CRITERIA

Type 1-4 RRS for all constituents detected in groundwater on site are presented below in Table 9-2. HSRA RRS criteria for groundwater for the detected constituents are shown compared to their highest concentrations detected on site.

TABLE 10-2 – RISK REDUCTION STANDARDS FOR GROUNDWATER SHALLOW ZONE

Regulated Substance	Historically Highest Concentration Detected µg/L	Location	Most Recent Highest Concentration Detected µg/L (June 2015)	Location	Residential		Non-Residential	
					Type 1 RRS Criteria, µg/L	Type 2 RRS Criteria, µg/L	Type 3 RRS Criteria, µg/L	Type 4 RRS Criteria, µg/L
VOCs								
1,2-dichlorobenzene	12	MW-13	<50	MW-13	600	110	600	548
1,3-dichlorobenzene	BRL	NA	BRL	NA	600	110	600	548
1,4-dichlorobenzene	56	MW-13	56	MW-13	75	5.7	75	7.3
1,1-dichloroethane	19	MW-13	<50	MW-13	4,000	25.3	4,000	46.4
1,1-dichloroethene	11	MW-13	<50	MW-13	7.0	103	7.0	523
1,2,4-trichlorobenzene	51	MW-13	<50	MW-13	70	1.18	70	5.79
1,1,2-trichloroethane	BRL	NA	BRL	NA	5	0.12	5	0.58
Benzene	14.6	MW-13	<50	MW-13	5.0	4.48	5.0	8.8
Chlorobenzene	65	MW-13	<50	MW-13	100	27	100	130
Cis-1,2-dichloroethene	2,900	MW-13	1,030	MW-13	70	31	70	204
Ethylbenzene	2,330	MW-19	<25	MW-19	700	15	700	29
Isopropylbenzene	7.3	MW-13	<50	MW-13	5.0	200	5.0	1,000
Methylene Chloride	5.4	MW-13	<100	MW-13	5.0	74	5.0	450
Naphthalene	63.8	MW-19	<25	MW-19	20	2.4	20	1.4
Trans-1,2-dichloroethene	32.4	MW-13	<50	MW-13	100	310	100	2,000
Trichloroethene	8,200	MW-13	2,580	MW-13	5.0	1.0	5.0	5.2
Vinyl Chloride	3,300	MW-13	680	MW-19	2.0	1.1	2.0	3.3
Xylenes	10,900	MW-19	67.1	MW-19	10,000	59	10,000	290
Pesticides								
4,4-DDD	7.4	MW-19	2.1	MW-19	0.1	3.5	0.1	12
4,4'-DDT	8.4	MW-13	4.0	MW-13	0.1	2.5	0.1	8.4
Alpha-BHC	4.0	MW-19	<1.2	MW-11	0.05	0.14	0.05	0.45
Beta-BHC	4.9	MW-19	4.4	MW-13	0.05	4.7	0.05	16
Delta-BHC	8.3	MW-19	5.4	MW-16	0.05	0.47	0.05	1.6
Gamma-BHC	4.4	MW-19	1.5	MW-13	0.2	0.77	0.2	2.6
Chlordane	BRL	NA	BRL	NA	2.0	2.4	2.0	8.2
Dieldrin	7.9	MW-19	7.9	MW-19	0.1	0.053	0.1	0.18
Endrin	8.0	MW-13	5.4	MW-19	2.0	4.7	2.0	31
Endrin Ketone	6.2	MW-19	6.2	MW-19	0.1	0.1	0.1	ND
Toxaphene	44.0	MW-13	<4.0	MW-13	3.0	0.77	3.0	2.6

µg/L - micrograms per liter (equivalent to parts per billion)
Note: Shaded values exceed Type 1-4 RRS

TABLE 10-3 - RISK REDUCTION STANDARDS FOR GROUNDWATER INTERMEDIATE DEPTH ZONE

Regulated Substance	Historically Highest Concentration Detected µg/L	Location	Most Recent Highest Concentration Detected µg/L (June 2015)	Location	Residential		Non-Residential	
					Type 1 RRS Criteria, µg/L	Type 2 RRS Criteria, µg/L	Type 3 RRS Criteria, µg/L	Type 4 RRS Criteria, µg/L
VOCs								
1,2-dichlorobenzene	3.2	MW-18	<50	MW-18	600	110	600	548
1,3-dichlorobenzene	1.0	MW-18	<50	MW-18	600	110	600	548
1,4-dichlorobenzene	11.5	MW-18	<50	MW-2	75	5.7	75	7.3
1,1-dichloroethane	4.0	MW-18	<50	MW-18	4,000	25.3	4,000	46.4
1,1-dichloroethene	14	PZ-2	<250	PZ-2	7.0	103	7.0	523
1,2,4-trichlorobenzene	7.7	MW-18	<50	MW-18	70	1.18	70	5.79
1,1,2-trichloroethane	21	PZ-2	<100	PZ-2	5	0.12	5	0.58
Benzene	4.1	MW-18	3.5	MW-12	5.0	4.48	5.0	8.8
Chlorobenzene	15.4	MW-18	12.3	MW-2	100	27	100	130
Cis-1,2-dichloroethene	20,000	PZ-2	7,280	PZ-2	70	31	70	204
Ethylbenzene	2.5	MW-2	2.3	MW-2	700	15	700	29
Isopropylbenzene	BRL	NA	BRL	NA	5.0	200	5.0	1,000
Methylene Chloride	592	PZ-2	592	PZ-2	5.0	74	5.0	450
Naphthalene	10.5	MW-2	5.5	MW-2	20	2.4	20	1.4
Trans-1,2-dichloroethene	80.3	PZ-2	<250	PZ-2	100	310	100	2,000
Trichloroethene	57,000	PZ-2	46,300	PZ-2	5.0	1.0	5.0	5.2
Vinyl Chloride	6,800	PZ-2	1,620	PZ-2	2.0	1.1	2.0	3.3
Xylenes	18	MW-2	7.8	MW-2	10,000	59	10,000	290
Pesticides								
4,4-DDD	2.2	PZ-2	0.12	PZ-2	0.1	3.5	0.1	12
4,4'-DDT	0.55	PZ-2	<0.05	PZ-2	0.1	2.5	0.1	8.4
Alpha-BHC	7.3	MW-2	6.5	MW-2	0.05	0.14	0.05	0.45
Beta-BHC	1.5	MW-2	<0.37	PZ-2	0.05	4.7	0.05	16
Delta-BHC	9.0	MW-2	9.0	MW-2	0.05	0.47	0.05	1.6
Gamma-BHC	2.5	MW-2	2.3	MW-2	0.2	0.77	0.2	2.6
Chlordane	2.22	MW-2	0.23	MW-18	2.0	2.4	2.0	8.2
Dieldrin	1.8	MW-2	0.15	PZ-2	0.1	0.053	0.1	0.18
Endrin	1.2	MW-18	<0.05	MW-18	2.0	4.7	2.0	31
Endrin Ketone	1.8	MW-18	0.51	PZ-2	0.1	0.1	0.1	ND
Toxaphene	2.6	MW-18	2.6	MW-18	3.0	0.77	3.0	2.6

µg/L - micrograms per liter (equivalent to parts per billion)
Note: Shaded values exceed Type 1-4 RRS

Based on the groundwater testing data available to Amec Foster Wheeler and presented herein, groundwater in the shallow aquifer zone at the site does not currently comply with Type 1, 2, 3 or 4 groundwater RRS for the following constituents: benzene, cis-1,2-DCE, trichloroethene, vinyl chloride, Alpha-BHC, Beta-BHC, Delta-BHC, Gamma BHC, dieldrin, and endrin ketone. Groundwater in the intermediate aquifer zone does not comply with Type 1,2,3 or 4 groundwater RRS for cis-1,2-DCE, methylene chloride, trichloroethene, vinyl chloride, Alpha-BHC, Delta-BHC, dieldrin and endrin ketone.

11.0 EXPOSURE PATHWAYS

The risk to human health and the environmental is directly related to the potential for receptors to be exposed to contamination. Exposure pathways are the means by which regulated substances migrate from a source to a point of contact with humans and/or the environment. An examination of the following potential exposure pathways and receptors was conducted for the site.

- Potential exposure to regulated constituents in soil;
- Potential exposure to regulated constituents in groundwater;
- Potential exposure to regulated constituents in surface water;
- Potential exposure to regulated constituents due to vapor intrusion from impacted soil or groundwater.

11.1 SOIL CRITERIA

The potential for direct exposure of commercial workers to impacted soil at the site is incomplete as soil concentrations are below the approved direct exposure risk reduction standards for construction workers and utility workers in the event that ground-disturbing activities are performed in the future.

Type 1, 2, 3 and 4 RRS were calculated for constituents detected in soil using default exposure assumptions. The site satisfies RRS criteria calculated for potential exposure to soil for all COCs detected on site. The HSRA Type 1 through Type 4 RRS criteria for soil for the regulated substances are shown in Table 9-1 along with the highest remaining concentration detected and the corresponding sample location.

On the basis of the site's compliance with non-residential RRS for soil at a minimum, and in conjunction with the industrial zoning designation for the site, the site is currently in compliance with non-residential RRS and the soil exposure pathway is no longer complete. In addition, Legion Industries, Inc. will file an Environmental Covenant restricting use of the site to non-residential purposes.

11.2 GROUNDWATER CRITERIA

A water usage survey was conducted for the area surrounding the site to identify active drinking water sources in the site vicinity (see Appendix E). In summary, no domestic drinking water wells were identified within one mile of the site. Two public supply wells were identified in the general site vicinity. One well is located just under a mile southwest of the site while the second is approximately 1.15 miles to the northwest. Neither supply well is located within the documented flow path downgradient from the site. The general groundwater flow in this area is northward toward Brier Creek, approximately 2.75 miles north of the site. A surface water intake is also located on Brier Creek northeast of the site, approximately three miles downstream of the point where shallow groundwater from the site would discharge to the creek, resulting in a total flow path of over five miles from the site to the intake location. Based on this research and delineation of the groundwater contamination discussed in Section 6.0, no drinking water sources have been identified which would be impacted by the release from the site.

Groundwater contaminant fate and transport modeling results (Appendix D) indicate the shallow plume migration (northward) will likely remain within the site boundaries over the long term. Intermediate depth plume migration (northeastward) is predicted to extend off site to the northeast. The maximum extent of the intermediate depth plume is predicted to extend approximately 1,400 feet 50 years in the future.

In order to evaluate the risk that regulated constituents in groundwater could impact a potential receptor within 1,000 feet of the downgradient extent of the plume and to estimate the time required to achieve compliance with applicable RRS, Amec Foster Wheeler applied the BIOCHLOR software to the release of CVOCs in groundwater on site. CVOCs are what the program is designed to address and CVOCs represent the most mobile components of the VOC plume and substantially more mobile than pesticides. Because the extent of pesticides is more restricted, despite their earlier release, which confirms they are less mobile in the subsurface environment, they have not been modeled.

BIOCHLOR utilizes a combination of site specific data and literature values to determine the various physical properties of the plume and the migration potential of chlorinated VOC constituents. The purpose of the modeling is to predict the migration pattern of a chlorinated solvent plume where no engineering controls have been implemented and monitored natural attenuation (MNA) is the groundwater remedial option.

As first documented in the 3rd Semi-Annual Progress Report, the initial release of CVOCs to groundwater has been assumed to have occurred approximately 40 to 45 years ago when the kitchen ware manufacturing operation began in 1971. This time frame appears to be reasonable based on the calibration of actual conditions with model results. CVOCs are no longer utilized on site and soils impacted above applicable RRS in the source areas have been removed. As such, the release going forward has been modelled as a decaying source.

Groundwater conditions in MW-13 represents the source location for the shallow aquifer zone and conditions in PZ-2 represent the source location for the intermediate depth aquifer because this is the most upgradient location of soil impact that required remediation. In each case the highest historic groundwater concentrations were utilized as the initial contaminant concentrations.

Groundwater conditions were evaluated in the source area as well as downgradient of this area using USEPA's Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater to confirm that conditions on site are favorable for biotransformation. Groundwater conditions from MW-13, MW-18, MW-19 and MW-2 were evaluated and the score sheets are included in Appendix D. Note that limited data regarding natural attenuation parameters were available for inclusion in the scoring sheets. TCE was known to be the CVOC previously utilized on site as a degreaser and significant concentrations of the TCE degradation products cis-1,2-DCE and vinyl chloride have been detected in groundwater since the earliest assessments conducted on site in 2001. We note that the DCE detected on site consists almost entirely of cis-1,2-DCE, which indicates that it is most likely the daughter product of TCE. As such, it was readily apparent that degradation of TCE has been occurring since at least 2001. Nevertheless, the scoring protocol indicates at least limited evidence for anaerobic biodegradation at each location examined. Based primarily on the distribution of CVOCs in groundwater and the presence of significant concentrations of TCE daughter products, it is reasonable to conclude that the subsurface conditions on site are very favorable for biotransformation of CVOCs.

The Biochlor model was initially developed for the 3rd Semi-Annual Monitoring Report by inputting measured parameters such as hydraulic conductivity, hydraulic gradient, soil organic carbon content, and groundwater VOC concentrations within the source area. It has been fine-tuned using data obtained during subsequent monitoring periods.

As illustrated on the attached updated outputs from the BIOCHLOR model, the model predicts CVOC concentrations in groundwater after approximately 48 years (i.e. now) that closely match conditions currently observed in wells downgradient of the shallow and intermediate depth source area wells MW-13 and PZ-2. The modeling runs were extended for 100 years after the estimated initial release date to evaluate the point at which the maximum lateral extent of the plume was achieved. The results of the modeling indicate that the downgradient extent of the shallow plume will not migrate beyond Legion Industries' northern property boundary at concentrations in excess of applicable RRS. The intermediate depth plume may slightly exceed the RRS for vinyl chloride at the eastern property boundary, but is not predicted to exceed the RRS at a distance of greater than 500 feet from the source area. The predicted maximum extent of the shallow and intermediate depth plumes are illustrated on Figure D-1 which also illustrates the locations of the wells and surface water intake in the site vicinity and demonstrates the significant distances between the plume and area receptors.

RRS were calculated for the constituents detected in groundwater on site. Again the Type 1, 2, 3 and 4 RRS criteria were derived using site default exposure assumptions (Tables C-2 and C-3 in Appendix C). Based on the groundwater results, neither the shallow nor the intermediate aquifer zones on site currently comply with the Type 1-4 groundwater RRS for at least one or more pesticides or VOCs. Although groundwater conditions are not currently in compliance with applicable Type 1-4 RRS, there is no use of groundwater for drinking on site or in the surrounding area and the risk to human health and the environment posed by the groundwater on site is negligible.

The site will comply with Type 5 RRS upon filing of an Environmental Covenant by Legion Industries, Inc. that restricts the use of groundwater as an institutional control. Further, the condition of the groundwater on site is expected to improve over time due to the natural attenuation of regulated constituents as observed in on-site wells in recent sampling events.

Groundwater monitoring over a period of 18 years from 2001 to 2018, along with groundwater fate and transport modeling, have demonstrated the groundwater conditions will not exceed Georgia in-stream water quality standards or drinking water standards within 1,000 feet downgradient of the current extent of impacts (Appendix D). The area in the flow path down-gradient of the shallow plume is undeveloped and occupied by a multi-lane highway. The property in the flow path of the intermediate plume is also zoned industrial and is occupied by a manufacturing warehouse facility served by the municipal water supply. As such, the site is in compliance with appropriate groundwater criteria under the VRP.

For these reasons, the groundwater exposure pathway is incomplete. Also, the proposed filing of an Environmental Covenant will restrict the use of groundwater on the site.

11.3 SOURCE

Concentrations of dissolved VOCs in groundwater are all well below the aqueous solubilities for the various compounds detected on site. Evidence of saturated soils indicative of a potential free product condition has never been observed and impacted soils from the source area have been removed. The concentrations of PCE detected in groundwater from PZ-2 historically have been in excess of 1%, but below 4.5%, of the aqueous solubility of TCE during some of the monitoring events. However, no direct indications of a dense non-aqueous phase liquid (DNAPL) condition have been observed during installation or sampling of the numerous borings and wells on the subject site.

11.4 SURFACE WATER

Surface water testing conducted on samples collected from the drainage ditch along the Waynesboro Bypass did not detect COCs. Further, as detailed in the Semi-Annual VRP Progress Reports, groundwater fate and transport modelling indicates that COCs are not predicted to reach Brier Creek, the nearest perennial stream.

Based on the detected concentrations of COCs dissolved in groundwater at the site, the results of the analytical groundwater fate and transport model for the VOCs in question and the results of the testing of the only surface water in the nearby site vicinity, in-stream water quality standards are not exceeded currently, and are not predicted to be exceeded in the future. Therefore, the surface water exposure pathway is incomplete.

11.5 VAPOR INTRUSION

In 2015, a screening level vapor intrusion risk evaluation was performed for the site. The purpose of the vapor intrusion (VI) risk evaluation was to evaluate the potential for volatile organic compounds (VOCs) detected in shallow groundwater to intrude into indoor air inside current or future buildings at the site. In order to assess whether groundwater concentrations of constituents of potential concern ethylbenzene, TCE, vinyl chloride, and xylenes potentially posed unacceptable indoor air risk or hazards to site commercial workers, an evaluation was performed for these constituents using USEPA's Johnson and Ettinger Model for Subsurface Vapor Intrusion into Buildings (J&E Model; USEPA, 2004). The results of the groundwater VI evaluation estimated total incremental cancer risk at 4×10^{-6}, which is less than the HSRA target cancer risk of 1×10^{-5}. The cumulative hazard index for the commercial scenario was 0.7, which is less than the HSRA target hazard index of 1. The risks and hazards calculated using the older version of the J&E Model indicate low potential for adverse health effects to commercial workers from VOCs in site groundwater migrating from the subsurface into indoor air.

As part of this Revised CSR, vapor intrusion was evaluated using measured concentrations of sub-slab soil gas. The purpose of this 2018 vapor intrusion risk evaluation is to evaluate the potential for VOCs detected in sub-slab soil gas to intrude into indoor air inside current buildings at the site. Five sub-slab soil gas samples (SS-1 through SS-5) were collected at a depth just below the floor slab within the building and analyzed by the TOC-15 method in August 2018. Samples were taken at a shallow depth because the water table is within four feet of the ground surface. Eighteen VOCs and one radionuclide (radon) were detected in sub-slab soil gas. Results are listed in Table 8 and Table G-1. The maximum detected concentrations for VOCs were compared to U.S. Environmental Protection Agency's (USEPA) sub-slab soil gas vapor intrusion screening levels (VISLs; USEPA, 2018) to ensure that indoor air constituents of potential concern are identified. These comparisons are shown in Table G-1.

For the calculation of the sub-slab soil gas VISLs, a site-specific groundwater temperature of 22.8 degrees Celsius was used, based on well purging data. A commercial exposure scenario was assumed in the VISL calculations using a target cancer risk of 10^{-5} with a target hazard index of 1 as designated under HSRA rules. The highest detected sub-slab soil gas concentrations for detected VOCs were compared to their respective target sub-slab soil gas concentrations on Table G-1. For cis-1,2-dichloroethane and 4-ethyltoleune, VISLs could not be calculated because there are no published inhalation toxicity values for these compounds. Furthermore, for radon, there is no appropriate soil gas VISL. As such, the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for radon of 100 picoCuries per liter (pCi/L) was divided by the default USEPA sub-slab soil gas to indoor air attenuation factor of 0.003 to derive a sub-slab soil gas screening level of 33,333 pCi/L for radon. Based on the ratio of indoor air radon to sub-slab soil gas radon, the site-specific attenuation factor appears to be much more significant and in the order of 0.000067 to 0.000099 (Table G-1).

Only a single VOC evaluated, TCE, exceeded its commercial sub-slab soil gas VISL. The maximum detected concentration of TCE was 520 μg/m^3 (location SS-2), which exceeded the commercial VISL of 292 μg/m^3 for this constituent. A TCE concentration of 200 μg/m^3 was detected at location SS-1, but the other three locations were non-detect (<5.5 μg/m^3). In order to assess whether concentrations of TCE potentially pose unacceptable indoor air risk or hazards to site commercial workers, an additional evaluation was performed for TCE using USEPA's Johnson and Ettinger Model for Subsurface Vapor Intrusion into Buildings (J&E Model; USEPA, 2017). The J&E Model was updated in 2017 to align with current VI guidance (USEPA, 2015). The J&E Model incorporates both default and site-specific exposure parameters and assumptions to calculate incremental cancer risks and hazards for a typical commercial exposure scenario.

The assumptions used in the J&E model are presented in Table G-2. The vapor intrusion scenario used in the J&E Model is based on building dimensions representative of the office spaces at the north end of the current manufacturing building (32.5 feet by 120 feet) and a ceiling height equivalent to the manufacturing area (16 feet). The soil type was modeled as sandy clay, and the depth to the sub-slab soil gas sampling point beneath the building was modeled as 1 foot based on site soil gas data. The J&E Model outputs are provided as an attachment, and a summary of the results are presented in Table G-3. Toxicity values for TCE are from USEPA's Integrated Risk Information System (IRIS) database. The air exchange rate was assumed to be 1.5 per hour, which is the average rate for large commercial buildings (USEPA, 2011). This is conservative for the Legion Industries facility as they reportedly operate with open overhead doors during fair weather.

Commercial receptors were assumed to be exposed for 250 days per year for 25 years (USEPA, 2014). Indoor air concentrations were estimated from sub-slab concentrations using dilution attenuation as calculated by the J&E Model.

For the commercial scenario, total incremental cancer risk was estimated at 2×10^{-6}, which is less than the HSRA target cancer risk of 1×10^{-5}. The cumulative hazard index for the commercial scenario is 0.2, which is less than the HSRA target hazard index of 1. The risks and hazards calculated using the J&E Model indicate low potential for adverse health effects to commercial workers from VOCs in sub-slab soil gas migrating from the subsurface into indoor air.

The 2018 soil gas VI evaluation confirms the conclusions of the 2015 groundwater VI evaluation in that risks and hazards estimated for commercial workers from VI exposures are within the acceptable range and are less than HSRA target goals for cumulative cancer risks and hazard indices.

A portion of the impacted groundwater plume in the intermediate depth aquifer zone is interpreted to underlie the nearby Synergy Group, LLC property east of the site. The Synergy Group facility has not been specifically evaluated for vapor intrusion potential, and they have refused Legion Industries access to their property (refer to the email attached in Appendix H). However, the Synergy Group facility is of similar construction to the Legion Industries facility and is subject to reduced influence from the plume as the Synergy Group building is located farther from the areas of highest groundwater impact. The Synergy Group facility is also situated at a higher elevation than the subject site with a corresponding greater depth to groundwater (approximately 13 feet between floor slab and water table versus approximately 4 feet on the subject site). In addition, the shallow groundwater plume is not predicted to extend onto the Synergy Group property as it migrates in a northerly direction. Only the intermediate depth plume appears to have the potential to eventually affect the area east of the subject site. The Synergy Group building is immediately underlain by unimpacted groundwater, thereby further reducing the potential for vapor intrusion from the groundwater plume. These factors lead to a reasonable conclusion that the potential for vapor intrusion into the Synergy Group facility exceeding a risk-based standard is negligible.

12.0 CONCLUSIONS

Based on the findings of assessment activities and the results of corrective action, the following conclusions are presented:

- Source area soil remediation was conducted inside the building around the former degreaser pit and south of the building, in areas of identified soil impacts exceeding applicable RRS.
- Groundwater has been monitored at the site for 15 years. Based on data obtained since monitoring began in 2001, we note the following:
  - The plume has been delineated to the extent practicable to Type 1 RRS. The intermediate zone plume may currently minimally extend onto the Synergy Group, LLC property to the east and is predicted to migrate farther in the future. However, Synergy Group has denied access to conduct additional delineation and monitoring. Similarly, the plume extends a short distance across Davis Road and potentially onto the Helena Chemical Company property to the west at concentrations only slightly above the Type 1 RRS. Helena Chemical Company has also denied access;
  - The plume has been observed to be generally stable, with the exception of some minor fluctuations;
  - VOC concentrations have generally decreased significantly from their historic maximums. Where evident, VOC increases are typically related to the production of TCE breakdown products;
  - Significant degradation of chlorinated VOCs is evident throughout the plume and it is reasonable to conclude from these observations and from modeling that natural attenuation is a viable remedial option for the VOC groundwater condition;
  - Pesticide concentrations have generally remained stable or have decreased;
  - No surface water impacts have been identified;
  - Limited plume migration is evident. The VOC release is believed to have begun approximately 45 years ago. However, the plume has migrated a limited distance since that time, extending only short distances onto nearby properties to the west and to the east and remaining on site to the north;
- Contaminant fate and transport modeling indicates the shallow plume migration (northward) will likely remain within the site boundaries over the long term. Intermediate depth plume migration (northeastward) will extend off site to the northeast. A maximum extent of the intermediate depth plume of approximately 1,400 feet is predicted 50 years in the future;
- A water usage survey conducted by Amec Foster Wheeler did not identify private drinking water sources within one mile of the site. Two public water supplies were identified in the general site vicinity, neither of which is located downgradient of the site. One well is located approximately 0.9 miles southwest of the site. A second well is located

approximately 1.15 miles northwest of the site. A surface water intake is located along Brier Creek, approximately 2.75 miles northeast of the site, well beyond the predicted maximum extent of the plume.

- Sub-slab soil gas testing confirms the conclusions of the 2015 groundwater vapor intrusion evaluation in that risks and hazards estimated for commercial workers from vapor intrusion exposures are within the acceptable range and are less than HSRA target goals for cumulative cancer risks and hazard indices.
- The subject site will be eligible for delisting from the HSI because it is in compliance with Type 4 RRS for soil and will be in compliance with Type 4 with controls risk reduction criteria for groundwater upon filing of the Environmental Covenant using institutional controls.

With the approval of this Revised CSR by EPD, Legion Industries, Inc. will submit a draft Environmental Covenant to EPD for review, comment and ultimate execution by both parties. Legion will also provide annual certification as to the continued non-residential usage of the subject site and Synergy Group, LLC properties and the lack of groundwater usage as a drinking water source on these two properties.

References:

USEPA, 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings, Office of Emergency and Remedial Response, February 2004.

USEPA, 2011. Exposure Factors Handbook, 2011 Edition. EPA/600/R-090/052F, September 2011.

USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 6, 2014.

USEPA, 2015. Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. Office of Land and Emergency Management, Washington DC. EPA 9200.2.-154. June 2015.

USEPA, 2017. Johnson and Ettinger Model to Evaluate Site-Specific Vapor Intrusion into Buildings, Version 6.0, September 2017.

USEPA, 2018. Vapor Intrusion Screening Level (VISL) Calculator, https://epa-visl.ornl.gov/cgi-bin/visl_search.

TABLES

Table 1 - Summary of Shallow Soil Testing Data (2001)

Constituent	GP-1-3'	GP-2-3'	GP-3-3'	GP-4-3'	SS-1-3'	SS-2-3'	SS-2A-0.5-1'	SS-2B-2'	SS-3-3'	SS-4-3'
Sample Date	6/14/2001	6/14/2001	6/14/2001	6/14/2001	7/23/2001	7/23/2001	11/28/2001	11/28/2001	7/23/2001	7/23/2001
VOCs, mg/kg										
Cis-1,2-Dichloroethene	<0.0052	<0.0053	<0.0054	<0.0052	<0.0044	<0.18	<0.0052	**0.78**	<0.0045	<0.0053
Vinyl Chloride	NT	NT	NT	NT	NT	NT	<0.010	<0.38	NT	NT

Constituent	SS-5-3'	SS-6-3'	SS-7-3'	SS-8-0.5-1'*	SS-9-0.5-1'	SS-10-0.5-1'	SS-11-0.5-1'	SS-12-0.5-1'*	SS-13-0.5-1'	MW-11-4-5'
Sample Date	7/23/2001	7/23/2001	7/23/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	2/14/2002
VOCs, mg/kg										
Cis-1,2-Dichloroethene	<0.005	<0.0054	<0.0047	**0.051**	**0.0089**	**0.13**	**0.012**	**190.0**	<0.0053	<0.005
Vinyl Chloride	NT	NT	NT	<0.01	<0.011	<0.01	<0.01	<3.8	<0.01	<0.01

mg/kg - milligrams per kilogram (parts per million)

NT - Not tested

Note that the laboratory analyses employed only a limited suite of VOCs

Table 2 - Summary of Soil Testing Data (2001-2010)

Constituent	SS-1-3'	SS-2B-3'	SS-3-3'	SS-4-3'	SS-5-3'	SS-6-3'	SS-7-3'	SS-8-3'	SS-9-3'	SS-10-3'	SS-11-3'	SS-12-3'	GP-1-3'	GP-2-3'	GP-3-3'	GP-3-3' (dup)	Applicable Soil RRS, mg/kg
VOCs, mg/kg																	
1,4-Dichlorobenzene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	**0.011**	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	7.5*
Chlorobenzene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	**0.038**	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	10*
Cis-1,2-Dichloroethene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	**0.029**	<0.0053	<0.0043	<0.0049	**0.012**	<0.0047	<0.0045	<0.0058	<0.0063	7.0*
Ethylbenzene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	<0.0043	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	70*
Isopropylbenzene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	<0.0043	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	33*
Tetrachloroethene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	**0.18**	<0.0053	<0.0043	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	0.5*
Toluene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	<0.0043	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	100*
Trichloroethene	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	**1.9**	<0.0053	**0.005**	**0.012**	**0.07**	<0.0047	<0.0045	<0.0058	<0.0063	0.5*
Vinyl Chloride	<0.011	<0.0089	<0.0075	<0.010	<0.010	<0.094	<0.084	**0.069**	<0.011	<0.0086	<0.098	<0.01	<0.0093	<0.009	<0.012	<0.013	0.2*
Xylenes	<0.0057	<0.0044	<0.0037	<0.0052	<0.0052	<0.0047	<0.0042	<0.0046	<0.0053	<0.0043	<0.0049	<0.005	<0.0047	<0.0045	<0.0058	<0.0063	1,000*
Metals, mg/kg																	
Barium	<5.7	**9.45**	**13.3**	**9.96**	<4.63	**22.3**	**34.7**	<5.48	**5.9**	**15**	**10.7**	**19.4**	**16.6**	**22.4**	**9.3**	**10.2**	1,000*
Chromium	**14.5**	**15.6**	**17.3**	**21.6**	**12.6**	**21.9**	**15.8**	**20.2**	**15.2**	**27.1**	**19.2**	**18.9**	**21.7**	**21.4**	**24.6**	**25.7**	1,200*
Lead	<5.7	**5.48**	**4.84**	**6.33**	**5.36**	**5.81**	**9.75**	<5.48	**5.12**	**4.55**	**6.3**	**7.82**	**5.53**	**6.65**	**5.41**	**5.38**	400*
Pesticides, mg/kg																	
4,4'-DDD	<0.0039	<0.0038	<0.0039	<0.0039	<0.0039	<0.004	<0.004	**0.0054**	<0.004	**4.6**	**0.17**	**1.8**	<0.0038	<0.004	<0.0039	<0.0039	56**
4,4'-DDE	<0.0039	<0.0038	<0.0039	<0.0039	<0.0039	<0.004	<0.004	<0.0042	<0.004	**0.22**	**0.046**	**0.48**	**0.0044**	<0.004	<0.0039	<0.0039	40**
4,4'-DDT	<0.0039	**0.0045**	<0.0039	<0.0039	<0.0039	<0.004	<0.004	**0.012**	<0.004	**6.6**	**0.18**	**5.5**	**0.012**	<0.004	<0.0039	<0.0039	57**
Aldrin	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	**0.12**	<0.002	**0.016**	<0.002	<0.002	<0.002	<0.002	0.66*
Alpha-BHC	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	<9.6	**0.0043**	<0.01	<0.0019	<0.002	<0.002	<0.002	0.66*
Alpha Chlordane	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	**0.23**	**0.029**	**0.13**	<0.0019	<0.002	<0.002	<0.002	11*
Beta-BHC	<0.002	<0.0019	**0.0087**	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	**0.03**	**0.014**	**0.018**	<0.0019	<0.002	<0.002	<0.002	0.66*
Delta-BHC	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	**0.041**	**0.0072**	<0.01	<0.0019	<0.002	<0.002	<0.002	0.19**
Dieldrin	<0.0039	<0.0038	**0.064**	<0.0039	<0.0039	<0.004	<0.004	<0.0042	<0.004	**0.22**	**0.13**	**0.27**	<0.0038	<0.004	<0.0039	<0.0039	0.66*
Endrin	<0.0039	<0.0038	<0.0039	<0.0039	<0.0039	<0.004	<0.004	<0.0042	<0.004	<0.019	**0.011**	**0.19**	<0.0038	<0.004	<0.0039	<0.0039	10*
Endrin Ketone	<0.0039	<0.0038	**0.011**	<0.0039	<0.0039	<0.004	<0.004	<0.0042	<0.004	<0.019	**0.033**	**0.44**	<0.0038	<0.004	<0.0039	<0.0039	25**
Gamma-BHC	<0.0039	<0.0038	<0.0039	<0.0039	<0.0039	<0.004	<0.004	<0.0042	<0.004	<0.019	<0.004	<0.02	<0.0038	<0.004	<0.0039	<0.0039	10*
Gamma-Chlordane	<0.002	<0.0019	**0.013**	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	**0.56**	**0.028**	**0.14**	<0.0019	<0.002	<0.002	<0.002	11*
Heptachlor	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	<9.6	**0.0024**	**0.012**	<0.0019	<0.002	<0.002	<0.002	0.66*
Heptachlor Epoxide	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0021	<0.002	<9.6	**0.012**	<0.01	<0.0019	<0.002	<0.002	<0.002	1.1**
Methoxychlor	<0.02	<0.019	<0.02	<0.02	<0.02	<0.02	<0.02	<21	<0.020	<960	**0.52**	**4.3**	<0.0190	<0.020	<0.020	<0.020	1.7*
Toxaphene	<0.020	<0.0190	**0.52**	<0.020	<0.020	<0.020	<0.020	<210	<0.02	<96	<0.02	**0.27**	<0.019	<0.02	<0.02	<0.02	15**
Herbicides, mg/kg	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	NA

mg/kg - milligrams per kilogram (parts per million)

NT - Not tested

*Type 3 Soil Risk Reduction Standard

** Type 4 Soil Risk Reduction Standard

Not Tested

Note: Shaded Value indicates exceedance of RRS

Samples outlined in red were removed during June 2013 soil remediation

Table 2 - Summary of Soil Testing Data (2001-2010)

Constituent	GP-4-3'	DP-1-3'	DP-2-3'	DP-2-3'(dup)	DP-3-3'	DP-4-3'	DP-5-3'	DP-6-3'	DP-7-3'	DP-8-3'	Applicable Soil RRS, mg/kg
VOCs, mg/kg											
1,4-Dichlorobenzene	<0.0044	<0.0052	<0.62	<26.0	<450	<0.0042	<0.0057	<0.0044	<0.0048	<44	7.5*
Chlorobenzene	<0.0044	<0.0052	<0.62	<26.0	<450	<0.0042	<0.0057	<0.0044	<0.0048	<44	10*
Cis-1,2-Dichloroethene	<0.0044	**0.12**	**9.8**	**6.9**	**3.6**	**42**	**0.069**	<0.0044	**0.011**	<44	7.0*
Ethylbenzene	<0.0044	**0.053**	**680**	**370**	**8.9**	**0.33**	**0.66**	**0.007**	<0.0048	**680**	70*
Isopropylbenzene	<0.0044	<0.0052	**10**	<26.0	<450	**0.014**	<0.0057	<0.0044	<0.0048	<44	33*
Tetrachloroethene	<0.0044	<0.0052	<0.62	<26.0	<450	<0.0042	<0.0057	<0.0044	<0.0048	<44	0.5*
Toluene	<0.0044	<0.0052	**13**	**8.1**	<450	**0.011**	**0.0094**	<0.0044	<0.0048	<44	100*
Trichloroethene	<0.0044	**0.037**	**36**	**18**	**0.81**	**0.051**	**0.028**	<0.0044	<0.0048	<44	0.5*
Vinyl Chloride	<0.0088	<0.01	<1.2	<51.0	**3.2**	**0.016**	<0.011	<8.7	**0.029**	<44	0.2*
Xylenes	<0.0044	**0.42**	**4,200**	**2,400**	**52**	**2.2**	**4.7**	**0.017**	<0.0048	**4,700**	1,000*
Metals, mg/kg											
Barium	**20.3**	**8.59**	**11**	**11.4**	**9.47**	**5**	NT	NT	NT	NT	1,000*
Chromium	**17.5**	**21.3**	**16**	**17.5**	**15**	**12**	NT	NT	NT	NT	1,200*
Lead	**5.85**	**4.88**	**4.63**	**6.04**	**4.92**	<3.89	NT	NT	NT	NT	400*
Pesticides, mg/kg											
4,4'-DDD	<0.0038	**32**	**4.8**	**6.4**	**48**	**0.47**	**10**	**0.21**	**0.27**	**2,800**	56**
4,4'-DDE	<0.0038	**2.8**	**0.69**	**0.77**	**3.3**	**0.11**	**1.7**	<0.02	<0.02	**150**	40**
4,4'-DDT	**4.2**	**180**	**5.3**	**23**	**3.7**	**2.3**	**79**	**0.093**	**0.028**	**4,300**	57**
Aldrin	<0.0019	**1.4**	**0.043**	**0.83**	**0.094**	**0.019**	<9.9	<0.01	<0.01	<9.8	0.66*
Alpha-BHC	<0.0019	**300**	**0**	**0.87**	**0.067**	**0.0091**	**0.04**	<0.01	**0.015**	**8.7**	0.66*
Alpha Chlordane	<0.0019	**4.3**	**0.34**	**0.51**	**7.6**	**0.25**	**1.3**	**0.011**	**0.025**	**160**	11*
Beta-BHC	<0.0019	<0.020	**0.019**	**0.26**	<0.039	**0.041**	**0.044**	<0.01	<0.01	**18**	0.66*
Delta-BHC	<0.0019	**210**	**0.022**	**1.1**	**1.2**	**0.028**	**0.066**	<0.01	<0.01	**79**	0.19**
Dieldrin	<0.0038	**2.8**	**0.6**	**0.84**	**8.9**	**0.54**	<2	<0.02	**0.023**	<98	0.66*
Endrin	<0.0038	**11**	**0.12**	**3.4**	<0.078	**0.32**	**4.3**	<0.02	<0.02	**370**	10*
Endrin Ketone	<0.0038	**5.4**	**0.26**	**0.8**	**1.8**	**0.35**	**3.3**	<0.02	<0.02	**270**	25**
Gamma-BHC	<0.0038	<0.390	**0.028**	**1.3**	**0.59**	**0.016**	**0.034**	<0.02	<0.02	**150**	10*
Gamma-Chlordane	<0.0019	**5.2**	**0.3**	**0.68**	**8.8**	**0.32**	**1.5**	**0.013**	**0.041**	**180**	11*
Heptachlor	<0.0019	**2.3**	**0.028**	**0.98**	**0.72**	**0.018**	**0.15**	<0.01	<0.01	**42**	0.66*
Heptachlor Epoxide	<0.0019	<0.020	<0.01	<0.039	<0.039	<0.0019	<9.9	<0.01	<0.01	<49	1.1**
Methoxychlor	<0.019	**7.8**	<0.010	<0.390	<0.390	<0.019	<9.9	<0.010	<0.010	<49	1.7*
Toxaphene	<0.0190	**98**	**5.9**	**38**	**61**	**5.4**	**56**	<0.010	<0.010	**2,700**	15**
Herbicides, mg/kg	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	NA

mg/kg - milligrams per kilogram (parts per million)

NT - Not tested

*Type 3 Soil Risk Reduction Standard

** Type 4 Soil Risk Reduction Standard

Not Tested

Note: Shaded Value indicates exceedance of RRS

Samples outlined in red were removed during June 2013 soil remediation

Table 3 - Summary of Soil Delineation Data (January 2013)

Boring No.	GP-9	GP-10	GP-11	GP-12	GP-15	GP-17	SS-13		SS-14		SS-15		SS-16		SS-17		Applicable Soil RRS, mg/kg
Depth, Ft.	3	2-2-.5	2-2.5	2-2.5	2-2.5	2-2.5	0.5-1	2-2.5	0.5-1	2-2.5	0.5-1	2-2.5	0.5-1	2-2.5	0.5-1	2-2.5	
VOCs, mg/kg																	
1,4-Dichlorobenzene	<0.0047	<0.0049	<0.004	**0.12**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	7.5*
1,1,1,2-Tetrachloroethane	<0.0047	<0.0049	<0.004	**0.018**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	0.5*
Benzene	<0.0047	<0.0049	<0.004	**0.013**	NT	<0.0045	<0.004	**0.0057**	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	0.5*
Chlorobenzene	<0.0047	<0.0049	<0.004	**0.099**	NT	<0.0045	**0.0075**	**0.02**	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	10*
cis-1,2-Dichloroethene	<0.0047	<0.0049	<0.004	**0.22**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	**0.14**	<0.0048	<0.0057	7.0*
Ethylbenzene	<0.0047	<0.0049	<0.004	**0.011**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	70*
Isopropylbenzene	<0.0047	<0.0049	<0.004	<0.0043	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	33**
Tetrachloroethene	<0.0047	<0.0049	<0.004	**0.017**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	0.5*
Toluene	<0.0047	<0.0049	<0.004	**0.0053**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	100*
Trichloroethene	<0.0047	<0.0049	<0.004	**0.82**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.0054	<0.0054	**0.1**	**0.16**	<0.0048	<0.0057	0.5*
Vinyl Chloride	<0.0094	<0.0097	<0.008	**0.038**	NT	<0.009	<0.0086	<0.010	<0.0078	<0.011	<0.012	<0.011	<0.10	<0.0047	<0.0096	<0.011	0.2*
Xylenes	<0.0047	<0.0049	<0.004	**0.019**	NT	<0.0045	<0.004	<0.0052	<0.0039	<0.0054	<0.006	<0.0054	<0.005	<0.0047	<0.0048	<0.0057	1,000*
PESTICIDES, mg/kg																	
4,4'-DDD	**0.0062**	<0.190	<0.0037	**1.4**	<0.0037	NT	**0.088**	<0.0041	**0.13**	**0.093**	**0.073**	<0.004	<0.02	<0.004	<0.019	<0.004	56**
4,4'-DDE	**0.0057**	**0.81**	**0.0064**	**0.077**	<0.0037	NT	**0.0049**	<0.0041	**0.028**	**0.045**	**0.016**	<0.004	<0.02	<0.004	**0.27**	<0.004	40**
4,4'-DDT	**0.02**	**14**	**0.005**	**2**	<0.0037	NT	**0.0082**	**0.005**	**0.062**	**0.086**	**0.039**	<0.004	<0.02	<0.004	**0.36**	**0.005**	57**
Aldrin	<0.0018	**0.82**	<0.0018	**0.01**	<0.0018	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	<0.002	0.66*
Alpha BHC	<0.0018	<0.097	<0.0018	**0.25**	<0.0018	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	<0.002	0.66*
Alpha Chlordane	<0.0018	**0.75**	**0.0021**	**0.11**	<0.0018	NT	**0.0067**	<0.0021	**0.0093**	**0.0051**	**0.015**	<0.002	<0.098	<0.002	**0.17**	<0.002	11*
Beta BHC	<0.0018	**0.11**	<0.0018	**0.041**	<0.0018	NT	**0.0021**	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	**0.0026**	0.66*
Delta BHC	<0.0018	**0.2**	**0.0037**	**0.093**	**0.004**	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	**0.0076**	0.19**
Dieldrin	<0.0037	**5**	<0.0037	**0.058**	<0.0037	NT	**0.02**	<0.0041	**0.028**	**0.0098**	**0.03**	<0.004	<0.02	<0.004	**0.31**	<0.004	0.66*
Endosulfan II	<0.0037	<0.190	<0.0037	<0.019	<0.0037	NT	<0.0039	<0.0041	<0.0038	<0.0039	**0.0057**	<0.004	<0.02	<0.004	<0.019	<0.004	10*
Endrin	<0.0037	<0.190	<0.0037	**0.28**	<0.0037	NT	<0.0039	<0.0041	**0.0075**	<0.0039	<0.002	<0.004	<0.02	<0.004	<0.019	<0.004	25**
Endrin Ketone	**0.0042**	<0.190	**0.015**	**0.18**	<0.0018	NT	<0.0039	<0.0041	**0.0082**	<0.0039	**0.0046**	<0.004	<0.02	<0.004	<0.019	<0.004	10*
Gamma Chlordane	<0.0018	**0.96**	**0.0019**	**0.091**	<0.0018	NT	**0.006**	<0.0021	**0.012**	**0.0046**	**0.016**	<0.002	<0.098	<0.002	**0.21**	<0.002	11*
Gamma BHC	<0.0018	<0.097	<0.0018	**0.55**	<0.0018	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	<0.002	0.66*
Heptachlor	<0.0018	<0.097	<0.0018	**0.02**	<0.0018	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	<0.002	1.1**
Heptachlor Epoxide	<0.0018	<0.097	<0.0018	<0.0096	<0.0018	NT	<0.002	<0.0021	<0.0019	<0.0019	<0.002	<0.002	<0.098	<0.002	<0.0093	<0.002	1.7*
Toxaphene	<0.18	**70**	<0.18	**2.7**	<0.18	NT	<0.20	<0.21	<0.19	<0.19	<0.20	<0.20	<0.98	<0.20	**3.7**	<0.20	15**

mg/kg - milligrams per kilogram (parts per million)

*Type 3 Soil Risk Reduction Standard

** Type 4 Soil Risk Reduction Standard

NT - Not tested

Note: Shaded values indicate exceedance of RRS

Samples outlined in red were removed during June 2013 soil remediation

Table 4 - Summary of Soil Confirmation Data - Interior Excavation (2013)

Boring No.	DP-6	DP-7	DP-9	GP-10	GP-11	GP-12	GP-17[1]	GP-15[2]	GP-9	CS-8	CS-9A	**Applicable Soil RRS, mg/kg**
Depth, Ft.	3	2-2-.5	2-2.5	2-2.5	2-2.5	2-2.5	2-2.5	0.5-1	2-2.5	0.5-1	2-2.5	
VOCs, mg/kg												
1,4-Dichlorobenzene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.12**	<0.0045	NT	<0.0047	<0.005	NT	7.5*
1,1,2,2-Tetrachloroethene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.018**	<0.0045	NT	<0.0047	<0.005	NT	0.5*
Benzene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.013**	<0.0045	NT	<0.0047	<0.005	NT	0.5*
Chlorobenzene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.099**	<0.0045	NT	<0.0047	<0.005	NT	10*
Cis-1,2-Dichloroethene	<0.0044	**0.011**	<0.0054	<0.0049	<0.004	**0.22**	<0.0045	NT	<0.0047	<0.005	NT	7.0*
Ethylbenzene	**0.007**	<0.0048	<0.0054	<0.0049	<0.004	**0.011**	<0.0045	NT	<0.0047	<0.005	NT	70*
Tetrachloroethene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.017**	<0.0045	NT	<0.0047	<0.005	NT	0.5*
Toluene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.0053**	<0.0045	NT	<0.0047	<0.005	NT	100*
Trichloroethene	<0.0044	<0.0048	<0.0054	<0.0049	<0.004	**0.82**	<0.0045	NT	<0.0047	<0.005	NT	0.5*
Vinyl Chloride	<0.0087	**0.029**	<0.0054	<0.0097	<0.008	**0.028**	<0.009	NT	<0.0094	<0.010	NT	0.2*
Xylenes	**0.017**	<0.0048	<0.0054	<0.0049	<0.004	**0.019**	**0.021**	NT	<0.0047	<0.005	NT	1,000*
PESTICIDES, mg/kg												
4,4'-DDD	**0.21**	**0.27**	<0.0038	<0.19	<0.0037	**1.4**	NT	<0.0037	**0.0062**	<0.0037	<0.0042	56**
4,4'-DDE	<0.020	<0.020	<0.0038	**0.81**	**0.0064**	**0.077**	NT	<0.0037	**0.0057**	<0.0037	<0.0042	40**
4,4'-DDT	**0.093**	**0.028**	<0.0038	**14**	**0.005**	**2**	NT	<0.0037	**0.02**	**0.0049**	**0.013**	57**
Aldrin	<0.010	<0.010	<0.0038	<0.097	<0.0018	**0.01**	NT	<0.0018	<0.0018	<0.0018	<0.0021	0.66*
Alpha BHC	<0.010	**0.015**	<0.0038	<0.097	<0.0018	**0.25**	NT	<0.0018	<0.0018	**0.0027**	<0.0021	0.66*
Alpha Chlordane	**0.011**	**0.025**	<0.0194	**0.75**	**0.0021**	**0.11**	NT	<0.0018	<0.0018	<0.0018	**0.034**	11*
Beta BHC	<0.010	<0.010	<0.0038	**0.11**	<0.0018	**0.041**	NT	<0.0018	<0.0018	<0.0018	<0.0021	0.66*
Delta BHC	<0.020	<0.010	<0.0038	**0.2**	**0.0037**	**0.093**	NT	**0.004**	<0.0018	<0.0018	<0.0021	0.19**
Dieldrin	<0.020	**0.023**	<0.0038	**5**	<0.0037	**0.058**	NT	<0.0037	<0.0037	<0.0037	<0.0042	0.66*
Endrin	<0.020	<0.020	<0.0075	<0.19	<0.0037	**0.28**	NT	<0.0037	<0.0037	<0.0037	<0.0042	25**
Endrin Ketone	<0.020	<0.020	<0.0075	<0.19	**0.015**	**0.18**	NT	<0.0037	**0.0042**	**0.007**	<0.0042	10*
Gamma Chlordane	**0.013**	**0.041**	<0.0194	**0.96**	**0.0019**	**0.091**	NT	<0.0018	<0.0018	<0.0018	**0.0061**	11*
Gamma BHC	<0.010	<0.010	<0.0038	<0.097	<0.0018	**0.55**	NT	<0.0018	<0.0018	**0.0031**	<0.0021	0.66*
Heptachlor	<0.010	<0.010	<0.0038	<0.097	<0.0018	**0.02**	NT	<0.018	<0.018	<0.0037	<0.0021	1.1**
Toxaphene	<1.0	<1.0	<0.0753	**70**	<0.180	**2.7**	NT	<0.180	<0.180	<0.180	<0.21	15**

mg/kg - milligrams per kilogram (parts per million)

NT - Not tested

*Type 3 Soil Risk Reduction Standard

** Type 4 Soil Risk Reduction Standard

NT - Not tested

Note: Shaded values indicate exceedance of RRS

[1]GP-17 was not tested for pesticides as the adjacent sample (GP-12) did not detect pesticides above RRS.

[2]GP-15 was not tested for VOCs as the adjacent sample (GP-10) did not detect VOCs above RRS

Samples outlined in red were removed during June 2013 soil remediation

Table 5 – Soil Confirmation Testing Results
West Exterior Excavation

Boring No.	CS-1	CS-2	CS-12	SS-8S15	SS-16	SS-16	Applicable Soil RRS, mg/kg
Depth, Ft.	1.5	1.5	1.5	2	0.5-1	2-2.5	
VOCs, mg/kg							
Cis-1,2-Dichloroethene	NT	NT	NT	NT	0.048	0.14	0.7
Trichloroethene	**0.064**	**0.032**	<0.0052	0.034	0.1	0.16	0.5

mg/kg - milligrams per kilogram (parts per million)

Table 6 – Soil Confirmation Testing Results
East Exterior Excavation

Boring No.	CS-6	CS-7	CS-11	CS-14	SS-12W15	SS-12E15	Applicable Soil RRS, mg/kg
Depth, Ft.	1.5	1.5	1.5	2	1.5	1.5	
VOCs, mg/kg							
Trichloroethene	**0.061**	**0.018**	<0.0042	**0.024**	<0.0059	<0.0053	0.5

mg/kg - milligrams per kilogram (parts per million)

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-1									MW-2						
Date	Type 3	Type 4	4/25/2001	8/3/2001	2/19/2002	12/11/2009	12/31/2013	6/16/2014	12/17/2014	6/3/2015	DUP	11/29/2001	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/16/2014	6/5/2015
VOCs, ug/L																		
1,1-Dichloroethane	4,000	46	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	523	NT	NT	<5.0	<5.0	<5.0	**2.2**	<10	<10	<10	<20	<10	<5.0	<5.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	548	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	600	548	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	70	519	NT	NT	NT	<5.0	<5.0	**1.2**	<10	<10	<10	NT	NT	<5.0	<5.0	**3.0**	**1.6**	**2.0**
1,2,4-Trichlorobenzene	70	5.79	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	5	4.6	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Benzene	5	8.8	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	**3.9**	**3.4**	**3.5**
Chlorobenzene	100	130	NT	NT	NT	<5.0	<5.0	**1.4**	<10	<10	<10	NT	NT	**10**	**8.6**	**11.8**	**10.2**	**12.3**
Chloroform	80	3	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	3	270	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<5.0	<5.0	<5.0
Cis-1,2-Dichloroethene	70	200	NT	NT	**180**	**820**	**145**	**902**	**709**	**742**	**724**	**480**	**270**	**430**	**101**	**160**	**77.2**	**145**
Ethylbenzene	700	29	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	**2.5**	**1.4**	**2.3**
Isopropylbenzene	5	1,000	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Isopropyltoluene	NR	NR	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	**1.6**	<1.0
Methylene Chloride	5	450	NT	NT	NT	<5.0	<5.0	<2.0	<20	<20	<20	NT	NT	<5.0	<5.0	<2.0	<2.0	<2.0
Naphthalene	20	2.4	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	**10.5**	<1.0	**5.5**
Tetrachloroethene	5	98	NT	NT	NT	<5.0	<5.0	**1.2**	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Toluene	1000	5200	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	100	160	NT	NT	<5.0	<5.0	<5.0	**2.9**	<10	<10	<10	<20	<10	<5.0	<5.0	**1.1**	<1.0	<1.0
Trichloroethene	5	38	**350**	**180**	**140**	**860**	**193**	**788**	**612**	**623**	**596**	**25**	**14**	**5.6**	<5.0	**2.1**	<1.0	**2.0**
Vinyl Chloride	2	3.3	NT	NT	<10	**5**	<5.0	**160**	<10	**13.9**	**13**	<40	<20	**350**	**107**	**159**	**88.1**	**120**
Xylenes	10,000	290	NT	NT	NT	<5.0	<5.0	<1.0	<10	<10	<10	NT	NT	**18**	<10	**6.1**	**2.3**	**7.8**
Pesticides, ug/L																		
4,4'-DDD	0.1	12	NT	NT	NT	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.10	<1.0	<1.0	<1.2	<1.2
4,4'-DDE	0.1	84	NT	NT	NT	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.10	<1.0	<1.0	<1.2	<1.2
4,4'-DDT	0.1	8.4	NT	NT	NT	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.10	<1.0	<1.0	<1.2	<1.2
Alpha-BHC	0.05	0.45	NT	NT	NT	**0.052**	**<0.05**	<0.05	<0.05	<0.05	<0.05	NT	NT	**2**	**6.4**	**5.3**	**7.3**	**6.5**
Beta-BHC	0.05	1.6	NT	NT	NT	**0.073**	**0.057**	**0.11**	**0.082**	**0.16**	**0.19**	NT	NT	**0.49**	**1.5**	<1.0	**1.4**	<1.2
Delta-BHC	0.05	1.6	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	**1.8**	**8**	**8.1**	**8.7**	**9**
Dieldrin	0.1	0.18	NT	NT	NT	<0.10	0.076	**0.12**	**0.058**	**0.13**	**0.15**	NT	NT	**0.5**	<1.0	**1.8**	<1.2	<1.2
Endosulfan II	2	610	NT	NT	NT	<0.10	0.076	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.10	<0.10	<0.10	<1.2	<1.2
Endrin	2	31	NT	NT	NT	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.10	<1.0	<1.0	<1.2	<1.2
Endrin Ketone	0.1	ND	NT	NT	NT	**0.13**	**0.1**	**0.24**	**0.17**	**0.25**	**0.3**	NT	NT	**0.31**	<1.0	<1.0	<1.2	<1.2
Gamma-BHC	0.2	2.6	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	**1.1**	**2.3**	**1.9**	**2.5**	**2.3**
Chlordane	2	8.2	NT	NT	NT	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	NT	NT	**2.22**	<4.0	<4.0	<5.0	<5.0
Toxaphene	5	2.6	NT	NT	NT	<5.0	<0.2	<0.2	<0.2	<0.2	<0.2	NT	NT	<5.0	<4.0	<4.0	<5.0	<5.0
Chlorinated Herbicides			NT	NT	NT	BRL	NT	NT	NT	NT	NT	NT	NT	BRL	NT	NT	NT	NT

NT - Not Tested
ug/L - micrograms per liter (parts per billion)
NT - Not tested
Note: Shaded values indicate exceedance of RRS
Samples outlined in red were removed during June 2013 soil remediation
NR - Not a HSRA regulated constituent

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-3								MW-4							MW-5					
Date	Type 3	Type 4	4/25/2001	12/13/2001	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/16/2014	6/5/2015	2/19/2002	3/11/2009	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/4/2015	2/19/2002	12/11/2009	12/30/2013	6/18/2014	12/18/2014	6/3/2015
VOCs, ug/L																							
1,1-Dichloroethane	4,000	46	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	523	NT	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	548	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	600	548	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	70	519	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	5.79	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	5	4.6	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Benzene	5	8.8	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
Chlorobenzene	100	130	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Chloroform	80	3	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Chloromethane	3	270	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene	70	200	NT	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	**15**	<5.0	<5.0	NS	**5.1**	**3.2**	**3.5**	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
Ethylbenzene	700	29	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	1,000	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
Isopropyltoluene	NR	NR	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
Methylene Chloride	5	450	NT	NT	NT	<5.0	<5.0	<2.0	<2.0	<2.0	NT	<5.0	<5.0	NS	<2.0	<2.0	<2.0	NT	NT	<5.0	<2.0	<2.0	<2.0
Naphthalene	20	2.4	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	<5.0	<5.0	NS	<1.0	<1.0	<1.0	NT	NT	<5.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	98	NT	NT	NT	<5.0	<5.0	<1.0	<1.0	<1.0	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Toluene	1000	5200	NT	NT	NT	<5.0	<5.0	<1.0	**1.2**	**1.0**	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	100	160	NT	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
Trichloroethene	5	38	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	**1.6**	**11**	<5.0	<5.0	NS	**7.8**	**1.7**	**1.2**	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
Vinyl Chloride	2	3.3	NT	<10	<10	<2.0	<2.0	<1.0	<1.0	<1.0	<10	<10	<2.0	NS	<1.0	<1.0	<1.0	<10	<2.0	<2.0	<1.0	<1.0	<1.0
Xylenes	10,000	290	NT	NT	NT	<5.0	<5.0	<2.0	<2.0	<2.0	NT	NT	<5.0	NS	<2.0	<2.0	<2.0	NT	<5.0	<5.0	<2.0	<2.0	<2.0
Pesticides, ug/L																							
4,4'-DDD	0.1	12	NT	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.10	<0.10	<0.05	<0.05	<0.05
4,4'-DDE	0.1	84	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	0.1	8.4	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Alpha-BHC	0.05	0.45	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Beta-BHC	0.05	1.6	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Delta-BHC	0.05	1.6	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.1	0.18	NT	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.10	<0.10	<0.05	<0.05	<0.05
Endosulfan II	2	610	NT	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.10	<0.10	<0.05	<0.05	<0.05
Endrin	2	31	NT	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin Ketone	0.1	ND	NT	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.10	<0.10	<0.05	<0.05	<0.05
Gamma-BHC	0.2	2.6	NT	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	2	8.2	NT	NT	NT	<0.2	<0.2	<0.2	<0.2	<0.2	NT	NT	<0.05	NS	<0.2	<0.2	<0.2	NT	<0.05	<0.05	<0.2	<0.2	<0.2
Toxaphene	5	2.6	NT	NT	NT	<0.2	<0.2	<0.2	<0.2	<0.2	NT	NT	<5.0	NS	<0.2	<0.2	<0.2	NT	<5.0	<0.2	<0.2	<0.2	<0.2
Chlorinated Herbicides			NT	NT	NT	BRL	NT	NT	NT	NT	NT	NT	BRL	NS	NT	NT	NT	NT	BRL	NT	NT	NT	NT

NT - Not Tested
ug/L - micrograms per liter (parts per billion)
NT - Not tested
Note: Shaded values indicate exceedance of RRS
Samples outlined in red were removed during June 2013 soil remediation
NR - Not a HSRA regulated constituent

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-6						MW-7								MW-8	MW-9					
Date	Type 3	Type 4	2/19/2002	3/11/2002	12/11/2009	12/31/2013	12/18/2014	6/3/2015	2/19/2002	3/11/2002	12/11/2009	12/31/2013	DUP	6/18/2014	12/18/2014	6/4/2015	2/19/2002	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/18/2014	6/5/2015
VOCs, ug/L																							
1,1-Dichloroethane	4,000	46	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	523	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0	<5.0	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	548	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	600	548	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	70	519	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	5.79	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	5	4.6	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Benzene	5	8.8	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Chlorobenzene	100	130	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Chloroform	80	3	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Chloromethane	3	270	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene	70	200	**10**	**6**	<5.0	<5.0	**5.3**	<1.0	**130**	**110**	NS	**5.5**	**7.6**	**17.4**	**11.5**	**3.9**	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	**2.8**
Ethylbenzene	700	29	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	1,000	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Isopropyltoluene	NR	NR	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Methylene Chloride	5	450	NT	NT	<5.0	<5.0	<2.0	<2.0	NT	NT	NS	<5.0	<5.0	<2.0	<2.0	<2.0	<5.0	NT	<5.0	<5.0	<2.0	<2.0	<2.0
Naphthalene	20	2.4	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	98	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Toluene	1000	5200	NT	NT	<5.0	<5.0	<1.0	<1.0	NT	NT	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	NT	<5.0	<5.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	100	160	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	NT	<5.0	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
Trichloroethene	5	38	**17**	**11**	**14**	<5.0	**4.2**	**1**	**59**	**66**	NS	**7.1**	**8.7**	<1.0	**10.4**	**6.9**	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	**8.5**
Vinyl Chloride	2	3.3	<10	<10	<2.0	<2.0	<1.0	<1.0	NT	<10	NS	<5.0	<5.0	<1.0	<1.0	<1.0	<2.0	<10	<2.0	<2.0	<1.0	<1.0	<1.0
Xylenes	10,000	290	NT	NT	<5.0	<5.0	<2.0	<2.0	NT	NT	NS	<5.0	<5.0	<2.0	<2.0	<2.0	<5.0	NT	<5.0	<5.0	<2.0	<2.0	<2.0
Pesticides, ug/L																							
4,4'-DDD	0.1	12	NT	NT	<0.10	<0.10	<0.05	<0.05	NT	NT	NS	<0.10	<0.10	<0.05	<0.05	<0.05	<0.10	NT	**0.2**	**0.42**	**0.13**	<0.05	**0.088**
4,4'-DDE	0.1	84	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	**0.31**	**0.23**	**0.16**	<0.05	<0.05
4,4'-DDT	0.1	8.4	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Alpha-BHC	0.05	0.45	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Beta-BHC	0.05	1.6	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Delta-BHC	0.05	1.6	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.1	0.18	NT	NT	<0.10	<0.10	<0.05	<0.05	NT	NT	NS	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	<0.10	<0.05	<0.05	**0.16**
Endosulfan II	2	610	NT	NT	<0.10	<0.10	<0.05	<0.05	NT	NT	NS	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05
Endrin	2	31	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin Ketone	0.1	ND	NT	NT	<0.10	<0.10	<0.05	<0.05	NT	NT	NS	<0.10	<0.10	<0.05	<0.05	<0.05	NT	NT	<0.10	<0.10	<0.05	<0.05	<0.05
Gamma-BHC	0.2	2.6	NT	NT	<0.05	<0.05	<0.05	<0.05	NT	NT	NS	<0.05	<0.05	<0.05	<0.05	<0.05	NT	NT	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	2	8.2	NT	NT	<0.05	<0.05	<0.2	<0.2	NT	NT	NS	<0.05	<0.05	<0.2	<0.2	<0.2	NT	NT	<0.05	<0.05	<0.2	<0.2	<0.2
Toxaphene	5	2.6	NT	NT	<5.0	**0.26**	<0.2	<0.2	NT	NT	NS	<0.05	<0.05	<0.2	<0.2	<0.2	NT	NT	<0.05	<0.05	<0.2	<0.2	<0.2
Chlorinated Herbicides			NT	NT	BRL	NT	NT	NT	NT	NT	NS	BRL	NT	NT	NT	NT	NT	NT	BRL	NT	NT	NT	NT

NT - Not Tested
ug/L - micrograms per liter (parts per billion)
NT - Not tested
Note: Shaded values indicate exceedance of RRS
Samples outlined in red were removed during June 2013 soil remediation
NR - Not a HSRA regulated constituent

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-10							MW-11						MW-12					
Date	Type 3	Type 4	2/19/2002	3/11/2002	1/28/2010	12/31/2013	6/19/014	12/18/2014	6/4/2015	2/19/2002	1/28/2010	12/31/2013	6/18/2014	12/18/2014	6/3/2015	1/28/2010	12/30/2010	6/18/2014	DUP	12/16/2014	6/4/2015
VOCs, ug/L																					
1,1-Dichloroethane	4,000	46	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	7	523	<5.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	548	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	600	548	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	70	519	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	5.79	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	5	4.6	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Benzene	5	8.8	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100	130	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chloroform	80	3	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	3	270	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene	70	200	<5.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	NS	<1.0	**6.2**	**2.3**	<5.0	<5.0	**2.1**	**2.4**	**3.4**	**2.6**
Ethylbenzene	700	29	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	**8.3**	**12.4**	**13.2**	<1.0	<1.0
Isopropylbenzene	5	1,000	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Isopropyltoluene	NR	NR	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	450	NT	NT	<5.0	NS	<2.0	<2.0	<2.0	NT	<5.0	NS	<2.0	<2.0	<2.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0
Naphthalene	20	2.4	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	**1.0**	**3.4**	**2.3**	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	98	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	1000	5200	NT	NT	<5.0	NS	<1.0	<1.0	<1.0	NT	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	100	160	<5.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	NS	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	5	38	**16**	**11**	<5.0	NS	<1.0	**1.0**	<1.0	<5.0	<5.0	NS	<1.0	**5.7**	**2.8**	<5.0	<5.0	<1.0	<1.0	**21.2**	**17.4**
Vinyl Chloride	2	3.3	<10	<10	<2.0	NS	<1.0	<1.0	<1.0	<10	<2.0	NS	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0
Xylenes	10,000	290	NT	NT	<5.0	NS	<2.0	<2.0	<2.0	NT	<5.0	NS	<2.0	<2.0	<2.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0
Pesticides, ug/L																					
4,4'-DDD	0.1	12	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	<0.10	NS	<0.5	**0.54**	<0.5	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	0.1	84	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.10	NS	<0.5	<0.2	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	0.1	8.4	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	**0.15**	NS	<0.5	<0.2	<0.5	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05
Alpha-BHC	0.05	0.45	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	**0.33**	NS	**0.79**	**1.0**	**1.2**	**0.11**	**0.11**	<0.05	<0.05	**0.073**	**0.18**
Beta-BHC	0.05	1.6	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	**0.11**	NS	<0.5	**0.52**	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Delta-BHC	0.05	1.6	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	**0.35**	NS	**0.79**	**1.2**	<0.5	**0.08**	**0.076**	**0.055**	**0.072**	**0.058**	**0.095**
Dieldrin	0.1	0.18	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	**0.72**	NS	**1.3**	**0.72**	<0.5	<0.10	<0.10	<0.10	<0.05	<0.05	<0.05
Endosulfan II	2	610	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	**0.4**	NS	<0.5	<0.2	<0.5	<0.10	<0.10	<0.10	<0.05	<0.05	<0.05
Endrin	2	31	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	<0.05	NS	<0.5	<0.2	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin Ketone	0.1	ND	NT	NT	<0.10	NS	<0.05	<0.05	<0.05	NT	**2.3**	NS	**3**	**2.4**	**3.4**	<0.10	<0.10	<0.10	<0.05	<0.05	<0.05
Gamma-BHC	0.2	2.6	NT	NT	<0.05	NS	<0.05	<0.05	<0.05	NT	**0.22**	NS	<0.5	**0.42**	**0.56**	**0.25**	**0.29**	**0.13**	**0.16**	**0.2**	**0.44**
Chlordane	2	8.2	NT	NT	<0.05	NS	<0.2	<0.2	<0.2	NT	<0.05	NS	<2.0	<0.8	<2.0	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2
Toxaphene	5	2.6	NT	NT	<5.0	NS	<0.2	<0.2	<0.2	NT	<5.0	NS	<2.0	<0.8	<2.0	<5.0	<0.05	<0.05	<0.2	<0.2	<0.2
Chlorinated Herbicides			NT	NT	BRL	NS	NT	NT	NT	NT	BRL	NS	NT	NT		BRL	BRL	NT	NT	NT	NT

NT - Not Tested
ug/L - micrograms per liter (parts per billion)
NT - Not tested
Note: Shaded values indicate exceedance of RRS
Samples outlined in red were removed during June 2013 soil remediation
NR - Not a HSRA regulated constituent

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-13						MW-14				MW-15			MW-16			MW-17		
Date	Type 3	Type 4	1/28/2010	12/30/2013	6/18/2014	12/17/2014	DUP	6/4/2015	6/19/2014	12/18/2014	DUP	6/4/2015	6/18/2014	12/17/2014	6/3/2015	6/18/2014	12/17/2014	6/5/2015	6/18/2014	12/16/2014	6/5/2015
VOCs, ug/L																					
1,1-Dichloroethane	4,000	46	19	7.6	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
1,1-Dichloroethene	7	523	11	5.3	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
1,2-Dichlorobenzene	600	548	12	7.8	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
1,3-Dichlorobenzene	600	548	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
1,4-Dichlorobenzene	70	519	50	42.4	47	41.1	<50	56.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.9	2.1	2.2	<5.0	<5.0	<20
1,2,4-Trichlorobenzene	70	5.79	51	22	32	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
1,1,2-Trichloroethane	5	4.6	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
Benzene	5	8.8	<5.0	14.6	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10	3.7	3.2	<5.0	<5.0	<20
Chlorobenzene	100	130	65	44.7	48.1	36.4	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	45.3	11.7	11.7	<5.0	<5.0	<20
Chloroform	80	3	<5.0	<5.0	<20	<20	<20	<20	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<20
Chloromethane	3	270	<5.0	<5.0	<20	<20	<20	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<20
Cis-1,2-Dichloroethene	70	200	2,900	1,260	1,120	1,710	1,850	1,030	1.67	3	2.1	2.5	1.1	62	50.9	1.4	<1.0	2.5	803	993	1,010
Ethylbenzene	700	29	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	657	1.7	<1.0	<5.0	<5.0	<20
Isopropylbenzene	5	1,000	7.3	5.2	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
Isopropyltoluene	NR	NR	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
Methylene Chloride	5	450	5.4	<5.0	<40	<40	<100	<100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<5.0	<5.0	53.5
Naphthalene	20	2.4	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	174	2.0	<1.0	6.1	5.4	<20
Tetrachloroethene	5	98	19	11.4	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
Toluene	1000	5200	<5.0	<5.0	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	<1.0	<1.0	<5.0	<5.0	<20
Trans-1,2-Dichloroethene	100	160	6.0	32.4	<20	<20	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20
Trichloroethene	5	38	8,200	4,320	2,710	4,770	4,460	2,580	<1.0	4	2.8	1.1	<1.0	62.8	58.8	<5.0	<1.0	5.6	926	2,340	976
Vinyl Chloride	2	3.3	3,300	933	657	516	588	576	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	46.9	12.5	6.6	33	20.1	22.6
Xylenes	10,000	290	9.8	<10	<20	<20	<50	<50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	928	1.1	<1.0	<10.0	<10.0	<20.0
Pesticides, ug/L																					
4,4'-DDD	0.1	12	2.9	4.2	3.8	3.2	3.9	1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	1.4	<0.10	<0.05	<0.05
4,4'-DDE	0.1	84	<0.5	<1.0	2.3	<1.0	<1.0	<1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	1	<0.10	<0.05	<0.05
4,4'-DDT	0.1	8.4	2.4	8.4	7.6	6.9	8.4	4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	<0.10	0.13	<0.05
Alpha-BHC	0.05	0.45	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	0.21	0.35	0.41
Beta-BHC	0.05	1.6	3.7	4.3	4.2	3.7	4.4	2.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.48	0.48	1.9	1.0	1.2	0.75
Delta-BHC	0.05	1.6	2.3	2.5	1.9	1.9	2.2	1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.4	1.8	5.4	0.45	0.47	0.52
Dieldrin	0.1	0.18	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	0.22	0.17	<0.05
Endosulfan II	2	610	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	<0.10	<0.10	<0.10
Endrin	2	31	7.3	8.0	6.0	4.5	5.6	3.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	0.28	0.4	<0.05
Endrin Ketone	0.1	ND	3.3	4.9	4.0	4.3	5.1	2.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	0.26	0.65	0.29
Gamma-BHC	0.2	2.6	2.0	1.8	1.5	1.5	1.5	<1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.25	<1.0	<0.10	0.078	0.066
Chlordane	2	8.2	<0.05	<4.0	<4.0	<4.0	<4.0	<4.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<1.0	<4.0	<0.4	<0.2	<0.2
Toxaphene	5	2.6	44	<4.0	<4.0	<4.0	<4.0	<4.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<1.0	<4.0	<0.4	<0.2	<0.2
Chlorinated Herbicides			BRL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BRL	BRL	NT	NT	NT	NT

NT - Not Tested
ug/L - micrograms per liter (parts per billion)
NT - Not tested
Note: Shaded values indicate exceedance of RRS
Samples outlined in red were removed during June 2013 soil remediation
NR - Not a HSRA regulated constituent

Table 7 - Cumulative Summary of Groundwater Testing Results

Constituent	Non-Residential Risk Reduction Standards, µg/L		MW-18			MW-19				MW-20	PZ-2								SW-1	SW-2
Date	Type 3	Type 4	6/19/2014	12/17/2014	6/4/2015	6/19/2014	12/18/2014	6/4/2015	DUP	8/21/2018	8/3/2001	9/25/2001	11/29/2001	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/5/2015	12/11/2009	12/11/2009
VOCs, ug/L																				
1,1-Dichloroethane	4,000	46	4	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
1,1-Dichloroethene	7	523	1.7	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	<1,000	14	9.7	<100	<100	<250	<5.0	<5.0
1,2-Dichlorobenzene	600	548	3.2	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
1,3-Dichlorobenzene	600	548	1	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
1,4-Dichlorobenzene	70	519	11.5	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
1,2,4-Trichlorobenzene	70	5.79	7.7	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
1,1,2-Trichloroethane	5	4.6	1.6	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	21	9.9	<100	<100	<250	<5.0	<5.0
Benzene	5	8.8	4.1	<50	<50	<1.0	6.3	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Chlorobenzene	100	130	15.4	<50	<50	<1.0	14.1	<25	<25	<1.0	NT	NT	NT	6.9	<5.0	<100	<100	<250	<5.0	<5.0
Chloroform	80	3	<1.0	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Chloromethane	3	270	<1.0	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Cis-1,2-Dichloroethene	70	200	2,530	1,710	1,660	127	205	125	116	<1.0	NT	NT	20,000	8,000	3,660	3,340	5,380	7,280	<5.0	<5.0
Ethylbenzene	700	29	<1.0	<50	<50	311	2,330	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Isopropylbenzene	5	1,000	<1.0	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Isopropyltoluene	NR	NR	<1.0	<50	<50	<1.0	6.2	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Methylene Chloride	5	450	5.4	<250	<250	<1.0	<5.0	<25	<25	<2.0	NT	NT	NT	<5.0	<5.0	<100	<100	592	<5.0	<5.0
Naphthalene	20	2.4	3.5	5.4	<50	10	63.8	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Tetrachloroethene	5	98	3.5	<50	<50	<1.0	<5.0	<25	<25	<1.0	NT	NT	NT	130	27.8	<100	<100	<250	<5.0	<5.0
Toluene	1000	5200	<1.0	<50	<50	12.1	50.6	<25	<25	<1.0	NT	NT	NT	<5.0	<5.0	<100	<100	<250	<5.0	<5.0
Trans-1,2-Dichloroethene	100	160	3.6	<50	<50	<5.0	<5.0	<25	<25	<1.0	NT	NT	<1,000	17	80.3	<100	<100	<250	<5.0	<5.0
Trichloroethene	5	38	3,220	3,590	3,010	62.3	<5.0	<25	<25	<1.0	7,200	7,800	3,300	57,000	18,700	10,300	41,600	46,300	<5.0	<5.0
Vinyl Chloride	2	3.3	181	838	680	5.1	113	<25	<25	<1.0	NT	NT	6,800	2,200	<1,000	305	1,220	1,620	<2.0	<2.0
Xylenes	10,000	290	2.4	<100	<100	2,120	10,900	67.1	64.2	<2.0	NT	NT	NT	5.4	<5.0	<200	<100	<250	<5.0	<5.0
Pesticides, ug/L																				
4,4'-DDD	0.1	12	<0.25	<0.2	<0.05	4.9	7.4	1.5	2.1	<0.10	NT	NT	NT	0.13	0.18	1.7	2.2	0.12	<0.10	<0.10
4,4'-DDE	0.1	84	<0.25	<0.2	<0.05	<1.0	<1.0	<1.0	<1.0	<0.05	NT	NT	NT	<0.05	0.13	<0.2	<0.25	<0.05	<0.10	<0.10
4,4'-DDT	0.1	8.4	<0.25	<0.2	<0.05	1.6	1.6	<1.0	<1.0	<0.10	NT	NT	NT	<0.1	<0.05	0.5	0.55	<0.05	<0.10	<0.10
Alpha-BHC	0.05	0.45	0.4	0.23	<0.05	<1.0	4	<1.0	<1.0	<0.05	NT	NT	NT	0.53	0.2	0.33	0.35	0.44	<0.10	<0.10
Beta-BHC	0.05	1.6	1.9	0.45	0.14	1.6	4.9	1.4	1.5	<0.05	NT	NT	NT	0.71	0.5	0.41	0.52	0.37	<0.05	<0.05
Delta-BHC	0.05	1.6	1.2	0.45	0.16	1.3	8.3	1.0	<1.0	<0.05	NT	NT	NT	1.1	0.61	0.75	0.78	0.71	<0.10	<0.10
Dieldrin	0.1	0.18	<0.25	<0.2	<0.05	5.4	4.4	7.9	7.0	<0.10	NT	NT	NT	<0.1	<0.05	0.52	0.43	0.15	<0.10	<0.10
Endosulfan II	2	610	<0.25	<0.2	<0.05	<1.0	<1.0	2.8	2.5	<0.10	NT	NT	NT	<0.1	<0.05	<0.2	<0.25	<0.05	<0.10	<0.10
Endrin	2	31	1.2	0.51	<0.05	5.1	2.6	5.8	5.4	<0.05	NT	NT	NT	<0.1	<0.05	0.28	<0.25	<0.05	<0.10	<0.10
Endrin Ketone	0.1	ND	1.8	0.73	0.13	4.4	5.3	6.2	5.6	<0.10	NT	NT	NT	1.3	0.1	0.54	0.44	0.51	<0.10	<0.10
Gamma-BHC	0.2	2.6	1.1	0.3	<0.05	1.2	4.4	<1.0	<1.0	<0.05	NT	NT	NT	0.83	0.24	0.44	0.41	0.56	<0.05	<0.05
Chlordane	2	8.2	<1.0	<0.8	0.23	<4.0	<4.0	<4.0	<4.0	<0.05	NT	NT	NT	<0.1	<5.0	<5.0	<1.0	<0.05	<0.05	<0.05
Toxaphene	5	2.6	<1.0	<0.8	2.6	<4.0	<4.0	<4.0	<4.0	<2.0	NT	NT	NT	<5.0	<5.0	<5.0	<1.0	<5.0	<5.0	<5.0
Chlorinated Herbicides			NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BRL	NT	NT	NT	NT	BRL	BRL

NT - Not Tested

ug/L - micrograms per liter (parts per billion)

NT - Not tested

Note: Shaded values indicate exceedance of RRS

Samples outlined in red were removed during June 2013 soil remediation

NR - Not a HSRA regulated constituent

Table 8 - Well Construction and Water Level Data

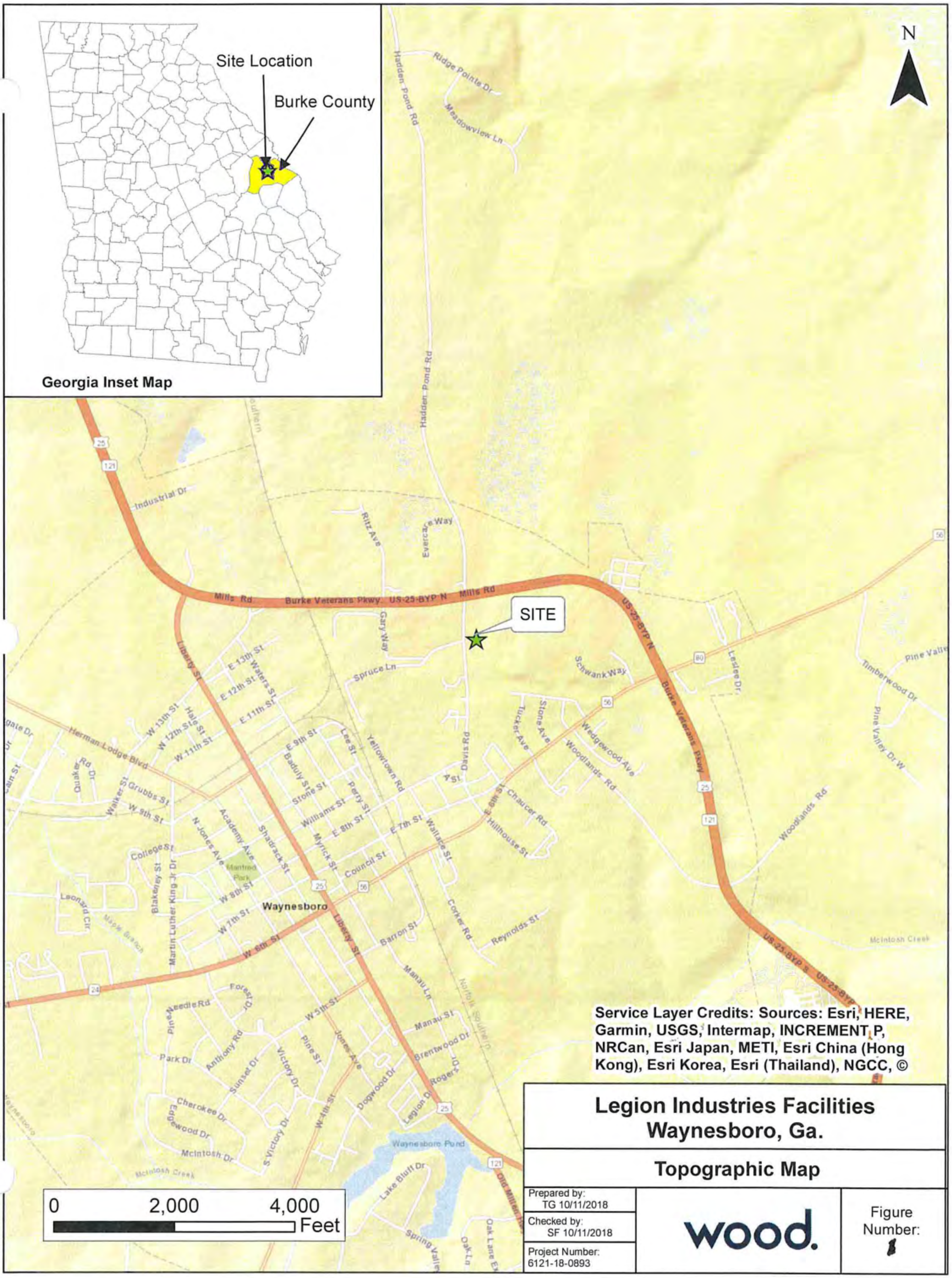
Well No.	Top of Casing Elevation, Ft.	Screened Interval, Ft.	Depth to Water, Ft.	Groundwater Elevation, Ft.
MW-1	297.51	3 - 8	5.4	292.11
MW-2 (I)	298.47	16 - 21	11.31	287.16
MW-3	294.85	7 - 12	7.61	287.14
MW-4 (deep)	298.33	56 - 66	31.25	267.08
MW-5	302.92	3 - 13	10.6	292.32
MW-6	299.16	3 - 13	7.52	291.64
MW-7	294.54	3- 13	2.94	291.6
MW-8 (destroyed)	NA	NA	NA	NA
MW-9	294.26	3 - 13	8.38	285.88
MW-10	301.04	15 – 25	12.65	288.39
MW-11	299.86	6 - 16	8.29	291.57
MW-12 (deep)	299.89	54 - 64	32.79	267.1
MW-13	298.64	3 -13	6.15	292.39
MW-14 (I)	298.99	17 - 22	10.25	288.74
MW-15	298.79	3 - 8	6.82	291.97
MW-16	297.25	3 - 8	5.08	292.17
MW-17 (I)	297.83	20 - 25	8.53	291.3
MW-18 (I)	298.71	20 - 25	10.42	288.29
MW-19	297.12	5 - 10	3.51	294.61
MW-20	290.37	2 - 12	5.35	285.02
PZ-2 (I)	298.82	30 - 35	7.7	291.12
PZ-6 (I) (destroyed	295.06	17 - 22	NA	NA
PZ-4 (I) (destroyed)	295.06	17 - 22	NA	NA
PZ-5 (I) (destroyed)	293.54	17 - 22	NA	NA

(I) – Intermediate depth well screen

Monitoring wells MW-1 through MW-11 and Piezometers PZ-1 through PZ-6 were surveyed by Steve Bargeron and Associates, Georgia Registered Land Surveyor. Monitoring wells MW-12 through MW-20 were surveyed by Wood Personnel.

Table 9 - Summary of Soil Vapor Testing Results						
Sample Designation		SS-1	SS-2	SS-3	SS-4	SS-5
Depth, ft.		1	1	1	1	1
Date		8/10/2018	8/10/2018	8/10/2018	8/10/2018	8/10/2018
VOCs, μg/m^3						
Benzene		<3.2	**6.3**	**34**	<3.2	<3.2
2-Butanone		**42**	**73**	<30	<30	**94**
Chloroform		**15**	**130**	<4.9	<4.9	<4.9
1,1-Dichloroethane		**5.5**	**4.6**	<4.1	<4.1	<4.1
cis-1,2-Dichloroethene		<4.0	**750**	<4.0	<4.0	<4.0
Ethylbenzene		**11**	**8.7**	**8.5**	**8.7**	**23**
4-Ethyltoluene		<5.0	<5.0	<5.0	<5.0	**5.5**
2-Hexanone		<8.3	**10**	<8.3	<8.3	**13**
4-Methyl-2-pentanone		**10**	**24**	**14**	**53**	**45**
Tetrachloroethene		<6.9	**34**	**39**	**120**	**53**
Toluene		**170**	**39**	**42**	**100**	**560**
1,1,1-Trichloroethane		<5.5	**7.2**	<5.5	**21**	<5.5
Trichloroethene		**200**	**520**	<5.5	<5.3	<5.3
1,2,4-Trimethylbenzene		**12**	**20**	**13**	**15**	**23**
1,3,5-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0	8.1
Vinyl Chloride		<2.6	**11**	<2.6	<2.6	<2.6
m,p-Xylenes		**69**	**40**	**48**	**58**	**100**
o-Xylenes		**27**	**18**	**18**	**24**	**36**
Radon, pCi/L	Indoor Air	**0.12**	NT	NT	NT	**0.05**
	Sub-Slab	**1216**	NT	NT	NT	**750**

FIGURES



Legion Industries Facilities
Waynesboro, Ga.

Topographic Map

Prepared by: TG 10/11/2018	wood.	Figure Number: 8
Checked by: SF 10/11/2018		
Project Number: 6121-18-0893		

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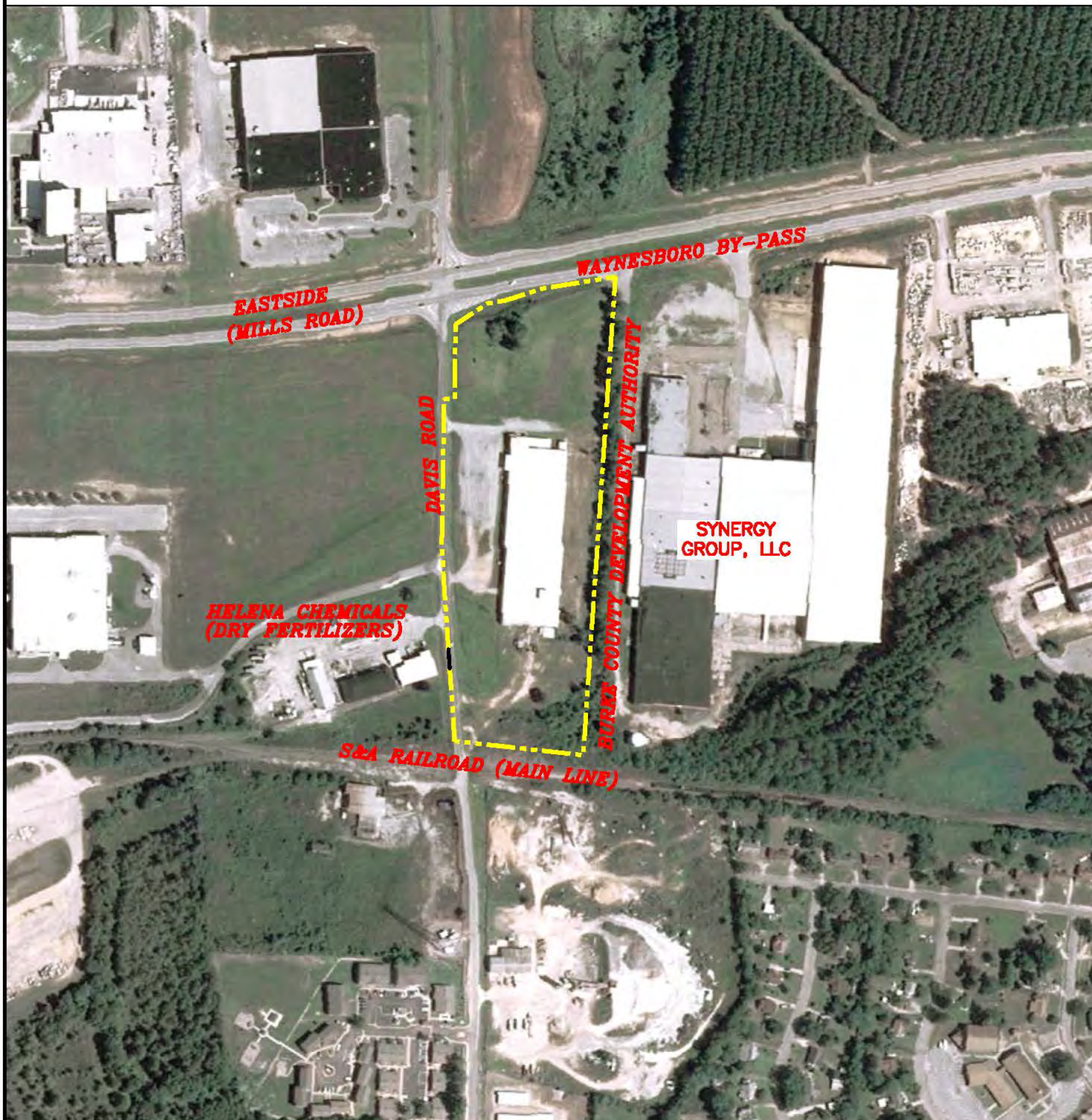

SCALE IN FEET

0 400 800

SOURCE: USDA NRCS NATIONAL AERIAL IMAGERY PROJECT (NAIP 2009)SALT LAKE CITY UTAH, USGS SEAMLESS DATA DISTRIBUTION

LEGION INDUSTRIES FACILITIES WAYNESBORO, GA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	SITE AND VICINITY MAP JOB NO. 6121-18-0893 FIGURE 2

PREPARED BY/DATE TG 1/18/2016
CHECKED BY/DATE SF 1/18/2016

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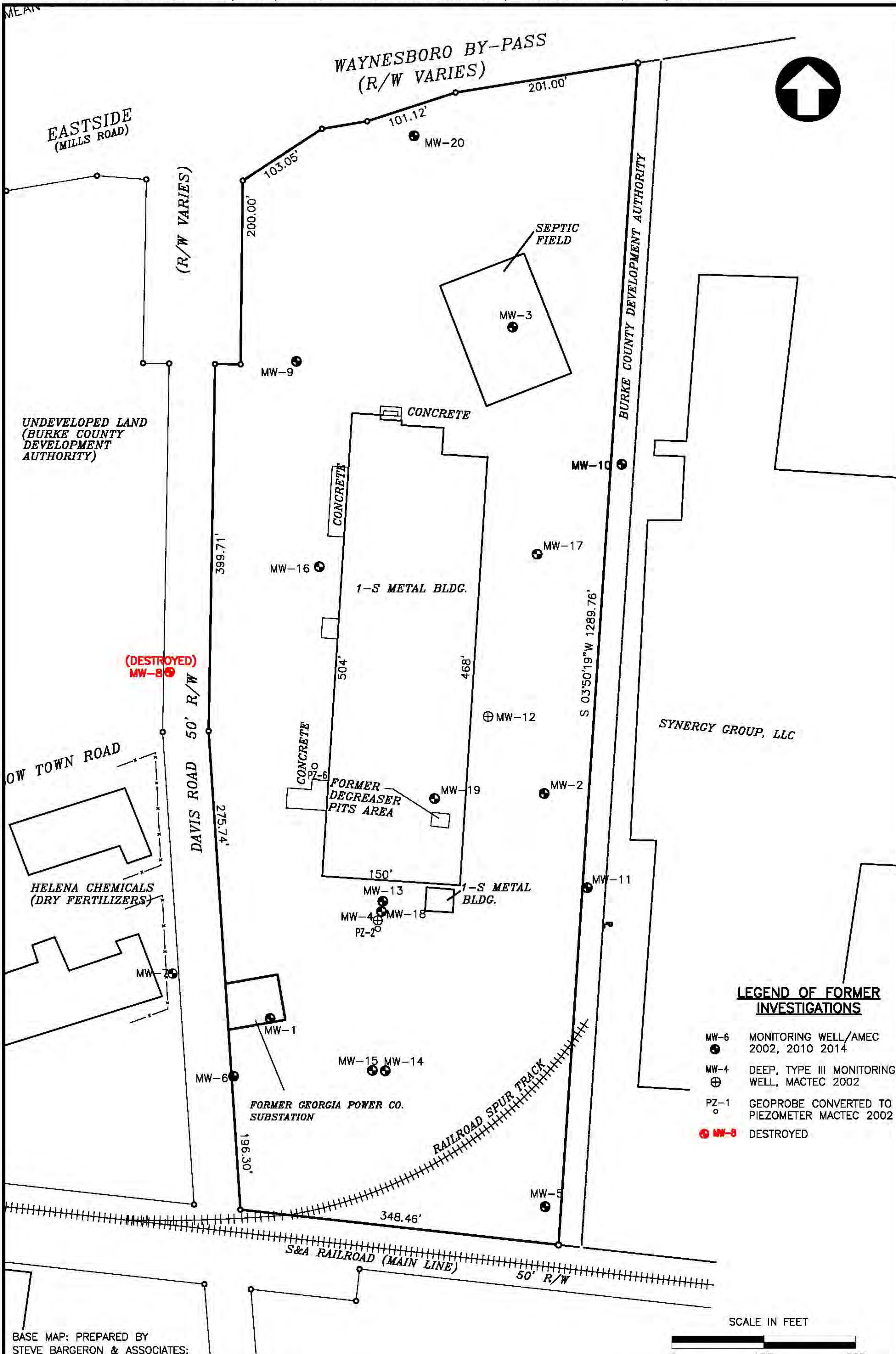
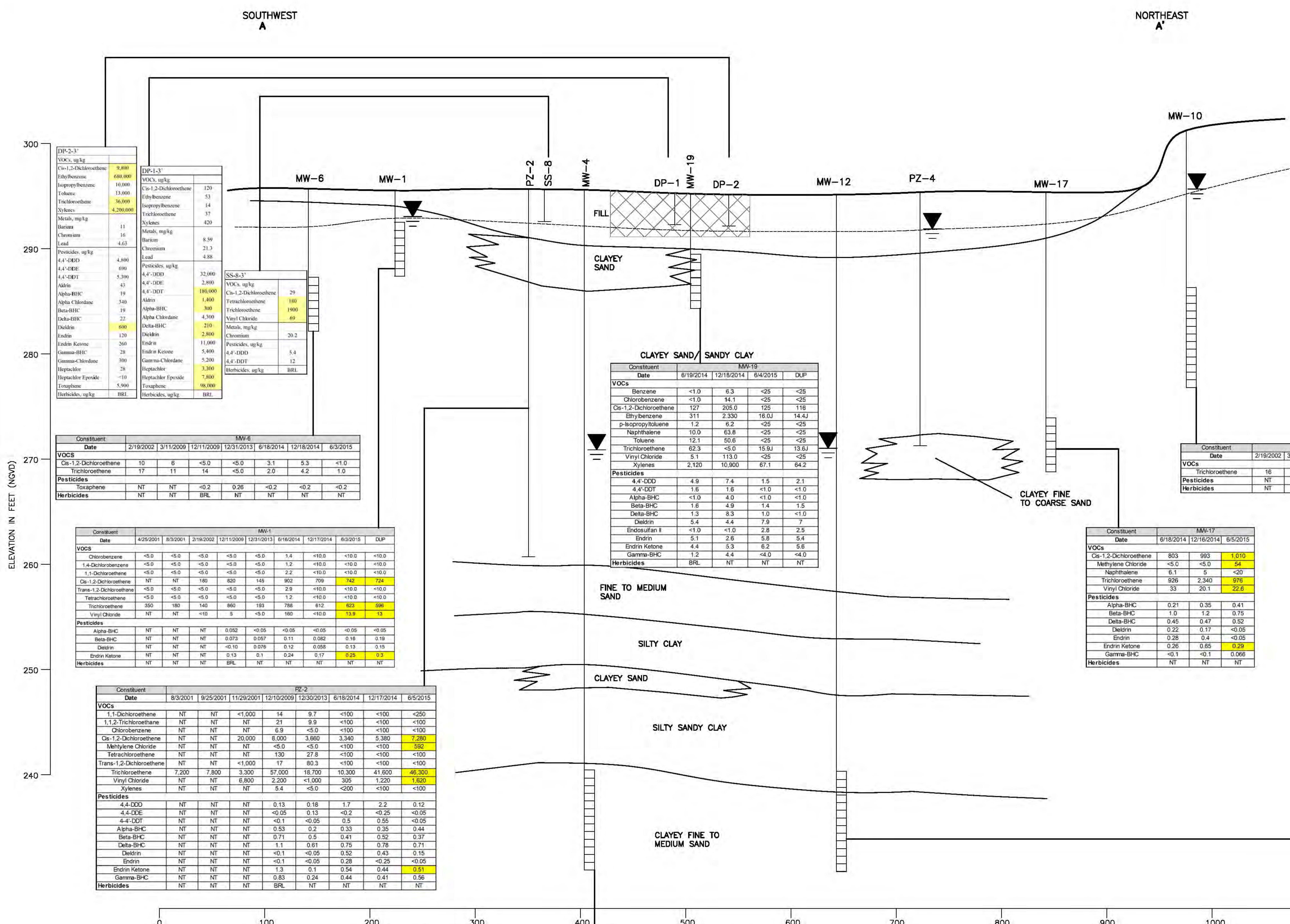
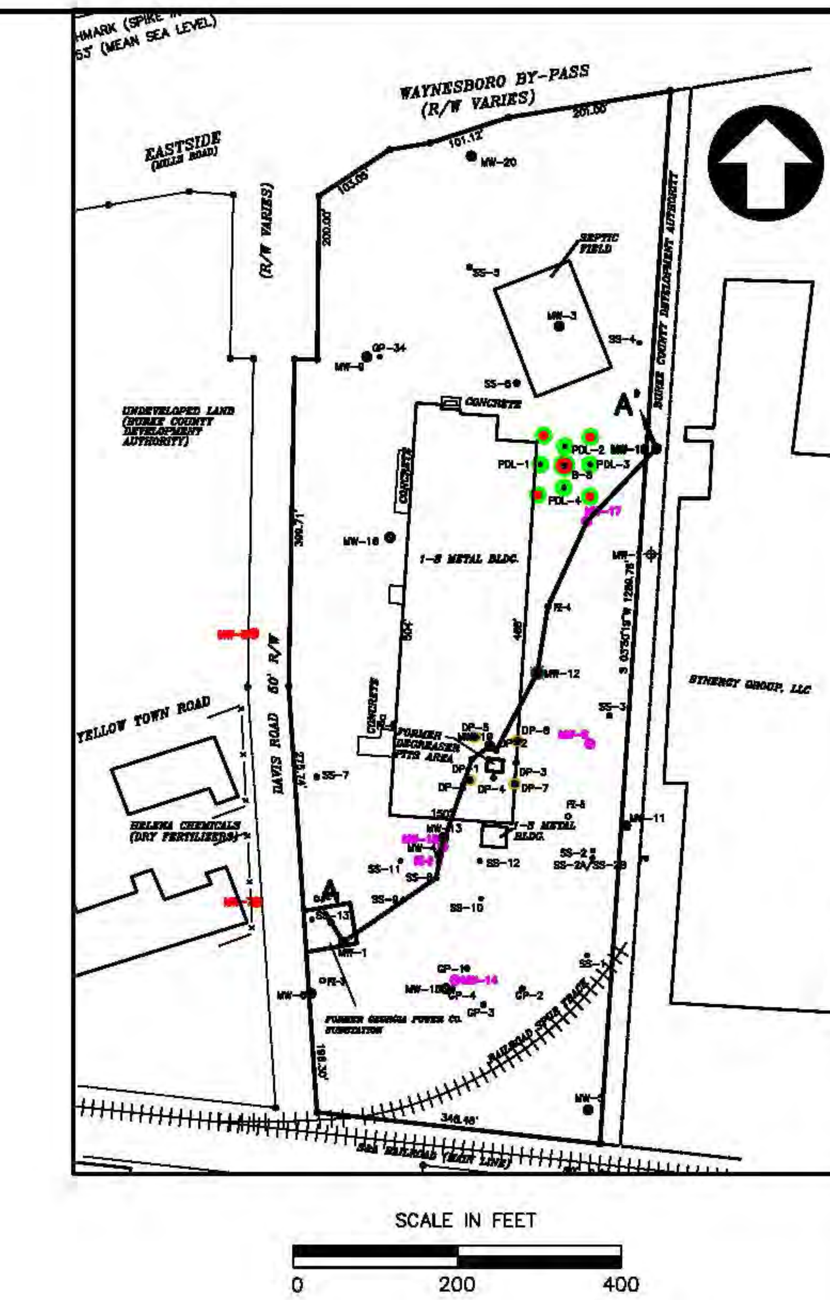


LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	MONITORING WELL LOCATIONS JOB NO. 6121-18-0893 FIGURE 3

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018





DP-2-3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	9,800
Ethylbenzene	680,000
Isopropylbenzene	10,000
Toluene	13,000
Trichloroethene	36,000
Xylenes	4,200,000
Metals, mg/kg	
Barium	11
Chromium	16
Lead	4.63
Pesticides, ug/kg	
4,4'-DDD	4,800
4,4'-DDE	690
4,4'-DDT	5,300
Aldrin	43
Alpha-BHC	19
Alpha Chlordane	340
Beta-BHC	19
Delta-BHC	22
Dieldrin	600
Endrin	120
Endrin Ketone	260
Gamma-BHC	28
Gamma-Chlordane	300
Heptachlor	28
Heptachlor Epoxide	<10
Toxaphene	5,900
Herbicides, ug/kg	BRL

DP-1-3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	120
Ethylbenzene	53
Isopropylbenzene	14
Trichloroethene	37
Xylenes	420
Metals, mg/kg	
Barium	8.59
Chromium	21.3
Lead	4.88
Pesticides, ug/kg	
4,4'-DDD	32,000
4,4'-DDE	2,800
4,4'-DDT	180,000
Aldrin	1,400
Alpha-BHC	300
Alpha Chlordane	4,300
Delta-BHC	210
Dieldrin	2,800
Endrin	11,000
Endrin Ketone	5,400
Gamma-Chlordane	5,200
Heptachlor	3,300
Heptachlor Epoxide	7,800
Toxaphene	98,000
Herbicides, ug/kg	BRL

SS-8-3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	29
Tetrachloroethene	180
Trichloroethene	1900
Vinyl Chloride	69
Metals, mg/kg	
Chromium	20.2
Pesticides, ug/kg	
4,4'-DDD	5.4
4,4'-DDT	12
Herbicides, ug/kg	BRL

Constituent	MW-6						
Date	2/19/2002	3/11/2009	12/11/2009	12/31/2013	6/18/2014	12/18/2014	6/3/2015
VOCS							
Cis-1,2-Dichloroethene	10	6	<5.0	<5.0	3.1	5.3	<1.0
Trichloroethene	17	11	14	<5.0	2.0	4.2	1.0
Pesticides							
Toxaphene	NT	NT	<0.2	0.26	<0.2	<0.2	<0.2
Herbicides	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-1								
Date	4/25/2001	8/3/2001	2/19/2002	12/11/2009	12/31/2013	6/16/2014	12/17/2014	6/3/2015	DUP
VOCS									
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	1.4	<10.0	<10.0	<10.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<10.0	<10.0	<10.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	2.2	<10.0	<10.0	<10.0
Cis-1,2-Dichloroethene	NT	NT	180	820	145	902	709	742	724
Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	2.9	<10.0	<10.0	<10.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<10.0	<10.0	<10.0
Trichloroethene	350	180	140	860	193	788	612	623	596
Vinyl Chloride	NT	NT	<10	5	<5.0	160	<10.0	13.9	13
Pesticides									
Alpha-BHC	NT	NT	NT	0.052	<0.05	<0.05	<0.05	<0.05	<0.05
Beta-BHC	NT	NT	NT	0.073	0.057	0.11	0.082	0.16	0.19
Dieldrin	NT	NT	NT	<0.10	0.076	0.12	0.058	0.13	0.15
Endrin Ketone	NT	NT	NT	0.13	0.1	0.24	0.17	0.25	0.3
Herbicides	NT	NT	NT	BRL	NT	NT	NT	NT	NT

Constituent	PZ-2							
Date	8/3/2001	9/25/2001	11/29/2001	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/5/2015
VOCs								
1,1-Dichloroethene	NT	NT	<1,000	14	9.7	<100	<100	<250
1,1,2-Trichloroethane	NT	NT	NT	21	9.9	<100	<100	<100
Chlorobenzene	NT	NT	NT	6.9	<5.0	<100	<100	<100
Cis-1,2-Dichloroethene	NT	NT	20,000	8,000	3,660	3,340	5,380	7,280
Mehtylene Chloride	NT	NT	NT	<5.0	<5.0	<100	<100	592
Tetrachloroethene	NT	NT	NT	130	27.8	<100	<100	<100
Trans-1,2-Dichloroethene	NT	NT	<1,000	17	80.3	<100	<100	<100
Trichloroethene	7,200	7,800	3,300	57,000	18,700	10,300	41,600	46,300
Vinyl Chloride	NT	NT	6,800	2,200	<1,000	305	1,220	1,620
Xylenes	NT	NT	NT	5.4	<5.0	<200	<100	<100
Pesticides								
4,4-DDD	NT	NT	NT	0.13	0.18	1.7	2.2	0.12
4,4-DDE	NT	NT	NT	<0.05	0.13	<0.2	<0.25	<0.05
4-4'-DDT	NT	NT	NT	<0.1	<0.05	0.5	0.55	<0.05
Alpha-BHC	NT	NT	NT	0.53	0.2	0.33	0.35	0.44
Beta-BHC	NT	NT	NT	0.71	0.5	0.41	0.52	0.37
Delta-BHC	NT	NT	NT	1.1	0.61	0.75	0.78	0.71
Dieldrin	NT	NT	NT	<0.1	<0.05	0.52	0.43	0.15
Endrin	NT	NT	NT	<0.1	<0.05	0.28	<0.25	<0.05
Endrin Ketone	NT	NT	NT	1.3	0.1	0.54	0.44	0.51
Gamma-BHC	NT	NT	NT	0.83	0.24	0.44	0.41	0.56
Herbicides	NT	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-19			
Date	6/19/2014	12/18/2014	6/4/2015	DUP
VOCs				
Benzene	<1.0	6.3	<25	<25
Chlorobenzene	<1.0	14.1	<25	<25
Cis-1,2-Dichloroethene	127	205.0	125	116
Ethylbenzene	311	2,330	16.0J	14.4J
p-Isopropyltoluene	1.2	6.2	<25	<25
Naphthalene	10.0	63.8	<25	<25
Toluene	12.1	50.6	<25	<25
Trichloroethene	62.3	<5.0	15.9J	13.6J
Vinyl Chloride	5.1	113.0	<25	<25
Xylenes	2,120	10,900	67.1	64.2
Pesticides				
4,4'-DDD	4.9	7.4	1.5	2.1
4,4'-DDT	1.6	1.6	<1.0	<1.0
Alpha-BHC	<1.0	4.0	<1.0	<1.0
Beta-BHC	1.6	4.9	1.4	1.5
Delta-BHC	1.3	8.3	1.0	<1.0
Dieldrin	5.4	4.4	7.9	7
Endosulfan II	<1.0	<1.0	2.8	2.5
Endrin	5.1	2.6	5.8	5.4
Endrin Ketone	4.4	5.3	6.2	5.6
Gamma-BHC	1.2	4.4	<4.0	<4.0
Herbicides	BRL	NT	NT	NT

Constituent	MW-10						
Date	2/19/2002	3/11/2002	1/28/2010	12/31/2013	6/19/2014	12/18/2014	6/4/2015
VOCs							
Trichloroethene	16	11	<5.0	NS	<1.0	1.0	<1.0
Pesticides	NT	NT	BRL	NS	BRL	BRL	BRL
Herbicides	NT	NT	BRL	NS	NT	NT	NT

Constituent	MW-17		
Date	6/18/2014	12/16/2014	6/5/2015
VOCs			
Cis-1,2-Dichloroethene	803	993	1,010
Methylene Chloride	<5.0	<5.0	54
Naphthalene	6.1	5	<20
Trichloroethene	926	2,340	976
Vinyl Chloride	33	20.1	22.6
Pesticides			
Alpha-BHC	0.21	0.35	0.41
Beta-BHC	1.0	1.2	0.75
Delta-BHC	0.45	0.47	0.52
Dieldrin	0.22	0.17	<0.05
Endrin	0.28	0.4	<0.05
Endrin Ketone	0.26	0.65	0.29
Gamma-BHC	<0.1	<0.1	0.066
Herbicides	NT	NT	NT

LEGEND

- WELL SCREENED INTERVAL
- GROUNDWATER ELEVATION
- BRL — BELOW REPORTING LIMIT
- NT — NOT TESTED
- UG/KG — MICROGRAMS PER KILOGRAMS
- UG/L — MICROGRAMS PER LITER
- AREA OF SOIL EXCAVATION

Constituent	MW-12					
Date	1/28/2010	12/30/2013	6/18/2014	DUP-1	12/16/2014	6/4/2015
VOCs						
Cis-1,2-Dichloroethene	<5.0	<5.0	2.1	2.4	3.4	2.6
Trichloroethene	<5.0	8.3	12.4	13.2	21.2	17.4
Pesticides						
Alpha-BHC	0.11	0.11	<0.05	<0.05	0.073	0.18
Delta-BHC	0.08	0.076	0.055	0.072	0.058	0.095
Gamma-BHC	0.25	0.29	0.13	0.16	0.2	0.44
Herbicides	BRL	NT	NT	NT	NT	NT

Constituent	MW-4						
Date	2/19/2002	3/11/2009	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/4/2015
VOCS							
Cis-1,2-Dichloroethene	15	<5.0	<5.0	NT	5.1	3.2	3.5
Trichloroethene	11	<5.0	<5.0	NT	7.8	1.7	1.2
Pesticides	NT	NT	BRL	NT	BRL	BRL	BRL
Herbicides	NT	NT	BRL	NT	NT	NT	NT

SCALE IN FEET 0 20 50

DESIGNED T. GLADSTONE
DRAWN T. GLADSTONE
CHECKED S. FOLEY
IN CHARGE
DATE 10/11/2018

LEGION INDUSTRIES
ATLANTA, GEORGIA

wood.

ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CROSS SECTION A-A'

SCALE AS SHOWN
CONTRACT 6121-18-0893
DWG. NO. FIG 4 | REV | PAGE NO

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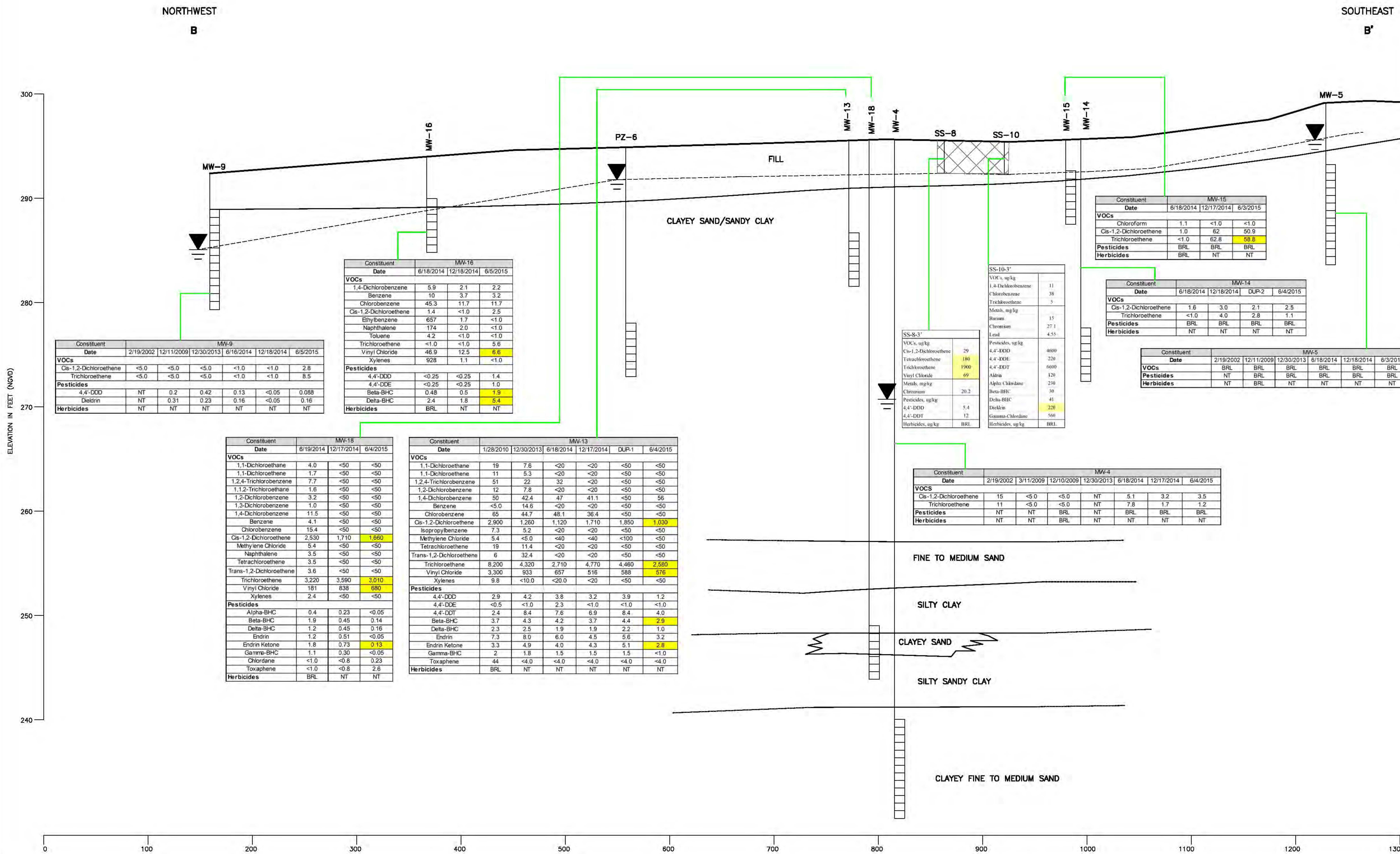


Constituent	MW-9					
Date	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/18/2014	6/5/2015
VOCs						
Cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<1.0	<1.0	2.8
Trichloroethene	<5.0	<5.0	<5.0	<1.0	<1.0	8.5
Pesticides						
4,4'-DDD	NT	0.2	0.42	0.13	<0.05	0.088
Dieldrin	NT	0.31	0.23	0.16	<0.05	0.16
Herbicides	NT	NT	NT	NT	NT	NT

Constituent	MW-16		
Date	6/18/2014	12/18/2014	6/5/2015
VOCs			
1,4-Dichlorobenzene	5.9	2.1	2.2
Benzene	10	3.7	3.2
Chlorobenzene	45.3	11.7	11.7
Cis-1,2-Dichloroethene	1.4	<1.0	2.5
Ethylbenzene	657	1.7	<1.0
Naphthalene	174	2.0	<1.0
Toluene	4.2	<1.0	<1.0
Trichloroethene	<1.0	<1.0	5.6
Vinyl Chloride	46.9	12.5	6.6
Xylenes	928	1.1	<1.0
Pesticides			
4,4'-DDD	<0.25	<0.25	1.4
4,4'-DDE	<0.25	<0.25	1.0
Beta-BHC	0.48	0.5	1.9
Delta-BHC	2.4	1.8	5.4
Herbicides	BRL	NT	NT

Constituent	MW-18		
Date	6/19/2014	12/17/2014	6/4/2015
VOCs			
1,1-Dichloroethane	4.0	<50	<50
1,1-Dichloroethene	1.7	<50	<50
1,2,4-Trichlorobenzene	7.7	<50	<50
1,1,2-Trichloroethane	1.6	<50	<50
1,2-Dichlorobenzene	3.2	<50	<50
1,3-Dichlorobenzene	1.0	<50	<50
1,4-Dichlorobenzene	11.5	<50	<50
Benzene	4.1	<50	<50
Chlorobenzene	15.4	<50	<50
Cis-1,2-Dichloroethene	2,530	1,710	1,660
Methylene Chloride	5.4	<50	<50
Naphthalene	3.5	<50	<50
Tetrachloroethene	3.5	<50	<50
Trans-1,2-Dichloroethene	3.6	<50	<50
Trichloroethene	3,220	3,590	3,010
Vinyl Chloride	181	838	680
Xylenes	2.4	<50	<50
Pesticides			
Alpha-BHC	0.4	0.23	<0.05
Beta-BHC	1.9	0.45	0.14
Delta-BHC	1.2	0.45	0.16
Endrin	1.2	0.51	<0.05
Endrin Ketone	1.8	0.73	0.13
Gamma-BHC	1.1	0.30	<0.05
Chlordane	<1.0	<0.8	0.23
Toxaphene	<1.0	<0.8	2.6
Herbicides	BRL	NT	NT

Constituent	MW-13					
Date	1/28/2010	12/30/2013	6/18/2014	12/17/2014	DUP-1	6/4/2015
VOCs						
1,1-Dichloroethane	19	7.6	<20	<20	<50	<50
1,1-Dichloroethene	11	5.3	<20	<20	<50	<50
1,2,4-Trichlorobenzene	51	22	32	<20	<50	<50
1,2-Dichlorobenzene	12	7.8	<20	<20	<50	<50
1,4-Dichlorobenzene	50	42.4	47	41.1	<50	56
Benzene	<5.0	14.6	<20	<20	<50	<50
Chlorobenzene	65	44.7	48.1	36.4	<50	<50
Cis-1,2-Dichloroethene	2,900	1,260	1,120	1,710	1,850	1,030
Isopropylbenzene	7.3	5.2	<20	<20	<50	<50
Methylene Chloride	5.4	<5.0	<40	<40	<100	<50
Tetrachloroethene	19	11.4	<20	<20	<50	<50
Trans-1,2-Dichloroethene	6	32.4	<20	<20	<50	<50
Trichloroethene	8,200	4,320	2,710	4,770	4,460	2,580
Vinyl Chloride	3,300	933	657	516	588	576
Xylenes	9.8	<10.0	<20.0	<20	<50	<50
Pesticides						
4,4'-DDD	2.9	4.2	3.8	3.2	3.9	1.2
4,4'-DDE	<0.5	<1.0	2.3	<1.0	<1.0	<1.0
4,4'-DDT	2.4	8.4	7.6	6.9	8.4	4.0
Beta-BHC	3.7	4.3	4.2	3.7	4.4	2.9
Delta-BHC	2.3	2.5	1.9	1.9	2.2	1.0
Endrin	7.3	8.0	6.0	4.5	5.6	3.2
Endrin Ketone	3.3	4.9	4.0	4.3	5.1	2.8
Gamma-BHC	2	1.8	1.5	1.5	1.5	<1.0
Toxaphene	44	<4.0	<4.0	<4.0	<4.0	<4.0
Herbicides	BRL	NT	NT	NT	NT	NT

SS-8-3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	29
Tetrachloroethene	180
Trichloroethene	1900
Vinyl Chloride	69
Metals, mg/kg	
Chromium	20.2
Pesticides, ug/kg	
4,4'-DDD	5.4
4,4'-DDT	12
Herbicides, ug/kg	BRL

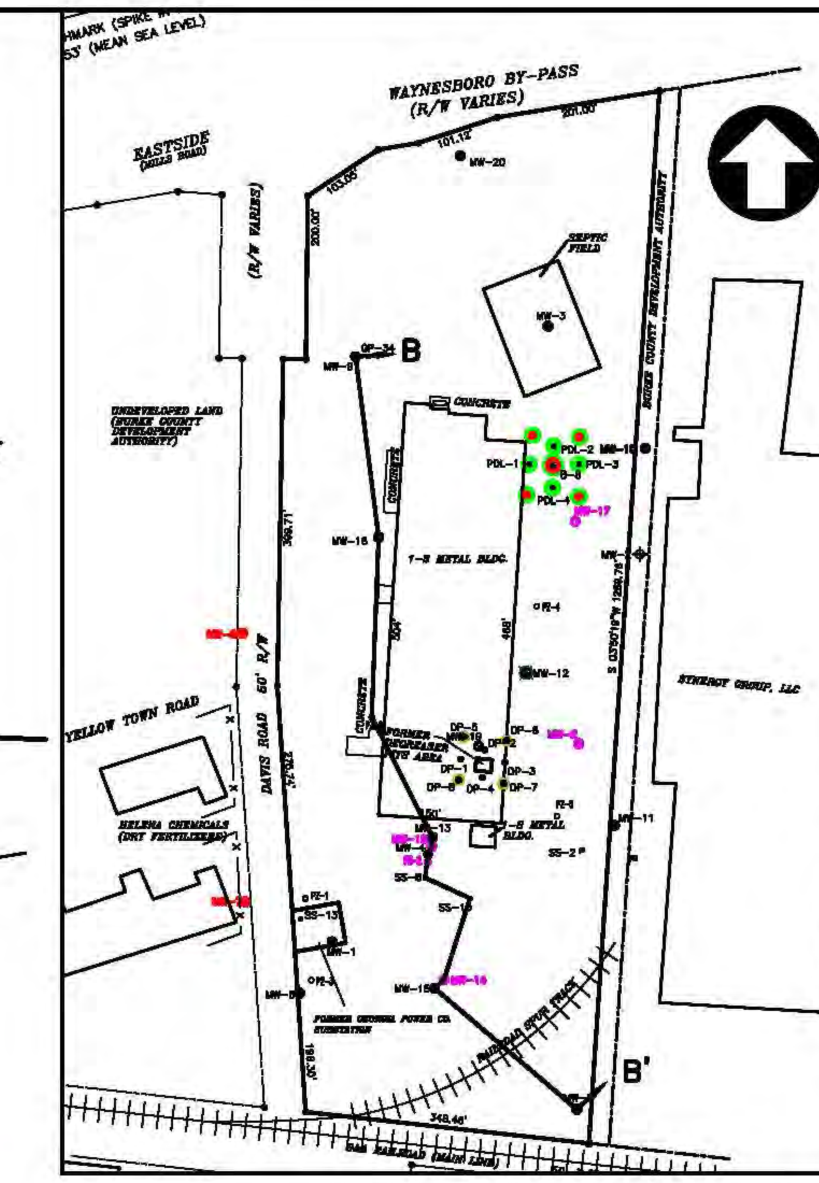
SS-10-3'	
VOCs, ug/kg	
1,4-Dichlorobenzene	11
Chlorobenzene	38
Trichloroethene	5
Metals, mg/kg	
Barium	15
Chromium	27.1
Lead	4.55
Pesticides, ug/kg	
4,4'-DDD	4600
4,4'-DDE	220
4,4'-DDT	6600
Aldrin	120
Alpha Chlordane	230
Beta-BHC	30
Delta-BHC	41
Dieldrin	220
Gamma-Chlordane	560
Herbicides, ug/kg	BRL

Constituent	MW-15		
Date	6/18/2014	12/17/2014	6/3/2015
VOCs			
Chloroform	1.1	<1.0	<1.0
Cis-1,2-Dichloroethene	1.0	62	50.9
Trichloroethene	<1.0	62.8	58.8
Pesticides	BRL	BRL	BRL
Herbicides	BRL	NT	NT

Constituent	MW-14			
Date	6/18/2014	12/18/2014	DUP-2	6/4/2015
VOCs				
Cis-1,2-Dichloroethene	1.6	3.0	2.1	2.5
Trichloroethene	<1.0	4.0	2.8	1.1
Pesticides	BRL	BRL	BRL	BRL
Herbicides	NT	NT	NT	NT

Constituent	MW-5					
Date	2/19/2002	12/11/2009	12/30/2013	6/18/2014	12/18/2014	6/3/2015
VOCs	BRL	BRL	BRL	BRL	BRL	BRL
Pesticides	NT	BRL	BRL	BRL	BRL	BRL
Herbicides	NT	BRL	NT	NT	NT	NT

Constituent	MW-4						
Date	2/19/2002	3/11/2009	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/4/2015
VOCS							
Cis-1,2-Dichloroethene	15	<5.0	<5.0	NT	5.1	3.2	3.5
Trichloroethene	11	<5.0	<5.0	NT	7.8	1.7	1.2
Pesticides	NT	NT	BRL	NT	BRL	BRL	BRL
Herbicides	NT	NT	BRL	NT	NT	NT	NT



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LEGEND

- WELL SCREENED INTERVAL
- GROUNDWATER ELEVATION
- BRL — BELOW REPORTING LIMIT
- NT — NOT TESTED
- UG/KG — MICROGRAMS PER KILOGRAMS
- UG/L — MICROGRAMS PER LITER
- AREA OF SOIL EXCAVATION

SCALE IN FEET 0 20 50

DESIGNED T. GLADSTONE
DRAWN T. GLADSTONE
CHECKED S. FOLEY
IN CHARGE
DATE 1/7/2016

LEGION INDUSTRIES
ATLANTA, GEORGIA

wood.

ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CROSS SECTION B–B'

SCALE AS SHOWN
CONTRACT 6121-18-0893
DWG. NO. FIG 5 REV PAGE NO

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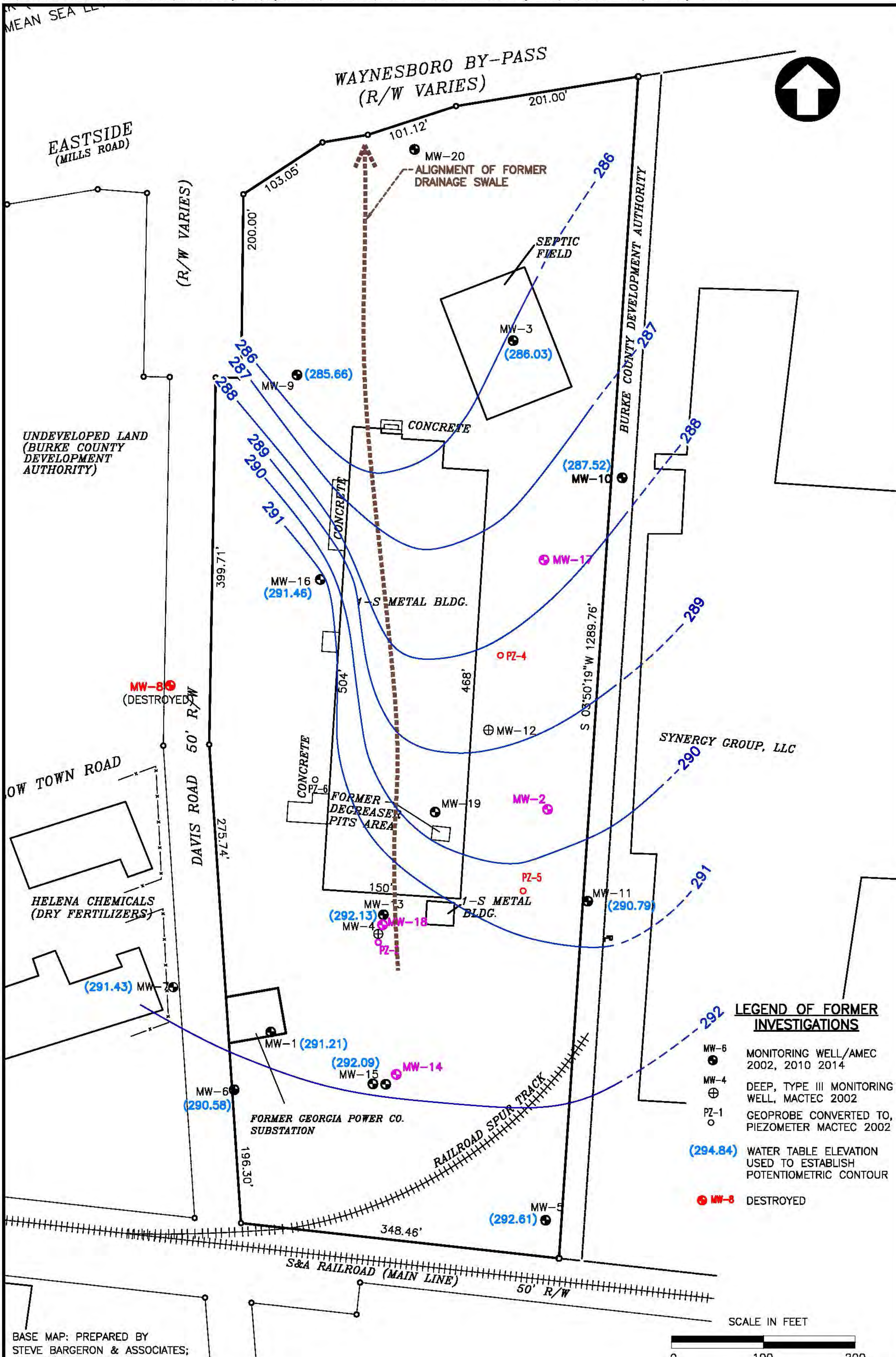
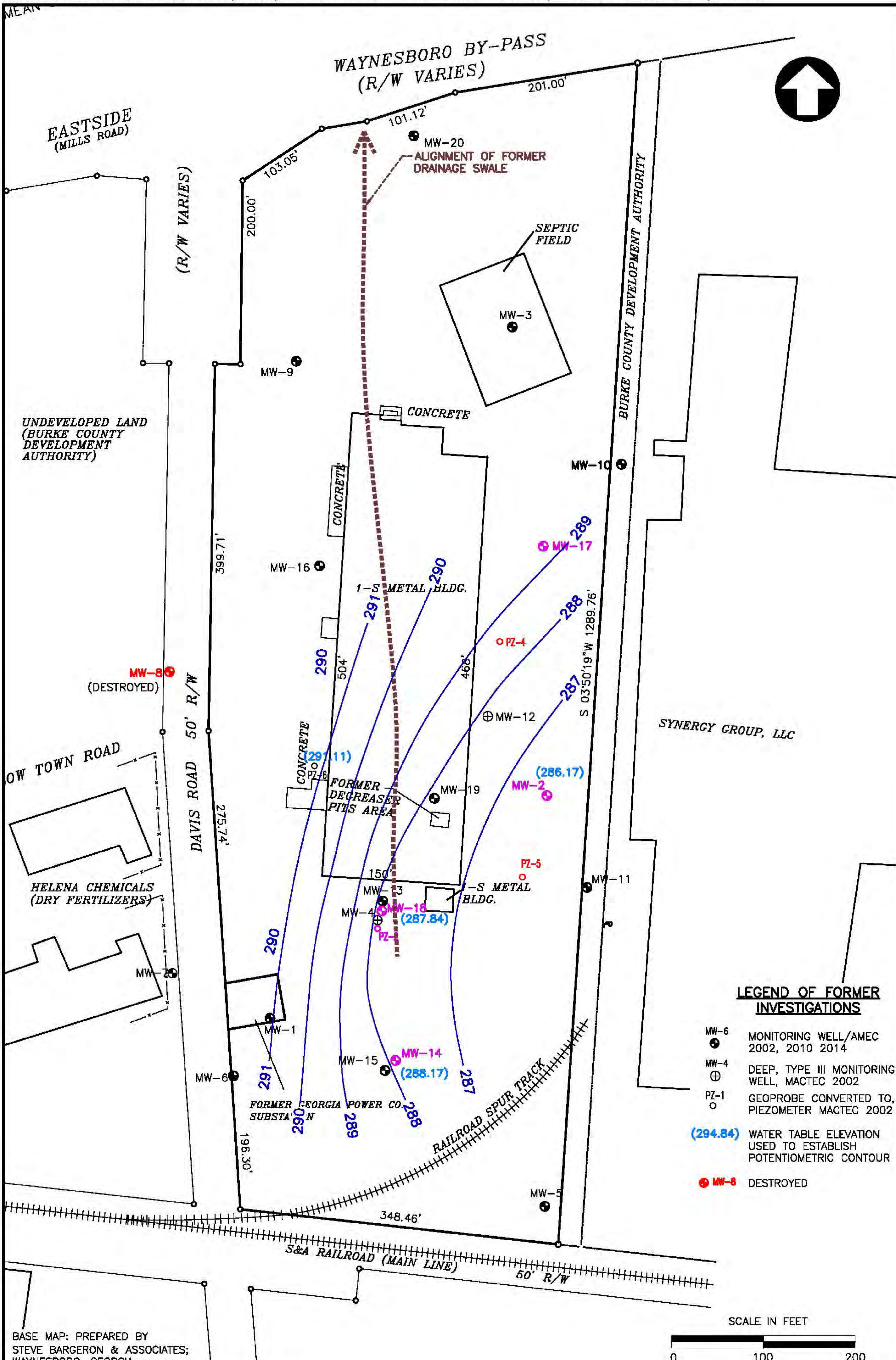


LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	POTENTIOMETRIC SURFACE MAP SHALLOW DEPTH JUNE 2, 2015 JOB NO. **6121-18-0893** FIGURE **6**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	POTENTIOMETRIC SURFACE MAP INTERMEDIATE DEPTH JUNE 2, 2015 JOB NO. 6121-18-0893 FIGURE 7

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

SS-7	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Barium	NT	34.7
Chromium	NT	15.8
Lead	NT	9.75
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

DP-1-3’	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	120
Ethylbenzene	53
Isopropylbenzene	14
Trichloroethene	37
Xylenes	420
Metals, mg/kg	
Barium	8.59
Chromium	21.3
Lead	4.88
Pesticides, ug/kg	
4,4’-DDD	32,000
4,4’-DDE	2,800
4,4’-DDT	180,000
Aldrin	1,400
Alpha-BHC	300
Alpha Chlordane	4,300
Delta-BHC	210
Dieldrin	2,800
Endrin	11,000
Endrin Ketone	5,400
Gamma-Chlordane	5,200
Heptachlor	3,300
Heptachlor Epoxide	7,800
Toxaphene	98,000
Herbicides, ug/kg	BRL

DP-4-3’	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	42
Ethylbenzene	330
Isopropylbenzene	14
Toluene	11
Trichloroethene	51
Vinyl Chloride	16
Xylenes	2,200
Metals, mg/kg	
Barium	5
Chromium	12
Pesticides, ug/kg	
4,4’-DDD	470
4,4’-DDE	110
4,4’-DDT	2,300
Aldrin	19
Alpha-BHC	9.1
Alpha Chlordane	250
Beta-BHC	41
Delta-BHC	28
Dieldrin	540
Endrin	320
Endrin Ketone	350
Gamma-BHC	16
Gamma-Chlordane	320
Heptachlor	18
Toxaphene	5,400
Herbicides, ug/kg	BRL

BACKGROUND #1 3'	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	7.67
Chromium	17.1

SS-5	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Chromium	NT	12.6
Lead	NT	5.36
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

SS-6	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Barium	NT	22.3
Chromium	NT	21.9
Lead	NT	5.81
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

PDL-1-3	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	14.7
Chromium	21.5
Lead	6.29

SS-4	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Barium	NT	9.96
Chromium	NT	21.6
Lead	NT	6.33
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

DP-2-3’	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	9,800
Ethylbenzene	680,000
Isopropylbenzene	10,000
Toluene	13,000
Trichloroethene	36,000
Xylenes	4,200,000
Metals, mg/kg	
Barium	11
Chromium	16
Lead	4.63
Pesticides, ug/kg	
4,4’-DDD	4,800
4,4’-DDE	690
4,4’-DDT	5,300
Aldrin	43
Alpha-BHC	19
Alpha Chlordane	340
Beta-BHC	19
Delta-BHC	22
Dieldrin	600
Endrin	120
Endrin Ketone	260
Gamma-BHC	28
Gamma-Chlordane	300
Heptachlor	28
Heptachlor Epoxide	<10
Toxaphene	5,900
Herbicides, ug/kg	BRL

DP-2-3’ DUP	
VOCs, ug/kg	
Ethylbenzene	370,000
Xylenes	2,400,000
Metals, mg/kg	
Barium	11.4
Chromium	17.5
Lead	6.04
Pesticides, ug/kg	
4,4’-DDD	6,400
4,4’-DDE	770
4,4’-DDT	23,000
Aldrin	830
Alpha-BHC	870
Alpha Chlordane	510
Beta-BHC	260
Delta-BHC	1,100
Dieldrin	840
Endrin	3,400
Endrin Ketone	800
Gamma-BHC	1,300
Gamma-Chlordane	680
Heptachlor	980
Toxaphene	38,000
Herbicides, ug/kg	BRL

BACKGROUND #2 3'	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	8.68
Chromium	21.2
Lead	5.32

SS-11	11/28/2001 0.5-1ft	1/27/2010 3ft
VOCs, ug/kg		
Trichloroethene	12	12
Cis-1,2-Dichloroethene	10	BRL
Metals, mg/kg		
Barium	NT	10.7
Chromium	NT	19.2
Lead	NT	6.3
Pesticides, ug/kg		
4,4’-DDD	NT	170
4,4’-DDE	NT	46
4,4’-DDT	NT	180
Alpha-BHC	NT	4.3
Alpha Chlordane	NT	29
Beta-BHC	NT	14
Delta-BHC	NT	7.2
Dieldrin	NT	130
Endrin	NT	11
Endrin Ketone	NT	33
Gamma-Chlordane	NT	28
Heptachlor	NT	2.4
Heptachlor Epoxide	NT	12
Toxaphene	NT	520
Herbicides, ug/kg	NT	BRL

PDL-2-3	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	14.9
Chromium	27.6
Lead	5.23

PDL-3-3	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	18.7
Chromium	29.6

PDL-4-3	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	12.5
Chromium	20.3

SS-8	11/28/2001 0.5-1ft	1/27/2010 3ft
VOCs, ug/kg		
Cis-1,2-Dichloroethene	80	29
Tetrachloroethene	BRL	180
Trichloroethene	51	1900
Vinyl Chloride	BRL	69
Metals, mg/kg		
Chromium	NT	20.2
Pesticides, ug/kg		
4,4’-DDD	NT	5.4
4,4’-DDT	NT	12
Herbicides, ug/kg	NT	BRL

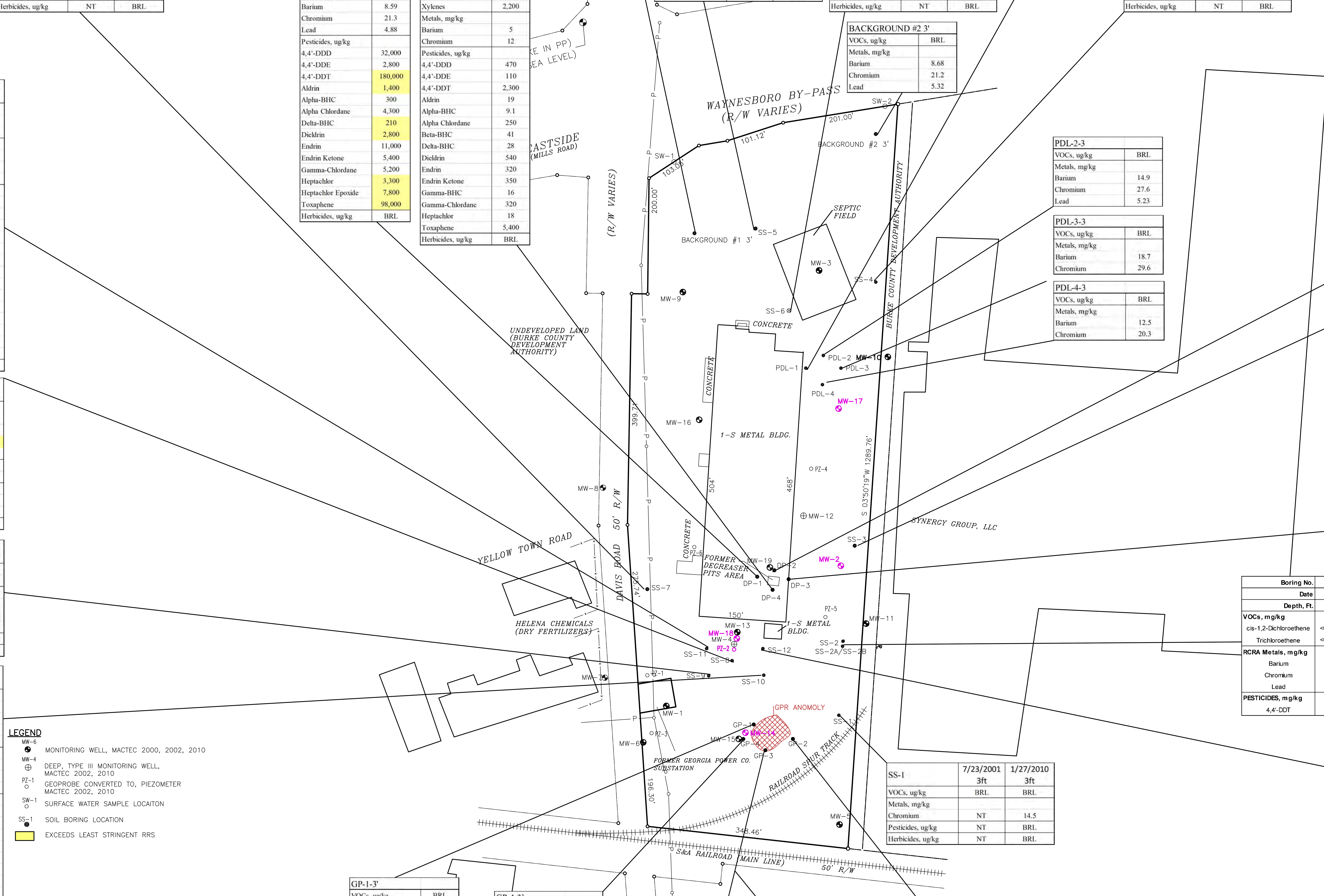
SS-3	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Barium	NT	13.3
Chromium	NT	17.3
Lead	NT	4.84
Pesticides, ug/kg		
Beta-BHC	NT	8.7
Dieldrin	NT	64
Endrin Ketone	NT	11
Gamma-Chlordane	NT	13
Toxaphene	NT	520
Herbicides, ug/kg	NT	BRL

DP-3--3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	3,600
Ethylbenzene	8,900
Trichloroethene	810
Vinyl Chloride	3,200
Xylenes	52,000
Metals, mg/kg	
Barium	9.47
Chromium	15
Lead	4.92
Pesticides, ug/kg	
4,4’-DDD	48,000
4,4’-DDE	3,300
4,4’-DDT	3,700
Aldrin	940
Alpha-BHC	670
Alpha Chlordane	7,600
Delta-BHC	1,200
Dieldrin	8,900
Endrin Ketone	1,800
Gamma-BHC	590
Gamma-Chlordane	8,800
Heptachlor	720
Toxaphene	61,000
Herbicides, ug/kg	BRL

SS-9	11/28/2001 0.5-1ft	1/27/2010 3ft
VOCs, ug/kg		
Trichloroethene	8.9	BRL
Metals, mg/kg		
Barium	NT	5.9
Chromium	NT	15.2
Lead	NT	5.12
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

Boring No.	SS-2A/2B		
Date	11/28/2001		1/27/2010
Depth, Ft.	0.5-1	2	3
VOCs, mg/kg			
cis-1,2-Dichloroethene	<0.0052	0.43	<0.0044
Trichloroethene	<0.0052	0.78	<0.0044
RCRA Metals, mg/kg			
Barium	NT	NT	9.45
Chromium	NT	NT	15.6
Lead	NT	NT	5.48
PESTICIDES, mg/kg			
4,4'-DDT	NT	NT	0.0045

SS-10	11/28/2001 0.5-1ft	1/27/2010 3ft
VOCs, ug/kg		
Cis-1,2-Dichloroethene	11	29
1,4-Dichlorobenzene	NT	11
Chlorobenzene	NT	38
Trichloroethene	130	5
Metals, mg/kg		
Barium	NT	15
Chromium	NT	27.1
Lead	NT	4.55
Pesticides, ug/kg		
4,4’-DDD	NT	4600
4,4’-DDE	NT	220
4,4’-DDT	NT	6600
Aldrin	NT	120
Alpha Chlordane	NT	230
Beta-BHC	NT	30
Delta-BHC	NT	41
Dieldrin	NT	220
Gamma-Chlordane	NT	560
Herbicides, ug/kg	NT	BRL



SS-1	7/23/2001 3ft	1/27/2010 3ft
VOCs, ug/kg	BRL	BRL
Metals, mg/kg		
Chromium	NT	14.5
Pesticides, ug/kg	NT	BRL
Herbicides, ug/kg	NT	BRL

SS-12	11/28/2001 0.5-1ft	1/27/2010 3ft
VOCs, ug/kg		
Cis-1,2-Dichloroethene	18,000	12
Trichloroethene	190,000	70
Metals, mg/kg		
Barium	NT	19.4
Chromium	NT	18.9
Lead	NT	7.82
Pesticides, ug/kg		
4,4’-DDD	NT	1800
4,4’-DDE	NT	480
4,4’-DDT	NT	5500
Aldrin	NT	16
Alpha Chlordane	NT	130
Beta-BHC	NT	18
Dieldrin	NT	270
Endrin	NT	190
Endrin Ketone	NT	440
Gamma-Chlordane	NT	140
Heptachlor	NT	12
Toxaphene	NT	270
Herbicides, ug/kg	NT	BRL

LEGEND

MW-6 MONITORING WELL, MACTEC 2000, 2002, 2010

MW-4 DEEP, TYPE III MONITORING WELL, MACTEC 2002, 2010

PZ-1 GEOPROBE CONVERTED TO, PIEZOMETER MACTEC 2002, 2010

SW-1 SURFACE WATER SAMPLE LOCAITON

SS-1 SOIL BORING LOCATION

EXCEEDS LEAST STRINGENT RRS

GP-1-3'	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	16.6
Chromium	21.7
Lead	5.53
Pesticides, ug/kg	
4,4’-DDE	4.4
4,4’-DDT	12
Herbicides, ug/kg	BRL

GP-4-3’	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	20.3
Chromium	17.5
Lead	5.85
Pesticides, ug/kg	
4,4’-DDT	4.2
Herbicides, ug/kg	BRL

GP-3-3’	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	9.3
Chromium	24.6
Lead	5.41
Pesticides, ug/kg	BRL
Herbicides, ug/kg	BRL

GP-3-3' DUP	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	10.2
Chromium	25.7
Lead	5.38
Pesticides, ug/kg	BRL
Herbicides, ug/kg	BRL

GP-2-3'	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	22.4
Chromium	21.4
Lead	6.65
Pesticides, ug/kg	BRL
Herbicides, ug/kg	BRL

SCALE IN FEET

0 100 200

BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

DESIGNED T. FOLEY

DRAWN T. GLADSTONE

CHECKED S. FOLEY

IN CHARGE

DATE 9/6/2018

LEGION INDUSTRIES FACILITY

WAYNESBORO, GEORGIA

wood.

ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

2001/2010 SOIL TESTING RESULTS

SCALE AS SHOWN

CONTRACT 6121-18-0893

DWG. NO. FIG. 8

REV

PAGE NO

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BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

DESIGNED S. FOLEY
DRAWN T. GLADSTONE
CHECKED S. FOLEY
IN CHARGE
DATE 9/6/2018

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood.

ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SOIL TESTING RESULTS USED FOR DELINEATION

SCALE AS SHOWN
CONTRACT 6121-18-0893
DWG NO. FIG 9
REV
PAGE NO

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Constituent	MW-19			
Date	6/19/2014	12/18/2014	6/4/2015	DUP
VOCs				
Benzene	<1.0	6.3	<25	<25
Chlorobenzene	<1.0	14.1	<25	<25
Cis-1,2-Dichloroethene	127	205.0	125	116
Ethylbenzene	311	2,330	16.0J	14.4J
p-Isopropyltoluene	1.2	6.2	<25	<25
Naphthalene	10.0	63.8	<25	<25
Toluene	12.1	50.6	<25	<25
Trichloroethene	62.3	<5.0	15.9J	13.6J
Vinyl Chloride	5.1	113.0	<25	<25
Xylenes	2,120	10,900	67.1	64.2
Pesticides				
4,4'-DDD	4.9	7.4	1.5	2.1
4,4'-DDT	1.6	1.6	<1.0	<1.0
Alpha-BHC	<1.0	4.0	<1.0	<1.0
Beta-BHC	1.6	4.9	1.4	1.5
Delta-BHC	1.3	8.3	1.0	<1.0
Dieldrin	5.4	4.4	7.9	7
Endosulfan II	<1.0	<1.0	2.8	2.5
Endrin	5.1	2.6	5.8	5.4
Endrin Ketone	4.4	5.3	6.2	5.6
Gamma-BHC	1.2	4.4	<4.0	<4.0
Herbicides	BRL	NT	NT	NT

Constituent	MW-16		
Date	6/18/2014	12/18/2014	6/5/2015
VOCs			
1,4-Dichlorobenzene	5.9	2.1	2.2
Benzene	10	3.7	3.2
Chlorobenzene	45.3	11.7	11.7
Cis-1,2-Dichloroethene	1.4	<1.0	2.5
Ethylbenzene	657	1.7	<1.0
Naphthalene	174	2.0	<1.0
Toluene	4.2	<1.0	<1.0
Trichloroethene	<1.0	<1.0	5.6
Vinyl Chloride	46.9	12.5	6.6
Xylenes	928	1.1	<1.0
Pesticides			
4,4'-DDD	<0.25	<0.25	1.4
4,4'-DDE	<0.25	<0.25	1.0
Beta-BHC	0.48	0.5	1.9
Delta-BHC	2.4	1.8	5.4
Herbicides	BRL	NT	NT

Constituent	MW-9					
Date	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/18/2014	6/5/2015
VOCs						
Cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<1.0	<1.0	2.8
Trichloroethene	<5.0	<5.0	<5.0	<1.0	<1.0	8.5
Pesticides						
4,4'-DDD	NT	0.2	0.42	0.13	<0.05	0.088
Dieldrin	NT	0.31	0.23	0.16	<0.05	0.16
Herbicides	NT	NT	NT	NT	NT	NT

Constituent	MW-20
Date	8/21/2018
VOCs,	BRL
Pesticides	BRL

Constituent	MW-3							
Date	4/25/2001	12/13/2001	12/19/2002	12/11/2009	12/30/2013	6/16/2014	12/16/2014	6/5/2015
VOCs								
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	1.2	1.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<1.0	1.6
Pesticides	NT	NT	NT	BRL	BRL	BRL	BRL	BRL
Herbicides	NT	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-17		
Date	6/18/2014	12/16/2014	6/5/2015
VOCs			
Cis-1,2-Dichloroethene	803	993	1,010
Methylene Chloride	<5.0	<5.0	54
Naphthalene	6.1	5	<20
Trichloroethene	926	2,340	976
Vinyl Chloride	33	20.1	22.6
Pesticides			
Alpha-BHC	0.21	0.35	0.41
Beta-BHC	1.0	1.2	0.75
Delta-BHC	0.45	0.47	0.52
Dieldrin	0.22	0.17	<0.05
Endrin	0.28	0.4	<0.05
Endrin Ketone	0.26	0.65	0.29
Gamma-BHC	<0.1	<0.1	0.066
Herbicides	NT	NT	NT

LEGEND

MW-6 — MONITORING WELL, MACTEC 2002, 2010, 2014, 2018

MW-4 — DEEP, TYPE III MONITORING WELL, MACTEC 2002

PZ-2 — GEOPROBE CONVERTED TO, PIEZOMETER MACTEC 2002

SURFACE WATER SAMPLE LOCATION

VOCs — VOLATILE ORGANIC COMPOUNDS

BRL — BELOW REPORTING LIMIT

NT — NOT TESTED

NS — NOT SAMPLED

709.0 — MOST RECENT TEST RESULTS EXCEEDS HIGHER OF TYPE 3 OR 4 RRS

ALL RESULTS PRESENTED IN MICROGRAMS PER LITER (UG/L)

Constituent	MW-18		
Date	6/19/2014	12/17/2014	6/4/2015
VOCs			
1,1-Dichloroethane	4.0	<50	<50
1,1-Dichloroethene	1.7	<50	<50
1,2,4-Trichlorobenzene	7.7	<50	<50
1,1,2-Trichloroethane	1.6	<50	<50
1,2-Dichlorobenzene	3.2	<50	<50
1,3-Dichlorobenzene	1.0	<50	<50
1,4-Dichlorobenzene	11.5	<50	<50
Benzene	4.1	<50	<50
Chlorobenzene	15.4	<50	<50
Cis-1,2-Dichloroethene	2,530	1,710	1,660
Methylene Chloride	5.4	<50	<50
Naphthalene	3.5	<50	<50
Tetrachloroethene	3.5	<50	<50
Trans-1,2-Dichloroethene	3.6	<50	<50
Trichloroethene	3,220	3,590	3,010
Vinyl Chloride	181	838	680
Xylenes	2.4	<50	<50
Pesticides			
Alpha-BHC	0.4	0.23	<0.05
Beta-BHC	1.9	0.45	0.14
Delta-BHC	1.2	0.45	0.16
Endrin	1.2	0.51	<0.05
Endrin Ketone	1.8	0.73	0.13
Gamma-BHC	1.1	0.30	<0.05
Chlordane	<1.0	<0.8	0.23
Toxaphene	<1.0	<0.8	2.6
Herbicides	BRL	NT	NT

Constituent	MW-8					
Date	2/19/2002	12/11/2009	12/31/2013	6/18/2014	12/16/2014	6/3/2015
VOCs	BRL	NS	NS	NS	NS	NS
Pesticides	NT	NS	NS	NS	NS	NS
Herbicides	NT	NS	NS	NS	NS	NS

Constituent	MW-10						
Date	2/19/2002	3/11/2002	1/28/2010	12/31/2013	6/19/2014	12/18/2014	6/4/2015
VOCs							
Trichloroethene	16	11	<5.0	NS	<1.0	1.0	<1.0
Pesticides	NT	NT	BRL	NS	BRL	BRL	BRL
Herbicides	NT	NT	BRL	NS	NT	NT	NT

Constituent	MW-2						
Date	11/29/2001	2/19/2002	12/11/2009	12/30/2013	6/16/2014	12/16/2014	6/5/2015
VOCS							
Benzene	<5.0	<5.0	<5.0	<5.0	3.9	3.4	3.5
Chlorobenzene	NT	NT	10	8.6	11.8	10.2	12.3
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	3.0	1.6	2.0
Cis-1,2-Dichloroethene	480	270	430	101	160	77.2	145
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	2.5	1.4	2.3
Isopropyltoluene	<5.0	<5.0	<5.0	<5.0	<1.0	1.6	<1.0
Naphthalene	NT	NT	NT	NT	10.5	<1.0	5.5
Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	1.1	<1.0	<1.0
Trichloroethene	25	14	5.6	<5.0	2.1	<1.0	2.0
Vinyl Chloride	<40	<20	350	107	159	88.1	120
Xylenes	NT	NT	18	<10	6.1	2.3	7.8
Pesticides							
Alpha-BHC	NT	NT	2	6.4	5.3	7.3	6.5
Beta-BHC	NT	NT	0.49	1.5	<1.0	1.4	<1.2
Delta-BHC	NT	NT	1.8	8.0	8.1	8.7	9.0
Dieldrin	NT	NT	0.5	<1.0	1.8	<1.2	<1.2
Endosulfan I	NT	NT	<0.10	9.0	<1.0	<1.2	<1.2
Endrin Ketone	NT	NT	0.31	<1.0	<1.0	<1.2	<1.2
Gamma-BHC	NT	NT	1.1	2.3	1.9	2.5	2.3
Chlordane	NT	NT	2.22	<1.0	<1.0	<5.0	<5.0
Herbicides	NT	NT	BRL	NT	<1.0	NT	NT

Constituent	MW-12					
Date	1/28/2010	12/30/2013	6/18/2014	DUP-1	12/16/2014	6/4/2015
VOCs						
Cis-1,2-Dichloroethene	<5.0	<5.0	2.1	2.4	3.4	2.6
Trichloroethene	<5.0	8.3	12.4	13.2	21.2	17.4
Pesticides						
Alpha-BHC	0.11	0.11	<0.05	<0.05	0.073	0.18
Delta-BHC	0.08	0.076	0.055	0.072	0.058	0.095
Gamma-BHC	0.25	0.29	0.13	0.16	0.2	0.44
Herbicides	BRL	NT	NT	NT	NT	NT

Constituent	PZ-2							
Date	8/3/2001	9/25/2001	11/29/2001	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/5/2015
VOCs								
1,1-Dichloroethene	NT	NT	<1,000	14	9.7	<100	<100	<250
1,1,2-Trichloroethane	NT	NT	NT	21	9.9	<100	<100	<100
Chlorobenzene	NT	NT	NT	6.9	<5.0	<100	<100	<100
Cis-1,2-Dichloroethene	NT	NT	20,000	8,000	3,660	3,340	5,380	7,280
Mehtylene Chloride	NT	NT	NT	<5.0	<5.0	<100	<100	592
Tetrachloroethene	NT	NT	NT	130	27.8	<100	<100	<100
Trans-1,2-Dichloroethene	NT	NT	<1,000	17	80.3	<100	<100	<100
Trichloroethene	7,200	7,800	3,300	57,000	18,700	10,300	41,600	46,300
Vinyl Chloride	NT	NT	6,800	2,200	<1,000	305	1,220	1,620
Xylenes	NT	NT	NT	5.4	<5.0	<200	<100	<100
Pesticides								
4,4-DDD	NT	NT	NT	0.13	0.18	1.7	2.2	0.12
4,4-DDE	NT	NT	NT	<0.05	0.13	<0.2	<0.25	<0.05
4-4'-DDT	NT	NT	NT	<0.1	<0.05	0.5	0.55	<0.05
Alpha-BHC	NT	NT	NT	0.53	0.2	0.33	0.35	0.44
Beta-BHC	NT	NT	NT	0.71	0.5	0.41	0.52	0.37
Delta-BHC	NT	NT	NT	1.1	0.61	0.75	0.78	0.71
Dieldrin	NT	NT	NT	<0.1	<0.05	0.52	0.43	0.15
Endrin	NT	NT	NT	<0.1	<0.05	0.28	<0.25	<0.05
Endrin Ketone	NT	NT	NT	1.3	0.1	0.54	0.44	0.51
Gamma-BHC	NT	NT	NT	0.83	0.24	0.44	0.41	0.56
Herbicides	NT	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-13					
Date	1/28/2010	12/30/2013	6/18/2014	12/17/2014	DUP-1	6/4/2015
VOCs						
1,1-Dichloroethane	19	7.6	<20	<20	<50	<50
1,1-Dichloroethene	11	5.3	<20	<20	<50	<50
1,2,4-Trichlorobenzene	51	22	32	<20	<50	<50
1,2-Dichlorobenzene	12	7.8	<20	<20	<50	<50
1,4-Dichlorobenzene	50	42.4	47	41.1	<50	56
Benzene	<5.0	14.6	<20	<20	<50	<50
Chlorobenzene	65	44.7	48.1	36.4	<50	<50
Cis-1,2-Dichloroethene	2,900	1,260	1,120	1,710	1,850	1,030
Isopropylbenzene	7.3	5.2	<20	<20	<50	<50
Methylene Chloride	5.4	<5.0	<40	<40	<100	<50
Tetrachloroethene	19	11.4	<20	<20	<50	<50
Trans-1,2-Dichloroethene	6	32.4	<20	<20	<50	<50
Trichloroethene	8,200	4,320	2,710	4,770	4,460	2,580
Vinyl Chloride	3,300	933	657	516	588	576
Xylenes	9.8	<10.0	<20.0	<20	<50	<50
Pesticides						
4,4'-DDD	2.9	4.2	3.8	3.2	3.9	1.2
4,4'-DDE	<0.5	<1.0	2.3	<1.0	<1.0	<1.0
4,4'-DDT	2.4	8.4	7.6	6.9	8.4	4.0
Beta-BHC	3.7	4.3	4.2	3.7	4.4	2.9
Delta-BHC	2.3	2.5	1.9	1.9	2.2	1.0
Endrin	7.3	8.0	6.0	4.5	5.6	3.2
Endrin Ketone	3.3	4.9	4.0	4.3	5.1	2.8
Gamma-BHC	2	1.8	1.5	1.5	1.5	<1.0
Toxaphene	44	<4.0	<4.0	<4.0	<4.0	<4.0
Herbicides	BRL	NT	NT	NT	NT	NT

Constituent	MW-7							
Date	2/19/2002	3/11/2002	12/11/2009	12/31/2013	DUP	6/18/2014	12/18/2014	6/4/2015
VOCs								
Cis-1,2-Dichloroethene	130	110	NS	5.5	7.6	17.4	11.5	3.9
Trichloroethene	59	66	NS	7.1	8.7	16.9	10.4	6.9
Pesticides	NT	NT	NS	BRL	BRL	BRL	BRL	BRL
Herbicides	NT	NT	NS	NT	NT	NT	NT	NT

Constituent	MW-11					
Date	2/19/2002	1/28/2010	12/31/2013	6/18/2014	12/18/2014	6/3/2015
VOCs						
cis-1,2-Dichloroethene	NT	NT	NS	<1.0	6.2	2.3
Trichloroethene	NT	NT	NS	<1.0	3.4	2.8
Naphthalene	NT	NT	NS	1.0	5.7	2.3
Pesticides						
4,4-DDT	NT	0.15	NS	<0.5	<0.2	<0.5
Alpha-BHC	NT	0.33	NS	0.79	1.0	1.2
Beta-BHC	NT	0.11	NS	<0.5	0.5	<0.5
Delta-BHC	NT	0.35	NS	0.79	1.2	<0.5
Dieldrin	NT	0.72	NS	1.3	0.7	<0.5
Endosulfan II	NT	0.4	NS	<0.5	<0.2	<0.5
Endrin Ketone	NT	2.3	NS	3.0	2.4	3.4
Gamma-BHC	NT	0.22	NS	<0.5	0.42	0.56
Herbicides	NT	NT	NS	NT	NT	NT

Constituent	MW-1								
Date	4/25/2001	8/3/2001	2/19/2002	12/11/2009	12/31/2013	6/16/2014	12/17/2014	6/3/2015	DUP
VOCS									
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	1.4	<10.0	<10.0	<10.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<10.0	<10.0	<10.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	2.2	<10.0	<10.0	<10.0
Cis-1,2-Dichloroethene	NT	NT	180	820	145	902	709	742	724
Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	2.9	<10.0	<10.0	<10.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<10.0	<10.0	<10.0
Trichloroethene	350	180	140	860	193	788	612	623	596
Vinyl Chloride	NT	NT	<10	5	<5.0	160	<10.0	13.9	13
Pesticides									
Alpha-BHC	NT	NT	NT	0.052	<0.05	<0.05	<0.05	<0.05	<0.05
Beta-BHC	NT	NT	NT	0.073	0.057	0.11	0.082	0.16	0.19
Dieldrin	NT	NT	NT	<0.10	0.076	0.12	0.058	0.13	0.15
Endrin Ketone	NT	NT	NT	0.13	0.1	0.24	0.17	0.25	0.3
Herbicides	NT	NT	NT	BRL	NT	NT	NT	NT	NT

Constituent	MW-4						
Date	2/19/2002	3/11/2009	12/10/2009	12/30/2013	6/18/2014	12/17/2014	6/4/2015
VOCS							
Cis-1,2-Dichloroethene	15	<5.0	<5.0	NT	5.1	3.2	3.5
Trichloroethene	11	<5.0	<5.0	NT	7.8	1.7	1.2
Pesticides	NT	NT	BRL	NT	BRL	BRL	BRL
Herbicides	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-14			
Date	6/18/2014	12/18/2014	DUP-2	6/4/2015
VOCs				
Cis-1,2-Dichloroethene	1.6	3.0	2.1	2.5
Trichloroethene	<1.0	4.0	2.8	1.1
Pesticides	BRL	BRL	BRL	BRL
Herbicides	NT	NT	NT	NT

Constituent	MW-15		
Date	6/18/2014	12/17/2014	6/3/2015
VOCs			
Chloroform	1.1	<1.0	<1.0
Cis-1,2-Dichloroethene	1.0	62	50.9
Trichloroethene	<1.0	62.8	58.8
Pesticides	BRL	BRL	BRL
Herbicides	BRL	NT	NT

Constituent	MW-6						
Date	2/19/2002	3/11/2009	12/11/2009	12/31/2013	6/18/2014	12/18/2014	6/3/2015
VOCS							
Cis-1,2-Dichloroethene	10	6	<5.0	<5.0	3.1	5.3	<1.0
Trichloroethene	17	11	14	<5.0	2.0	4.2	1.0
Pesticides							
Toxaphene	NT	NT	<0.2	0.26	<0.2	<0.2	<0.2
Herbicides	NT	NT	BRL	NT	NT	NT	NT

Constituent	MW-5					
Date	2/19/2002	12/11/2009	12/30/2013	6/18/2014	12/18/2014	6/3/2015
VOCs	BRL	BRL	BRL	BRL	BRL	BRL
Pesticides	NT	BRL	BRL	BRL	BRL	BRL
Herbicides	NT	BRL	NT	NT	NT	NT

BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

SCALE IN FEET

0 80 160

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED S. FOLEY
DRAWN T. GLADSTONE
CHECKED S. FOLEY
IN CHARGE C. FERRY
DATE 9/6/2018

LEGION INDUSTRIES FACILITY

WAYNESBORO, GEORGIA

wood.
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CUMULATIVE SUMMARY OF GROUNDWATER TESTING RESULTS

SCALE AS SHOWN

CONTRACT 6121-18-0893

DWG. NO. FIG 10 | REV | PAGE NO

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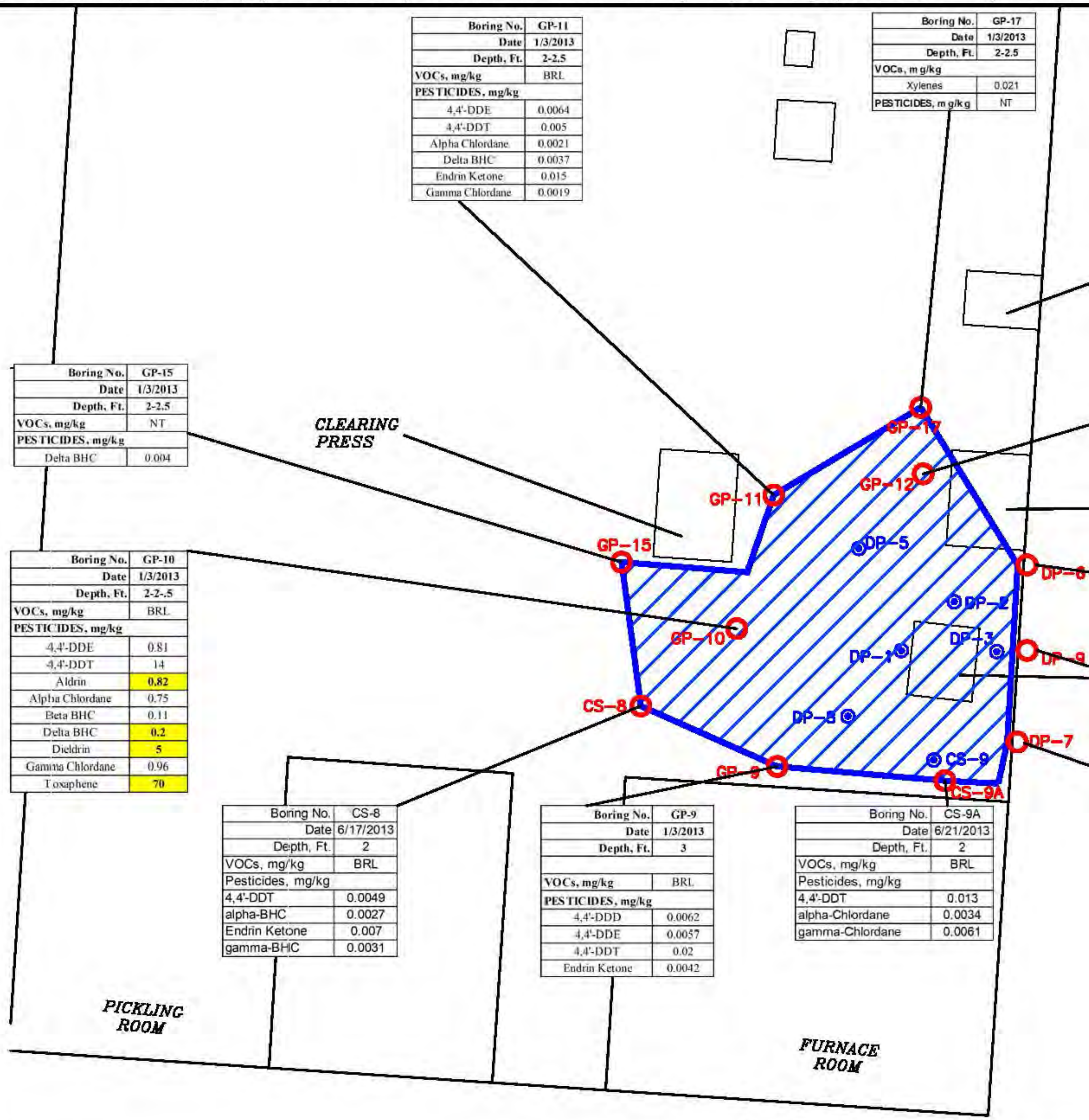


Boring No.	GP-11
Date	1/3/2013
Depth, Ft.	2-2.5
VOCs, mg/kg	BRL
PESTICIDES, mg/kg	
4,4'-DDE	0.0064
4,4'-DDT	0.005
Alpha Chlordane	0.0021
Delta BHC	0.0037
Endrin Ketone	0.015
Gamma Chlordane	0.0019

Boring No.	GP-17
Date	1/3/2013
Depth, Ft.	2-2.5
VOCs, mg/kg	
Xylenes	0.021
PESTICIDES, mg/kg	NT

Boring No.	GP-12
Date	1/3/2013
Depth, Ft.	2-2.5
VOCs, mg/kg	
1,4-Dichlorobenzene	0.12
1,1,1,2-Tetrachloroethane	0.018
Benzene	0.013
Chlorobenzene	0.099
cis-1,2-Dichloroethene	0.22
Ethylbenzene	0.011
Tetrachloroethene	0.017
Toluene	0.0053
Trichloroethene	**0.82**
Vinyl Chloride	0.038
Xylenes	0.019
PESTICIDES, mg/kg	
4,4'-DDD	1.4
4,4'-DDE	0.077
4,4'-DDT	2
Aldrin	0.01
Alpha BHC	0.25
Alpha Chlordane	0.11
Beta BHC	0.041
Delta BHC	0.093
Dieldrin	0.058
Endrin	0.28
Endrin Ketone	0.18
Gamma Chlordane	0.091
Gamma BHC	0.55
Heptachlor	0.02
Toxaphene	2.7

Boring No.	GP-15
Date	1/3/2013
Depth, Ft.	2-2.5
VOCs, mg/kg	NT
PESTICIDES, mg/kg	
Delta BHC	0.004

Boring No.	GP-10
Date	1/3/2013
Depth, Ft.	2-2-.5
VOCs, mg/kg	BRL
PESTICIDES, mg/kg	
4,4'-DDE	0.81
4,4'-DDT	14
Aldrin	**0.82**
Alpha Chlordane	0.75
Beta BHC	0.11
Delta BHC	**0.2**
Dieldrin	**5**
Gamma Chlordane	0.96
Toxaphene	**70**

Boring No.	DP-6
Date	1/27/2010
Depth, Ft.	3
VOCs, mg/kg	
Ethylbenzene	0.007
Xylenes	0.017
Pesticides, mg/kg	
4-4'-DDD	0.21
4,4'-DDT	0.093
Alpha Chlordane	0.011
Gamma Chlordane	0.013
Herbicides, mg/kg	BRL

Boring No.	DP-9
Date	8/21/2018
Depth, Ft.	2-2.5
VOCs, mg/kg	BRL
Pesticides, mg/kg	BRL

Boring No.	CS-8
Date	6/17/2013
Depth, Ft.	2
VOCs, mg/kg	BRL
Pesticides, mg/kg	
4,4'-DDT	0.0049
alpha-BHC	0.0027
Endrin Ketone	0.007
gamma-BHC	0.0031

Boring No.	GP-9
Date	1/3/2013
Depth, Ft.	3
VOCs, mg/kg	BRL
PESTICIDES, mg/kg	
4,4'-DDD	0.0062
4,4'-DDE	0.0057
4,4'-DDT	0.02
Endrin Ketone	0.0042

Boring No.	CS-9A
Date	6/21/2013
Depth, Ft.	2
VOCs, mg/kg	BRL
Pesticides, mg/kg	
4,4'-DDT	0.013
alpha-Chlordane	0.0034
gamma-Chlordane	0.0061

Boring No.	DP-7
Date	1/27/2010
Depth, Ft.	3
VOCs, mg/kg	
Cis-1,2-Dichloroethene	0.11
Vinyl Chloride	0.029
Pesticides, mg/kg	
4-4'-DDD	0.27
4,4'-DDT	0.028
Alpha BHC	0.015
Alpha Chlordane	0.025
Dieldrin	0.023
Gamma Chlordane	0.041
Herbicides, mg/kg	BRL

LEGEND

PREVIOUS BORING WITH RISK REDUCTION STANDARD EXCEEDANCE

SOIL CONFIRMATION SAMPLE LOCATION

mg/kg MILLIGRAMS PER KILOGRAM

SCALE IN FEET

0 20 40

BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY
WAYNESBORO, GA.

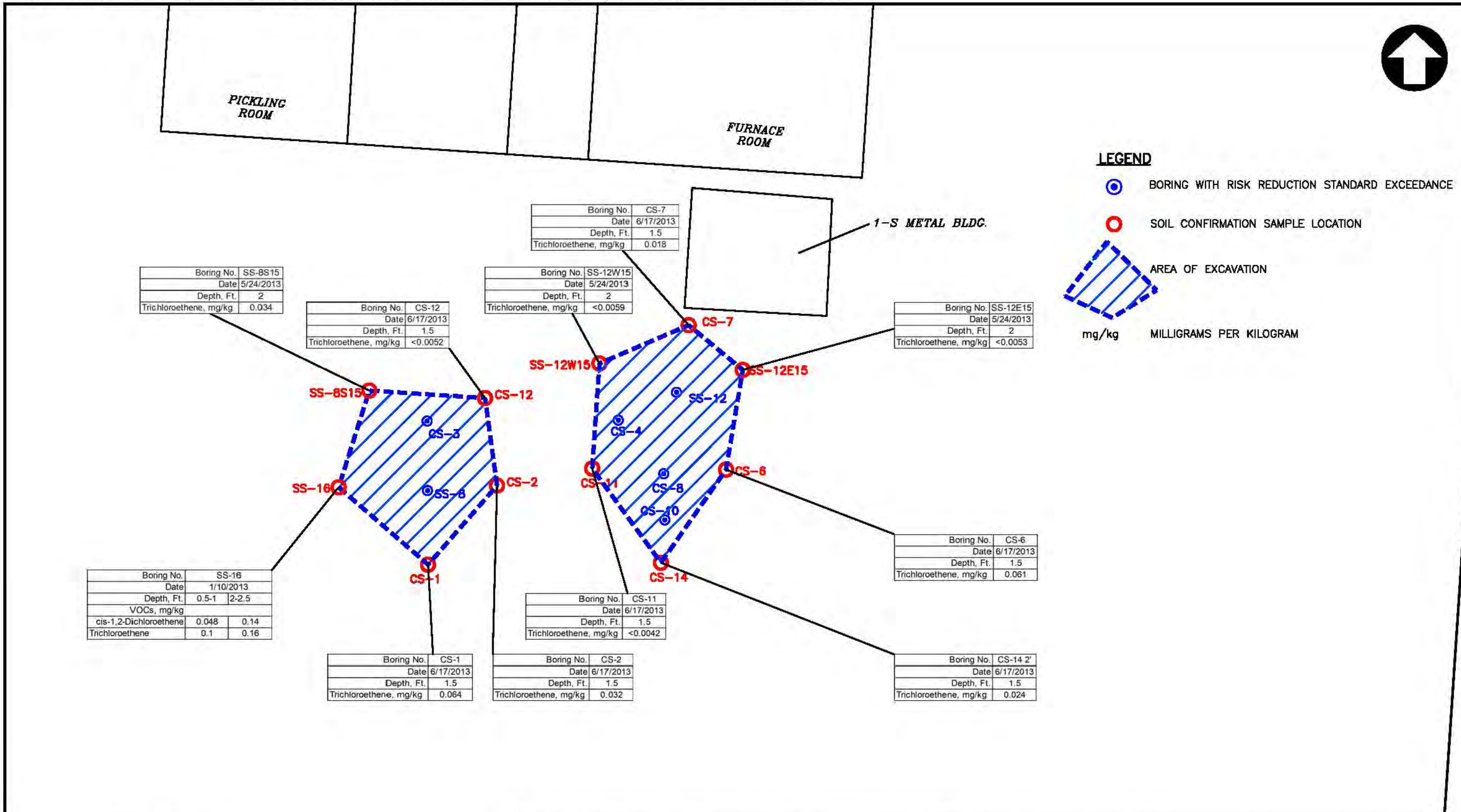
wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SOIL CONFIRMATION DATA
INTERIOR EXCAVATION

JOB No. 6121-18-0893

FIGURE: 11



Boring No.	CS-7
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	0.018

Boring No.	SS-8S15
Date	5/24/2013
Depth, Ft.	2
Trichloroethene, mg/kg	0.034

Boring No.	CS-12
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	<0.0052

Boring No.	SS-12W15
Date	5/24/2013
Depth, Ft.	2
Trichloroethene, mg/kg	<0.0059

Boring No.	SS-12E15
Date	5/24/2013
Depth, Ft.	2
Trichloroethene, mg/kg	<0.0053

Boring No.	CS-6
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	0.061

Boring No.	SS-16	
Date	1/10/2013	
Depth, Ft.	0.5-1	2-2.5
VOCs, mg/kg		
cis-1,2-Dichloroethene	0.048	0.14
Trichloroethene	0.1	0.16

Boring No.	CS-11
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	<0.0042

Boring No.	CS-1
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	0.064

Boring No.	CS-2
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	0.032

Boring No.	CS-14 2'
Date	6/17/2013
Depth, Ft.	1.5
Trichloroethene, mg/kg	0.024

SCALE IN FEET

0 20 40

BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY
WAYNESBORO, GA.

wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SOIL CONFIRMATION DATA
EXTERIOR EXCAVATION

JOB No. 6121-18-0893

FIGURE: 12

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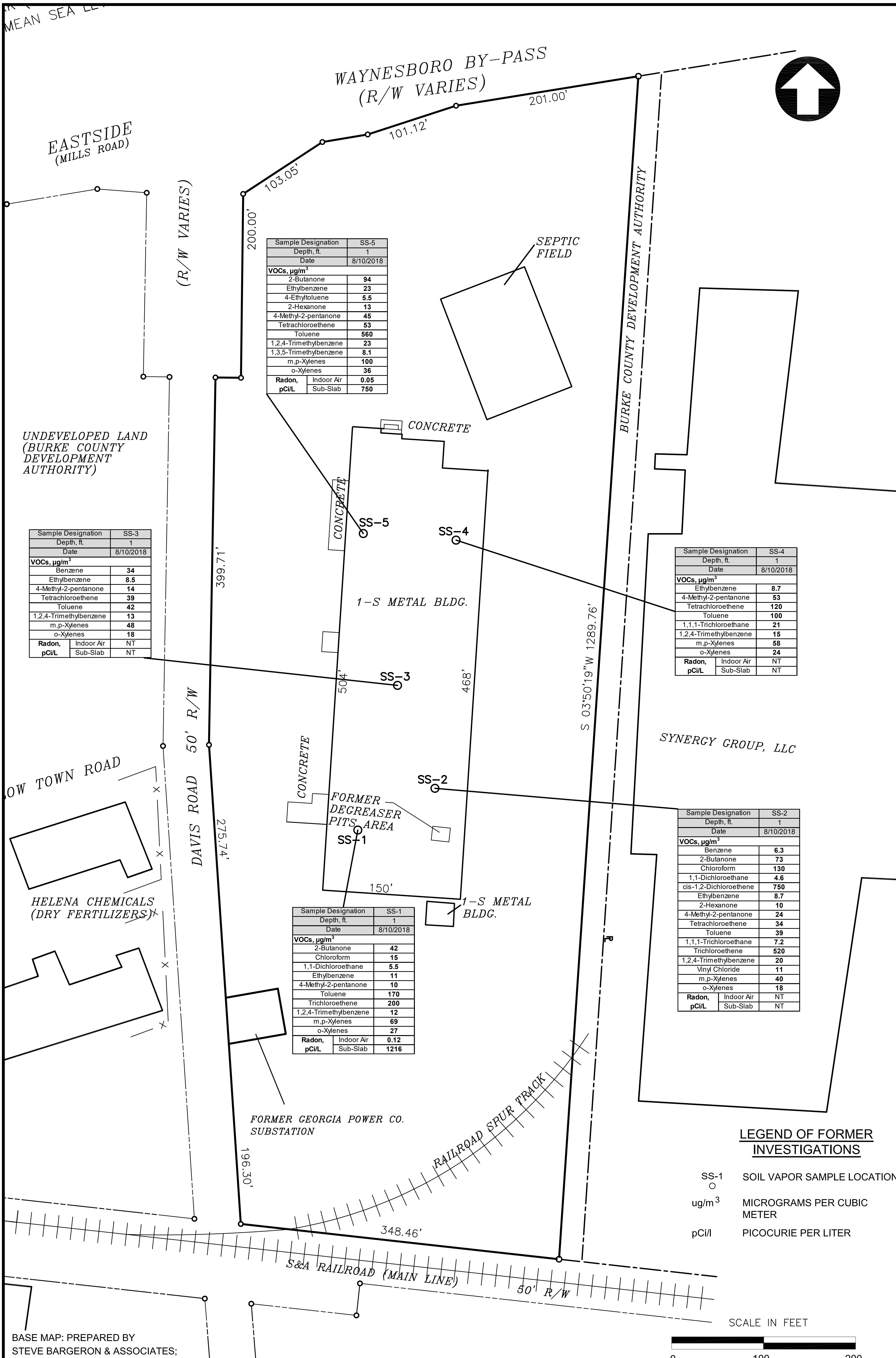


Sample Designation		SS-5
Depth, ft.		1
Date		8/10/2018
VOCs, μg/m^3		
2-Butanone		**94**
Ethylbenzene		**23**
4-Ethyltoluene		**5.5**
2-Hexanone		**13**
4-Methyl-2-pentanone		**45**
Tetrachloroethene		**53**
Toluene		**560**
1,2,4-Trimethylbenzene		**23**
1,3,5-Trimethylbenzene		**8.1**
m,p-Xylenes		**100**
o-Xylenes		**36**
Radon, pCi/L	Indoor Air	**0.05**
	Sub-Slab	**750**

Sample Designation		SS-3
Depth, ft.		1
Date		8/10/2018
VOCs, μg/m^3		
Benzene		**34**
Ethylbenzene		**8.5**
4-Methyl-2-pentanone		**14**
Tetrachloroethene		**39**
Toluene		**42**
1,2,4-Trimethylbenzene		**13**
m,p-Xylenes		**48**
o-Xylenes		**18**
Radon, pCi/L	Indoor Air	NT
	Sub-Slab	NT

Sample Designation		SS-4
Depth, ft.		1
Date		8/10/2018
VOCs, μg/m^3		
Ethylbenzene		**8.7**
4-Methyl-2-pentanone		**53**
Tetrachloroethene		**120**
Toluene		**100**
1,1,1-Trichloroethane		**21**
1,2,4-Trimethylbenzene		**15**
m,p-Xylenes		**58**
o-Xylenes		**24**
Radon, pCi/L	Indoor Air	NT
	Sub-Slab	NT

Sample Designation		SS-2
Depth, ft.		1
Date		8/10/2018
VOCs, μg/m^3		
Benzene		**6.3**
2-Butanone		**73**
Chloroform		**130**
1,1-Dichloroethane		**4.6**
cis-1,2-Dichloroethene		**750**
Ethylbenzene		**8.7**
2-Hexanone		**10**
4-Methyl-2-pentanone		**24**
Tetrachloroethene		**34**
Toluene		**39**
1,1,1-Trichloroethane		**7.2**
Trichloroethene		**520**
1,2,4-Trimethylbenzene		**20**
Vinyl Chloride		**11**
m,p-Xylenes		**40**
o-Xylenes		**18**
Radon, pCi/L	Indoor Air	NT
	Sub-Slab	NT

Sample Designation		SS-1
Depth, ft.		1
Date		8/10/2018
VOCs, μg/m^3		
2-Butanone		**42**
Chloroform		**15**
1,1-Dichloroethane		**5.5**
Ethylbenzene		**11**
4-Methyl-2-pentanone		**10**
Toluene		**170**
Trichloroethene		**200**
1,2,4-Trimethylbenzene		**12**
m,p-Xylenes		**69**
o-Xylenes		**27**
Radon, pCi/L	Indoor Air	**0.12**
	Sub-Slab	**1216**

LEGEND OF FORMER INVESTIGATIONS

SS-1 ○	SOIL VAPOR SAMPLE LOCATION
ug/m^3	MICROGRAMS PER CUBIC METER
pCi/l	PICOCURIE PER LITER

BASE MAP: PREPARED BY
STEVE BARGERON & ASSOCIATES;
WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood. Environment & Infrastructure Solutions, Inc.
1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SUMMARY OF 2018
SOIL VAPOR TESTING RESULTS

JOB NO. 6121-18-0893 FIGURE 13

PREPARED BY/DATE TG 10/11/2018 CHECKED BY/DATE SRF 10/11/2018

APPENDIX A
LABORATORY DATA

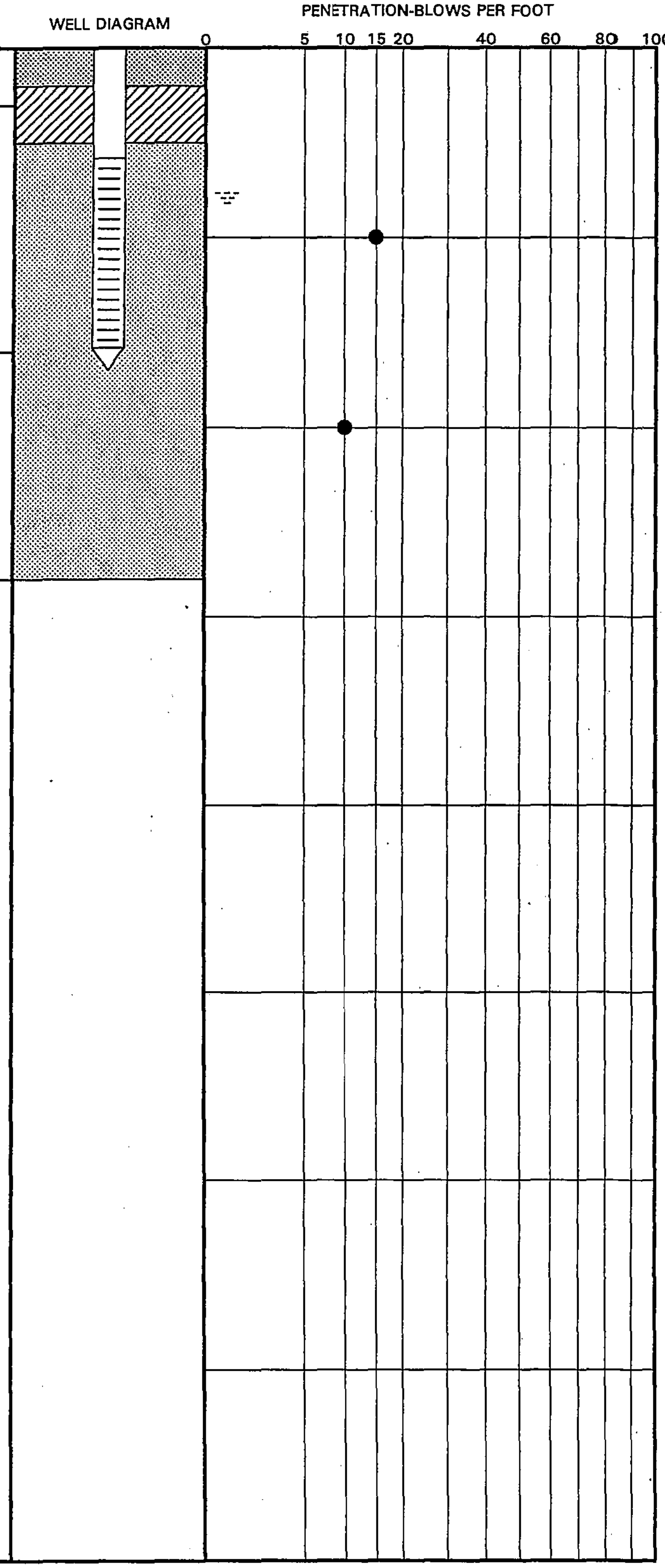
APPENDIX B
BORING LOGS

TEST BORING RECORD

HEIGHT OF RISER: +3.0'

C:\TEMP\MW-1.PL3 DSD-1 11-08-00

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
	0.0	Pea-gravel (FILL)
	1.5	Greyish brown sandy silty CLAY
	8.0	Reddish brown silty clayey fine to medium SAND
	14.0	Boring terminated at 14.0 feet



REMARKS:

1. Boring installed using 8 3/4-inch O.D. hollow-stem augers.
2. Well materials: 5-foot length of 2-inch I.D. PVC well screen attached to 2-inch PVC riser.
3. Drilling water level of 3.95 feet bgs measured on 11/1/00.

DRILLED BY	RP (LAW)	BORING NUMBER	MW-1
LOGGED BY	DSD	DATE STARTED	10/31/00
CHECKED BY	MJF	DATE COMPLETED	11/1/00
		JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

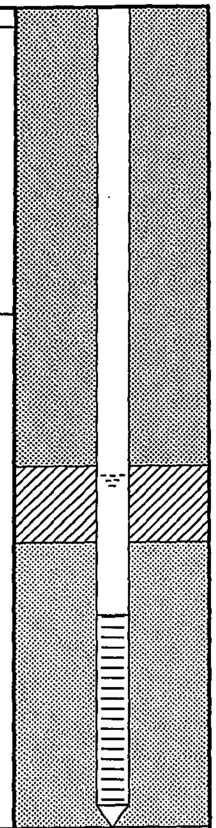
TEST BORING RECORD

HEIGHT OF RISER: +3.0'

C:\TEMP\MW-2.PL3 DSD-1 11-08-00

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
	0.0	Topsoil
	0.5	Brownish grey silty clayey fine to medium SAND
	8.0	Reddish brown sandy silty CLAY
	21.5	Boring terminated at 21.5 feet

WELL DIAGRAM



REMARKS:

1. Boring installed using 8 3/4-inch O.D. hollow-stem augers.
2. Well materials: 5-foot length of 2-inch I.D. PVC well screen attached to 2-inch PVC riser.
3. Drilling water level of 12.37 feet bgs measured on 11/1/00.

DRILLED BY	RP (LAW)	BORING NUMBER	MW-2
LOGGED BY	DSD	DATE STARTED	10/31/00
CHECKED BY	MJF	DATE COMPLETED	11/1/00
		JOB NUMBER	12000-0-2129

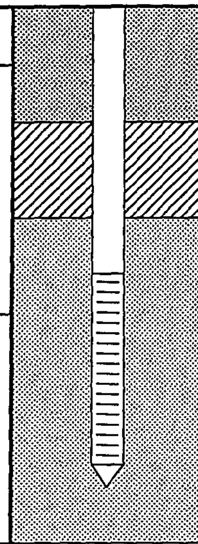
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

TEST BORING RECORD

HEIGHT OF RISER: +3.0'
DATUM ELEVATION:

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
	0.0	Reddish brown silty clayey SAND
	1.5	Greyish brown silty clayey SAND
	8.0	Very stiff grey and red mottled slightly sandy silty CLAY
	14.0	Boring terminated at 14.0 feet

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT

0 5 10 15 20 40 60 80 100

C:\TEMP\MW-3.PL3 DSD-1 11-08-00

REMARKS:

1. Boring installed using 8 3/4-inch O.D. hollow-stem augers.
2. Well materials: 5-foot length of 2-inch I.D. PVC well screen attached to 2-inch PVC riser.
3. Drilling water level of 8.76 feet bgs measured on 11/1/00.

DRILLED BY	RP (LAW)	BORING NUMBER	MW-3
LOGGED BY	DSD	DATE STARTED	10/31/00
CHECKED BY	MJF	DATE COMPLETED	10/31/00
		JOB NUMBER	12000-0-2129

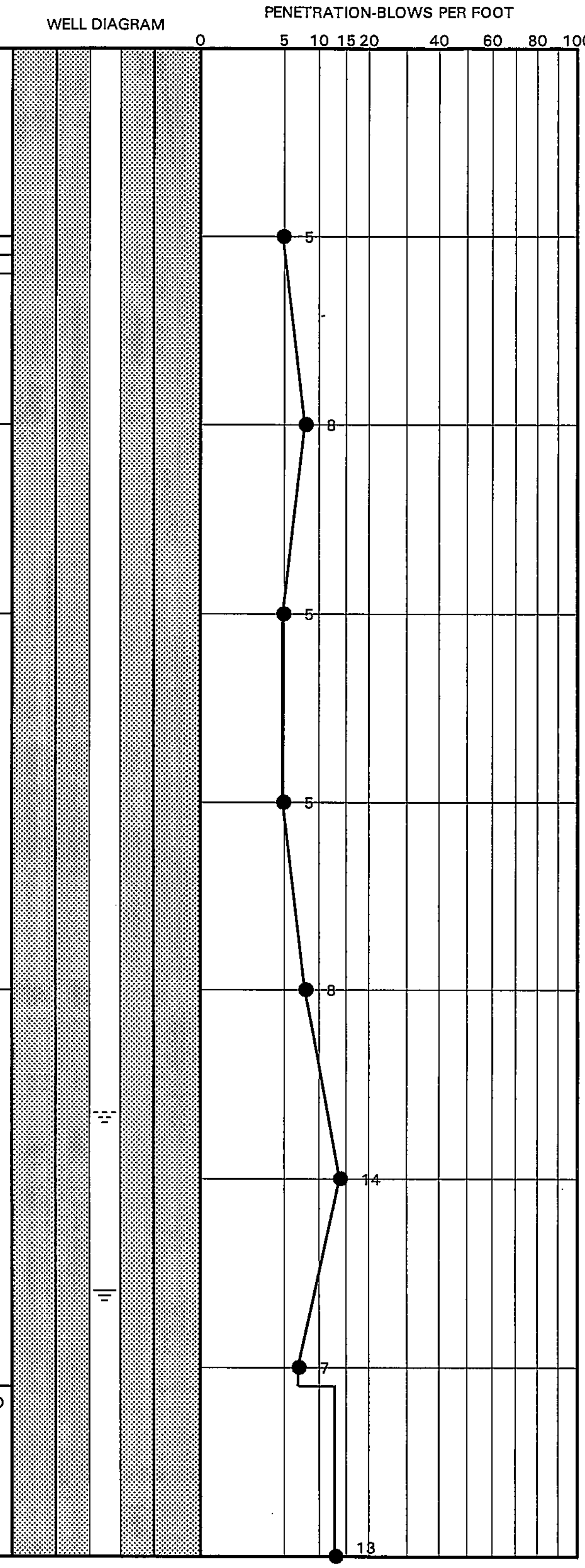
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

TEST BORING RECORD

HEIGHT OF RISER: 2.65 ft.
DATUM ELEVATION: 298.33 ft. NGVD

A:\LEGIONMW.PL3 CK-1 3-15-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
295.7	0.0	no samples
290.7	5.0	Firm, orange, sandy CLAY (CL).
	5.5	Soft, grey-brown, silty CLAY (CL).
	6.0	Firm, medium grey CLAY (CL).
285.7	10.0	Firm to stiff, dark gray, orange, and light gray mottled with orange, silty to sandy CLAY (CL).
280.7	15.0	Firm, orange to medium blue-grey, micaceous, slightly sandy CLAY (CL).
275.7		
270.7	25.0	Firm to stiff, purple, white, red and orange mottled, micaceous, slightly sandy CLAY (CL); sand is very fine- to medium-grained quartz.
265.7		
260.7		
	35.5	Loose, orange-tan, white mottled, clayey to silty, very fine- to medium-grained, quartz SAND (SC/SM).
255.7		



REMARKS:

1) Drilling Method: 0-47 ft., 6¼-inch ID; hollow stem augers. 47-65 feet, rotary drill with water.
2) Well Materials: 6-inch PVC outer casing; 2-inch PVC, 0.010-inch slotted screen.
3) $\overline{\nabla}$ Water level measured on 3/6/02.

DRILLED BY	LAW
LOGGED BY	CK
CHECKED BY	TPW
BORING NUMBER	MW-4
DATE STARTED	2/13/02
DATE COMPLETED	2/14/02
JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

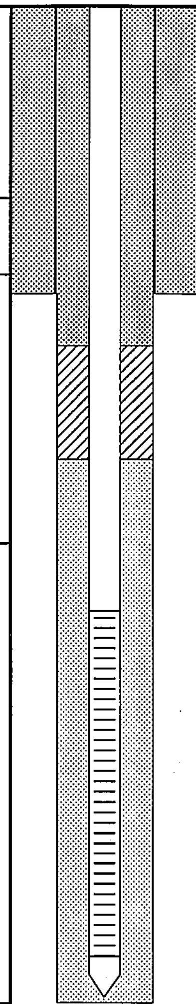
TEST BORING RECORD

HEIGHT OF RISER: 2.65 ft.
DATUM ELEVATION: 298.33 ft. NGVD

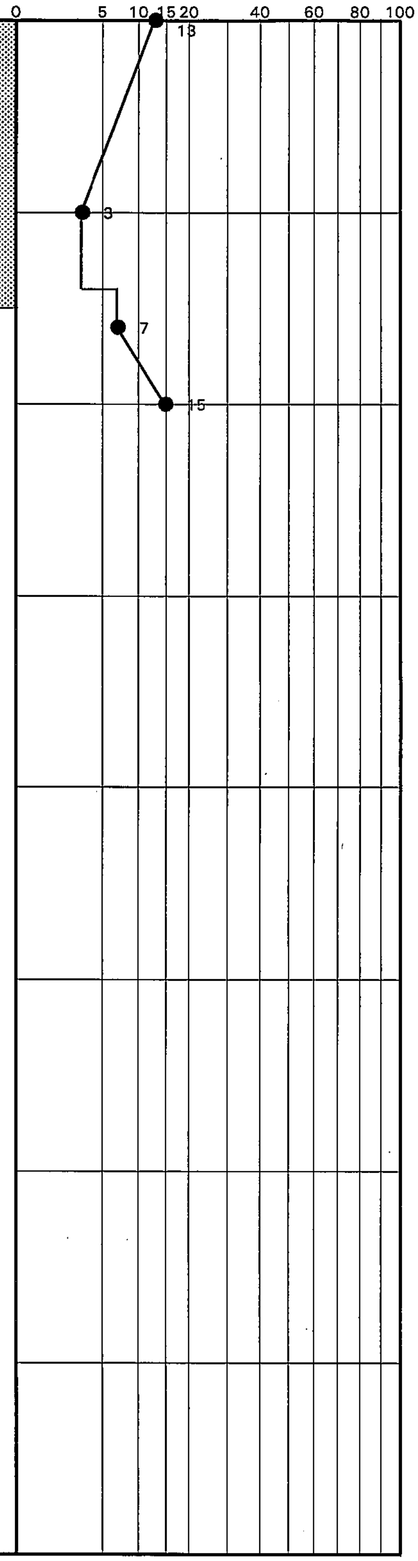
A:\LEGIONMW.PL3 CK-1 3-15-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
255.7	40.0	Stiff, brown, orange, grey and white mottled, slightly silty CLAY (CL) with hard, dark purple-brown concretions at 42 feet.
250.7	45.0	Soft, orange-yellow mottled, slightly clayey SILT (ML), with trace of fine-grained quartz sand.
	47.0	Soft to stiff, yellow-orange, silty CLAY (CL) with abundant white, brittle, claystone fragments and hard, black concretions.
245.7		
	54.0	Fine- to medium-grained, subrounded, clear, quartz SAND (SP). (Based on cuttings.)
240.7		
235.7		
230.7		
	66.0	Boring terminated at 66.00 feet
225.7		
220.7		
215.7		

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT



REMARKS:

DRILLED BY	LAW	BORING NUMBER	MW-4
LOGGED BY	CK	DATE STARTED	2/13/02
CHECKED BY	TPW	DATE COMPLETED	2/14/02
		JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

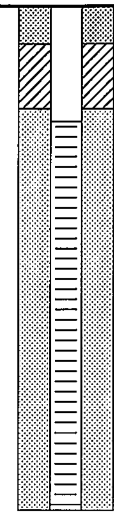
TEST BORING RECORD

HEIGHT OF RISER: 3.34
DATUM ELEVATION: 302.92

A:\MW-5.PL3 JMQ-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
299.6	0.0	Orange brown clayey SAND to sandy CLAY
294.6		
289.6		
	13.2	Boring terminated at 13.20 feet
284.6		
279.6		
274.6		
269.6		
264.6		
259.6		

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT

0 5 10 15 20 40 60 80 100

REMARKS:
1) Boring Advanced using direct-push techniques.
2) ⩧ Water level on 3-06-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW
LOGGED BY	TMK
CHECKED BY	CK

BORING NUMBER	MW-5
DATE STARTED	2/13/02
DATE COMPLETED	2/14/02
JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

TEST BORING RECORD

HEIGHT OF RISER: 3.30
DATUM ELEVATION: 299.16

A:\MW-6.PL3 JMQ-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION	WELL DIAGRAM	PENETRATION-BLOWS PER FOOT (0, 5, 10, 15, 20, 40, 60, 80, 100)
295.9	0.0	Orange brown, clayey SAND to sandy CLAY		
290.9				
285.9				
	13.0	Boring terminated at 13.00 feet		
280.9				
275.9				
270.9				
265.9				
260.9				
255.9				

REMARKS:
1) Boring Advanced using direct-push techniques
2) Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY LAW
LOGGED BY TMK
CHECKED BY CK

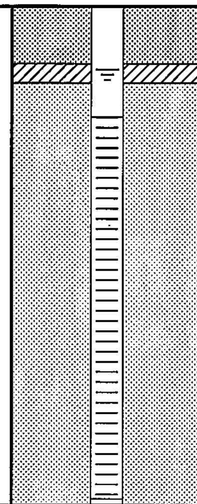
BORING NUMBER MW-6
DATE STARTED 2/14/02
DATE COMPLETED 2/14/02
JOB NUMBER 12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

TEST BORING RECORD

HEIGHT OF RISER: -0.17
DATUM ELEVATION: 294.54

A:\MW-7.PL3 JMQ-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION	WELL DIAGRAM	PENETRATION-BLOWS PER FOOT (0, 5, 10, 15, 20, 40, 60, 80, 100)
294.7	0.0	Orange brown, clayey SAND to sandy CLAY		
289.7				
284.7				
	13.0	Boring terminated at 13.04 feet		
279.7				
274.7				
269.7				
264.7				
259.7				
254.7				

REMARKS:
1) Boring Advanced using direct-push techniques
2) ▽ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY LAW
LOGGED BY TMK
CHECKED BY CK

BORING NUMBER MW-7
DATE STARTED 2/14/02
DATE COMPLETED 2/14/02
JOB NUMBER 12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

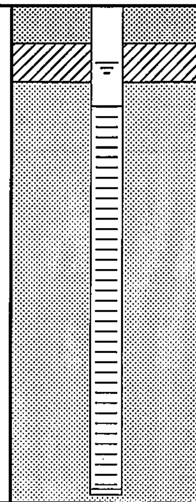
TEST BORING RECORD

A:\MW-8.PL3 JMQ-1 3-21-02

HEIGHT OF RISER: -0.22
DATUM ELEVATION: 293.96

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
294.2	0.0	Orange brown, clayey SAND to sandy CLAY
289.2		
284.2		
	13.0	Boring terminated at 12.97 feet
279.2		
274.2		
269.2		
264.2		
259.2		
254.2		

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT

0 5 10 15 20 40 60 80 100

REMARKS:
1) Boring Advanced using direct-push techniques
2) ═ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW
LOGGED BY	TMK
CHECKED BY	CK

BORING NUMBER	MW-8
DATE STARTED	2/14/02
DATE COMPLETED	2/14/02
JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

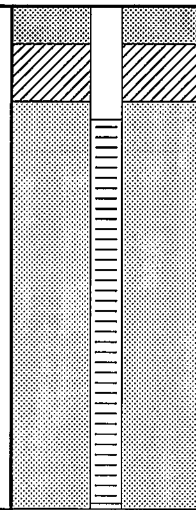
TEST BORING RECORD

HEIGHT OF RISER: 3.13
DATUM ELEVATION: 294.26

A:\MW-9.PL3 JMQ-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
291.1	0.0	Orange brown, clayey SAND to sandy CLAY
286.1		
281.1		
	13.1	Boring terminated at 13.12 feet
276.1		
271.1		
266.1		
261.1		
256.1		
251.1		

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT

0 5 10 15 20 40 60 80 100

REMARKS:
1) Boring Advanced using direct-push techniques
2) ⊽ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY LAW
LOGGED BY TMK
CHECKED BY CK

BORING NUMBER MW-9
DATE STARTED 2/14/02
DATE COMPLETED 2/14/02
JOB NUMBER 12000-0-2129

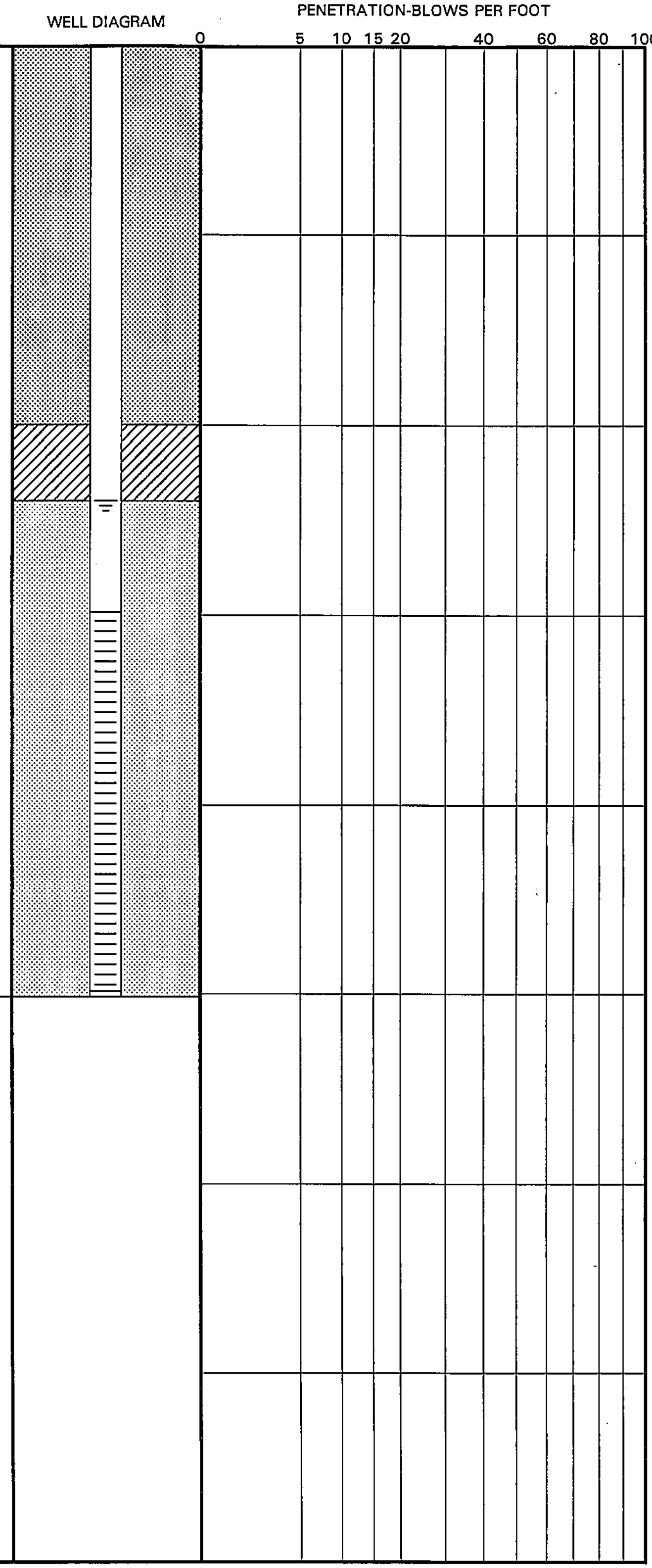
LAW
ENGINEERING AND ENVIRONMENTAL SE

TEST BORING RECORD

HEIGHT OF RISER: -0.14
DATUM ELEVATION: 301.04

A:\MW-10.PL3 JMO-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
301.2	0.0	Orange brown, clayey SAND to sandy CLAY
296.2		
291.2		
286.2		
281.2		
276.2	25.1	Boring terminated at 25.09 feet
271.2		
266.2		
261.2		



REMARKS:
1) Boring Advanced using direct-push techniques
2) ≡ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW	BORING NUMBER	MW-10
LOGGED BY	TMK	DATE STARTED	2/14/02
CHECKED BY	CK	DATE COMPLETED	2/14/02
		JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

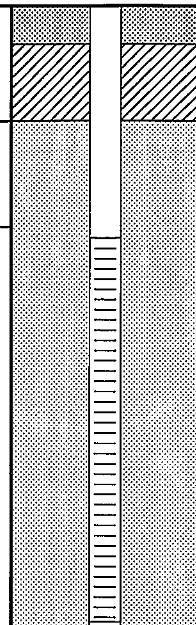
TEST BORING RECORD

HEIGHT OF RISER: -0.14
DATUM ELEVATION: 299.86

A:\MW-11.PL3 JMQ-1 3-21-02

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
300.0	0.0	Mottled yellowish-orange, red-brown, and light brown, slight micaceous silty very clayey, medium SAND- (FILL)
	3.0	Grayish brown, silty fine-medium SAND (SM-SP)
295.0	5.8	Light gray with some yellowish orange mottling, very clayey SAND (SC)
290.0		
285.0	16.2	Boring terminated at 16.24 feet
280.0		
275.0		
270.0		
265.0		
260.0		

WELL DIAGRAM



PENETRATION-BLOWS PER FOOT
0 5 10 15 20 40 60 80 100

REMARKS:
1) Boring Advanced using direct-push techniques
2) ▽ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC

DRILLED BY LAW
LOGGED BY TMK
CHECKED BY CK

BORING NUMBER MW-11
DATE STARTED 2/14/02
DATE COMPLETED 2/14/02
JOB NUMBER 12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT (1st 6" 2nd 6" 3rd 6")
45	Very soft tan **CLAY**.					(N = 2)
	Soft tan to light gray fine sandy **CLAY** with claystone fragments.					
50				SS		1-1-3 (N = 4)
66	Boring terminated at 66 feet.					

PL (%) NM (%) LL (%)

▲ FINES (%)

● SPT (bpf)

0 10 20 30 40 50 60 70 80 90 100

Depth scale: 45, 50, 55, 60, 65, 70, 75, 80, 85, 90

SOIL TEST BORING LEGION INDUSTRIES.GPJ LAW GIBB.GDT 3/31/10

DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger/Mud Rotary
HOLE DIA.:	8.25 inches
REMARKS:	Type III well installed at 64 feet. Outer casing set at 52 feet. Stabilized groundwater depth 26.38 feet bgs.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-12
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 25, 2010
PROJECT NO.: 6121-09-0444

MACTEC

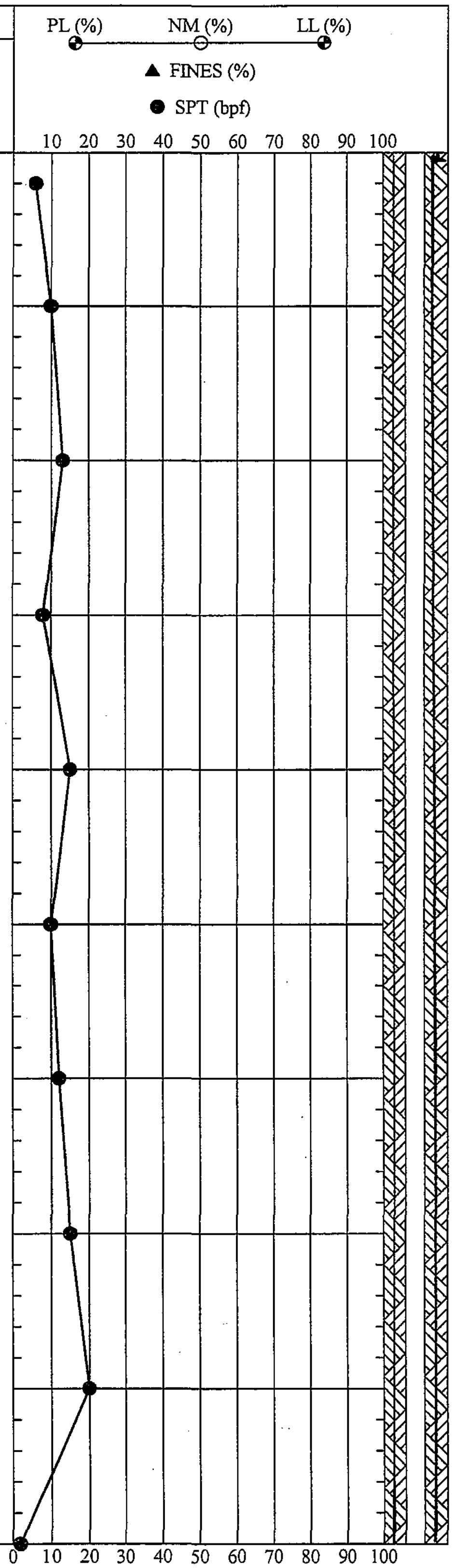
SOIL CLASSIFICATION AND REMARKS

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS
0	FILL - Loose brown clayey medium **SAND**.
5.5	ALLUVIAL - Stiff gray medium sandy **CLAY**.
12.5	Loose to medium dense red-brown, tan and gray fine to medium sandy **CLAY**.
37	Medium dense red and gray fine **SAND**.
42	Very soft tan **CLAY**.

SAMPLES

DEPTH (ft)	IDENT	TYPE	N-COUNT (1st 6" / 2nd 6" / 3rd 6")
0	SS		5-3-3 (N = 6)
5	SS		2-5-5 (N = 10)
10	SS		3-6-7 (N = 13)
15	SS		2-3-5 (N = 8)
20	SS		3-6-9 (N = 15)
25	SS		4-5-5 (N = 10)
30	SS		2-2-10 (N = 12)
35	SS		7-7-8 (N = 15)
40	SS		5-9-11 (N = 20)
45	SS		0-1-1



DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger/Mud Rotary
HOLE DIA.:	8.25 inches
REMARKS:	Type III well installed at 64 feet. Outer casing set at 52 feet. Stabilized groundwater depth 26.38 feet bgs.

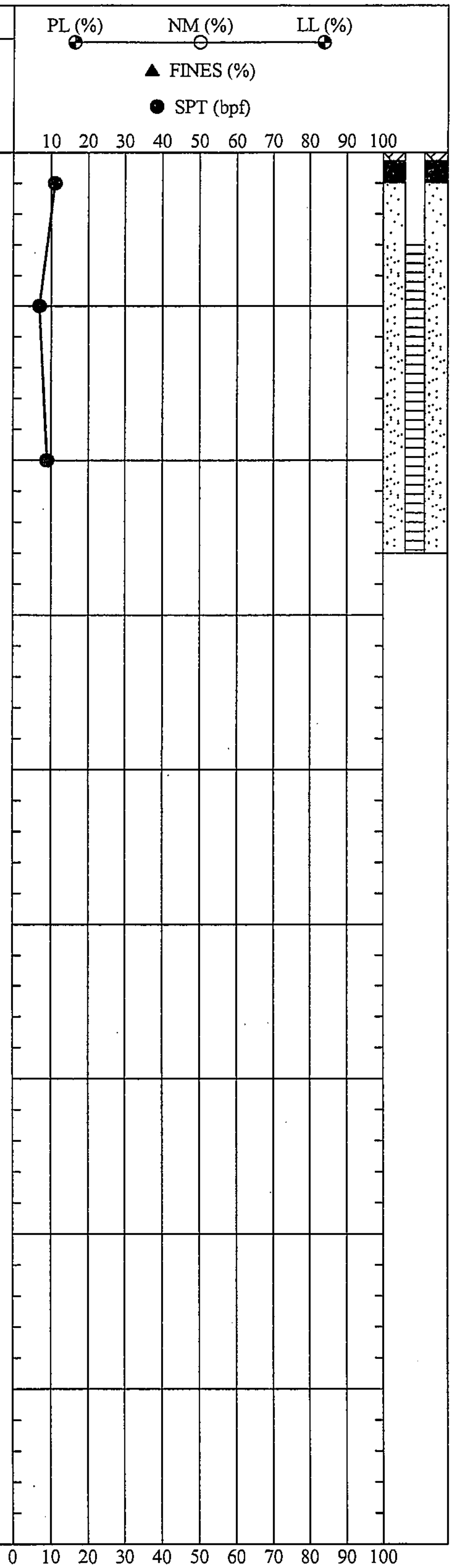
THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-12
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 25, 2010
PROJECT NO.: 6121-09-0444

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT (1st 6" 2nd 6" 3rd 6")
0	FILL - Medium dense brown clayey medium to coarse **SAND** with some fine gravel.			SS		3-4-7 (N = 11)
	ALLUVIAL - Loose brown clayey medium **SAND**.					
5				SS		4-3-4 (N = 7)
	Stiff gray medium sandy **CLAY**.					
10				SS		3-4-5 (N = 9)
	Boring terminated at 13 feet.					
15						
20						
25						
30						
35						
40						
45						



DRILLER: MACTEC
EQUIPMENT: CME 75
METHOD: Hollow Stem Auger
HOLE DIA.: 8.25 inches
REMARKS: Type II well installed. Stabilized groundwater depth 3.19 feet bgs.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-13
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 27, 2010
PROJECT NO.: 6121-09-0444

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.
0	**TOPSOIL**
	FILL - Brown clayey medium **SAND.**
	ALLUVIAL - Red-brown tan and gray clayey medium **SAND.**
	Red-brown slightly clayey fine to medium **SAND.**
	Purple red clayey fine to coarse **SAND.**
	Boring terminated at 24 feet.

LEGEND | ELEV (ft) | SAMPLES: IDENT, TYPE, N-COUNT (1st 6", 2nd 6", 3rd 6") | PL (%) NM (%) LL (%) | ▲ FINES (%) | ● SPT (bpf)

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ LAW GIBB.GDT 3/31/10

DRILLER:	Atlas GeoSampling
EQUIPMENT:	Geoprobe
METHOD:	Direct Push
HOLE DIA.:	2 inches
REMARKS:	1 inch piezometer installed. Stabilized groundwater depth 4.31 feet.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: PZ-4
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 27, 2010
PROJECT NO.: 6121-09-0444

PAGE 1 **OF** 1

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	**TOPSOIL**								
	FILL - Brown clayey fine to medium **SAND.**								
	ALLUVIAL - Gray slightly clayey fine to medium **SAND.**								
5									
	Light gray to brown fine to medium sandy **CLAY.**								
10									
15									
20	Light gray clayey fine to medium **SAND.**								
	Boring terminated at 22 feet.								
25									
30									
35									
40									
45									

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ LAW_GIBB.GDT 3/31/10

DRILLER:	Atlas GeoSampling
EQUIPMENT:	Geoprobe
METHOD:	Direct Push
HOLE DIA.:	2 inches
REMARKS:	1 inch piezometer installed. Stabilized groundwater depth 3.58 feet.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: PZ-5
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 27, 2010
PROJECT NO.: 6121-09-0444

PAGE 1 **OF** 1

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"
0	**TOPSOIL**							
	FILL - Brown clayey fine to medium **SAND.**							
	ALLUVIAL - Gray and brown slightly clayey to clayey fine to medium **SAND.**							
22	Boring terminated at 22 feet.							

PL (%) NM (%) LL (%)

▲ FINES (%)

● SPT (bpf)

10 20 30 40 50 60 70 80 90 100

Depth scale: 0 5 10 15 20 25 30 35 40 45

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ LAW_GIBB.GDT 3/31/10

DRILLER: Atlas GeoSampling
EQUIPMENT: Geoprobe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS: 1 inch piezometer installed. Stabilized groundwater depth 2.88 feet.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: PZ-6
PROJECT: Legion Industries
LOCATION: Waynesboro, GA
DRILLED: January 27, 2010
PROJECT NO.: 6121-09-0444

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	**CONCRETE**								
	FILL - Red clayey medium **SAND.**								
	VIRGIN - Red brown to gray clayey **SAND.**								
5	Gray and brown sandy **CLAY.**								5
10	Boring terminated at 10 feet.								10
15									15
20									20
25									25
30									30
35									35
40									40
45									0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-9
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	**CONCRETE**								
	FILL - Red brown clayey **SAND.**								
	VIRGIN - Tan medium sandy **CLAY.**								
5									5
	Gray clayey medium **SAND.**								
	Brown and gray medium sandy **CLAY.**								
10	Boring terminated at 10 feet.								10
15									15
20									20
25									25
30									30
35									35
40									40
45									0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-10
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) / NM (%) / LL (%) / FINES (%) / SPT (bpf)
0	**CONCRETE**								
	FILL - Red brown clayey **SAND.**								
	VIRGIN - Gray medium sandy **CLAY.**								
5									
	No recovery below 5 feet.								
10	Boring terminated at 10 feet.								
15									
20									
25									
30									
35									
40									
45									

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-11
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS (SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.)	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	N-COUNT 1st 6"	N-COUNT 2nd 6"	N-COUNT 3rd 6"	PL (%) / NM (%) / LL (%) / FINES (%) / SPT (bpf)
0	CONCRETE								
	FILL - Red brown clayey **SAND.**								
	VIRGIN - Gray brown clayey medium **SAND.**								
5	Gray and brown medium sandy **CLAY.**								
10	Boring terminated at 10 feet.								
15									
20									
25									
30									
35									
40									
45									

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-12
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	CONCRETE						
	FILL - Red brown clayey medium SAND.						
	VIRGIN - Red brown and gray clayey fine to medium SAND.						
5	Gray and brown medium sandy CLAY.						5
10	Boring terminated at 10 feet.						10
15							15
20							20
25							25
30							30
35							35
40							40
45							0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-13
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	CONCRETE								
	FILL - Red brown clayey SAND.								
	VIRGIN - Gray and tan medium sandy CLAY.								
5									5
	Gray clayey medium SAND.								
	Gray and tan medium sandy CLAY.								
10	Boring terminated at 10 feet.								10
15									15
20									20
25									25
30									30
35									35
40									40
45									0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-14
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	**CONCRETE**								
	FILL - Red brown clayey medium **SAND.**								
	VIRGIN - Brown and gray fine to medium sandy **CLAY.**								
5									
	Gray silty clayey **SAND.**								
	Gray silty fine to medium sandy **CLAY.**								
10	Boring terminated at 10 feet.								
15									
20									
25									
30									
35									
40									
45									

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-15
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"
0	CONCRETE							
	FILL - Red brown clayey medium **SAND**.							
	VIRGIN - Gray medium sandy **CLAY**.							
10	Boring terminated at 10 feet.							

PL (%) NM (%) LL (%)

▲ FINES (%)

● SPT (bpf)

0 10 20 30 40 50 60 70 80 90 100

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-16
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS (SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.)	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	**CONCRETE**						
	FILL - Red brown clayey medium **SAND.**						
	VIRGIN - Gray brown clayey **SAND.**						
5	Dark gray fine **SAND.**						
	Gray and brown fine to medium sandy **CLAY.**						
10	Boring terminated at 10 feet.						
15							
20							
25							
30							
35							
40							
45							

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-17
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	CONCRETE								
	FILL - Red brown clayey medium SAND.								
	Brown tan and gray medium sandy CLAY.								
10	Boring terminated at 10 feet.								

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-18
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	CONCRETE								
	FILL - Red brown clayey medium **SAND.**								
	VIRGIN - Brown to gray fine to medium sandy **CLAY.**								
5									
	Gray silty clayey fine **SAND.**								
	Gray silty fine sandy **CLAY.**								
10	Boring terminated at 10 feet.								
15									
20									
25									
30									
35									
40									
45									

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: GP-19
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 3, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	N-COUNT 1st 6"	N-COUNT 2nd 6"	N-COUNT 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL - **TOPSOIL** and gravel								
	Brown medium sandy **CLAY**.								
	VIRGIN - Red brown clayey medium **SAND**.								
	Gray medium sandy **CLAY**.								
5	Boring terminated at 5 feet.								
10									
15									
20									
25									
30									
35									
40									
45									

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: SS-13
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 4, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	FILL - Brown clayey **SAND** and gravel.								
	VIRGIN - Brown, tan and gray fine sandy **CLAY**.								
5	Boring terminated at 5 feet.								5
10									10
15									15
20									20
25									25
30									30
35									35
40									40
45									0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: SS-14
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 4, 2013
PROJECT NO.: 6121-09-0444

PAGE 1 OF 1

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL - Brown clayey SAND and gravel.								
	VIRGIN - Brown tan and gray fine to medium sandy CLAY.								
5	Boring terminated at 5 feet.								

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Graph scale: 0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: SS-15
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 4, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL - Brown clayey medium **SAND.**	▨							
	Red brown clayey medium **SAND.**	▨							
	Red brown and tan fine sandy **CLAY.**	▨							
	Gray clayey medium **SAND.**	▨							
5	Boring terminated at 5 feet.								
10									
15									
20									
25									
30									
35									
40									
45									

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 1/24/13

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: SS-16
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 4, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	N-COUNT 1st 6"	N-COUNT 2nd 6"	N-COUNT 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL - Brown clayey medium SAND.								
	VIRGIN - Gray clayey medium SAND.								
5	Boring terminated at 5 feet.								

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

PREPARED BY: S. Foley CHECKED BY: C. Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: SS-17
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: January 4, 2013
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.
0	**TOPSOIL**
	RESIDUAL - Brown fine to medium sandy silty **CLAY**.
	Gray clayey fine to medium **SAND**.
5	Gray and brown fine sandy **CLAY**.
	Red brown fine sandy **CLAY**.
15	Gray and tan clayey fine to medium **SAND**.
	Red and brown clayey fine **SAND**.
	Tan and purple fine sandy **CLAY**.
25	Boring terminated at 25 feet.

Column headings: DEPTH (ft) 0–45; LEGEND; ELEV (ft); SAMPLES: IDENT, TYPE, N-COUNT (1st 6", 2nd 6", 3rd 6"); PL (%), NM (%), LL (%); ▲ FINES (%); ● SPT (bpf); scale 10 20 30 40 50 60 70 80 90 100 (0 10 20 30 40 50 60 70 80 90 100 at bottom)

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push/Hollow Stem Auger
HOLE DIA.: 8 inches
REMARKS: Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-14
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 17, 2014
PROJECT NO.: 6121-09-0444

PAGE 1 **OF** 1

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"
0	**TOPSOIL**							
	RESIDUAL - Brown fine to medium sandy silty **CLAY**.							
	Gray clayey fine to medium **SAND**.							
5	Gray and brown fine sandy **CLAY**.							
	Gray clayey fine to medium **SAND**.							
	Boring terminated at 8 feet.							
10								
15								
20								
25								
30								
35								
40								
45								

PL (%) NM (%) LL (%)
▲ FINES (%)
● SPT (bpf)
10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push/Hollow Stem Auger
HOLE DIA.: 8 inches
REMARKS: Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-15
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 17, 2014
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES: IDENT	TYPE	N-COUNT: 1st 6" / 2nd 6" / 3rd 6"	PL (%) / NM (%) / LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	**TOPSOIL**						
	FILL - Gray brown fine to medium **SAND**.						
	RESIDUAL - Gray silty clayey fine to medium **SAND**.						
5	Red brown clayey silty fine **SAND**.						
	Red brown and and blue gray clayey fine to medium **SAND**.						
	Red brown slightly clayey silty fine **SAND**.						
10	Boring terminated at 10 feet.						
15							
20							
25							
30							
35							
40							
45							

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 6/25/14

DRILLER:	GeoLab
EQUIPMENT:	GeoProbe
METHOD:	Direct Push/Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-16
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 17, 2014
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	**TOPSOIL**								
	Red brown to brown and gray clayey silty fine **SAND** with occasional pebbles.								
5									
10									
	Red and gray fine sandy **CLAY**.								
	Red and gray clayey fine **SAND**.								
	Gray and red clayey fine to medium **SAND**.								
15									
20									
25	Boring terminated at 25 feet.								
30									
35									
40									
45									

0 10 20 30 40 50 60 70 80 90 100

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push/Hollow Stem Auger
HOLE DIA.: 8 inches
REMARKS: Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-17
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 17, 2014
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	**TOPSOIL**								
	RESIDUAL - Very stiff, red brown to brown clayey fine to medium **SAND**.								
	Soft, gray clayey fine to medium **SAND**.								
5	Gray fine sandy **CLAY**.								
	Gray clayey medium **SAND**.								
10	Brown to gray fine sandy **CLAY**.								
	Gray fine to medium sandy **CLAY**.								
15	Gray and red fine sandy **CLAY**.								
20	Wet, gray and red medium to coarse sandy **CLAY**.								
25	Red and gray fine sandy **CLAY**.								
	Brown slightly clayey silty fine **SAND**.								
30	Boring terminated at 30 feet.								
35									
40									
45									

Chart scale: 10 20 30 40 50 60 70 80 90 100 (top); 0 10 20 30 40 50 60 70 80 90 100 (bottom)

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push/Hollow Stem Auger
HOLE DIA.: 8 inches
REMARKS: Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-18
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 18, 2014
PROJECT NO.: 6121-09-0444

PAGE 1 **OF** 1

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	**CONCRETE**								
	FILL - Coarse **GRAVEL**.								
5	Gray fine to medium sandy **CLAY**.								
	Gray fine sandy **CLAY**.								
10	Gray and brown fine to medium sandy **CLAY**.								
	Brown fine sandy **CLAY**.								
15	Boring terminated at 15 feet.								
20									
25									
30									
35									
40									
45									

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LEGION INDUSTRIES.GPJ AMEC.GDT 6/25/14

DRILLER: GeoLab
EQUIPMENT: GeoProbe
METHOD: Direct Push/Hollow Stem Auger
HOLE DIA.: 8 inches
REMARKS: Well installed. Groundwater at __ feet.

Prepared by: S. Foley Reviewed by: Chuck Ferry

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: MW-19
PROJECT: Legion Industries
LOCATION: Atlanta, GA
DRILLED: June 18, 2014
PROJECT NO.: 6121-09-0444

amec

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) / NM (%) / LL (%); ▲ FINES (%); ● SPT (bpf)
0	FILL - Orange brown clayey sandy **SILT**.								
4	Boring terminated at 4 feet.								

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Chart scale: 0 10 20 30 40 50 60 70 80 90 100

DRILLER: Atlas Geosampling
EQUIPMENT: Geoprobe
METHOD: Direct Push
HOLE DIA.: 2 inches
REMARKS:

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BORING NO.: DP-9
PROJECT: Legion Industries
LOCATION: Waynesboro, Georgia
DRILLED: August 21, 2018
PROJECT NO.: 6121-18-0893

wood.

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	TYPE	N-COUNT 1st 6"	2nd 6"	3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL - Orange brown to red brown clayey sandy **SILT**.								
4	ALLUVIAL - Gray-brown fine to medium **SAND**.								
10	Gray brown medium sandy **CLAY**.								
12	Boring terminted at 12 feet.								

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Scale: 0 10 20 30 40 50 60 70 80 90 100

DRILLER: Atlas Geosampling
EQUIPMENT: Geoprobe
METHOD: Direct Push / HSA
HOLE DIA.: 2 inches / 8 inches
REMARKS: Type II well installed. Stablized groundwater depth 5.45 feet TOC.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BORING NO.: MW-20
PROJECT: Legion Industries
LOCATION: Waynesboro, Georgia
DRILLED: August 21, 2018
PROJECT NO.: 6121-18-0893

wood.

APPENDIX C
RISK REDUCTION STANDARDS

Table B-1
Summary of Soil RRS

PARAMETER	Type 1 RRS mg/kg	Type 2 RRS DAF of 20 mg/kg	Type 3 RRS Surface mg/kg	Type 3 RRS Subsurface mg/kg	Type 4 RRS IW DAF of 20 mg/kg
Volatile Organic Compounds (VOCs)					
1,1,2-Trichloroethane	5.0E-01	3.2E-02	5.0E-01	5.0E-01	3.2E-02
1,1-Dichloroethane	4.0E+02	2.3E+01	4.0E+02	4.0E+02	2.3E+01
1,1-Dichloroethene	7.0E-01	7.4E-01	7.0E-01	7.0E-01	3.8E+00
Chlorobenzene	1.0E+01	1.4E+00	1.0E+01	1.0E+01	1.8E+00
cis-1,2-Dichloroethene	7.0E+00	4.1E-01	7.0E+00	7.0E+00	1.2E+00
Ethylbenzene	7.0E+01	1.6E+01	7.0E+01	7.0E+01	1.6E+01
Isopropylbenzene	2.2E+01	6.5E+00	2.2E+01	2.2E+01	3.3E+01
Tetrachloroethene	5.0E-01	4.5E-02	5.0E-01	5.0E-01	4.5E-02
Toluene	1.0E+02	1.4E+01	1.0E+02	1.0E+02	7.2E+01
Trichloroethene	5.0E-01	3.6E-02	5.0E-01	5.0E-01	3.7E-02
Vinyl chloride (lifetime)	2.0E-01	1.4E-02	2.0E-01	2.0E-01	2.2E-02
Xylenes, mixture	1.0E+03	2.0E+02	1.0E+03	1.0E+03	2.0E+02
SVOCS					
1,2,4-Trichlorobenzene	1.1E+01	4.1E+00	1.1E+01	1.1E+01	4.1E+00
1,2-Dichlorobenzene	6.0E+01	1.2E+01	6.0E+01	6.0E+01	1.2E+01
1,4-Dichlorobenzene	7.5E+00	1.4E+00	7.5E+00	7.5E+00	1.4E+00
Metals					
Barium	1.0E+03	2.6E+03	1.0E+03	1.0E+03	1.7E+04
Chromium, Total	1.0E+02	1.8E+01	1.1E+02	1.2E+03	3.8E+01
Lead	7.5E+01	2.7E+02	4.0E+02	4.0E+02	2.7E+02
Pesticides					
4,4-DDD	6.6E-01	1.7E+01	6.6E-01	6.6E-01	5.6E+01
4,4-DDE	6.6E-01	1.2E+01	6.6E-01	6.6E-01	4.0E+01
4,4-DDT	6.6E-01	1.7E+01	6.6E-01	6.6E-01	5.7E+01
Aldrin	6.6E-01	1.6E-01	6.6E-01	6.6E-01	5.5E-01
Alpha-BHC	6.6E-01	1.6E-02	6.6E-01	6.6E-01	5.3E-02
Chlordane	9.2E+00	3.3E+00	9.2E+00	9.2E+00	1.1E+01
Beta-BHC	6.6E-01	5.5E-02	6.6E-01	6.6E-01	1.8E-01
Delta-BHC	8.3E+00	5.5E-02	2.5E+01	2.5E+01	1.8E-01
Dieldrin	6.6E-01	8.1E-02	6.6E-01	6.6E-01	1.4E-01
Endrin	1.0E+01	3.8E+00	1.0E+01	1.0E+01	2.5E+01
Endrin Ketone	1.0E+01	8.1E-02	1.0E+01	1.0E+01	8.1E-02
Gamma-BHC (Lindane)	6.6E-01	9.0E-02	6.6E-01	6.6E-01	3.0E-01
Heptachlor	6.6E-01	6.6E-01	6.6E-01	6.6E-01	1.1E+00
Heptachlor Epoxide	1.6E+00	8.2E-02	1.7E+00	1.7E+00	1.3E-01
Methoxychlor	1.0E+01	8.4E+01	1.0E+01	1.0E+01	5.5E+02
Toxaphene	1.1E+01	8.3E+00	1.1E+01	1.1E+01	9.3E+00

UPDATED/DATE: MKB 1/18/2012
CHECKED/DATE:LMS 1/18/2012

Table B-2
Toxicity Values

PARAMETER	Chronic Reference Dose Oral (RfDo) (mg/kg/day)	Chronic Reference Dose Inhalation (RfDi) (mg/kg/day)	Cancer Slope Factor Oral (SFo) (mg/kg/day)-1	Cancer Slope Factor Inhalation (SFi) (mg/kg/day)-1	Weight of Evidence	Source for Chronic RfDs and SFs
Volatile Organic Compounds (VOCs)						
1,1,2-Trichloroethane	4.0E-03	ND	5.7E-02	5.6E-02	C	IRIS
1,1-Dichloroethane	2.0E-01	ND	5.7E-03	5.6E-03	C	PPRTV, CALEPA
1,1-Dichloroethene	5.0E-02	5.7E-02	ND	ND	C	IRIS
Chlorobenzene	2.0E-02	1.4E-02	ND	ND	D	IRIS, PPRTV
Cis-1,2-Dichloroethene	2.0E-03	ND	ND	ND	NA	IRIS
Ethylbenzene	1.0E-01	2.9E-01	1.1E-02	8.8E-03	D	CALEPA, IRIS
Isopropylbenzene	1.0E-01	1.1E-01	ND	ND	D	ND
Tetrachloroethene	1.0E-02	7.7E-02	5.4E-01	2.1E-02	NA	IRIS, Cal EPA, ATSDR
Toluene	8.0E-02	1.4E+00	ND	ND	D	IRIS
Trichloroethene	5.0E-04	5.7E-04	5.0E-02	1.4E-02	A	IRIS
Vinyl chloride (lifetime as adult)	3.0E-03	2.9E-02	7.2E-01	1.5E-02	A	IRIS
Xylenes, mixture	2.0E-01	2.9E-02	ND	ND	NA	IRIS
Semi-volatile Organic Compounds						
1,2,4-Trichlorobenzene	1.0E-02	5.7E-04	2.9E-02	ND	D	IRIS,PPRTV
1,2-Dichlorobenzene	9.0E-02	5.7E-02	ND	ND	D	IRIS, HEAST
1,4-Dichlorobenzene	7.0E-02	2.3E-01	5.4E-03	3.9E-02	NA	CALEPA,ATSDR, IRIS
Metals						
Barium	2.0E-01	1.4E-04	ND	ND	D	IRIS
Chromium, Total	3.0E-03	2.9E-05	5.0E-01	2.9E+02	A/D	IRIS, NEW JERSEY
Lead	ND	ND	ND	ND	B2	NCEA
Pesticides						
4,4-DDD	ND	ND	2.4E-01	2.4E-01	B2	IRIS, CALEPA
4,4-DDE	ND	ND	3.4E-01	3.4E-01	B2	IRIS, CALEPA
4,4-DDT	5.0E-04	ND	3.4E-01	3.4E-01	B2	IRIS
Aldrin	3.0E-05	ND	1.7E+01	1.7E+01	B2	IRIS
Alpha-BHC	8.0E-03	ND	6.3E+00	6.3E+00	B2	IRIS
Chlordane	5.0E-04	2.0E-04	3.5E-01	3.5E-01	B2	IRIS
Beta-BHC	ND	ND	1.8E+00	1.9E+00	C	IRIS
Delta-BHC	ND	ND	1.8E+00	1.8E+00	D	IRIS
Dieldrin	5.0E-05	ND	1.6E+01	1.6E+01	B2	IRIS
Endrin	3.0E-04	ND	ND	ND	D	IRIS
Endrin Ketone	ND	ND	ND	ND	NA	IRIS
Gamma-BHC (Lindane)	3.0E-04	ND	1.1E+00	1.1E+00	NA	IRIS
Heptachlor	5.0E-04	ND	4.5E+00	4.6E+00	B2	IRIS
Heptachlor Epoxide	1.3E-05	ND	9.1E+00	9.1E+00	B2	IRIS
Methoxychlor	5.0E-03	ND	ND	ND	D	IRIS
Toxaphene	ND	ND	1.1E+00	1.1E+00	B2	IRIS

SOURCES: EPA Regional Screening Level Table, November 2011.
IRIS Integrated Risk Information System
PPRTV Provisional Peer Reviewed Toxicity Values
CALEPA California Environmental Protection Agency
HEAST Health Exposure Assessment Summary Tables
ATSDR Agency for Toxic Substances and Disease Registry
NCEA National Center for Environmental Assessment
NJ New Jersey Department of Environmental Protection
ND No Data
NA Not Available

UPDATED/DATE: MKB 1/18/2012
CHECKED/DATE:LMS 1/18/2012

Table B-3
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Chronic Reference Dose Oral (mg/kg/day)	Chronic Reference Dose Inhalation (mg/kg/day)	Cancer Slope Factor Oral (mg/kg/day)-1	Cancer Slope Factor Inhalation (mg/kg/day)-1	Source for Chronic Rfds and CSFs	Volatile? (a)	Type 1/ Type 3 (mg/L)		Type 2 Standard (mg/L) Adult Noncarcinogenic	Type 2 Standard (mg/L) Adult Carcinogenic	Type 2 Standard (mg/L) Child Noncarcinogenic	Type 2 Standard (mg/L) Child Carcinogenic	Type 2 Overall	Overall Residential	Type 4 (mg/L) Industrial Worker Noncarcinogenic	Type 4 (mg/L) Industrial Worker Carcinogenic	Type 4 Overall IW	Overall Nonresidential IW
Volatile Organic Compounds (VOCs)																		
1,1,2-Trichloroethane	4.0E-03	ND	5.7E-02	5.6E-02	IRIS	v	5.0E-03		1.5E-01	2.5E-03	6.3E-02	3.8E-03	2.5E-03	5.0E-03	4.1E-01	4.6E-03	4.6E-03	5.0E-03
1,1-Dichloroethane	2.0E-01	ND	5.7E-03	5.6E-03	PPRTV, CALEPA	v	4.0E+00		7.3E+00	2.5E-02	3.1E+00	3.8E-02	2.5E-02	4.0E+00	2.0E+01	4.6E-02	4.6E-02	4.0E+00
1,1-Dichloroethene	5.0E-02	5.7E-02	ND	ND	IRIS	v	7.0E-03		3.4E-01	ND	1.0E-01	ND	1.0E-01	1.0E-01	5.2E-01	ND	5.2E-01	5.2E-01
Chlorobenzene	2.0E-02	1.4E-02	ND	ND	IRIS, PPRTV	v	1.0E-01		9.0E-02	ND	2.7E-02	ND	2.7E-02	1.0E-01	1.3E-01	ND	1.3E-01	1.3E-01
Cis-1,2-Dichloroethene	2.0E-03	ND	ND	ND	IRIS	v	7.0E-02		7.3E-02	ND	3.1E-02	ND	3.1E-02	7.0E-02	2.0E-01	ND	2.0E-01	2.0E-01
Ethylbenzene	1.0E-01	2.9E-01	1.1E-02	8.8E-03	CALEPA, IRIS	v	7.0E-01		1.3E+00	1.5E-02	4.4E-01	2.4E-02	1.5E-02	7.0E-01	2.3E+00	2.9E-02	2.9E-02	7.0E-01
Isopropylbenzene	1.0E-01	1.1E-01	ND	ND	ND	v	1.0E-03	DL	6.6E-01	ND	2.0E-01	ND	2.0E-01	2.0E-01	1.0E+00	ND	1.0E+00	1.0E+00
Tetrachloroethene	1.0E-02	7.7E-02	5.4E-01	2.1E-02	IRIS, Cal EPA, ATSDR	v	5.0E-03		2.2E-01	1.3E-03	7.9E-02	2.6E-03	1.3E-03	5.0E-03	4.4E-01	3.8E-03	3.8E-03	5.0E-03
Toluene	8.0E-02	1.4E+00	ND	ND	IRIS	v	1.0E+00		2.3E+00	ND	8.8E-01	ND	8.8E-01	1.0E+00	5.2E+00	ND	5.2E+00	5.2E+00
Trichloroethene	5.0E-04	5.7E-04	5.0E-02	1.4E-02	IRIS	v	5.0E-03		3.4E-03	7.1E-03	1.0E-03	1.2E-02	1.0E-03	5.0E-03	5.2E-03	1.5E-02	5.2E-03	5.2E-03
Vinyl chloride (lifetime as adult)	3.0E-03	2.9E-02	7.2E-01	1.5E-02	IRIS	v	2.0E-03		7.2E-02	1.1E-03	2.6E-02	2.2E-03	1.1E-03	2.0E-03	1.5E-01	3.3E-03	3.3E-03	3.3E-03
Xylenes, mixture	2.0E-01	2.9E-02	ND	ND	IRIS	v	1.0E+01		2.1E-01	ND	5.9E-02	ND	5.9E-02	1.0E+01	2.9E-01	ND	2.9E-01	1.0E+01
Semi-volatile Organic Compounds																		
1,2,4-Trichlorobenzene	1.0E-02	5.7E-04	2.9E-02	ND	IRIS,PPRTV	v	7.0E-02		4.1E-03	2.9E-02	1.2E-03	6.3E-02	1.2E-03	7.0E-02	5.8E-03	9.9E-02	5.8E-03	7.0E-02
1,2-Dichlorobenzene	9.0E-02	5.7E-02	ND	ND	IRIS, HEAST	v	6.0E-01		3.7E-01	ND	1.1E-01	ND	1.1E-01	6.0E-01	5.5E-01	ND	5.5E-01	6.0E-01
1,4-Dichlorobenzene	7.0E-02	2.3E-01	5.4E-03	3.9E-02	CALEPA,ATSDR, IRIS	v	7.5E-02		1.0E+00	4.2E-03	3.3E-01	6.1E-03	4.2E-03	7.5E-02	1.8E+00	7.2E-03	7.2E-03	7.5E-02
Metals																		
Barium	2.0E-01	(a)	ND	ND	IRIS		2.0E+00		7.3E+00	ND	3.1E+00	ND	3.1E+00	3.1E+00	2.0E+01	ND	2.0E+01	2.0E+01
Chromium, Total	3.0E-03	(a)	5.0E-01	(a)	IRIS, NEW JERSEY		1.0E-01		1.1E-01	1.7E-03	4.7E-02	3.7E-03	1.7E-03	1.0E-01	3.1E-01	5.7E-03	5.7E-03	1.0E-01
Lead	ND	ND	ND	ND	NCEA		1.5E-02		ND	ND	ND	ND	ND	1.5E-02	ND	ND	1.5E-02	1.5E-02
Pesticides																		
4,4-DDD	ND	ND	2.4E-01	(a)	IRIS, CALEPA		1.0E-04		ND	3.5E-03	ND	7.6E-03	3.5E-03	3.5E-03	ND	1.2E-02	1.2E-02	1.2E-02
4,4-DDE	ND	ND	3.4E-01	(a)	IRIS, CALEPA		1.0E-04		ND	2.5E-03	ND	5.4E-03	2.5E-03	2.5E-03	ND	8.4E-03	8.4E-03	8.4E-03
4,4-DDT	5.0E-04	ND	3.4E-01	(a)	IRIS		1.0E-04		1.8E-02	2.5E-03	7.8E-03	5.4E-03	2.5E-03	2.5E-03	5.1E-02	8.4E-03	8.4E-03	8.4E-03
Aldrin	3.0E-05	ND	1.7E+01	(a)	IRIS		5.0E-05		1.1E-03	5.0E-05	4.7E-04	1.1E-04	5.0E-05	5.0E-05	3.1E-03	1.7E-04	1.7E-04	1.7E-04
Alpha-BHC	8.0E-03	ND	6.3E+00	(a)	IRIS		5.0E-05		2.9E-01	1.4E-04	1.3E-01	2.9E-04	1.4E-04	1.4E-04	8.2E-01	4.5E-04	4.5E-04	4.5E-04
Chlordane	5.0E-04	(a)	3.5E-01	(a)	IRIS		2.0E-03		1.8E-02	2.4E-03	7.8E-03	5.2E-03	2.4E-03	2.4E-03	5.1E-02	8.2E-03	8.2E-03	8.2E-03
Beta-BHC	ND	ND	1.8E+00	(a)	IRIS		5.0E-05		ND	4.7E-04	ND	1.0E-03	4.7E-04	4.7E-04	ND	1.6E-03	1.6E-03	1.6E-03
Delta-BHC	ND	ND	1.8E+00	(a)	IRIS		5.0E-05		ND	4.7E-04	ND	1.0E-03	4.7E-04	4.7E-04	ND	1.6E-03	1.6E-03	1.6E-03
Dieldrin	5.0E-05	ND	1.6E+01	(a)	IRIS		1.0E-04		1.8E-03	5.3E-05	7.8E-04	1.1E-04	5.3E-05	1.0E-04	5.1E-03	1.8E-04	1.8E-04	1.8E-04
Endrin	3.0E-04	ND	ND	ND	IRIS		2.0E-03		1.1E-02	ND	4.7E-03	ND	4.7E-03	4.7E-03	3.1E-02	ND	3.1E-02	3.1E-02
Endrin Ketone	ND	ND	ND	ND	IRIS		1.0E-04	DL	ND	ND	ND	ND	ND	1.0E-04	ND	ND	ND	1.0E-04
Gamma-BHC (Lindane)	3.0E-04	ND	1.1E+00	(a)	IRIS		2.0E-04		1.1E-02	7.7E-04	4.7E-03	1.7E-03	7.7E-04	7.7E-04	3.1E-02	2.6E-03	2.6E-03	2.6E-03
Heptachlor	5.0E-04	ND	4.5E+00	(a)	IRIS		4.0E-04		1.8E-02	1.9E-04	7.8E-03	4.1E-04	1.9E-04	4.0E-04	5.1E-02	6.4E-04	6.4E-04	6.4E-04
Heptachlor Epoxide	1.3E-05	ND	9.1E+00	(a)	IRIS		2.0E-04		4.7E-04	9.4E-05	2.0E-04	2.0E-04	9.4E-05	2.0E-04	1.3E-03	3.1E-04	3.1E-04	3.1E-04
Methoxychlor	5.0E-03	ND	ND	ND	IRIS		4.0E-02		1.8E-01	ND	7.8E-02	ND	7.8E-02	7.8E-02	5.1E-01	ND	5.1E-01	5.1E-01
Toxaphene	ND	ND	1.1E+00	(a)	IRIS		3.0E-03		ND	7.7E-04	ND	1.7E-03	7.7E-04	3.0E-03	ND	2.6E-03	2.6E-03	3.0E-03

IRIS Integrated Risk Information System
HEAST - Health Effects Assessment Summary Table FY1997, USEPA.
NCEA - National Center for Exposure Assessment, USEPA.
PPRTV - Provisional Peer Reviewed Toxicity Values, USEPA.
Cal EPA - California Environmental Protection Agency
ND Toxicity values not available
DL Detection limit
(a) Compound is not volatile in water.

Equation 2 (Noncarcinogens):

$$C = \frac{THI \times BW \times AT \times 365 days/year}{EF \times ED \times [(1/RfDi \times K \times IRa) + (1/RfDo \times IRw)]}$$

Equation 1 (Carcinogens):

$$C = \frac{TR \times BW \times AT \times 365 days/year}{EF \times ED \times [(SFi \times K \times IRa) + (SFo \times IRw)]}$$

Where:	Type 2 Adult	Type 2 Parameters Chil]d	Type 4 Industrial Worker Parameters
THI = Target Hazard Index =	1	1	1
BW = Body Weight =	70 kg	15 kg	70 kg
AT = Averaging Time =	30 years (noncarc.); 70 (carc	6 years (noncarc.); 70 (carcinogens)	25 years for noncarcinogens; 70 years for carc.
EF = Exposure Frequency =	350 days/year	350 days/year	250 day/year
ED = Exposure Duration =	30 years	6 years	25 year
RfDi = Inhalation Reference Dose =	Chemical Specific	Chemical Specific	Chemical Specific
K = Volatilization Factor = 0.0005 x 1000 L/m3 =	0.5 L/m3	0.5 L/m3	0.5 L/m3
IRa = Inhalation Rate for Air =	20 m3/day	15 m3/day	20 m3/day
RfDo = Oral Reference Dose =	Chemical Specific	Chemical Specific	Chemical Specific
IRw = Ingestion Rate for Water =	2 L/day	1 L/day	1 L/day
TR = Target Risk =	0.00001	0.00001	0.00001
SFo = Oral Cancer Slope Factor =	Chemical Specific	Chemical Specific	Chemical Specific
SFi = Inhalation Cancer Slope Factor =	Chemical Specific	Chemical Specific	Chemical Specific

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Table B-4
Type 1 and Type 3 Soil RRS, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	HSRA Type I Soil Criteria (mg/kg) (a)	HSRA Appendix I Value (mg/kg) (b)	Type I Groundwater RRS (mg/L) (c)		Type 1 GW RRS x 100 (mg/kg)	Number 1 (mg/kg) (d)	Risk-Based Residential Type 1 Noncarcinogenic (mg/kg) (e)	Risk-Based Residential Type 1 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 1 RRS (mg/kg) (g)	Overall Type 1 RRS (mg/kg) (h)	Risk-Based Nonresidential Type 3 Noncarcinogenic (mg/kg) (e)	Risk-Based Nonresidential Type 3 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 3 RRS (mg/kg) (g)	Subsurface Soil Type 3 RRS (mg/kg) (i)	Surface Soil Type 3 RRS (mg/kg) (j)
Volatile Organic Compounds (VOCs)																
1,1,2-Trichloroethane	8.8E+03	ND	5.0E-01	5.0E-03		5.0E-01	5.0E-01	2.6E+03	1.7E+02	1.7E+02	5.0E-01	8.2E+03	2.2E+02	2.2E+02	5.0E-01	5.0E-01
1,1-Dichloroethane	2.1E+03	ND	3.0E-02	4.0E+00		4.0E+02	4.0E+02	1.3E+05	4.2E+02	4.2E+02	4.0E+02	4.1E+05	5.4E+02	5.4E+02	4.0E+02	4.0E+02
1,1-Dichloroethene	8.7E+02	ND	3.6E-01	7.0E-03		7.0E-01	7.0E-01	2.4E+02	ND	2.4E+02	7.0E-01	2.5E+02	ND	2.5E+02	7.0E-01	7.0E-01
Chlorobenzene	8.6E+03	ND	4.2E+00	1.0E-01		1.0E+01	1.0E+01	5.6E+02	ND	5.6E+02	1.0E+01	6.1E+02	ND	6.1E+02	1.0E+01	1.0E+01
cis-1,2-Dichloroethene	2.7E+03	ND	5.3E-01	7.0E-02		7.0E+00	7.0E+00	1.3E+03	ND	1.3E+03	7.0E+00	4.1E+03	ND	4.1E+03	7.0E+00	7.0E+00
Ethylbenzene	7.6E+03	ND	2.0E+01	7.0E-01		7.0E+01	7.0E+01	9.2E+03	9.2E+01	9.2E+01	7.0E+01	1.1E+04	1.2E+02	1.2E+02	7.0E+01	7.0E+01
Isopropylbenzene	8.4E+03	ND	2.2E+01	1.0E-03	RL	1.0E-01	2.2E+01	4.2E+03	ND	4.2E+03	2.2E+01	4.6E+03	ND	4.6E+03	2.2E+01	2.2E+01
Tetrachloroethene	2.7E+03	ND	1.8E-01	5.0E-03		5.0E-01	5.0E-01	8.6E+02	9.4E+00	9.4E+00	5.0E-01	9.9E+02	1.5E+01	1.5E+01	5.0E-01	5.0E-01
Toluene	5.6E+03	ND	1.4E+01	1.0E+00		1.0E+02	1.0E+02	2.2E+04	ND	2.2E+04	1.0E+02	3.2E+04	ND	3.2E+04	1.0E+02	1.0E+02
Trichloroethene	2.5E+03	ND	1.3E-01	5.0E-03		5.0E-01	5.0E-01	6.7E+00	1.9E+01	6.7E+00	5.0E-01	7.1E+00	2.5E+01	7.1E+00	5.0E-01	5.0E-01
Vinyl chloride (lifetime as adult)	5.8E+02	ND	4.0E-02	2.0E-03		2.0E-01	2.0E-01	7.9E+01	3.6E+00	3.6E+00	2.0E-01	8.5E+01	5.1E+00	5.1E+00	2.0E-01	2.0E-01
Xylenes, mixture	7.9E+03	ND	2.0E+01	1.0E+01		1.0E+03	1.0E+03	1.1E+03	ND	1.1E+03	1.0E+03	1.2E+03	ND	1.2E+03	1.0E+03	1.0E+03
SVOCS																
1,2,4-Trichlorobenzene	4.1E+04	ND	1.1E+01	7.0E-02		7.0E+00	1.1E+01	1.1E+02	5.2E+02	1.1E+02	1.1E+01	1.2E+02	2.0E+03	1.2E+02	1.1E+01	1.1E+01
1,2-Dichlorobenzene	1.6E+04	ND	2.5E+01	6.0E-01		6.0E+01	6.0E+01	4.1E+03	ND	4.1E+03	6.0E+01	4.5E+03	ND	4.5E+03	6.0E+01	6.0E+01
1,4-Dichlorobenzene	1.4E+04	ND	6.8E+00	7.5E-02		7.5E+00	7.5E+00	1.2E+04	4.1E+01	4.1E+01	7.5E+00	1.5E+04	5.2E+01	5.2E+01	7.5E+00	7.5E+00
Metals																
Barium	NA	1.0E+03	5.0E+02	2.0E+00		2.0E+02	5.0E+02	1.2E+05	ND	1.2E+05	1.0E+03	3.6E+05	ND	3.6E+05	1.0E+03	1.0E+03
Chromium, Total	NA	1.0E+02	1.2E+03	1.0E-01		1.0E+01	1.2E+03	1.9E+03	2.9E+01	2.9E+01	1.0E+02	6.1E+03	1.1E+02	1.1E+02	1.2E+03	1.1E+02
Lead	NA	7.5E+01	4.0E+02	1.5E-02		1.5E+00	4.0E+02	ND	ND	ND	7.5E+01	ND	ND	4.0E+02	4.0E+02	4.0E+02
Pesticides																
4,4-DDD	NA	ND	6.6E-01	1.0E-04		1.0E-02	6.6E-01	ND	6.2E+01	6.2E+01	6.6E-01	ND	2.4E+02	2.4E+02	6.6E-01	6.6E-01
4,4-DDE	NA	ND	6.6E-01	1.0E-04		1.0E-02	6.6E-01	ND	4.4E+01	4.4E+01	6.6E-01	ND	1.7E+02	1.7E+02	6.6E-01	6.6E-01
4,4-DDT	NA	ND	6.6E-01	1.0E-04		1.0E-02	6.6E-01	3.2E+02	4.4E+01	4.4E+01	6.6E-01	1.0E+03	1.7E+02	1.7E+02	6.6E-01	6.6E-01
Aldrin	NA	ND	6.6E-01	5.0E-05	RL	5.0E-03	6.6E-01	1.9E+01	8.8E-01	8.8E-01	6.6E-01	6.1E+01	3.4E+00	3.4E+00	6.6E-01	6.6E-01
Alpha-BHC	NA	ND	6.6E-01	5.0E-05	RL	5.0E-03	6.6E-01	5.1E+03	2.4E+00	2.4E+00	6.6E-01	1.6E+04	9.1E+00	9.1E+00	6.6E-01	6.6E-01
Chlordane	NA	ND	9.2E+00	2.0E-03		2.0E-01	9.2E+00	3.2E+02	4.3E+01	4.3E+01	9.2E+00	1.0E+03	1.6E+02	1.6E+02	9.2E+00	9.2E+00
Beta-BHC	NA	ND	6.6E-01	5.0E-05	RL	5.0E-03	6.6E-01	ND	8.3E+01	8.3E+01	6.6E-01	ND	3.2E+02	3.2E+02	6.6E-01	6.6E-01
Delta-BHC	NA	ND	2.5E+01	5.0E-05	RL	5.0E-03	2.5E+01	ND	8.3E+00	8.3E+00	8.3E+00	ND	3.2E+01	3.2E+01	2.5E+01	2.5E+01
Dieldrin	NA	ND	6.6E-01	1.0E-04	RL	1.0E-02	6.6E-01	3.2E+01	9.3E-01	9.3E-01	6.6E-01	1.0E+02	3.6E+00	3.6E+00	6.6E-01	6.6E-01
Endrin	NA	ND	1.0E+01	2.0E-03		2.0E-01	1.0E+01	1.9E+02	ND	1.9E+02	1.0E+01	6.1E+02	ND	6.1E+02	1.0E+01	1.0E+01
Endrin Ketone	NA	ND	1.0E+01	1.0E-04	RL	1.0E-02	1.0E+01	ND	ND	ND	1.0E+01	ND	ND	ND	1.0E+01	1.0E+01
Gamma-BHC (Lindane)	NA	ND	6.6E-01	2.0E-04		2.0E-02	6.6E-01	1.9E+02	1.4E+01	1.4E+01	6.6E-01	6.1E+02	5.2E+01	5.2E+01	6.6E-01	6.6E-01
Heptachlor	NA	ND	6.6E-01	4.0E-04		4.0E-02	6.6E-01	3.2E+02	3.3E+00	3.3E+00	6.6E-01	1.0E+03	1.3E+01	1.3E+01	6.6E-01	6.6E-01
Heptachlor Epoxide	NA	ND	1.7E+00	2.0E-04		2.0E-02	1.7E+00	8.3E+00	1.6E+00	1.6E+00	1.6E+00	2.7E+01	6.3E+00	6.3E+00	1.7E+00	1.7E+00
Methoxychlor	NA	ND	1.0E+01	4.0E-02		4.0E+00	1.0E+01	3.2E+03	ND	3.2E+03	1.0E+01	1.0E+04	ND	1.0E+04	1.0E+01	1.0E+01
Toxaphene	NA	ND	1.1E+01	3.0E-03		3.0E-01	1.1E+01	ND	1.4E+01	1.4E+01	1.1E+01	ND	5.2E+01	5.2E+01	1.1E+01	1.1E+01

Notes:

(a) Table 2, Appendix III of HSRA regulations
(b) Appendix I of HSRA regulations. Value is the soil concentration that triggers notification requirements.
(c) Table 1, Appendix III of HSRA regulations. For those substances not listed, reporting limit used as the Type I groundwater RRS.
(d) Value is the highest of the Appendix I value and the groundwater RRS x 100.

(e) $$\frac{\text{THI x BW x ATn x 365days/year}}{\text{EF x ED x [(1/RfDi x (1/VF + 1/PEF) x InhR) + (1/RfDo x Irs x CF)]}}$$

(f) $$\frac{\text{TR x BW x ATc x 365days/year}}{\text{EF x ED x [(SFi x (1/VF + 1/PEF) x InhR) + (SFo x Irs x CF)]}}$$

(g) Minimum of noncarcinogenic and carcinogenic concentrations.
(h) Minimum concentration of Number 1 and Type 1 RRS.
(i) Maximum concentration of Number 1 and HSRA Type 1 Soil Criteria.
(j) Minimum concentration of the risk-based soil Type 3 RRS and the subsurface soil Type 3 RRS.
RL Reporting Limit
RRS Risk Reduction Standard
GW Groundwater
ND Not Determined - Can not be calculated

Exposure Parameters	Residential Type 1	Nonresidential Type 3	Unit
Total Hazard Index (THI)	1	1	unitless
Target Risk (TR)	1.E-05	1.E-05	unitless
Target Risk (TR) WOE - C	1.E-04	1.E-04	
Body Weight (BW)	70	70	kg
Averaging Time, Carcinogen (ATc)	70	70	yrs
Averaging Time, Noncarcinogen (ATn)	30	25	yrs
Exposure Duration (ED)	30	25	yrs
Exposure Frequency (EF)	350	250	days/yr
Soil Ingestion Rate (IRs)	114	50	mg/day
Air Inhalation Rate (InhR)	15	20	m^3/day
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09	m^3/kg
Conversion Factor (CF)	1.E-06	1.E-06	kg/mg
Volatilization Factor (VF)	Chemical-specific	hemical-specific	m^3/kg

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Table B-5
Soil to Ground water Leachability

	K_d (L/kg) (1)	K_{oc} (L/kg) (2)	Source	$Ø_w$	Øa	H' (unitless)	$Øw+Øa*H'/Þ_b$	Groundwater Type 1/3 RRS (C_w, mg/L)	C_w*20	Pathway Type 1/3 C_s (mg/kg)	Groundwater Type 2 RRS (C_w, mg/L)	C_w*20	Pathway Type 2 C_s (mg/kg)	Residential Soil Leaching Criteria (3)	Industrial Worker Groundwater Type 4 RRS (C_w, mg/L)	C_w*20	Pathway Type 4 C_s (mg/kg)	Industrial Worker Soil Leaching Criteria (4)
Volatile Organic Compounds (VOCs)																		
1,1,2-Trichloroethane	1.2E-01	6.1E+01	RSL	3.0E-01	1.3E-01	3.4E-02	2.0E-01	5.0E-03	1.0E-01	3.2E-02	2.5E-03	5.1E-02	1.6E-02	3.2E-02	4.6E-03	9.3E-02	3.0E-02	3.2E-02
1,1-Dichloroethane	6.4E-02	3.2E+01	RSL	3.0E-01	1.3E-01	2.3E-01	2.2E-01	4.0E+00	8.0E+01	2.3E+01	2.5E-02	5.1E-01	1.4E-01	2.3E+01	4.6E-02	9.3E-01	2.6E-01	2.3E+01
1,1-Dichloroethene	6.4E-02	3.2E+01	RSL	3.0E-01	1.3E-01	1.1E+00	3.0E-01	7.0E-03	1.4E-01	5.0E-02	1.0E-01	2.1E+00	7.4E-01	7.4E-01	5.2E-01	1.0E+01	3.8E+00	3.8E+00
Chlorobenzene	4.7E-01	2.3E+02	RSL	3.0E-01	1.3E-01	1.3E-01	2.1E-01	1.0E-01	2.0E+00	1.4E+00	2.7E-02	5.3E-01	3.6E-01	1.4E+00	1.3E-01	2.7E+00	1.8E+00	1.8E+00
Cis-1,2-Dichloroethene	7.9E-02	4.0E+01	RSL	3.0E-01	1.3E-01	1.7E-01	2.1E-01	7.0E-02	1.4E+00	4.1E-01	3.1E-02	6.3E-01	1.8E-01	4.1E-01	2.0E-01	4.1E+00	1.2E+00	1.2E+00
Ethylbenzene	8.9E-01	4.5E+02	RSL	3.0E-01	1.3E-01	3.2E-01	2.3E-01	7.0E-01	1.4E+01	1.6E+01	1.5E-02	3.1E-01	3.5E-01	1.6E+01	2.9E-02	5.8E-01	6.5E-01	1.6E+01
Isopropylbenzene	1.4E+00	7.0E+02	RSL	3.0E-01	1.3E-01	4.7E-01	2.4E-01	1.0E-03	2.0E-02	3.3E-02	2.0E-01	4.0E+00	6.5E+00	6.5E+00	1.0E+00	2.0E+01	3.3E+01	3.3E+01
Tetrachloroethene	1.9E-01	9.5E+01	RSL	3.0E-01	1.3E-01	7.2E-01	2.6E-01	5.0E-03	1.0E-01	4.5E-02	1.3E-03	2.6E-02	1.2E-02	4.5E-02	3.8E-03	7.6E-02	3.5E-02	4.5E-02
Toluene	4.7E-01	2.3E+02	RSL	3.0E-01	1.3E-01	2.7E-01	2.2E-01	1.0E+00	2.0E+01	1.4E+01	8.8E-01	1.8E+01	1.2E+01	1.4E+01	5.2E+00	1.0E+02	7.2E+01	7.2E+01
Trichloroethene	1.2E-01	6.1E+01	RSL	3.0E-01	1.3E-01	4.0E-01	2.3E-01	5.0E-03	1.0E-01	3.6E-02	1.0E-03	2.1E-02	7.3E-03	3.6E-02	5.2E-03	1.0E-01	3.7E-02	3.7E-02
Vinyl chloride (lifetime as adult)	4.3E-02	2.2E+01	RSL	3.0E-01	1.3E-01	1.1E+00	3.0E-01	2.0E-03	4.0E-02	1.4E-02	1.1E-03	2.1E-02	7.2E-03	1.4E-02	3.3E-03	6.5E-02	2.2E-02	2.2E-02
Xylenes, mixture	7.7E-01	3.8E+02	RSL	3.0E-01	1.3E-01	2.1E-01	2.2E-01	1.0E+01	2.0E+02	2.0E+02	5.9E-02	1.2E+00	1.2E+00	2.0E+02	2.9E-01	5.8E+00	5.7E+00	2.0E+02
Semi-volatile Organic Compounds																		
1,2,4-Trichlorobenzene	2.7E+00	1.4E+03	RSL	3.0E-01	1.3E-01	5.8E-02	2.1E-01	7.0E-02	1.4E+00	4.1E+00	1.2E-03	2.4E-02	6.9E-02	4.1E+00	5.8E-03	1.2E-01	3.4E-01	4.1E+00
1,2-Dichlorobenzene	7.7E-01	3.8E+02	RSL	3.0E-01	1.3E-01	7.8E-02	2.1E-01	6.0E-01	1.2E+01	1.2E+01	1.1E-01	2.2E+00	2.1E+00	1.2E+01	5.5E-01	1.1E+01	1.1E+01	1.2E+01
1,4-Dichlorobenzene	7.5E-01	3.8E+02	RSL	3.0E-01	1.3E-01	9.9E-02	2.1E-01	7.5E-02	1.5E+00	1.4E+00	4.2E-03	8.5E-02	8.2E-02	1.4E+00	7.2E-03	1.4E-01	1.4E-01	1.4E+00
Metals																		
Barium	4.1E+01		RSL	3.0E-01	1.3E-01	0.0E+00	2.0E-01	2.0E+00	4.0E+01	1.6E+03	3.1E+00	6.3E+01	2.6E+03	2.6E+03	2.0E+01	4.1E+02	1.7E+04	1.7E+04
Chromium, Total	1.9E+01		RSL	3.0E-01	1.3E-01	0.0E+00	2.0E-01	1.0E-01	2.0E+00	3.8E+01	1.7E-03	3.4E-02	6.5E-01	3.8E+01	5.7E-03	1.1E-01	2.2E+00	3.8E+01
Lead	9.0E+02		RSL	3.0E-01	1.3E-01	0.0E+00	2.0E-01	1.5E-02	3.0E-01	2.7E+02	ND	NA	NA	2.7E+02	1.5E-02	3.0E-01	2.7E+02	2.7E+02
Pesticides																		
4,4-DDD	2.4E+02	1.2E+05	RSL	3.0E-01	1.3E-01	2.7E-04	2.0E-01	1.0E-04	2.0E-03	4.7E-01	3.5E-03	7.1E-02	1.7E+01	1.7E+01	1.2E-02	2.4E-01	5.6E+01	5.6E+01
4,4-DDE	2.4E+02	1.2E+05	RSL	3.0E-01	1.3E-01	1.7E-03	2.0E-01	1.0E-04	2.0E-03	4.7E-01	2.5E-03	5.0E-02	1.2E+01	1.2E+01	8.4E-03	1.7E-01	4.0E+01	4.0E+01
4,4-DDT	3.4E+02	1.7E+05	RSL	3.0E-01	1.3E-01	3.4E-04	2.0E-01	1.0E-04	2.0E-03	6.7E-01	2.5E-03	5.0E-02	1.7E+01	1.7E+01	8.4E-03	1.7E-01	5.7E+01	5.7E+01
Aldrin	1.6E+02	8.2E+04	RSL	3.0E-01	1.3E-01	1.8E-03	2.0E-01	5.0E-05	1.0E-03	1.6E-01	5.0E-05	1.0E-03	1.6E-01	1.6E-01	1.7E-04	3.4E-03	5.5E-01	5.5E-01
Alpha-BHC	5.6E+00	2.8E+03	RSL	3.0E-01	1.3E-01	2.1E-04	2.0E-01	5.0E-05	1.0E-03	5.8E-03	1.4E-04	2.7E-03	1.6E-02	1.6E-02	4.5E-04	9.1E-03	5.3E-02	5.3E-02
Chlordane	6.8E+01	3.4E+04	RSL	3.0E-01	1.3E-01	2.0E-03	2.0E-01	2.0E-03	4.0E-02	2.7E+00	2.4E-03	4.9E-02	3.3E+00	3.3E+00	8.2E-03	1.6E-01	1.1E+01	1.1E+01
Beta-BHC	5.6E+00	2.8E+03	RSL	3.0E-01	1.3E-01	2.1E-04	2.0E-01	5.0E-05	1.0E-03	5.8E-03	4.7E-04	9.5E-03	5.5E-02	5.5E-02	1.6E-03	3.2E-02	1.8E-01	1.8E-01
Delta-BHC	5.6E+00	2.8E+03	RSL	3.0E-01	1.3E-01	2.1E-04	2.0E-01	5.0E-05	1.0E-03	5.8E-03	4.7E-04	9.5E-03	5.5E-02	5.5E-02	1.6E-03	3.2E-02	1.8E-01	1.8E-01
Dieldrin	4.0E+01	2.0E+04	RSL	3.0E-01	1.3E-01	4.1E-04	2.0E-01	1.0E-04	2.0E-03	8.1E-02	5.3E-05	1.1E-03	4.3E-02	8.1E-02	1.8E-04	3.6E-03	1.4E-01	1.4E-01
Endrin	4.0E+01	2.0E+04	RSL	3.0E-01	1.3E-01	4.1E-04	2.0E-01	2.0E-03	4.0E-02	1.6E+00	4.7E-03	9.4E-02	3.8E+00	3.8E+00	3.1E-02	6.1E-01	2.5E+01	2.5E+01
Endrin Ketone	4.0E+01	2.0E+04	RSL	3.0E-01	1.3E-01	4.1E-04	2.0E-01	1.0E-04	2.0E-03	8.1E-02	ND	ND	ND	8.1E-02	ND	ND	ND	8.1E-02
Gamma-BHC (Lindane)	5.6E+00	2.8E+03	RSL	3.0E-01	1.3E-01	2.1E-04	2.0E-01	2.0E-04	4.0E-03	2.3E-02	7.7E-04	1.5E-02	9.0E-02	9.0E-02	2.6E-03	5.2E-02	3.0E-01	3.0E-01
Heptachlor	8.3E+01	4.1E+04	RSL	3.0E-01	1.3E-01	1.2E-02	2.0E-01	4.0E-04	8.0E-03	6.6E-01	1.9E-04	3.8E-03	3.1E-01	6.6E-01	6.4E-04	1.3E-02	1.1E+00	1.1E+00
Heptachlor Epoxide	2.0E+01	1.0E+04	RSL	3.0E-01	1.3E-01	8.6E-04	2.0E-01	2.0E-04	4.0E-03	8.2E-02	9.4E-05	1.9E-03	3.8E-02	8.2E-02	3.1E-04	6.3E-03	1.3E-01	1.3E-01
Methoxychlor	5.4E+01	2.7E+04	RSL	3.0E-01	1.3E-01	8.3E-06	2.0E-01	4.0E-02	8.0E-01	4.3E+01	7.8E-02	1.6E+00	8.4E+01	8.4E+01	5.1E-01	1.0E+01	5.5E+02	5.5E+02
Toxaphene	1.5E+02	7.7E+04	RSL	3.0E-01	1.3E-01	2.5E-04	2.0E-01	3.0E-03	6.0E-02	9.3E+00	7.7E-04	1.5E-02	2.4E+00	9.3E+00	2.6E-03	5.2E-02	8.0E+00	9.3E+00

NA Not Available
ND No Data Available
RSL EPA Regional Screening Level
HSDB Toxnet Hazardous Substances Data Base
1. Kd values taken from USEPA Regional Screening Table User's Guide.
2. Koc values taken from the EPA RSL Chemical-specific Parameters Supporting Table November 2011 unless otherwise noted. $K_d = K_{oc} * f_{oc}$ where f_{oc} equals 0.002.
3. Residential leaching value is the higher of the values based on the Type 1 and Type 2 groundwater RRS.
4. Non-residential leaching value is the higher of the values based on Type 3 and Type 4 groundwater RRS.

$Ø_w$ Water-filled soil porosity = 0.3 (L/L)
$Ø_a$ Air-filled soil porosity = 0.13 (L/L)
H' Dimensionless Henry Law Constant (HLC x 41) (unitless)
Þb Dry soil bulk density = 1.5 kg/L
RRS Risk Reduction Standard
C_w Target Leachate Concentration (mg/L)
C_s Screening Level in soil (mg/kg)

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Table B-6
Type 2 Soil RRS, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	Residential Leaching DAF=20 (mg/kg)	Risk-Based Residential Child Noncarcinogenic (mg/kg) (a)	Risk-Based Residential Child Carcinogenic (mg/kg) (b)	Risk-Based Residential Adult Noncarcinogenic (mg/kg) (a)	Risk-Based Residential Adult Carcinogenic (mg/kg) (b)	Risk-Based Soil Type 2 RRS (mg/kg) (c)	Overall Type 2 RRS DAF=20 (mg/kg) (d)
Volatile Organic Compounds (VOCs)								
1,1,2-Trichloroethane	8.8E+03	3.2E-02	3.1E+02	1.7E+01	2.9E+03	1.3E+01	1.3E+01	3.2E-02
1,1-Dichloroethane	2.1E+03	2.3E+01	1.6E+04	4.5E+01	1.5E+05	3.2E+01	3.2E+01	2.3E+01
1,1-Dichloroethene	8.7E+02	7.4E-01	5.1E+01	ND	1.8E+02	ND	5.1E+01	7.4E-01
Chlorobenzene	8.6E+03	1.4E+00	1.2E+02	ND	4.3E+02	ND	1.2E+02	1.4E+00
cis-1,2-Dichloroethene	2.7E+03	4.1E-01	1.6E+02	ND	1.5E+03	ND	1.6E+02	4.1E-01
Ethylbenzene	7.6E+03	1.6E+01	1.8E+03	9.4E+01	7.3E+03	7.1E+01	7.1E+01	1.6E+01
Isopropylbenzene	8.4E+03	6.5E+00	8.6E+02	ND	3.2E+03	ND	8.6E+02	6.5E+00
Tetrachloroethene	2.7E+03	4.5E-02	1.7E+02	8.0E+00	6.8E+02	8.0E+00	8.0E+00	4.5E-02
Toluene	5.6E+03	1.4E+01	3.6E+03	ND	1.9E+04	ND	3.6E+03	1.4E+01
Trichloroethene	2.5E+03	3.6E-02	1.4E+00	1.9E+01	5.0E+00	1.4E+01	1.4E+00	3.6E-02
Vinyl chloride (lifetime)	5.8E+02	1.4E-02	1.6E+01	3.4E+00	6.0E+01	2.8E+00	2.8E+00	1.4E-02
Xylenes, mixture	7.9E+03	2.0E+02	2.3E+02	ND	8.3E+02	ND	2.3E+02	2.0E+02
SVOCS								
1,2,4-Trichlorobenzene	4.1E+04	4.1E+00	2.4E+01	3.1E+02	8.5E+01	5.9E+02	2.4E+01	4.1E+00
1,2-Dichlorobenzene	1.6E+04	1.2E+01	8.3E+02	ND	3.1E+03	ND	8.3E+02	1.2E+01
1,4-Dichlorobenzene	1.4E+04	1.4E+00	2.1E+03	4.3E+01	9.7E+03	3.1E+01	3.1E+01	1.4E+00
Metals								
Barium	NA	2.6E+03	1.5E+04	ND	1.4E+05	ND	1.5E+04	2.6E+03
Chromium, Total	NA	3.8E+01	2.3E+02	1.8E+01	2.2E+03	3.3E+01	1.8E+01	1.8E+01
Lead	NA	2.7E+02	4.2E+02	ND	ND	ND	4.2E+02	2.7E+02
Pesticides								
4,4-DDD	NA	1.7E+01	ND	3.8E+01	ND	7.1E+01	3.8E+01	1.7E+01
4,4-DDE	NA	1.2E+01	ND	2.7E+01	ND	5.0E+01	2.7E+01	1.2E+01
4,4-DDT	NA	1.7E+01	3.9E+01	2.7E+01	3.7E+02	5.0E+01	2.7E+01	1.7E+01
Aldrin	NA	1.6E-01	2.3E+00	5.4E-01	2.2E+01	1.0E+00	5.4E-01	1.6E-01
Alpha-BHC	NA	1.6E-02	6.3E+02	1.4E+00	5.8E+03	2.7E+00	1.4E+00	1.6E-02
Chlordane	NA	3.3E+00	3.9E+01	2.6E+01	3.6E+02	4.9E+01	2.6E+01	3.3E+00
Beta-BHC	NA	5.5E-02	ND	5.1E+00	ND	9.5E+00	5.1E+00	5.5E-02
Delta-BHC	NA	5.5E-02	ND	5.1E+00	ND	9.5E+00	5.1E+00	5.5E-02
Dieldrin	NA	8.1E-02	3.9E+00	5.7E-01	3.7E+01	1.1E+00	5.7E-01	8.1E-02
Endrin	NA	3.8E+00	2.3E+01	ND	2.2E+02	ND	2.3E+01	3.8E+00
Endrin Ketone	NA	8.1E-02	ND	ND	ND	ND	ND	8.1E-02
Gamma-BHC (Lindane)	NA	9.0E-02	2.3E+01	8.3E+00	2.2E+02	1.5E+01	8.3E+00	9.0E-02
Heptachlor	NA	6.6E-01	3.9E+01	2.0E+00	3.7E+02	3.8E+00	2.0E+00	6.6E-01
Heptachlor Epoxide	NA	8.2E-02	1.0E+00	1.0E+00	9.5E+00	1.9E+00	1.0E+00	8.2E-02
Methoxychlor	NA	8.4E+01	3.9E+02	ND	3.7E+03	ND	3.9E+02	8.4E+01
Toxaphene	NA	9.3E+00	ND	8.3E+00	ND	1.5E+01	8.3E+00	8.3E+00

Notes:

RRS Risk Reduction Standard

ND Not Determined - Can not be calculated

(a) $$\frac{\text{THI x BW x ATn x 365days/year}}{\text{EF x ED x [(1/RfDi x (1/VF + 1/PEF) x InhR) + (1/RfDo x Irs x CF)]}}$$

(b) $$\frac{\text{TR x BW x ATc x 365days/year}}{\text{EF x ED x [(SFi x (1/VF + 1/PEF) x InhR) + (SFo x Irs x CF)]}}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

(d) Minimum concentration of Leaching Value and Risk-based Value.

Exposure Parameters	Residential Child Type 2	Residential Adult Type 2
Total Hazard Index (THI)	1	1
Target Risk (TR)	1.E-05	1.E-05
Body Weight (BW)	15	70
Averaging Time, Carcinogen (ATc)	70	70
Averaging Time, Noncarcinogen (ATn)	6	30
Exposure Duration (ED)	6	30
Exposure Frequency (EF)	350	350
Soil Ingestion Rate (IRs)	200	100
Air Inhalation Rate (InhR)	15	20
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09
Conversion Factor (CF)	1.E-06	1.E-06
Volatilization Factor (VF)	Chemical-specific	Chemical-specific

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Table B-7
Type 4 Soil RRS, mg/kg
Default Industrial Worker

PARAMETER	Volatilization Factor (m^3/kg)	Nonresidential Leaching DAF=20 (mg/kg)	Risk-Based Industrial Worker Noncarcinogenic (mg/kg) (a)	Risk-Based Industrial Worker Carcinogenic (mg/kg) (b)	Risk-Based Soil IW Type 4 RRS (mg/kg) (c)	Overall IW Type 4 RRS DAF=20 (mg/kg) (d)
Volatile Organic Compounds (VOCs)						
1,1,2-Trichloroethane	8.8E+03	3.2E-02	8.2E+03	2.2E+01	2.2E+01	3.2E-02
1,1-Dichloroethane	2.1E+03	2.3E+01	4.1E+05	5.4E+01	5.4E+01	2.3E+01
1,1-Dichloroethene	8.7E+02	3.8E+00	2.5E+02	ND	2.5E+02	3.8E+00
Chlorobenzene	8.6E+03	1.8E+00	6.1E+02	ND	6.1E+02	1.8E+00
cis-1,2-Dichloroethene	2.7E+03	1.2E+00	4.1E+03	ND	4.1E+03	1.2E+00
Ethylbenzene	7.6E+03	1.6E+01	1.1E+04	1.2E+02	1.2E+02	1.6E+01
Isopropylbenzene	8.4E+03	3.3E+01	4.6E+03	ND	4.6E+03	3.3E+01
Tetrachloroethene	2.7E+03	4.5E-02	9.9E+02	1.5E+01	1.5E+01	4.5E-02
Toluene	5.6E+03	7.2E+01	3.2E+04	ND	3.2E+04	7.2E+01
Trichloroethene	2.5E+03	3.7E-02	7.1E+00	2.5E+01	7.1E+00	3.7E-02
Vinyl chloride (lifetime)	5.8E+02	2.2E-02	8.5E+01	5.1E+00	5.1E+00	2.2E-02
Xylenes, mixture	7.9E+03	2.0E+02	1.2E+03	ND	1.2E+03	2.0E+02
SVOCS						
1,2,4-Trichlorobenzene	4.1E+04	4.1E+00	1.2E+02	2.0E+03	1.2E+02	4.1E+00
1,2-Dichlorobenzene	1.6E+04	1.2E+01	4.5E+03	ND	4.5E+03	1.2E+01
1,4-Dichlorobenzene	1.4E+04	1.4E+00	1.5E+04	5.2E+01	5.2E+01	1.4E+00
Metals						
Barium	NA	1.7E+04	3.6E+05	ND	3.6E+05	1.7E+04
Chromium, Total	NA	3.8E+01	6.1E+03	1.1E+02	1.1E+02	3.8E+01
Lead	NA	2.7E+02	1.3E+03	ND	1.3E+03	2.7E+02
Pesticides						
4,4-DDD	NA	5.6E+01	ND	2.4E+02	2.4E+02	5.6E+01
4,4-DDE	NA	4.0E+01	ND	1.7E+02	1.7E+02	4.0E+01
4,4-DDT	NA	5.7E+01	1.0E+03	1.7E+02	1.7E+02	5.7E+01
Aldrin	NA	5.5E-01	6.1E+01	3.4E+00	3.4E+00	5.5E-01
Alpha-BHC	NA	5.3E-02	1.6E+04	9.1E+00	9.1E+00	5.3E-02
Chlordane	NA	1.1E+01	1.0E+03	1.6E+02	1.6E+02	1.1E+01
Beta-BHC	NA	1.8E-01	ND	3.2E+01	3.2E+01	1.8E-01
Delta-BHC	NA	1.8E-01	ND	3.2E+01	3.2E+01	1.8E-01
Dieldrin	NA	1.4E-01	1.0E+02	3.6E+00	3.6E+00	1.4E-01
Endrin	NA	2.5E+01	6.1E+02	ND	6.1E+02	2.5E+01
Endrin Ketone	NA	8.1E-02	ND	ND	ND	8.1E-02
Gamma-BHC (Lindane)	NA	3.0E-01	6.1E+02	5.2E+01	5.2E+01	3.0E-01
Heptachlor	NA	1.1E+00	1.0E+03	1.3E+01	1.3E+01	1.1E+00
Heptachlor Epoxide	NA	1.3E-01	2.7E+01	6.3E+00	6.3E+00	1.3E-01
Methoxychlor	NA	5.5E+02	1.0E+04	ND	1.0E+04	5.5E+02
Toxaphene	NA	9.3E+00	ND	5.2E+01	5.2E+01	9.3E+00

Notes:

RRS Risk Reduction Standard
ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.
(d) Minimum concentration of Leaching Value and Risk-based Value.

Exposure Parameters	Industrial Worker Type 4	Unit
Total Hazard Index (THI)	1	unitless
Target Risk (TR)	1.E-05	unitless
Body Weight (BW)	70	kg
Averaging Time, Carcinogen (ATc)	70	yrs
Averaging Time, Noncarcinogen (ATn)	25	yrs
Exposure Duration (ED)	25	yrs
Exposure Frequency (EF)	250	days/yr
Soil Ingestion Rate (IRs)	50	mg/day
Air Inhalation Rate (InhR)	20	m3/day
Particulate Emission Factor (PEF)	4.63E+09	m3/kg
Conversion Factor (CF)	1.E-06	kg/mg
Volatilization Factor (VF)	Chemical-specific	m3/kg

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Table B-8
Derivation of VF Factors (Soil-to-Air Volatilization Factor)
Based on Regional Screening Level Chemical-specific Parameters Supporting Table November 2011

Analyte	CAS No.	MW	H' (unitless)	HLC (atm-m^2/mole)	Dia (cm^2/s)	Diw (cm^2/s)	Koc (L/kg)	Dei (cm^2/sec)	K_d (cm^3/g)	K_{as} (g/cm^3)	Y (cm^2/sec)	VF (m^3/kg)
Chlorobenzene	108-90-7	112.56	0.1271464	0.00311	0.0721306	9.4765E-06	233.9	5.08E-02	4.68E+00	2.73E-02	2.80E-04	8.59E+03
Cumene (Isopropylbenzene)	98-82-8	120.2	0.4701554	0.0115	0.0603044	7.8566E-06	697.8	4.25E-02	1.40E+01	3.38E-02	2.90E-04	8.44E+03
Dichlorobenzene, 1,2-	95-50-1	147	0.0784955	0.00192	0.0561703	8.9213E-06	382.9	3.96E-02	7.66E+00	1.03E-02	8.25E-05	1.59E+04
Dichlorobenzene, 1,4-	106-46-7	147	0.0985282	0.00241	0.0550429	8.6797E-06	375.3	3.88E-02	7.51E+00	1.32E-02	1.03E-04	1.42E+04
Dichloroethane, 1,1-	75-34-3	98.96	0.2297629	0.00562	0.0836446	0.0000106	31.82	5.89E-02	6.36E-01	3.62E-01	4.04E-03	2.12E+03
Dichloroethylene, 1,1-	75-35-4	96.94	1.0670482	0.0261	0.0863138	0.000011	31.82	6.08E-02	6.36E-01	1.68E+00	1.55E-02	8.66E+02
Dichloroethylene, 1,2-cis-	156-59-2	96.94	0.1668029	0.00408	0.0884088	0.0000113	39.6	6.23E-02	7.92E-01	2.11E-01	2.56E-03	2.74E+03
Ethylbenzene	100-41-4	106.17	0.3221586	0.00788	0.0684652	8.4558E-06	446.1	4.82E-02	8.92E+00	3.62E-02	3.52E-04	7.64E+03
Tetrachloroethylene	127-18-4	165.83	0.7236304	0.0177	0.0504664	9.4551E-06	94.94	0.035565136	1.8988	3.82E-01	2.56E-03	2.65E+03
Toluene	108-88-3	92.14	0.2714636	0.00664	0.0778053	9.2045E-06	233.9	0.054831651	4.6780	5.82E-02	6.41E-04	5.64E+03
Trichlorobenzene, 1,2,4-	120-82-1	181.45	0.058054	0.00142	0.0395992	8.4033E-06	1356	0.027906705	27.1200	2.15E-03	1.22E-05	4.14E+04
Trichloroethane, 1,1,2-	79-00-5	133.41	0.0336877	0.000824	0.0668904	0.00001	60.7	0.047139605	1.2140	2.78E-02	2.65E-04	8.83E+03
Trichloroethylene	79-01-6	131.39	0.4026983	0.00985	0.0686618	0.0000102	60.7	0.048387962	1.2140	3.33E-01	3.06E-03	2.45E+03
Vinyl Chloride	75-01-4	62.5	1.1365495	0.0278	0.1071189	0.000012	21.73	0.075489795	0.4346	2.62E+00	2.62E-02	5.82E+02
Xylenes	1330-20-7	106.17	0.2117743	0.00518	0.0847395	9.9011E-06	382.9	0.059718383	7.6580	2.77E-02	3.35E-04	7.86E+03

Equation is from USEPA, 1991b.

VF = Volatilization Factor (m^3/kg)

$$VF = (LS \times V \times DH) / (A) * \frac{(3.14 \times Y \times T)^{1/2}}{(2 \times Dei \times P \times Kas \times 0.001)}$$

$$Y = \frac{Dei \times P}{P + (p(1-P)/Kas)}$$

LS = Length of side of contaminated area =	45 m (default)
V = wind speed in mixing zone =	2.25 m/s (default)
DH = diffusion height =	2 m
A = area of contamination =	20,250,000 cm^2 (default)
T = exposure interval =	790000000 s = 25 yrs
Dei = effective diffusivity (cm^2/s) =	Chemical Specific
P = air filled soil porosity (unitless) =	0.35 (default)
Kas = soil/air partition coefficient (g soil/cm^3 air) =	Chemical Specific
Conversion factor =	0.001 kg/g
p = True soil density or particulate density =	2.65 g/cm^3 (default)

Table B-9
Calculation of Remediation Goal for Lead in Soil - Industrial Workers

Exposure Variable	PRG Equation[1]	Description of Exposure Variable	Units	Values for Industrial Worker Using Equation 1 GSDi = 2.04	Values for Industrial Worker Using Equation 1 GSDi = 1.8 (a)
$PbB_{fetal,\ 0.95}$	X	95^{th} percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	X	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	X	Geometric standard deviation PbB	--	2.04	1.8
PbB_0	X	Baseline PbB	ug/dL	1.38	1.00
IR_S	X	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
$AF_{S,\ D}$	X	Absorption fraction (same for soil and dust)	--	0.12	0.12
C_w	X	Concentration of lead in ground water (average for site)	ug/L	4	4
IR_w[2]	X	Intake rate of water from on-site ground water	L/day	1	1
AF_w	X	Absolute gastrointestinal absorption fraction for lead in GW		0.2	0.2
EF	X	Exposure frequency (same for soil and dust and water)	days/yr	219	219
AT	X	Averaging Time	days/yr	365	365
PRG		**Preliminary Remediation Goal**	**ppm**	**1,300**	**2,100**

Note:

Level in groundwater set to background.

(a) Assumptions for the Adult Lead Model for EPA were updated in June 2009. Soil ingestion rate and frequency of exposure based on Frequent Questions from Risk Assessors on the ALM (www.epa.gov/superfund/health/contaminants/lead/almfaq.htm).

***Equation based on Georgia Adult Lead Model (November, 1999).**

$$\mathbf{PRG} = \frac{[([[PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0) - (C_w*I_w*A_w)] \ * \ (IR_S*AF_S)^{-1}}{BKSF*(EF/AT)}$$

Prepared by: MKB 1/18/2012

Checked by: LMS 1/18/2012

Sources:

U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.

Georgia EPD HSRA: Appendix IV.

Copy Range

	Values for Industrial Exposure Scenario				**Values for Commercial Exposure Scenario**			
	Using Equation 1		**Using Equation 2**		**Using Equation 1**		**Using Equation 2**	
	GSDi = 1.8	**GSDi = 2.2**	**GSDi = 1.8**	**GSDi = 2.2**	**GSDi = 1.8**	**GSDi = 2.2**	**GSDi = 1.8**	**GSDi = 2.2**
	10	10	10	10	10	10	10	10
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	1.8	2.1	1.8	2.1	1.8	2.1	1.8	2.1
	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	0.050	0.050	--	--	0.050	0.050	--	--
	--	--	0.050	0.050	--	--	0.050	0.050
	--	--	1.000	1.000	--	--	1.000	1.000
	--	--	0.700	0.700	--	--	0.700	0.700
	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
	219	219	219	219	50	50	50	50
	1,545	**888**	**1,545**	**888**	**6,768**	**3,889**	**6,768**	**3,889**

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 302.600 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	418.000	302.600
1-2	418.000	302.600
2-3	418.000	302.600
3-4	418.000	302.600
4-5	418.000	302.600
5-6	418.000	302.600
6-7	418.000	302.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

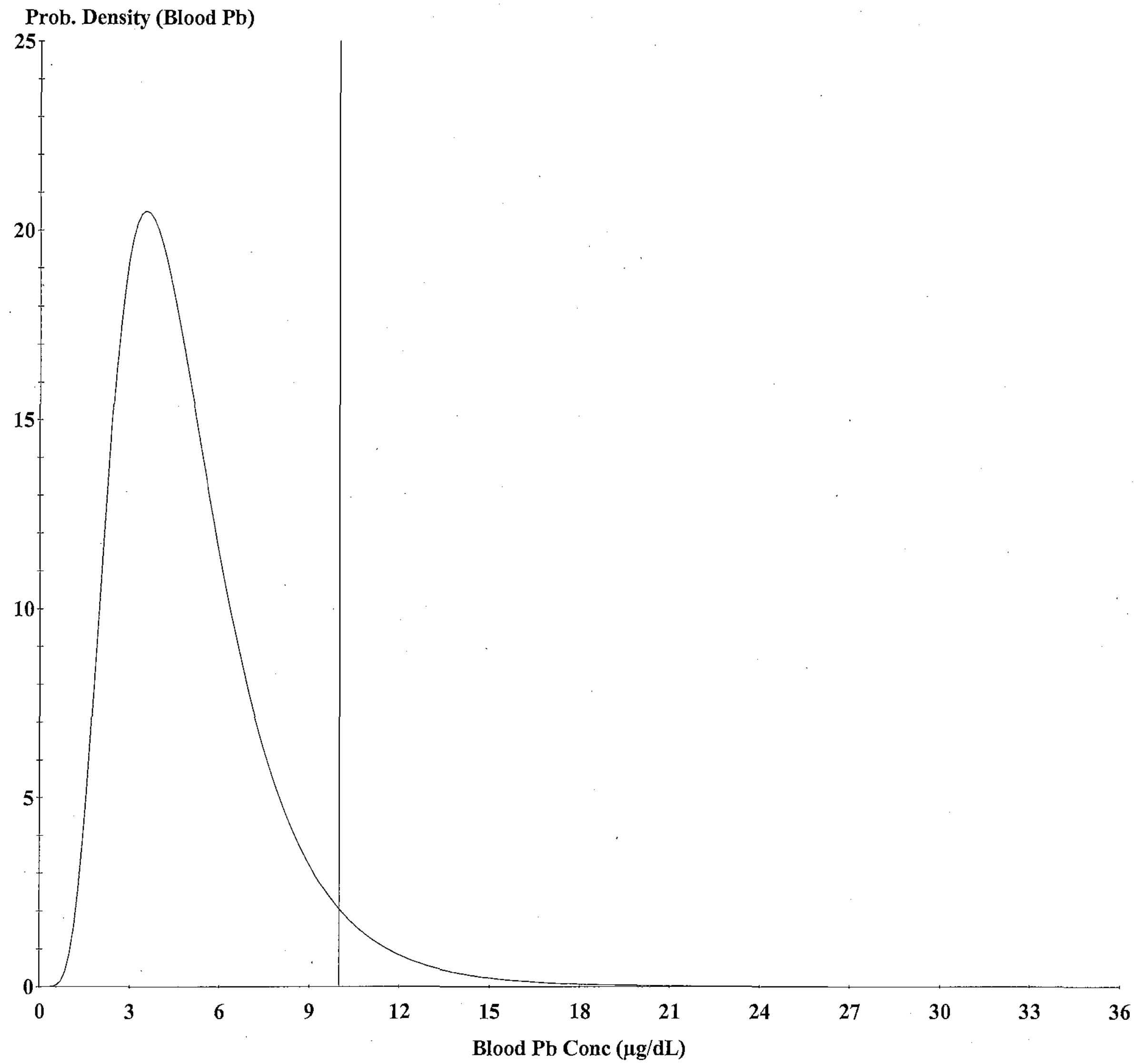
****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.013	0.000	0.359
1-2	0.034	0.863	0.000	0.880
2-3	0.062	0.953	0.000	0.931
3-4	0.067	0.927	0.000	0.963
4-5	0.067	0.913	0.000	1.030
5-6	0.093	0.971	0.000	1.099
6-7	0.093	1.058	0.000	1.124

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.107	9.500	5.1
1-2	12.637	14.414	5.9
2-3	12.851	14.797	5.5
3-4	13.047	15.004	5.2
4-5	9.962	11.972	4.3
5-6	9.067	11.230	3.6
6-7	8.615	10.891	3.2



Cutoff = 10.000 µg/dl
Geo Mean = 4.615
GSD = 1.600
% Above = 4.995
% Below = 95.005

Age Range = 0 to 84 months

Run Mode = Research

APPENDIX D
BIOCHLOR OUTPUT SHEETS

Table D-1 – Summary of Biochlor Input Parameters

Parameter	Input Value Used with Units		Range of Observed or Published Values		Bibliographic Reference
	Shallow Plume	Intermediate Plume	Shallow Plume	Intermediate Plume	
Hydraulic Conductivity	1.4 x 10^{-3} cm/sec	1.4 x 10^{-4} cm/sec	1.08 x 10^{-4} cm/sec -2.33 x 10^{-3} cm/sec	1.4x 10^{-4} cm/sec	Slug test results obtained from MW-1, MW-2, MW-3, MW-4 and MW-12.
Hydraulic Gradient	0.0084	0.028	0.0073 – 0.0097	0.025 - 0.031	Average of gradients calculated along flow paths from source area wells MW-18 and PZ-2 during semi-annual static water level measurements from last six monitoring events
Effective Porosity	0.2	0.2	0.16– 0.46	0.16 – 0.46	Groundwater Hydrology and Hydraulics, McWorter and Sunada, 1977
Longitudinal Dispersivity	21.276	18.158			Modified Xu Eckstein formula using 10% of estimated plume length
Transverse Dispersivity	0.1	0.1			0.1 x longitudinal dispersivity
Vertical Dispersivity	$1x10^{-99}$	$1x10^{-99}$			Biochlor recommended value
Retardation Factor	3.64	2.32			Initially calculated from $R=1+K_{oc} x f_{oc} x \rho/n$, then adjusted for effect related to clay content of soil based on comparison with field data
Aquifer Matrix Density	1.7 gm/cm^3	1.7 gm/cm^3	1.55 – 1.80	1.55 – 1.80	General Guide for Estimating Moist Bulk Density, Natural Resources Conservation Service
Foc	0.002	0.001			Field data for shallow aquifer collected during the installation of shallow well MW-16. Biochlor default value for intermediate aquifer
Koc					
PCE	155	155			Biochlor default values
TCE	166	166			
DCE	136	136			
VC	19	19			
Source Concentrations, mg/L					For both the shallow and intermediated depth plumes, the highest TCE concentrations detected to date multiplied by 1.5 were utilized as source area concentrations.
PCE	0.019	0.13	0.011 – 0.019	<0.005 – 0.13	
TCE	8.2	57	2.58 – 8.2	3.3 - 57.0	
DCE	2.9	20	1.03 – 2.9	3.3 - 20.0	
VC	3.3	6.8	0.516 – 3.3	0.305 - 6.8	
Source Decay Constant	0.02	0.02			The calculated of 0.003 was modified to match observed field conditions.
Biotransformation Rate Coefficient					Based on calibration to field data using 40-year simulation time (release of TCE assumed in approximately 1970). Started with Biochlor recommended values and adjusted model to fit field data.
PCE	0.462	0.462	0.07 – 1.2	0.07 – 1.2	
TCE	0.578	0.866	0.05 – 0.9	0.05 – 0.9	
DCE	1.98	0.578	0.18 – 3.3	0.18 – 3.3	
VC	2.1	0.924	0.12 – 2.6	0.12 – 2.6	
Plume Length	500	500			Shallow plume modeled from MW-13 to MW-9. Intermediate depth plume modeled from PZ-2 to estimated downgradient limit.
Plume Width	300	300			Modeled area widths were estimated based on location of 5 µg/L isopleth.
Simulation Time	100	100			Simulation time from estimated release beyond the point at which the plume begins to recede.
Source Thickness, ft.	10	10			From monitoring well boring logs.
Source Width, ft.	25	25			Modeled as a single-plane source based on location of 100 mg/L isopleth.
Source Concentrations, mg/L	8.2	57.0			MW-13 and PZ-2 data represent the highest concentration detected to date.

Table D-2A - Model Sensitivity Analysis – Shallow Zone Calculated for June 2015 at MW-3

Hydraulic Conductivity (Baseline = 1.13 x 10^{-4} cm/sec)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5xBaseline	Observed
PCE	0.006	0.002	<0.001	<0.001
TCE	0.243	0.064	0.006	0.006
DCE	0.073	0.019	0.002	0.003
VC	0.06	0.016	0.001	0.007
Hydraulic Gradient (Baseline = 0.0084)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.006	0.002	<0.001	<0.001
TCE	0.243	0.064	0.006	0.006
DCE	0.073	0.019	0.002	0.003
VC	0.06	0.016	0.001	0.007
Effective Porosity (Baseline = 0.2)				
Constituent	Concentrations (mg/L)			
	1.2x Baseline	Baseline	0.8x Baseline	Observed
PCE	0.001	0.002	0.003	<0.001
TCE	0.036	0.064	.0114	0.006
DCE	0.011	0.019	0.035	0.003
VC	0.009	0.016	0.029	0.007
Longitudinal Dispersivity (Baseline = 21.276 feet)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.002	0.002	0.002	<0.001
TCE	0.062	0.064	0.070	0.006
DCE	0.019	0.019	0.021	0.003
VC	0.016	0.016	0.018	0.007
Transverse Dispersivity (Baseline = 0.1 x Longitudinal Dispersivity)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.002	0.003	<0.001
TCE	0.045	0.064	0.088	0.006
DCE	0.014	0.019	0.027	0.003
VC	0.011	0.016	0.022	0.007
Retardation Factor (Baseline = 3.64)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.80x Baseline	Observed
PCE	0.002	0.002	0.002	<0.001
TCE	0.073	0.064	0.059	0.006
DCE	0.022	0.019	0.018	0.003
VC	0018	0.016	0.015	0.007
Aquifer Matrix Density (Baseline = 1.7 gm/cm^3)				
Constituent	Concentrations (mg/L)			
	1.2x Baseline	Baseline	0.90x Baseline	Observed
PCE	0.002	0.002	0.002	<0.001
TCE	0.067	0.064	0.062	0.006
DCE	0.020	0.019	0.019	0.003
VC	0.017	0.016	0.016	0.007

Table D-2A - Model Sensitivity Analysis – Shallow Zone Calculated for June 2015 at MW-3 (cont.)

Foc (Baseline = 0.002)				
Constituent	Concentrations (mg/L)			
	10x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.002	0.002	0.001	<0.001
TCE	0.059	0.064	0.045	0.006
DCE	0.018	0.019	0.014	0.003
VC	0.015	0.016	0.011	0.007
Koc (Baseline = 155-PCE, 166-TCE, 36-DCE, 19-VC)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.002	0.002	0.002	<0.001
TCE	0.073	0.064	0055	0.006
DCE	0.022	0.019	0.017	0.003
VC	0.018	0.016	0.014	0.007
Biotransformation Rate Constant (Baseline = 0.462-PCE, 0.866-TCE, 1.98-DCE, 1.733-VC)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.002	0.007	<0.001
TCE	0.016	0.064	0.312	0.006
DCE	0.005	0.019	0.094	0.003
VC	0.004	0.016	0.078	0.007
First Order Decay Constant **(Baseline = 0.02)**				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.002	0.002	<0.001
TCE	0.049	0.064	0.083	0.006
DCE	0.015	0.019	0.025	0.003
VC	0.012	0.016	0.021	0.007
Source Width (Baseline = 25 Ft)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.003	0.002	0.001	<0.001
TCE	0.093	0.064	0.032	0.006
DCE	0.028	0.019	0.010	0.003
VC	0.023	0.016	0.008	0.007

Table D-2B - Model Sensitivity Analysis – Intermediate Zone Calculated for June 2015 at MW-2

Hydraulic Conductivity (Baseline = 1.13 x 10^{-4} cm/sec)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5xBaseline	Observed
PCE	0.004	0.001	<0.001	<0.001
TCE	0.2645	0.018	<0.001	0.002
DCE	1.45	0.231	0.001	0.145
VC	0.92	0.187	0.001	0.120
Hydraulic Gradient (Baseline = 0.028)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.004	0.001	<0.001	<0.001
TCE	0.2645	0.018	<0.001	0.002
DCE	1.45	0.231	0.001	0.145
VC	0.92	0.187	0.001	0.120
Effective Porosity (Baseline = 0.2)				
Constituent	Concentrations (mg/L)			
	1.2x Baseline	Baseline	0.8x Baseline	Observed
PCE	<0.001	0.001	0.001	<0.001
TCE	0.007	0.018	0.050	0.002
DCE	0.113	0.231	0.491	0.145
VC	0.096	0.187	0.371	0.120
Longitudinal Dispersivity (Baseline = 18.158 feet)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.028	0.018	0.009	0.002
DCE	0.272	0.231	0.186	0.145
VC	0.206	0.187	0.164	0.120
Transverse Dispersivity (Baseline = 0.1 x Longitudinal Dispersivity)				
Constituent	Concentrations (mg/L)			
	2x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	<0.001	<0.001
TCE	0.013	0.018	0.009	0.002
DCE	0.166	0.231	0.186	0.145
VC	0.134	0.187	0.164	0.120
Retardation Factor (Baseline = 2.32)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.80x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.021	0.018	0.017	0.002
DCE	0.273	0.231	0.216	0.145
VC	0.221	0.187	0.174	0.120
Aquifer Matrix Density (Baseline = 1.7 gm/cm^3)				
Constituent	Concentrations (mg/L)			
	1.2x Baseline	Baseline	0.90x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.018	0.018	0.017	0.002
DCE	0.240	0.231	0.227	0.145
VC	0.194	0.187	0.183	0.120

Table D-2B - Model Sensitivity Analysis – Intermediate Zone Calculated for June 2015 at MW-2 (cont.)

Foc (Baseline = 0.002)				
Constituent	Concentrations (mg/L)			
	10x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.021	0.018	0.016	0.002
DCE	0.223	0.231	0.211	0.145
VC	0.221	0.187	0.170	0.120
Koc (Baseline = 155-PCE, 166-TCE, 36-DCE, 19-VC)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.019	0.018	0.016	0.002
DCE	0.253	0.231	0.211	0.145
VC	0.201	0.187	0.170	0.120
Biotransformation Rate Constant (Baseline = 0.462-PCE, 0.866-TCE, 0.578-DCE, 0.924-VC)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	<0.001	0.001	0.005	<0.001
TCE	0.002	0.018	0.318	0.002
DCE	0.039	0.231	1.781	0.145
VC	0.035	0.187	1.137	0.120
First Order Decay Constant **(Baseline = 0.02)**				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	0.001	<0.001
TCE	0.013	0.018	0.024	0.002
DCE	0.174	0.231	0.308	0.145
VC	0.141	0.187	0.247	0.120
Source Width (Baseline = 25 Ft)				
Constituent	Concentrations (mg/L)			
	1.5x Baseline	Baseline	0.5x Baseline	Observed
PCE	0.001	0.001	<0.001	<0.001
TCE	0.026	0.018	0.009	0.002
DCE	0.334	0.231	0.118	0.145
VC	0.270	0.187	0.095	0.120

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-2

Score: 9

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	○	
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	○	
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Sulfide*	>1 mg/L	Reductive pathway possible	○	○	
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	○	
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	○	
Temperature*	>20°C	At T >20°C biochemical process is accelerated	●	○	1
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	○	
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	○	
Chloride*	>2x background	Daughter product of organic chlorine	○	○	
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	●	○	2
PCE*		Material released	○	○	
TCE*		Daughter product of PCE [a/]	●	○	2
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE[a/]; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Daughter product of DCE[a/]	●	○	2
1,1,1-Trichloroethane*		Material released	○	○	
DCA		Daughter product of TCA under reducing conditions	○	○	
Carbon Tetrachloride		Material released	○	○	
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	○	
	>0.1 mg/L	Daughter product of VC/ethene	○	○	
Chloroform		Daughter product of Carbon Tetrachloride	○	○	
Dichloromethane		Daughter product of Chloroform	○	○	

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE | Reset

End of Form

Natural Attenuation Screening Protocol	Interpretation	Score	MW-13
The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.	Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5	Score: 12
	Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14	
	Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20	
	Strong evidence for anaerobic biodegradation* of chlorinated organics	>20	*Scroll to End of Table*

* reductive dechlorination

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	◉	○	3
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	○	
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	○	
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Sulfide*	>1 mg/L	Reductive pathway possible	○	○	
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	○	
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	○	
	<-100mV	Reductive pathway likely	○	○	
pH*	5 < pH < 9	Optimal range for reductive pathway	◉	○	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	○	
Temperature*	>20°C	At T >20°C biochemical process is accelerated	◉	○	1
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	○	
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	○	
Chloride*	>2x background	Daughter product of organic chlorine	○	○	
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	◉	○	2
PCE*		Material released	○	○	
TCE*		Daughter product of PCE a/	◉	○	2
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE a/; 1,1-DCE can be a chem. reaction product of TCA	◉	○	2
VC*		Daughter product of DCE a/	◉	○	2
1,1,1-Trichloroethane*		Material released	○	○	
DCA		Daughter product of TCA under reducing conditions	○	○	
Carbon Tetrachloride		Material released	○	○	
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	○	
	>0.1 mg/L	Daughter product of VC/ethene	○	○	
Chloroform		Daughter product of Carbon Tetrachloride	○	○	
Dichloromethane		Daughter product of Chloroform	○	○	

* required analysis.
a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE Reset

End of Form

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-18

Score: 13

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	◉	○	3
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	○	
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	○	
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Sulfide*	>1 mg/L	Reductive pathway possible	○	○	
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	○	
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	◉	○	1
	<-100mV	Reductive pathway likely	○	○	
pH*	5 < pH < 9	Optimal range for reductive pathway	◉	○	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	○	
Temperature*	>20°C	At T >20°C biochemical process is accelerated	◉	○	1
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	○	
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	○	
Chloride*	>2x background	Daughter product of organic chlorine	○	○	
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	◉	○	2
PCE*		Material released	○	○	
TCE*		Daughter product of PCE [a/]	◉	○	2
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE[a/]; 1,1-DCE can be a chem. reaction product of TCA	◉	○	2
VC*		Daughter product of DCE[a/]	◉	○	2
1,1,1-Trichloroethane*		Material released	○	○	
DCA		Daughter product of TCA under reducing conditions	○	○	
Carbon Tetrachloride		Material released	○	○	
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	○	
	>0.1 mg/L	Daughter product of VC/ethene	○	○	
Chloroform		Daughter product of Carbon Tetrachloride	○	○	
Dichloromethane		Daughter product of Chloroform	○	○	

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE Reset

End of Form

Natural Attenuation Screening Protocol	Interpretation	Score	
The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.	Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5	mw-19
	Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14	Score: 12
	Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20	
	Strong evidence for anaerobic biodegradation* of chlorinated organics	>20	*Scroll to End of Table*

* reductive dechlorination

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	◉	○	3
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	○	
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	○	
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	○	
Sulfide*	>1 mg/L	Reductive pathway possible	○	○	
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	○	
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	◉	0
	<-100mV	Reductive pathway likely	○	◉	0
pH*	5 < pH < 9	Optimal range for reductive pathway	◉	○	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	○	
Temperature*	>20°C	At T >20°C biochemical process is accelerated	◉	○	1
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	○	
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	○	
Chloride*	>2x background	Daughter product of organic chlorine	○	○	
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	◉	○	2
PCE*		Material released	○	○	
TCE*		Daughter product of PCE [a/]	◉	○	2
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE[a/]; 1,1-DCE can be a chem. reaction product of TCA	◉	○	2
VC*		Daughter product of DCE[a/]	◉	○	2
1,1,1-Trichloroethane*		Material released	○	○	
DCA		Daughter product of TCA under reducing conditions	○	○	
Carbon Tetrachloride		Material released	○	○	
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	○	
	>0.1 mg/L	Daughter product of VC/ethene	○	○	
Chloroform		Daughter product of Carbon Tetrachloride	○	○	
Dichloromethane		Daughter product of Chloroform	○	○	

* required analysis.
a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE   Reset

End of Form

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Shallow Zone - Calibration
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ● Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	49.1	(ft/yr)
or			
Hydraulic Conductivity	K	1.1E-03	(cm/sec)
Hydraulic Gradient	i	0.0084	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	21.276	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R
or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	2.0E-3	(-)		
Partition Coefficient	Koc			
PCE	155	(L/kg)	3.64	(-)
TCE	166	(L/kg)	3.82	(-)
DCE	35	(L/kg)	1.60	(-)
VC	19	(L/kg)	1.32	(-)
ETH	302	(L/kg)	6.13	(-)
Common R (used in model)* =			3.64	

4. BIOTRANSFORMATION -1st Order Decay Coefficient*

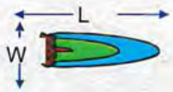
Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	1.980	0.35	0.64
VC → ETH	1.733	0.40	0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	39	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	650	(ft)
Zone 1 Length*	650	(ft)
Zone 2 Length*	0	(ft)



Zone 2= L - Zone 1

6. SOURCE DATA TYPE: Decaying Single Planar

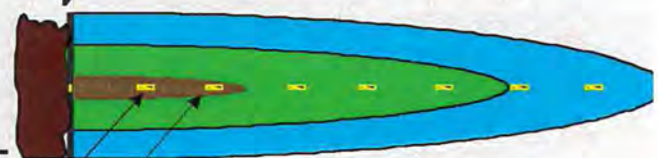
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Width* (ft) Y1: 25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.019	0.02
TCE	16.4	0.02
DCE	2.9	0.02
VC	3.3	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.001	.001								
TCE Conc. (mg/L)	8.2	.001								
DCE Conc. (mg/L)	2.9	.001								
VC Conc. (mg/L)	3.3	.001								
ETH Conc. (mg/L)										
Distance from Source (ft)	0	650								
Date Data Collected	2010									

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

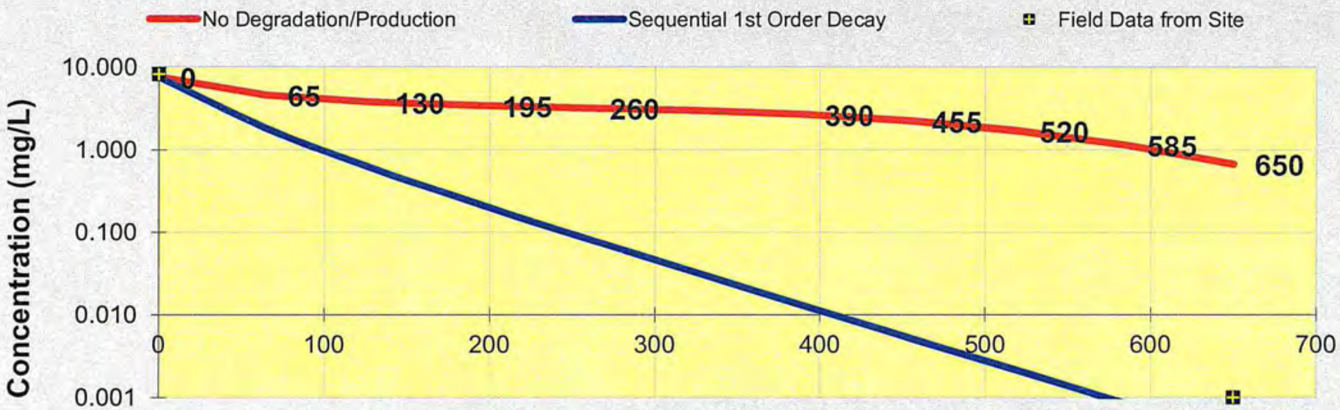
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	65	130	195	260	325	390	455	520	585	650
No Degradation	7.518	4.546	3.703	3.361	3.156	2.949	2.651	2.222	1.690	1.141	0.672
Biotransformation	7.5179	1.802	0.583	0.212	0.081	0.032	0.013	0.005	0.002	0.001	0.000

Monitoring Well Locations (ft)

	MW-13	MW-3									
	0	650									
Field Data from Site	8.200	0.001									



Distance From Source (ft.)

See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

39.0 Years

Log ⟺ Linear

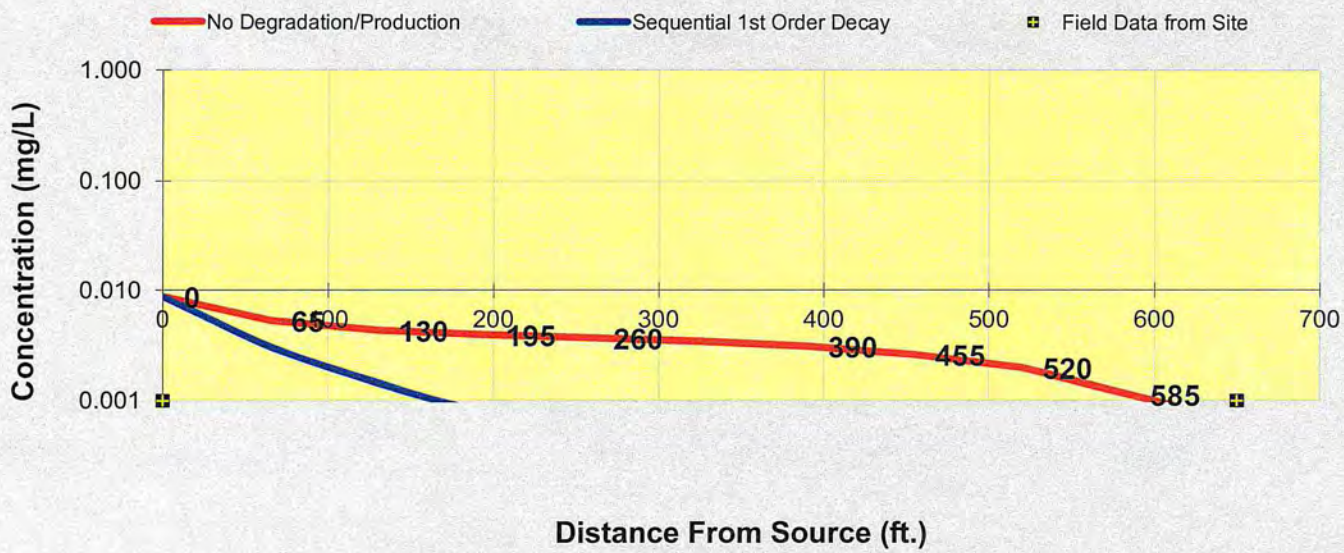
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	65	130	195	260	325	390	455	520	585	650
No Degradation	0.009	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.002	0.001	0.001
Biotransformation	0.0087	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	MW-13	MW-3	**Monitoring Well Locations (ft)**								
	0	650									
Field Data from Site	0.001	0.001									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

39.0 Years

Log ⟺ Linear

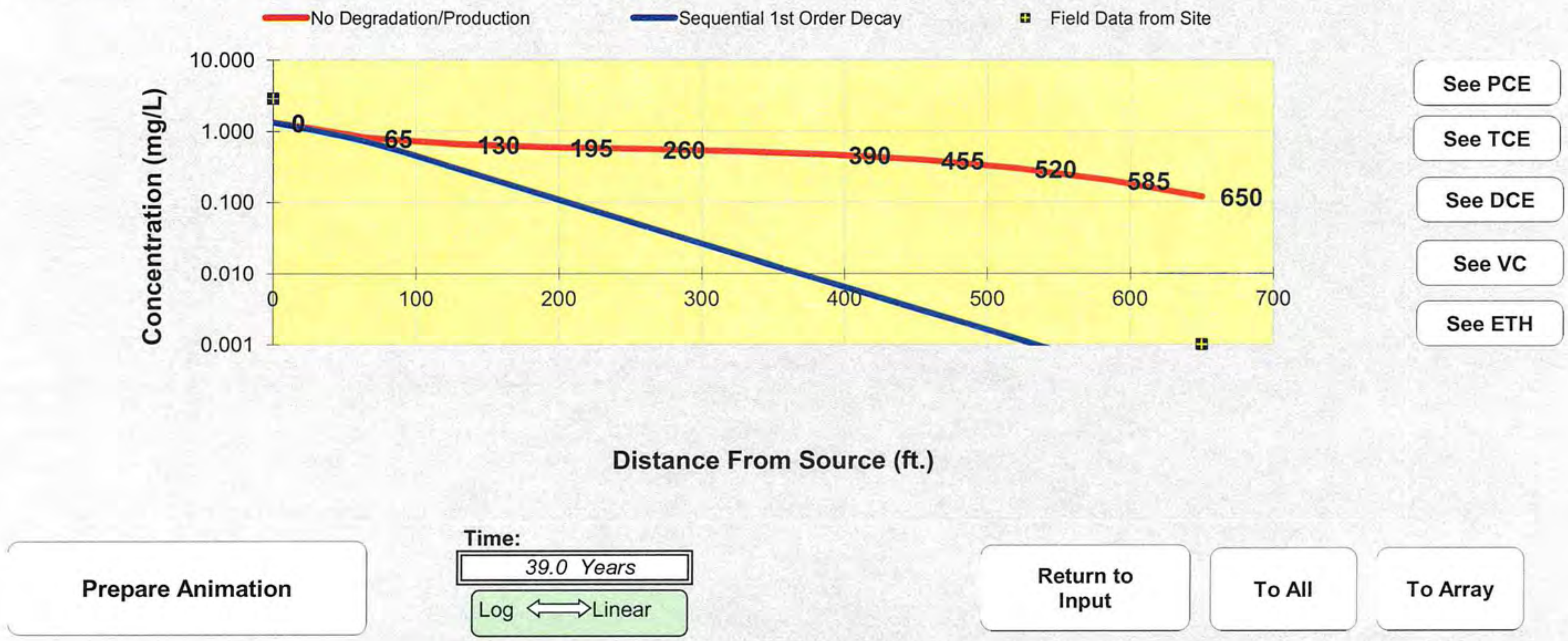
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

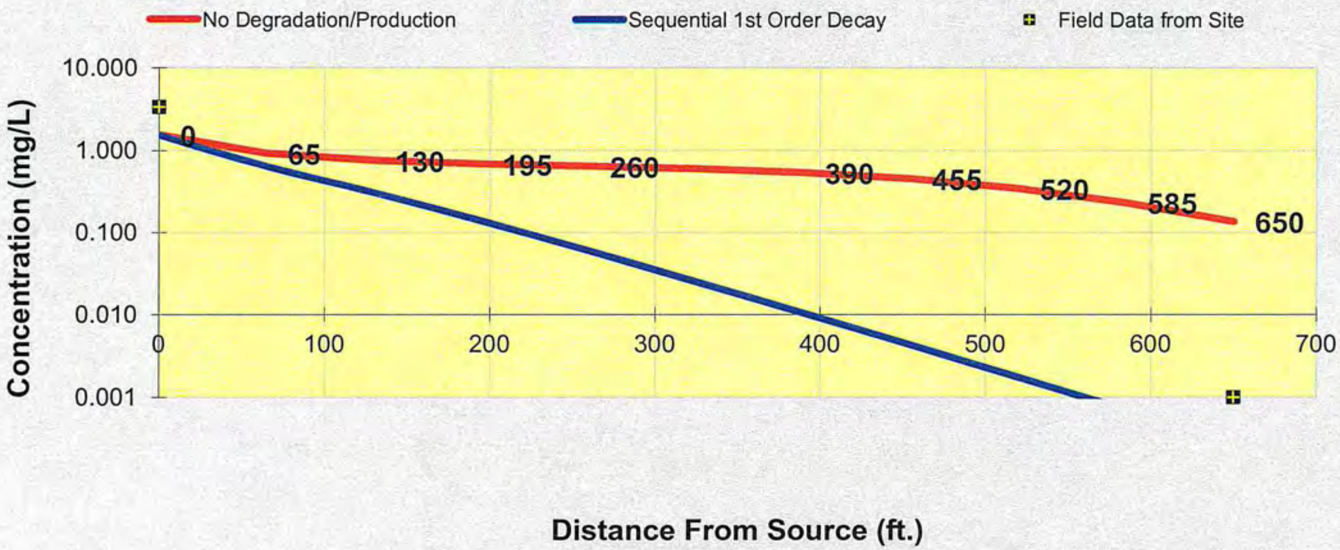
DCE	Distance from Source (ft)										
	0	65	130	195	260	325	390	455	520	585	650
No Degradation	1.329	0.804	0.655	0.594	0.558	0.521	0.469	0.393	0.299	0.202	0.119
Biotransformation	1.3294	0.719	0.290	0.114	0.045	0.018	0.007	0.003	0.001	0.000	0.000
	MW-13	MW-3	Monitoring Well Locations (ft)								
	0	650									
Field Data from Site	2.900	0.001									



DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

VC	Distance from Source (ft)										
	0	65	130	195	260	325	390	455	520	585	650
No Degradation	1.513	0.915	0.745	0.676	0.635	0.593	0.533	0.447	0.340	0.230	0.135
Biotransformation	1.5127	0.633	0.303	0.137	0.059	0.025	0.010	0.004	0.002	0.001	0.000

	MW-13	MW-3	Monitoring Well Locations (ft)								
	0	650									
Field Data from Site	3.300	0.001									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time: *39.0 Years*

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Shallow Zone - Validation
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	49.1	(ft/yr)
or			
Hydraulic Conductivity	K	1.1E-03	(cm/sec)
Hydraulic Gradient	i	0.0084	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	21.276	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)
FractionOrganicCarbon, foc	2.0E-3	(-)

Partition Coefficient	Koc		R	
PCE	155	(L/kg)	3.64	(-)
TCE	166	(L/kg)	3.82	(-)
DCE	35	(L/kg)	1.60	(-)
VC	19	(L/kg)	1.32	(-)
ETH	302	(L/kg)	6.13	(-)

Common R (used in model)* = 3.64

4. BIOTRANSFORMATION -1st Order Decay Coefficient*

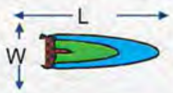
Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	1.980	0.35	0.64
VC → ETH	1.733	0.40	0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	43	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	650	(ft)
Zone 1 Length*	650	(ft)
Zone 2 Length*	0	(ft)



Zone 2= L - Zone 1

6. SOURCE DATA TYPE: Decaying Single Planar

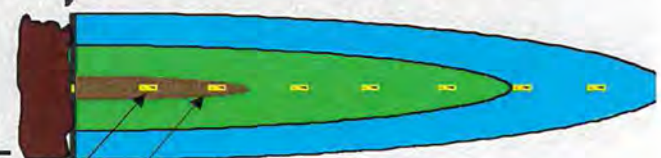
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Y1
Width* (ft) 25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.019	0.02
TCE	16.4	0.02
DCE	2.9	0.02
VC	3.3	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.001	.001	.001	.001							
TCE Conc. (mg/L)	4.77	.004	.001	.001							
DCE Conc. (mg/L)	1.71	.205	.001	.001							
VC Conc. (mg/L)	.516	.113	.013	.001							
ETH Conc. (mg/L)											
Distance from Source (ft)	0	130	350	650							
Date Data Collected	2014										

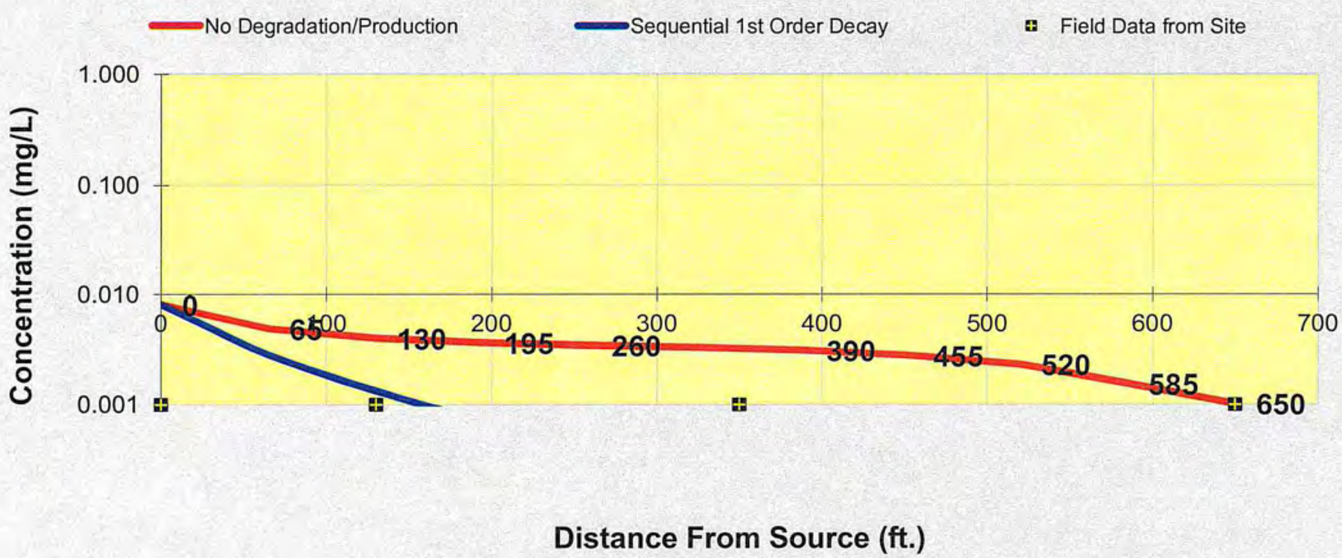
8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	65	130	195	260	325	390	455	520	585	650
No Degradation	0.008	0.005	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.001
Biotransformation	0.0080	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000

	MW-13	MW-19	MW-16	MW-3	Monitoring Well Locations (ft)						
	0	130	350	650							
Field Data from Site	0.001	0.001	0.001	0.001							



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

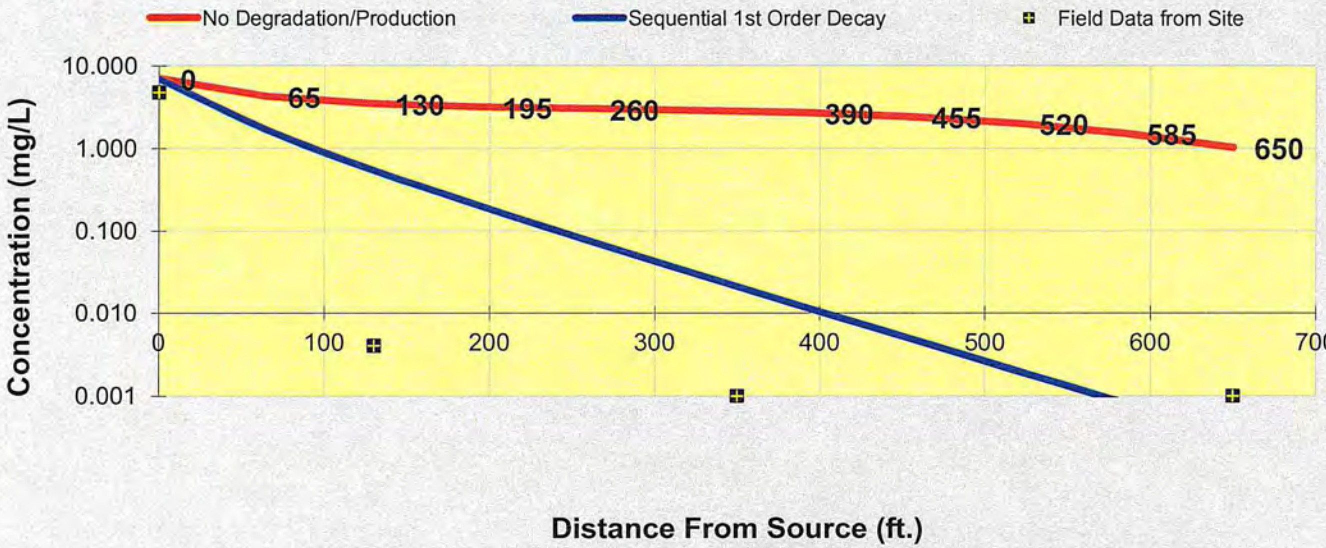
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	65	130	195	260	325	390	455	520	585	650
No Degradation	6.940	4.198	3.423	3.119	2.963	2.836	2.660	2.382	1.984	1.504	1.019
Biotransformation	6.9399	1.664	0.538	0.195	0.075	0.029	0.012	0.005	0.002	0.001	0.000

Monitoring Well Locations (ft)

	MW-13	MW-19	MW-16	MW-3							
	0	130	350	650							
Field Data from Site	4.770	0.004	0.001	0.001							



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

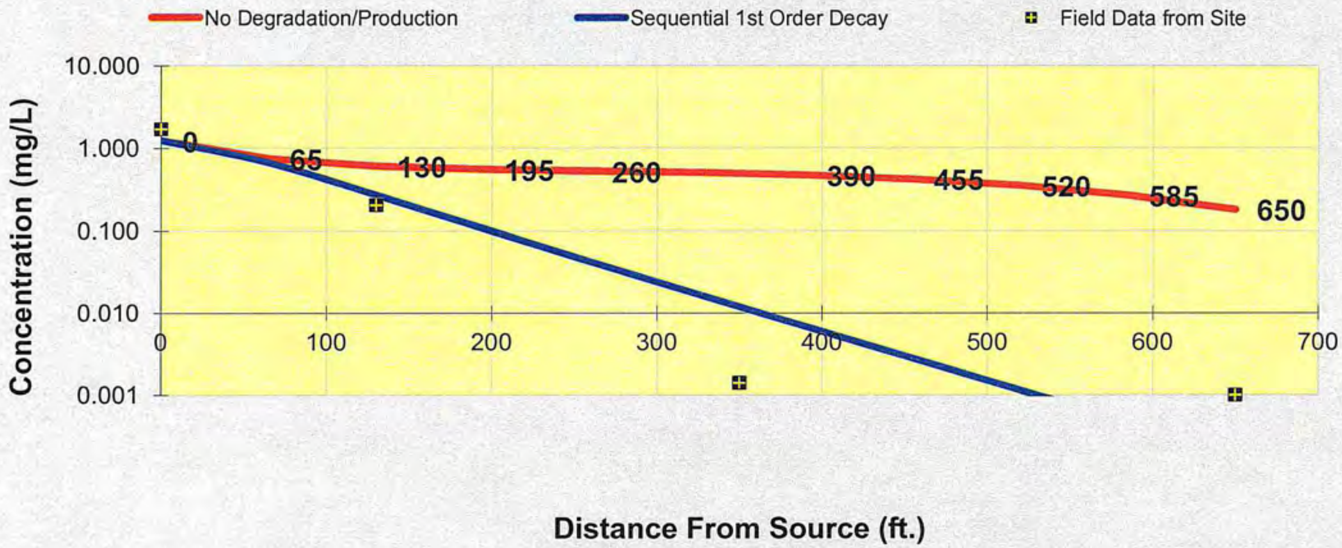
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	65	130	195	260	325	390	455	520	585	650
No Degradation	1.227	0.742	0.605	0.552	0.524	0.501	0.470	0.421	0.351	0.266	0.180
Biotransformation	1.2272	0.664	0.268	0.106	0.042	0.017	0.007	0.003	0.001	0.000	0.000
	MW-13	MW-19	MW-16	MW-3	Monitoring Well Locations (ft)						
	0	130	350	650							
Field Data from Site	1.710	0.205	0.001	0.001							



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

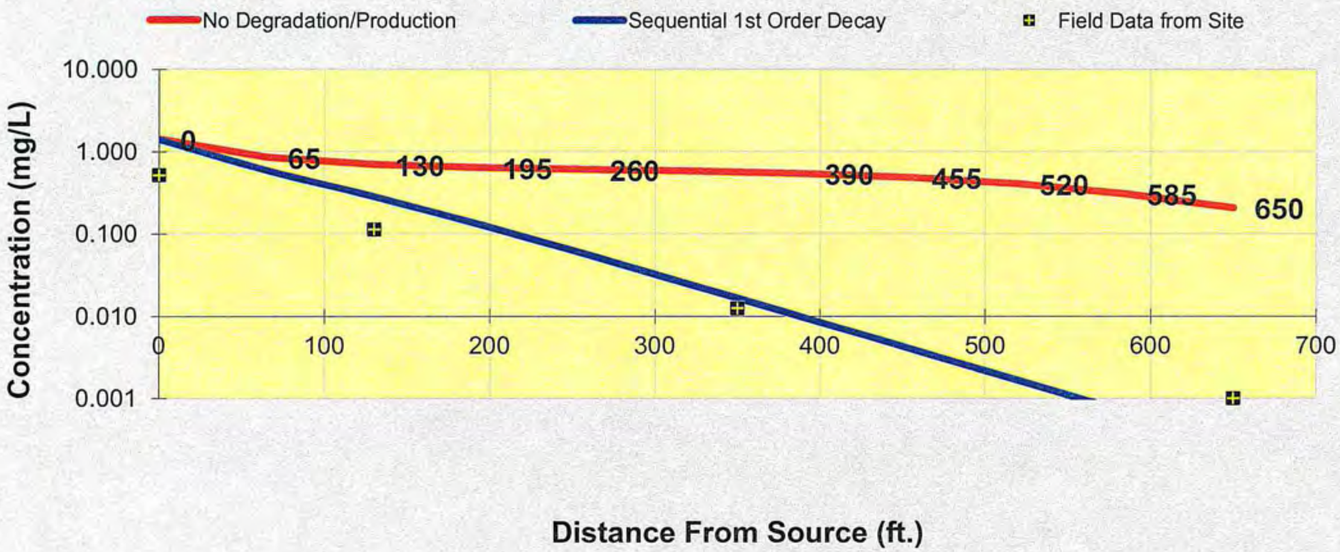
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	65	130	195	260	325	390	455	520	585	650
No Degradation	1.396	0.845	0.689	0.628	0.596	0.571	0.535	0.479	0.399	0.303	0.205
Biotransformation	1.3964	0.585	0.279	0.126	0.054	0.023	0.010	0.004	0.002	0.001	0.000

Monitoring Well Locations (ft)

	MW-13	MW-19	MW-16	MW-3							
	0	130	350	650							
Field Data from Site	0.516	0.113	0.013	0.001							



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Shallow Zone - 2015
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	49.1	(ft/yr)
or			
Hydraulic Conductivity	K	1.1E-03	(cm/sec)
Hydraulic Gradient	i	0.0084	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	21.276	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	2.0E-3	(-)		
Partition Coefficient	Koc			
PCE	155	(L/kg)	3.64	(-)
TCE	166	(L/kg)	3.82	(-)
DCE	35	(L/kg)	1.60	(-)
VC	19	(L/kg)	1.32	(-)
ETH	302	(L/kg)	6.13	(-)

Common R (used in model)* = 3.64

4. BIOTRANSFORMATION

-1st Order Decay Coefficient*

Zone 1

	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.578	1.20	0.74
DCE → VC	1.980	0.35	0.64
VC → ETH	2.100	0.33	0.45

Zone 2

	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	44	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	900	(ft)
Zone 1 Length*	900	(ft)
Zone 2 Length*	0	(ft)

Zone 2= L - Zone 1

6. SOURCE DATA

TYPE: Decaying Single Planar

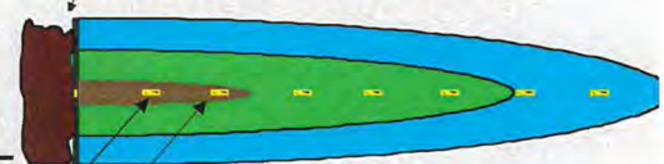
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Y1
Width* (ft) 20

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.019	0.02
TCE	16.4	0.02
DCE	2.9	0.02
VC	3.3	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.001	.001	.001	.001	.001						
TCE Conc. (mg/L)	4.77	.005	.006	.002	.001						
DCE Conc. (mg/L)	1.71	.205	.003	.001	.001						
VC Conc. (mg/L)	.657	.113	.007	.001	.001						
ETH Conc. (mg/L)											
Distance from Source (ft)	0	140	350	650	850						
Date Data Collected	2015										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

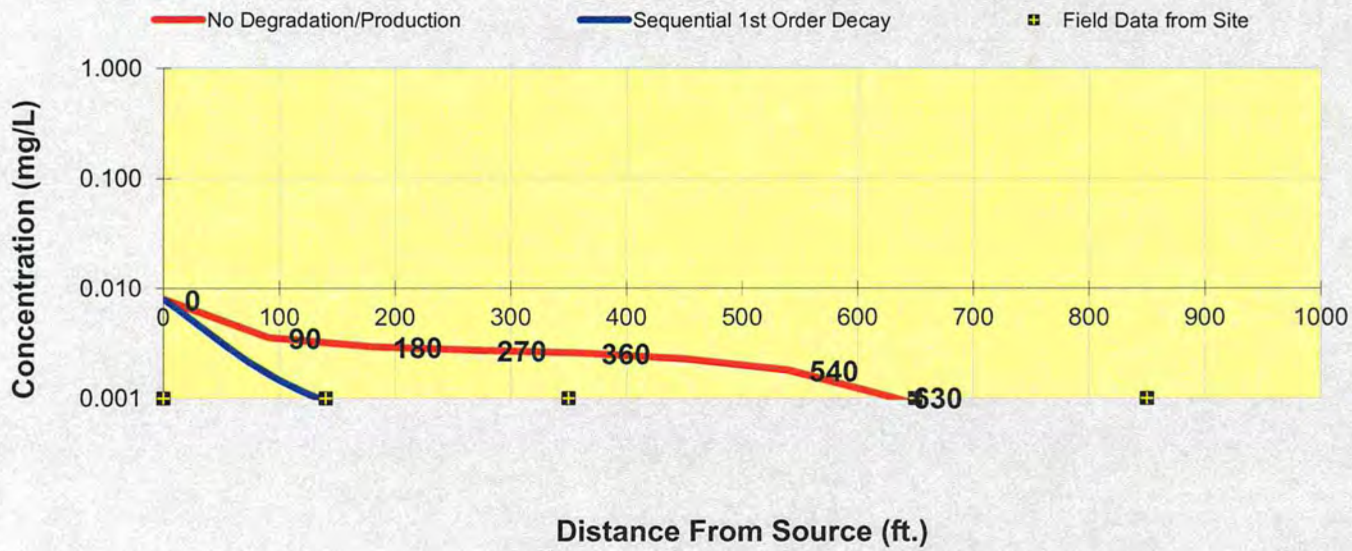
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

PCE	0	90	180	270	360	450	540	630	720	810	900
No Degradation	0.008	0.004	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Biotransformation	0.0079	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	MW-3	MW-19	MW-16	MW-3							
	0	140	350	650	850						
Field Data from Site	0.001	0.001	0.001	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

44.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

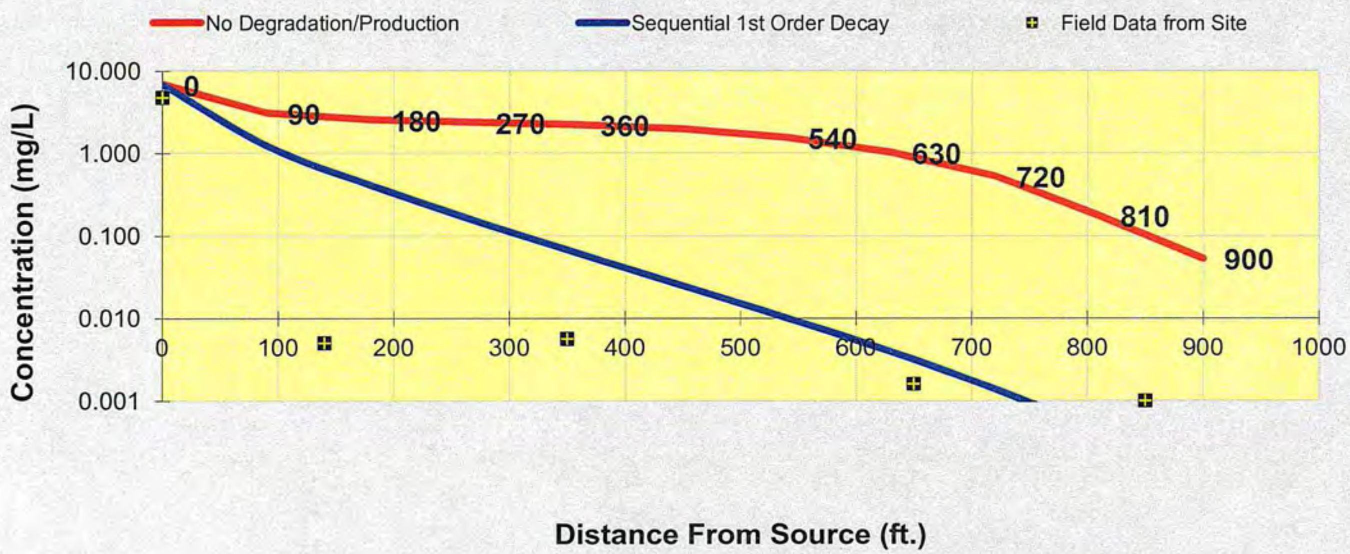
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	90	180	270	360	450	540	630	720	810	900
No Degradation	6.802	3.048	2.518	2.335	2.195	1.949	1.530	1.003	0.523	0.174	0.053
Biotransformation	6.8024	1.218	0.403	0.152	0.060	0.025	0.010	0.004	0.001	0.000	0.000

Monitoring Well Locations (ft)

	MW-3	MW-19	MW-16	MW-3							
	0	140	350	650	850						
Field Data from Site	4.770	0.005	0.006	0.002	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

44.0 Years

Log ⟺ Linear

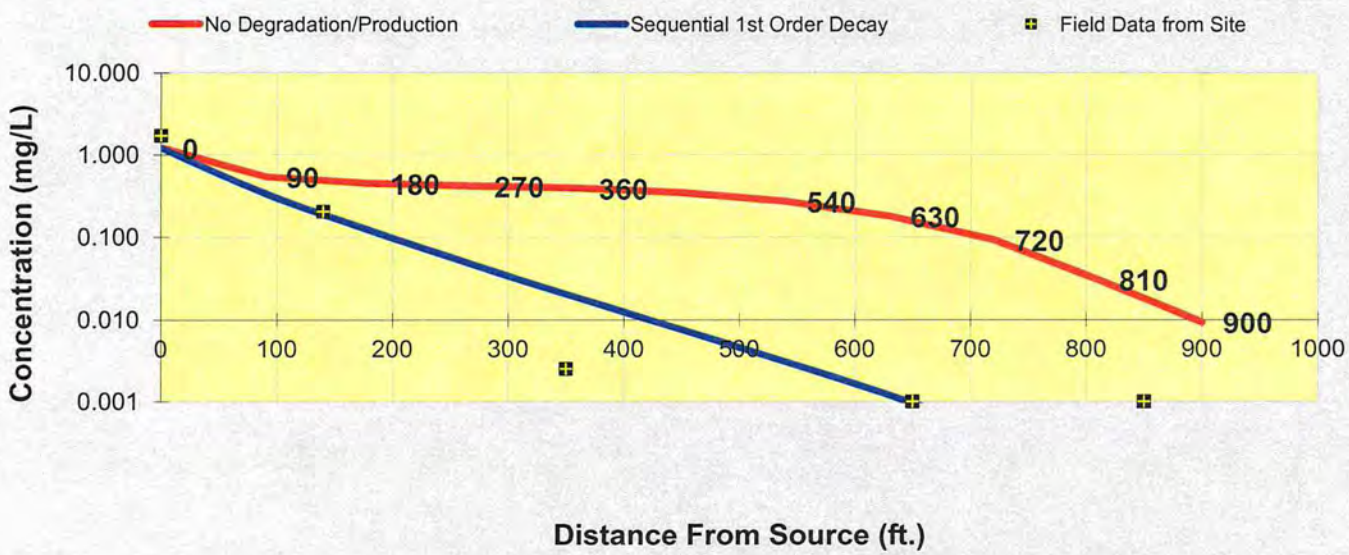
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	90	180	270	360	450	540	630	720	810	900
No Degradation	1.203	0.539	0.445	0.413	0.388	0.345	0.271	0.177	0.092	0.031	0.009
Biotransformation	1.2029	0.336	0.120	0.046	0.018	0.008	0.003	0.001	0.000	0.000	0.000
Monitoring Well Locations (ft)	MW-3	MW-19	MW-16	MW-3							
	0	140	350	650	850						
Field Data from Site	1.710	0.205	0.003	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

44.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

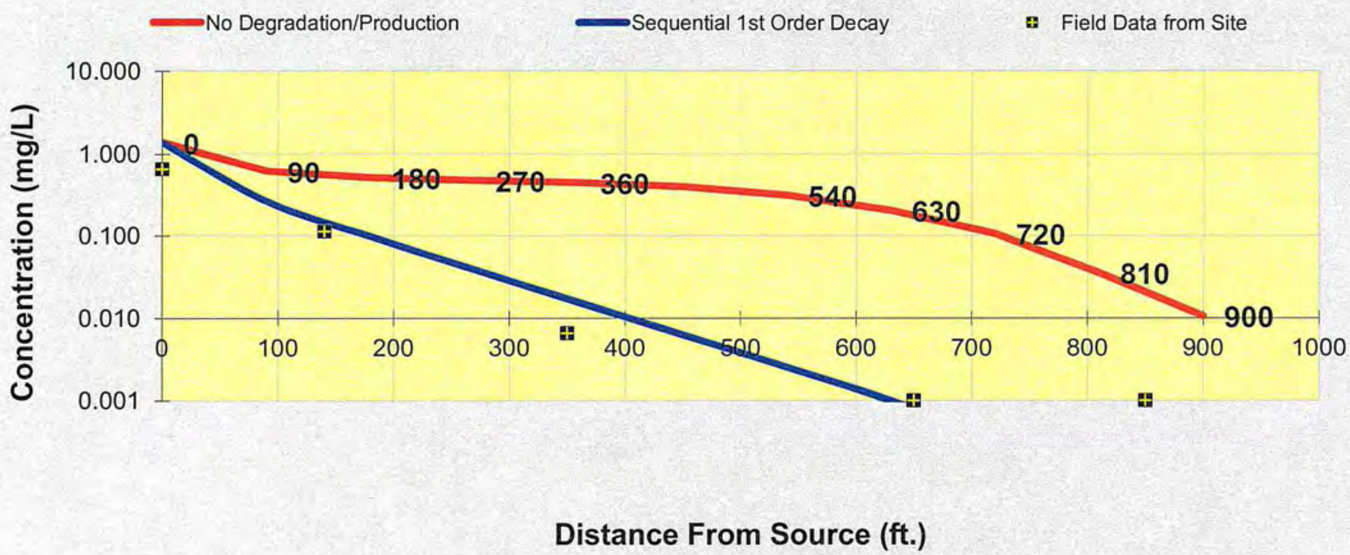
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	90	180	270	360	450	540	630	720	810	900
No Degradation	1.369	0.613	0.507	0.470	0.442	0.392	0.308	0.202	0.105	0.035	0.011
Biotransformation	1.3688	0.261	0.097	0.038	0.015	0.006	0.003	0.001	0.000	0.000	0.000

Monitoring Well Locations (ft)

	MW-3	MW-19	MW-16	MW-3							
	0	140	350	650	850						
Field Data from Site	0.657	0.113	0.007	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

44.0 Years

Log ⟺ Linear

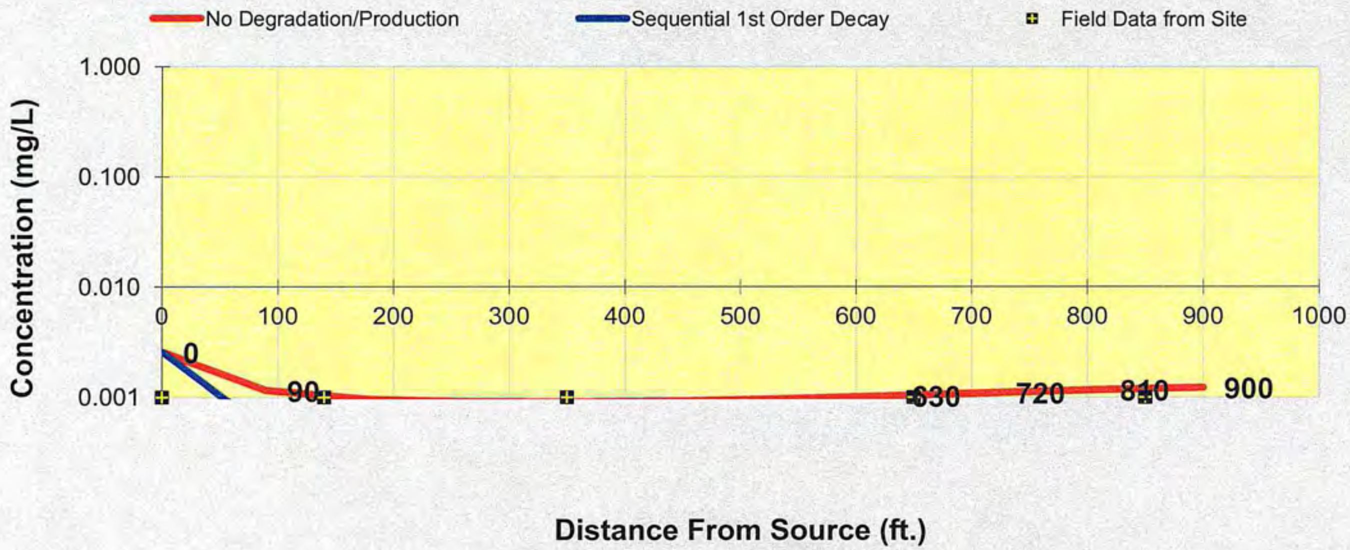
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	90	180	270	360	450	540	630	720	810	900
No Degradation	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Biotransformation	0.0026	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Monitoring Well Locations (ft)	MW-3	MW-19	MW-16	MW-3							
	0	140	350	650	850						
Field Data from Site	0.001	0.001	0.001	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

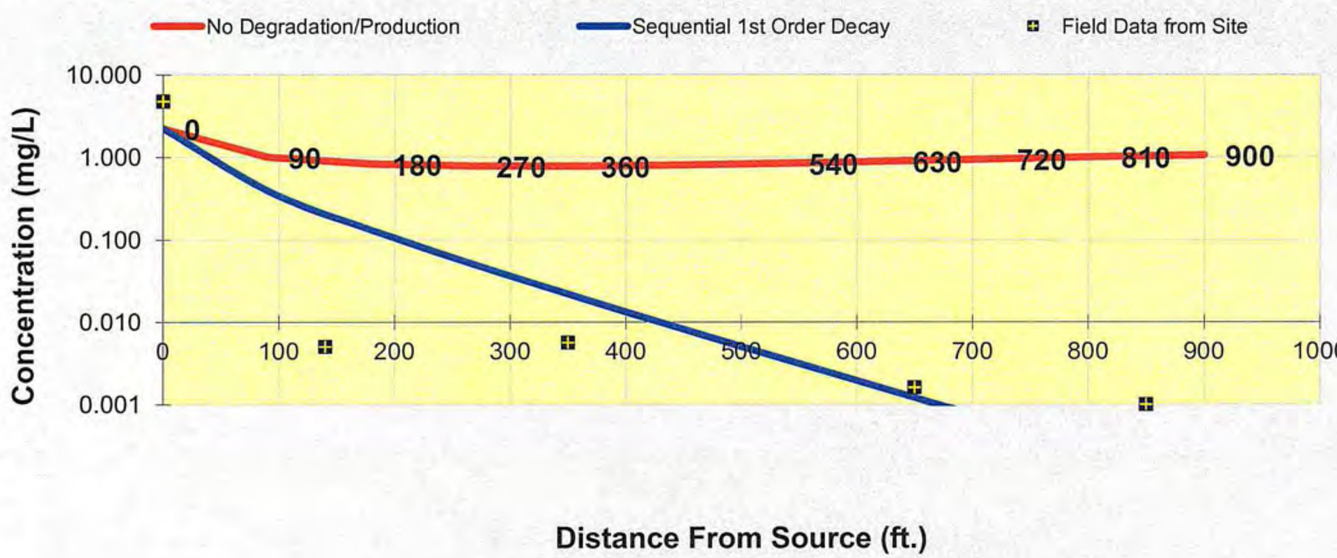
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	90	180	270	360	450	540	630	720	810	900
No Degradation	2.219	0.995	0.825	0.778	0.776	0.799	0.837	0.889	0.949	1.006	1.056
Biotransformation	2.2195	0.397	0.132	0.050	0.020	0.008	0.003	0.001	0.001	0.000	0.000
	MW-3	MW-19	MW-16	MW-3	Monitoring Well Locations (ft)						
	0	140	350	650	850						
Field Data from Site	4.770	0.005	0.006	0.002	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

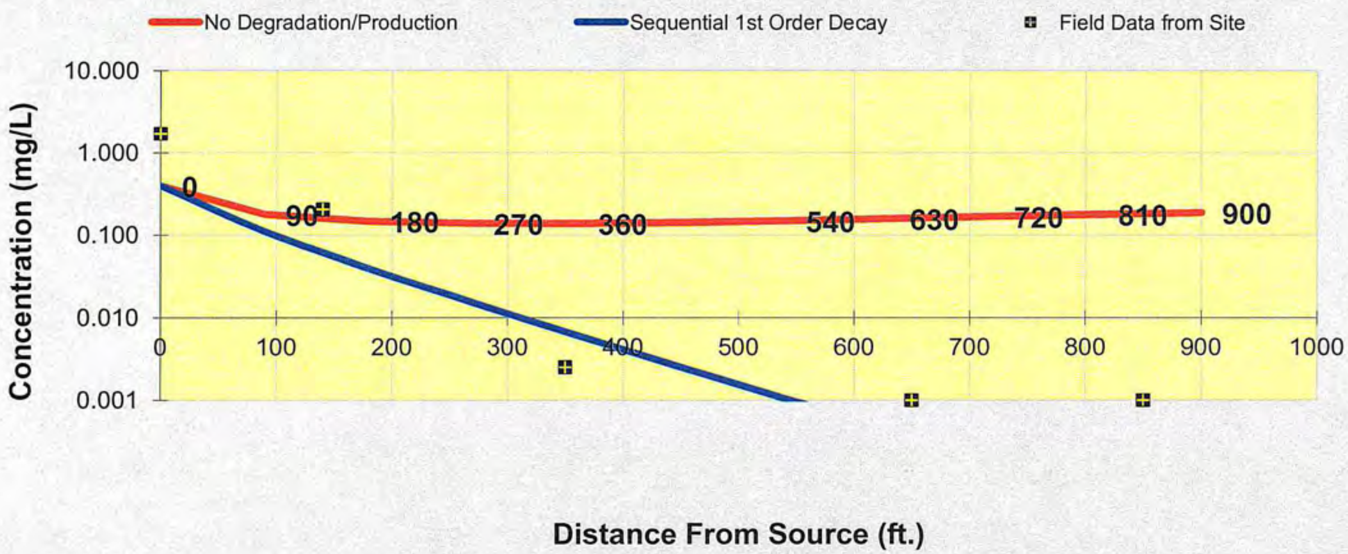
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	90	180	270	360	450	540	630	720	810	900
No Degradation	0.392	0.176	0.146	0.138	0.137	0.141	0.148	0.157	0.168	0.178	0.187
Biotransformation	0.3925	0.110	0.039	0.015	0.006	0.002	0.001	0.000	0.000	0.000	0.000
	MW-3	MW-19	MW-16	MW-3	Monitoring Well Locations (ft)						
	0	140	350	650	850						
Field Data from Site	1.710	0.205	0.003	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

Return to Input

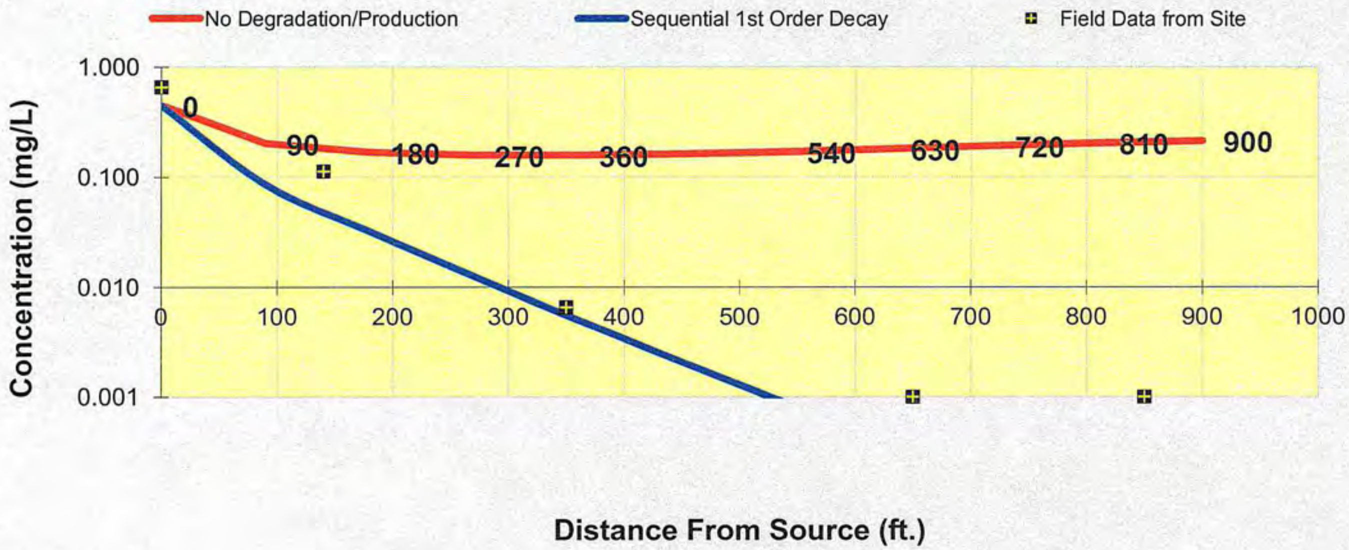
To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

VC	Distance from Source (ft)										
	0	90	180	270	360	450	540	630	720	810	900
No Degradation	0.447	0.200	0.166	0.157	0.156	0.161	0.169	0.179	0.191	0.203	0.212
Biotransformation	0.4466	0.085	0.032	0.012	0.005	0.002	0.001	0.000	0.000	0.000	0.000

	MW-3	MW-19	MW-16	MW-3	Monitoring Well Locations (ft)						
	0	140	350	650	850						
Field Data from Site	0.657	0.113	0.007	0.001	0.001						



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Intermediate Zone Calibration
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	20.3	(ft/yr)
or			
Hydraulic Conductivity	K	1.4E-04	(cm/sec)
Hydraulic Gradient	i	0.028	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	18.158	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	1.0E-3	(-)		
Partition Coefficient	Koc			
PCE	155	(L/kg)	2.32	(-)
TCE	166	(L/kg)	2.41	(-)
DCE	35	(L/kg)	1.30	(-)
VC	19	(L/kg)	1.16	(-)
ETH	302	(L/kg)	3.57	(-)
Common R (used in model)* =			2.32	

4. BIOTRANSFORMATION

-1st Order Decay Coefficient*

Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	0.578	1.20	0.64
VC → ETH	0.924	0.75	0.45

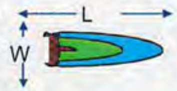
Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	30	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	500	(ft)
Zone 1 Length*	500	(ft)
Zone 2 Length*	0	(ft)

Zone 2= L - Zone 1



6. SOURCE DATA

TYPE: Decaying Single Planar

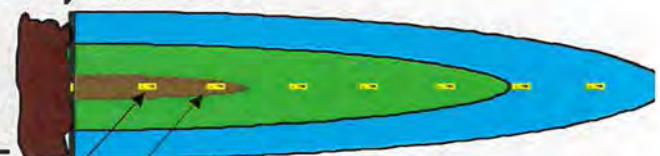
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Width* (ft) Y1: 25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.25	0.02
TCE	85.5	0.02
DCE	20.0	0.02
VC	6.8	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

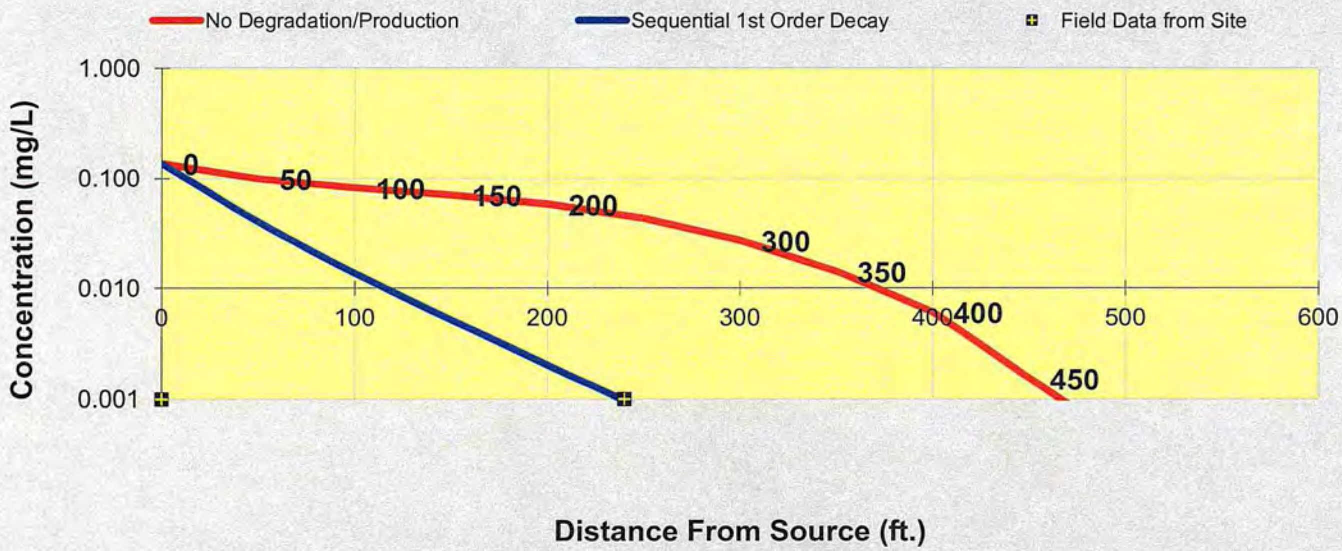
PCE Conc. (mg/L)	.001	.001									
TCE Conc. (mg/L)	3.3	.025									
DCE Conc. (mg/L)	20.0	.48									
VC Conc. (mg/L)	6.8	.035									
ETH Conc. (mg/L)											
Distance from Source (ft)	0	240									
Date Data Collected	2001										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	0.137	0.099	0.082	0.071	0.058	0.043	0.027	0.014	0.006	0.002	0.000
Biotransformation	0.1372	0.040	0.014	0.005	0.002	0.001	0.000	0.000	0.000	0.000	0.000
Monitoring Well Locations (ft)	PZ-2	MW-2									
	0	240									
Field Data from Site	0.001	0.001									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

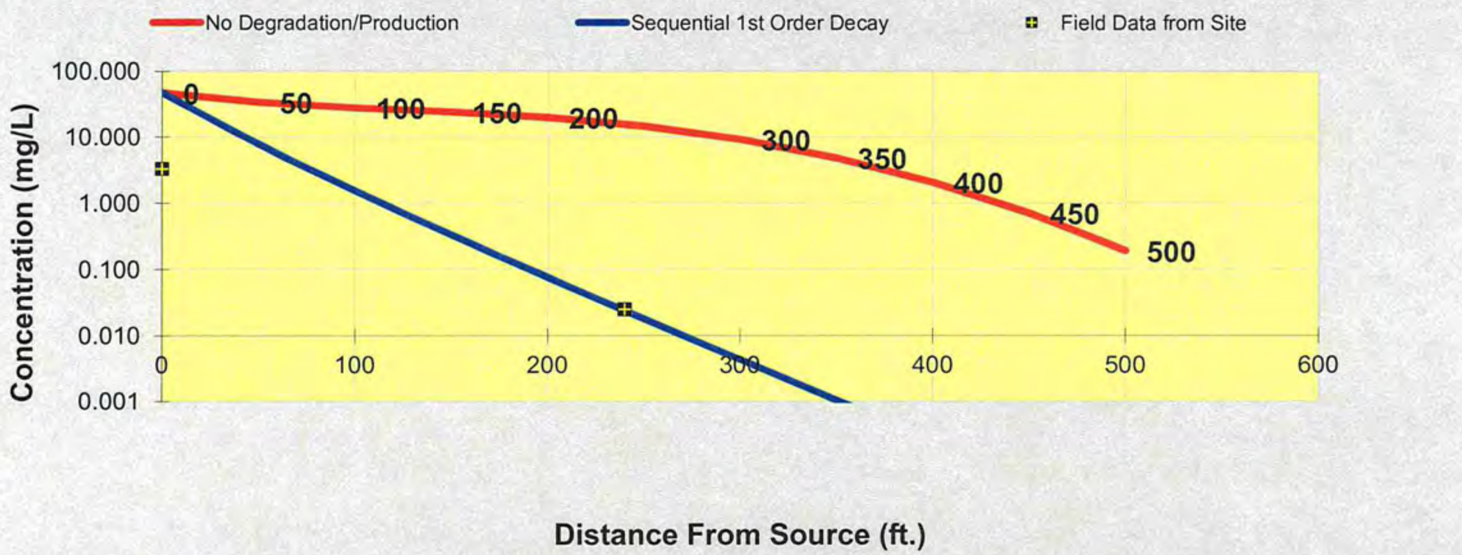
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	50	100	150	200	250	300	350	400	450	500
No Degradation	46.923	33.926	27.987	24.175	19.894	14.662	9.256	4.850	2.065	0.704	0.190
Biotransformation	46.9234	7.840	1.533	0.332	0.076	0.018	0.004	0.001	0.000	0.000	0.000

Monitoring Well Locations (ft)

	PZ-2	MW-2									
	0	240									
Field Data from Site	3.300	0.025									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

30.0 Years

Log ⟺ Linear

Return to Input

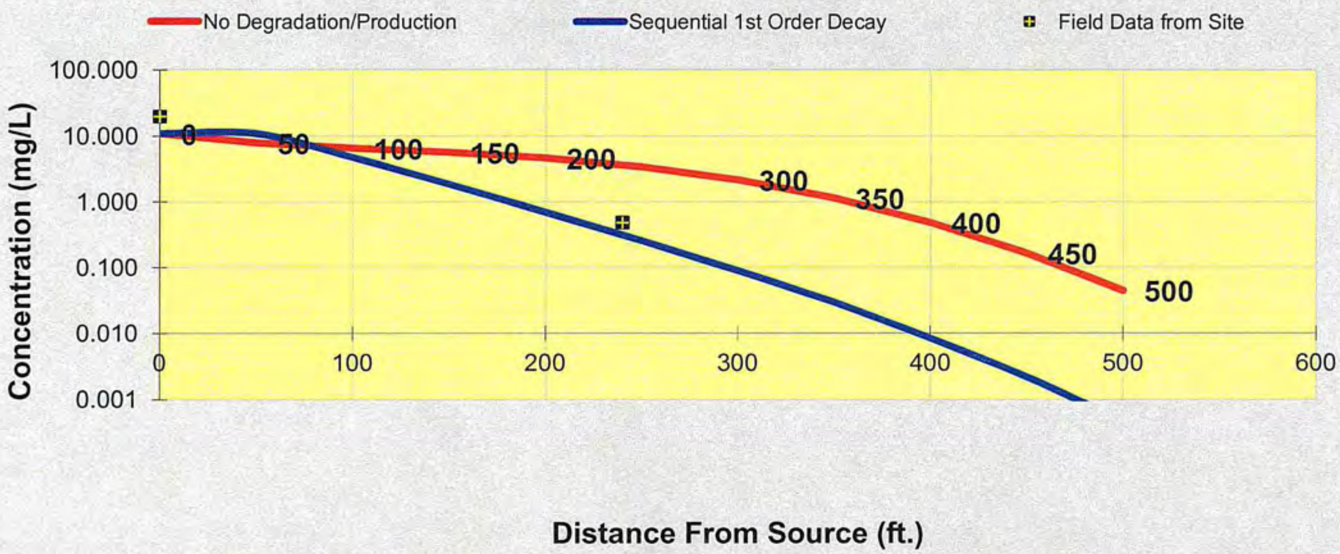
To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	10.976	7.936	6.547	5.655	4.654	3.430	2.165	1.135	0.483	0.165	0.045
Biotransformation	10.9762	10.889	4.722	1.843	0.689	0.251	0.088	0.029	0.008	0.002	0.000

	PZ-2	MW-2	Monitoring Well Locations (ft)								
	0	240									
Field Data from Site	20.000	0.480									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

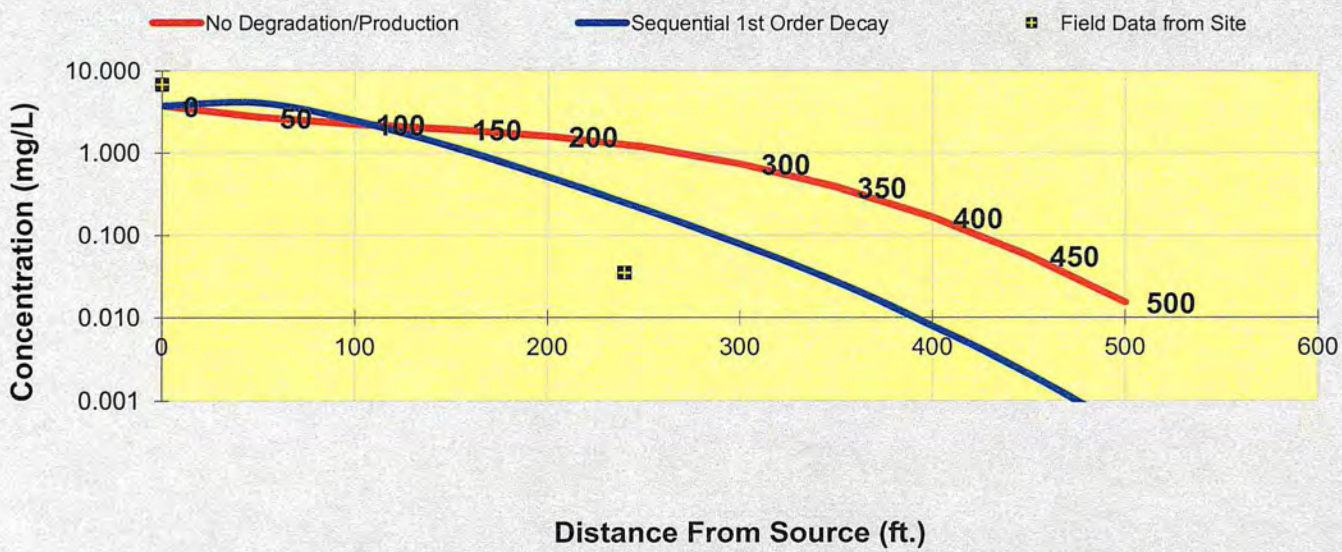
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	50	100	150	200	250	300	350	400	450	500
No Degradation	3.732	2.698	2.226	1.923	1.582	1.166	0.736	0.386	0.164	0.056	0.015
Biotransformation	3.7319	4.058	2.439	1.181	0.511	0.206	0.078	0.027	0.008	0.002	0.000

Monitoring Well Locations (ft)

	PZ-2	MW-2									
	0	240									
Field Data from Site	6.800	0.035									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time: 30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Intermediate Zone Validation
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
↑ *or* 2. Calculate by filling in gray
0.02 cells. Press Enter, then (C)
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ● Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	20.3	(ft/yr)
or			
Hydraulic Conductivity	K	1.4E-04	(cm/sec)
Hydraulic Gradient	i	0.028	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	18.158	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	1.0E-3	(-)		
Partition Coefficient	Koc			
PCE	155	(L/kg)	2.32	(-)
TCE	166	(L/kg)	2.41	(-)
DCE	35	(L/kg)	1.30	(-)
VC	19	(L/kg)	1.16	(-)
ETH	302	(L/kg)	3.57	(-)
Common R (used in model)* =			**2.32**	

4. BIOTRANSFORMATION

-1st Order Decay Coefficient*

Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	0.578	1.20	0.64
VC → ETH	0.924	0.75	0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	43	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	500	(ft)
Zone 1 Length*	500	(ft)
Zone 2 Length*	0	(ft)

L W
Zone 2= L - Zone 1

6. SOURCE DATA

TYPE: Decaying Single Planar

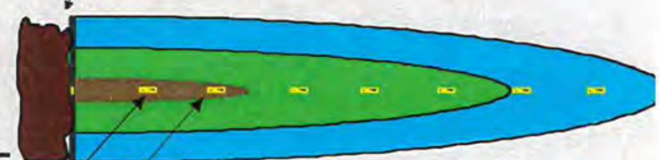
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Y1
Width* (ft) 25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.25	0.02
TCE	85.5	0.02
DCE	20.0	0.02
VC	6.8	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.025	.004	.001								
TCE Conc. (mg/L)	10.3	3.22	.002								
DCE Conc. (mg/L)	3.34	2.53	.16								
VC Conc. (mg/L)	.305	.181	.159								
ETH Conc. (mg/L)											
Distance from Source (ft)	0	30	240								
Date Data Collected	2014										

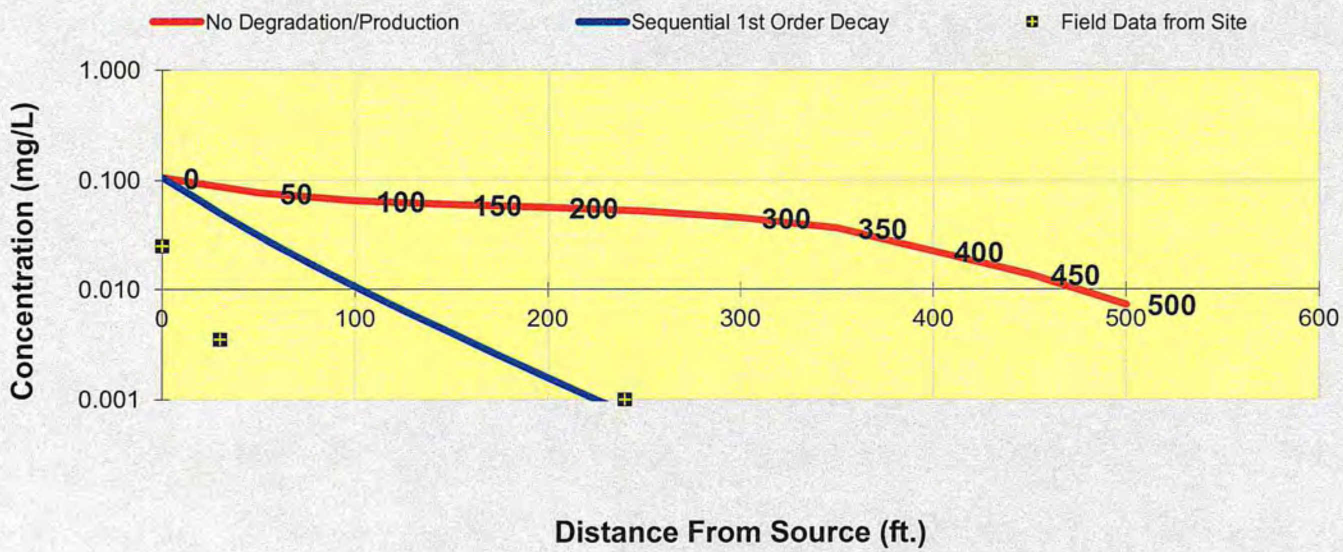
8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | *Help* | Restore | RESET | *SEE OUTPUT* | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	0.106	0.077	0.065	0.060	0.057	0.052	0.045	0.036	0.022	0.014	0.007
Biotransformation	0.1058	0.031	0.011	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000

	Monitoring Well Locations (ft)										
	PZ-2	MW-2									
	0	30	240								
Field Data from Site	0.025	0.004	0.001								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

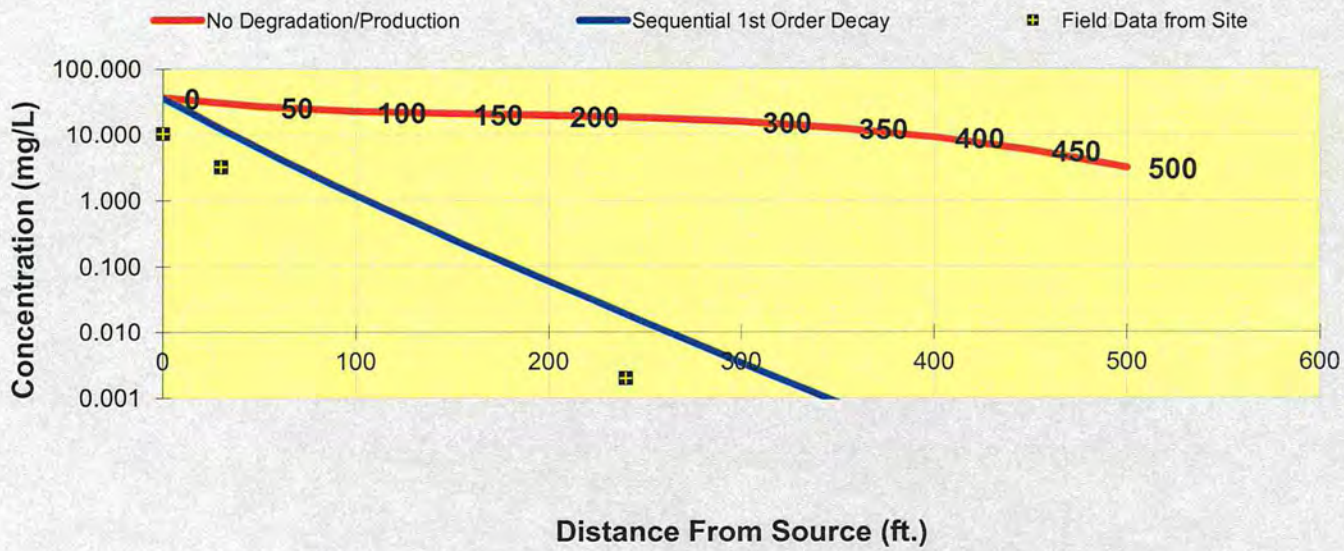
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	36.180	26.320	22.264	20.562	19.364	17.842	15.546	12.442	8.933	5.650	3.106
Biotransformation	36.1803	6.045	1.182	0.256	0.059	0.014	0.003	0.001	0.000	0.000	0.000
	PZ-2	MW-2		Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	10.300	3.220	0.002								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

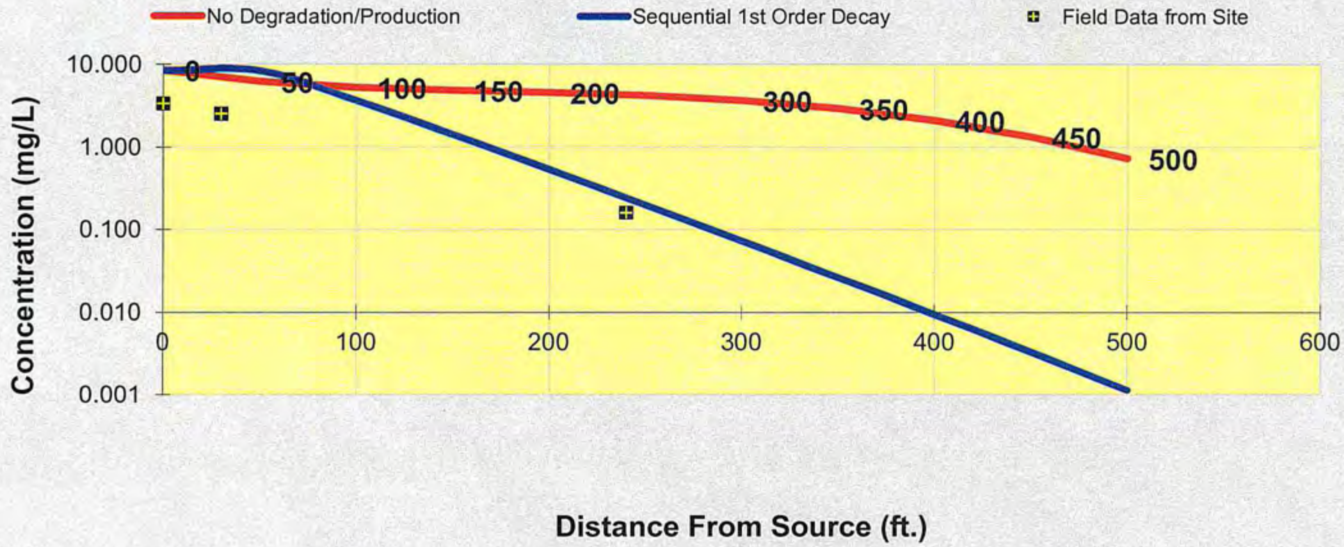
To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE

	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	8.463	6.157	5.208	4.810	4.530	4.174	3.636	2.910	2.090	1.322	0.727
Biotransformation	8.4632	8.396	3.641	1.422	0.534	0.197	0.072	0.026	0.009	0.003	0.001

	Monitoring Well Locations (ft)										
	PZ-2	MW-2									
	0	30	240								
Field Data from Site	3.340	2.530	0.160								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

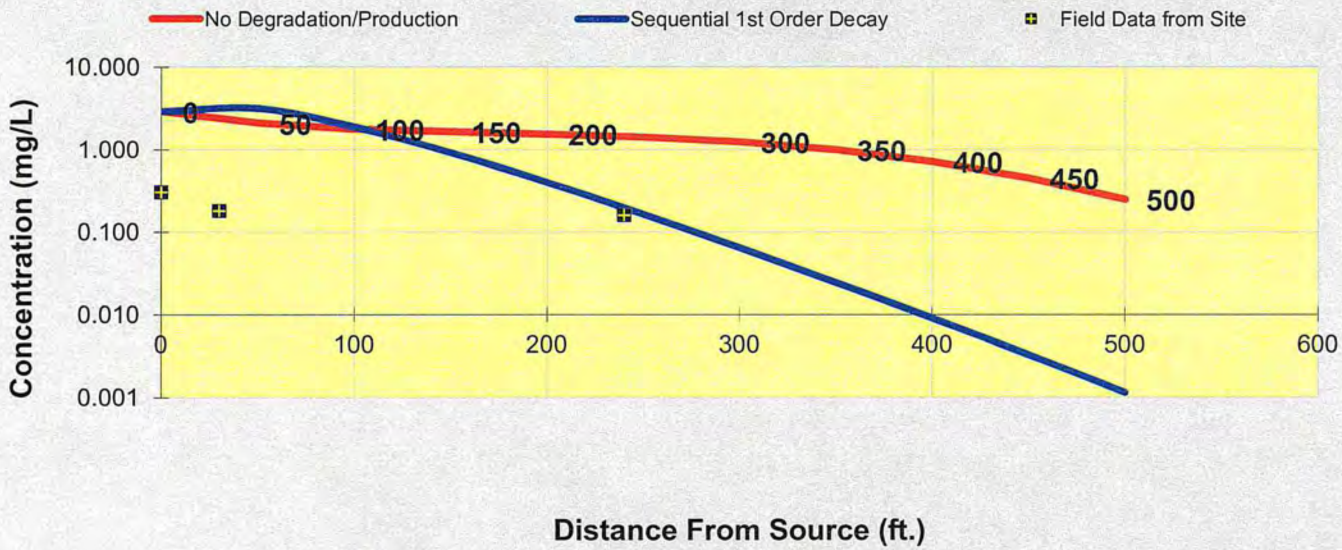
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

VC	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	2.878	2.093	1.771	1.635	1.540	1.419	1.236	0.990	0.710	0.449	0.247
Biotransformation	2.8775	3.129	1.881	0.912	0.396	0.162	0.064	0.024	0.009	0.003	0.001
	PZ-2	MW-2		Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	0.305	0.181	0.159								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Intermediate Zone - 2015
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then (C)
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	20.3	(ft/yr)
or			
Hydraulic Conductivity	K	1.4E-04	(cm/sec)
Hydraulic Gradient	i	0.028	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	18.158	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	1.0E-3	(-)		
Partition Coefficient	Koc		R	
PCE	155	(L/kg)	2.32	(-)
TCE	166	(L/kg)	2.41	(-)
DCE	36	(L/kg)	1.31	(-)
VC	19	(L/kg)	1.16	(-)
ETH	302	(L/kg)	3.57	(-)
Common R (used in model)* =			**2.32**	

4. BIOTRANSFORMATION **-1st Order Decay Coefficient***

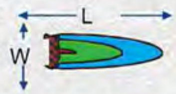
Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	0.578	1.20	0.64
VC → ETH	0.924	0.75	0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	43	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	500	(ft)
Zone 1 Length*	500	(ft)
Zone 2 Length*	0	(ft)



Zone 2= L - Zone 1

6. SOURCE DATA TYPE: Decaying Single Planar

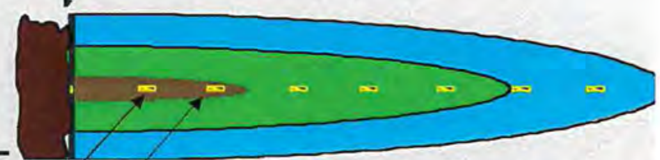
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Width* (ft) Y1: 25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.25	0.02
TCE	85.5	0.02
DCE	20.0	0.02
VC	6.8	0.02
ETH		0.02

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.025	.002	.001								
TCE Conc. (mg/L)	46.3	3.01	.002								
DCE Conc. (mg/L)	7.28	1.66	.145								
VC Conc. (mg/L)	1.62	.68	.12								
ETH Conc. (mg/L)											
Distance from Source (ft)	0	30	240								
Date Data Collected	2015										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

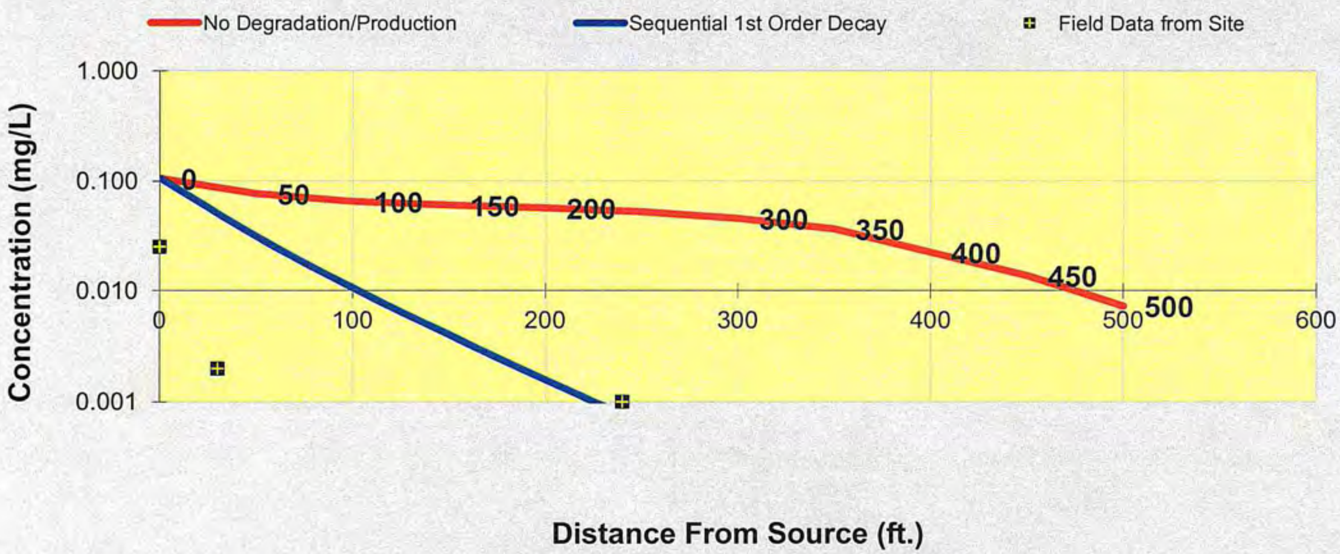
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

PCE	0	50	100	150	200	250	300	350	400	450	500
No Degradation	0.106	0.077	0.065	0.060	0.057	0.052	0.045	0.036	0.022	0.014	0.007
Biotransformation	0.1058	0.031	0.011	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	PZ-2	MW-18	MW-2								
	0	30	240								
Field Data from Site	0.025	0.002	0.001								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

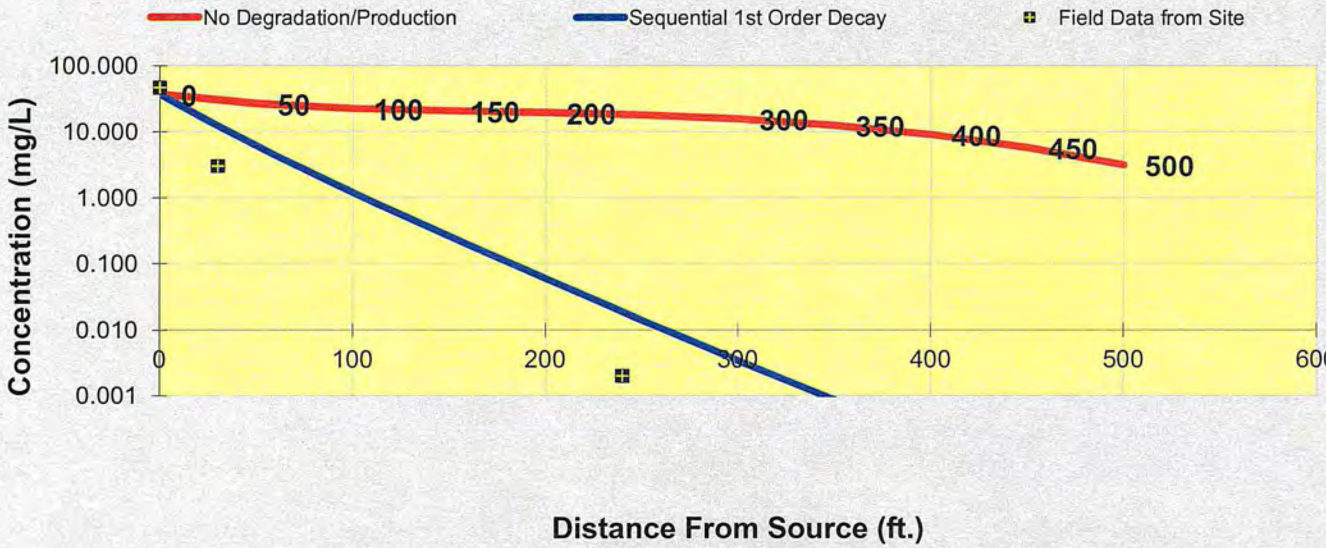
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	36.180	26.320	22.264	20.562	19.364	17.842	15.546	12.442	8.933	5.650	3.106
Biotransformation	36.1803	6.045	1.182	0.256	0.059	0.014	0.003	0.001	0.000	0.000	0.000
	PZ-2	MW-18	MW-2	**Monitoring Well Locations (ft)**							
	0	30	240								
Field Data from Site	46.300	3.010	0.002								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

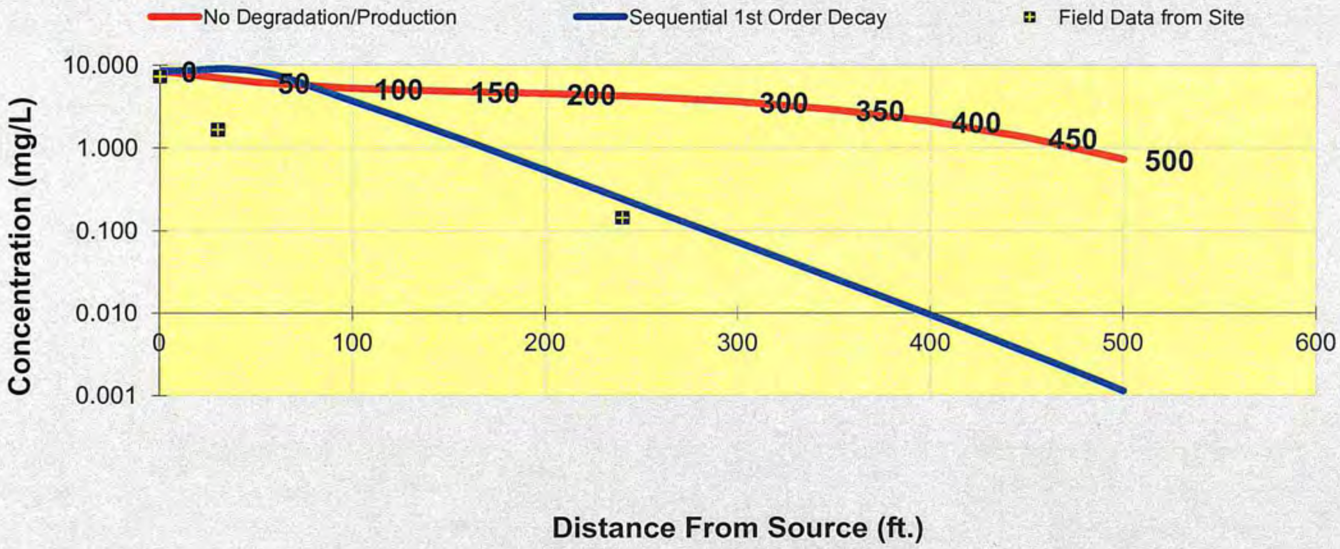
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	8.463	6.157	5.208	4.810	4.530	4.174	3.636	2.910	2.090	1.322	0.727
Biotransformation	8.4632	8.396	3.641	1.422	0.534	0.197	0.072	0.026	0.009	0.003	0.001
	PZ-2	MW-18	MW-2	Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	7.280	1.660	0.145								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

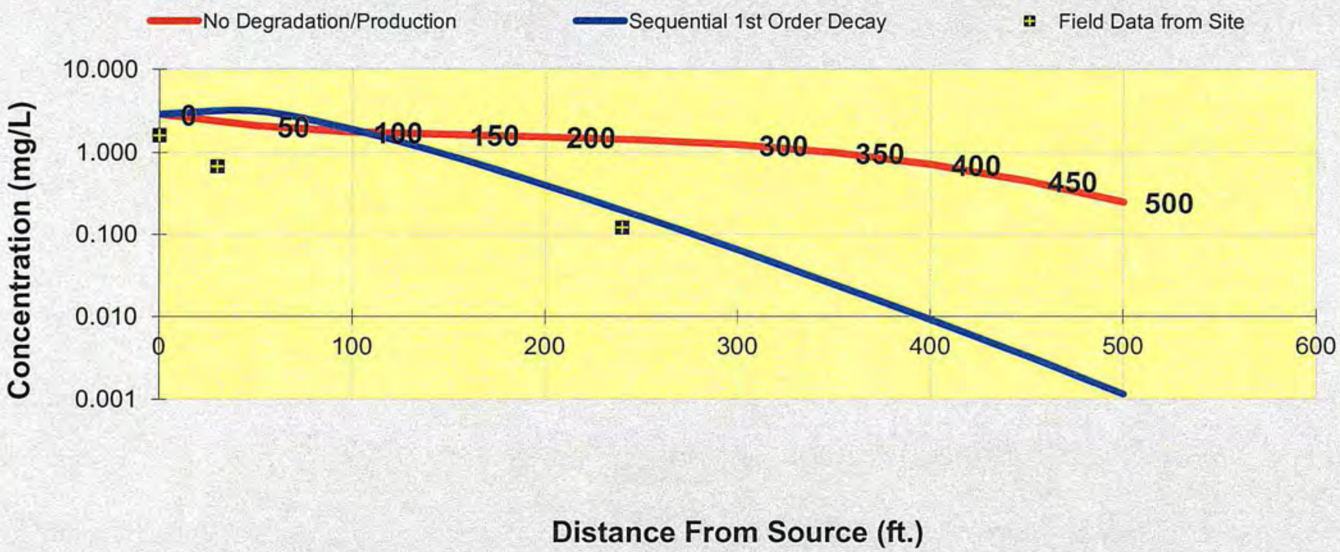
To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

VC	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	2.878	2.093	1.771	1.635	1.540	1.419	1.236	0.990	0.710	0.449	0.247
Biotransformation	2.8775	3.129	1.881	0.912	0.396	0.162	0.064	0.024	0.009	0.003	0.001

	PZ-2	MW-18	MW-2	Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	1.620	0.680	0.120								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

43.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Legion Industries
Intermediate Zone - 2015
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
or 2. Calculate by filling in gray
0.02 cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	20.3	(ft/yr)
or			
Hydraulic Conductivity	K	1.4E-04	(cm/sec)
Hydraulic Gradient	i	0.028	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	18.158	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R

or

Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	1.0E-3	(-)		
Partition Coefficient	Koc			
PCE	155	(L/kg)	2.32	(-)
TCE	166	(L/kg)	2.41	(-)
DCE	36	(L/kg)	1.31	(-)
VC	19	(L/kg)	1.16	(-)
ETH	302	(L/kg)	3.57	(-)

Common R (used in model)* = 2.32

4. BIOTRANSFORMATION

-1st Order Decay Coefficient*

Zone 1

	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	0.462	1.50	0.79
TCE → DCE	0.866	0.80	0.74
DCE → VC	0.578	1.20	0.64
VC → ETH	0.924	0.75	0.45

Zone 2

	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	100	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	500	(ft)
Zone 1 Length*	500	(ft)
Zone 2 Length*	0	(ft)

L W

Zone 2= L - Zone 1

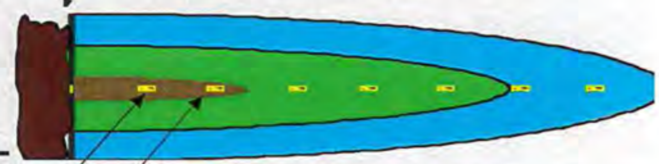
6. SOURCE DATA

TYPE: Decaying Single Planar

Source Options

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations

Source Thickness in Sat. Zone* 20 (ft)



	Y1
Width* (ft)	25

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.25	0.02
TCE	85.5	0.02
DCE	20.0	0.02
VC	6.8	0.02
ETH		0.02

View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

PCE Conc. (mg/L)	.025	.002	.001
TCE Conc. (mg/L)	46.3	3.01	.002
DCE Conc. (mg/L)	7.28	1.66	.145
VC Conc. (mg/L)	1.62	.68	.12
ETH Conc. (mg/L)			
Distance from Source (ft)	0	30	240
Date Data Collected	2015		

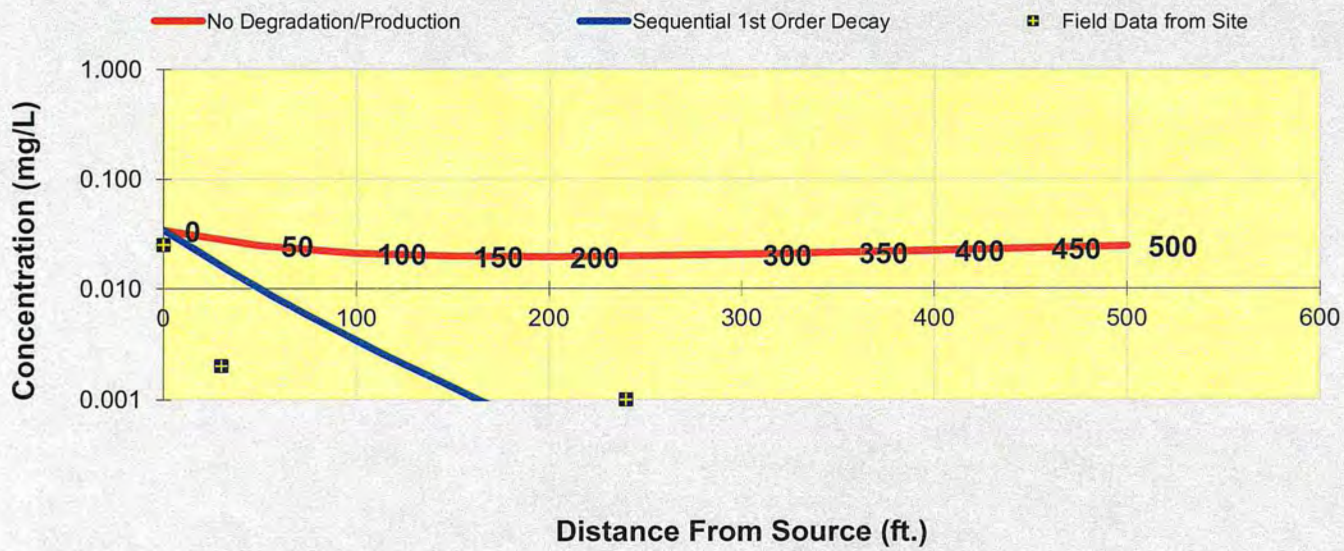
8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	0.034	0.025	0.021	0.020	0.019	0.020	0.020	0.021	0.022	0.023	0.025
Biotransformation	0.0338	0.010	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000

	PZ-2	MW-18	MW-2	Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	0.025	0.002	0.001								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

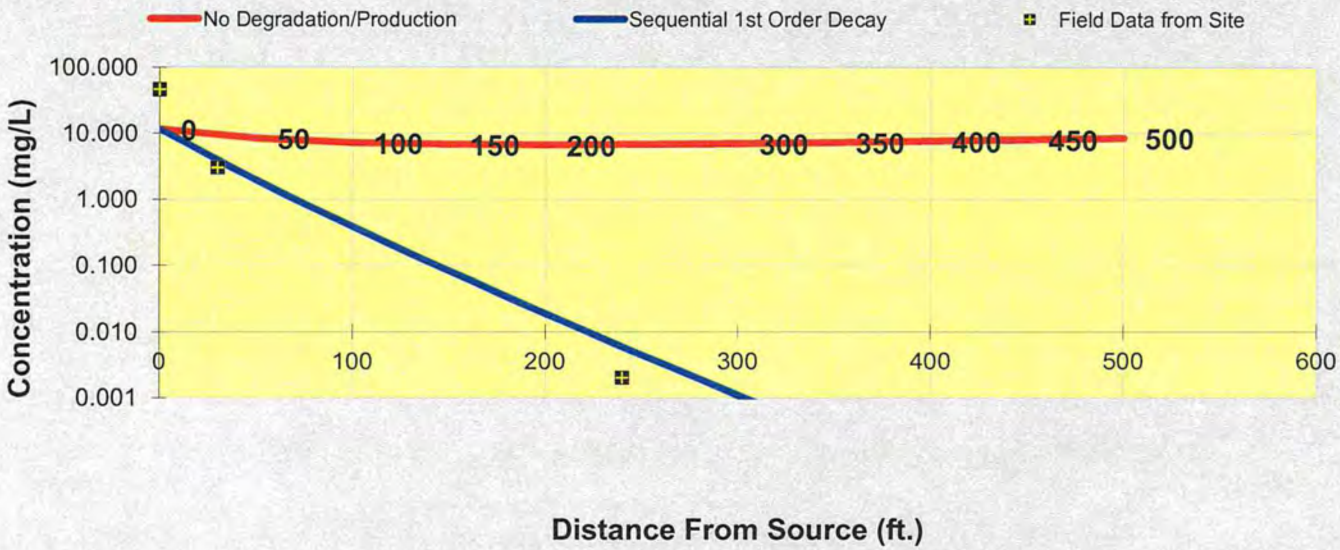
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	11.571	8.429	7.173	6.751	6.665	6.763	6.983	7.295	7.675	8.096	8.522
Biotransformation	11.5712	1.933	0.378	0.082	0.019	0.004	0.001	0.000	0.000	0.000	0.000
	PZ-2	MW-18	MW-2	Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	46.300	3.010	0.002								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

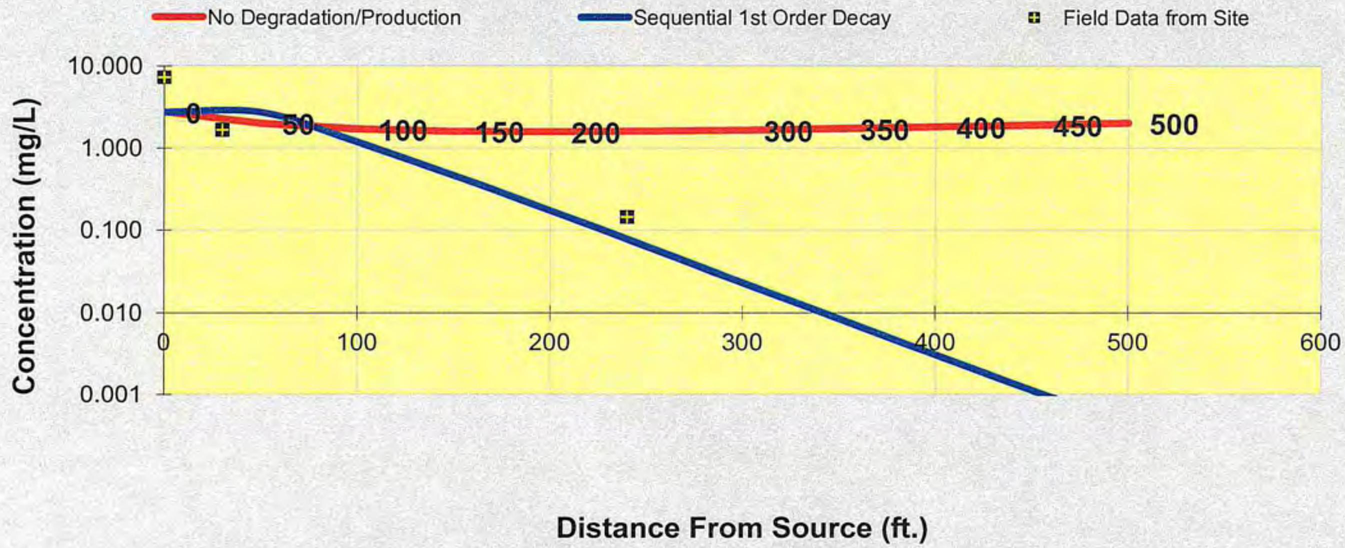
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

DCE	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	2.707	1.972	1.678	1.579	1.559	1.582	1.634	1.707	1.795	1.894	1.993
Biotransformation	2.7067	2.685	1.165	0.455	0.171	0.063	0.023	0.008	0.003	0.001	0.000
	PZ-2	MW-18	MW-2	**Monitoring Well Locations (ft)**							
	0	30	240								
Field Data from Site	7.280	1.660	0.145								



See PCE

See TCE

See DCE

See VC

See ETH

Time:

100.0 Years

Log ⟺ Linear

Prepare Animation

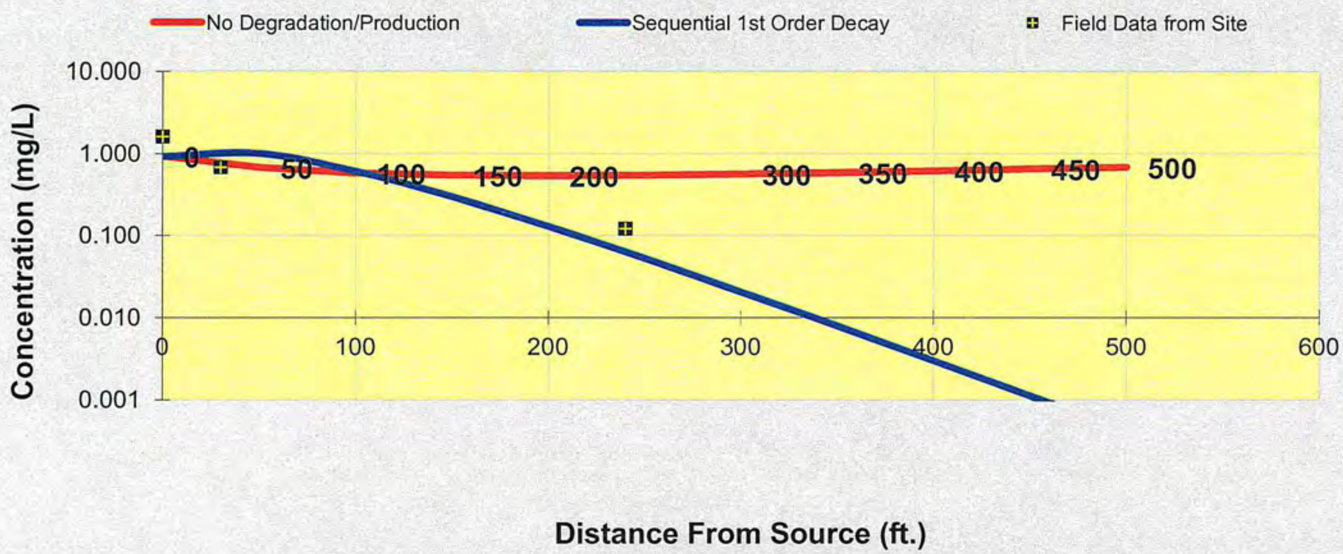
Return to Input

To All

To Array

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

VC	Distance from Source (ft)										
	0	50	100	150	200	250	300	350	400	450	500
No Degradation	0.920	0.670	0.570	0.537	0.530	0.538	0.555	0.580	0.610	0.644	0.678
Biotransformation	0.9203	1.001	0.602	0.292	0.127	0.052	0.020	0.008	0.003	0.001	0.000
	PZ-2	MW-18	MW-2	Monitoring Well Locations (ft)							
	0	30	240								
Field Data from Site	1.620	0.680	0.120								



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

100.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

APPENDIX E
WATER USAGE SURVEY

October 7, 2015

Legion Industries, Inc.
370 Mills Road
Waynesboro, Georgia 30830

Attention: Mr. Charles Brown

Subject: Report of Water Usage Survey
Legion Industries Property
370 Mills Road
Waynesboro, Georgia
Amec Foster Wheeler Project No. 6121-09-0444

Dear Mr. Brown:

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) is pleased to submit this report of our water usage survey for the Legion Industries property located at 370 Mills Road in Waynesboro, Burke County, Georgia. The survey consisted primarily of a review of readily available local, state and federal information regarding drinking water wells and drinking water intakes for the area lying within one mile of the subject site, a driving reconnaissance, and interviews with personnel at local water departments and other knowledgeable persons.

BACKGROUND

The subject site covers a total of 10.54 acres and is developed with a single industrial building which covers approximately 75,000 square feet. The remainder of the site consists of a gravel parking area and undeveloped grassed areas.

During environmental investigations, dissolved phase impacts to groundwater were identified in deep and shallow aquifers underlying the subject property. In support of a Compliance Status Report (CSR) for the seventh period at the subject site, Amec Foster Wheeler performed a survey of drinking water wells and surface water intakes which might be present within one mile to the north and northeast of the site and within one-half mile in the remaining directions from the boundaries of the site.

WATER USAGE SURVEY

The findings of the water usage survey are detailed in the following sections. Amec Foster Wheeler considered the one mile distance to extend to the north and northeast from the edges of the subject property and the one-half mile distance in all remaining directions as shown on Figure

1. Potential drinking water sources that were identified within the search radius are also plotted on Figure 1.

Information Sources

Amec Foster Wheeler assessed the potential presence of drinking water sources in the site area by a review of publicly available information sources and interviews with knowledgeable people listed below:

- The Hydrogeology of the Coastal Plain Strata of Richmond and Northern Burke Counties, Georgia, Georgia Department of Natural Resources (DNR) Environmental Protection Division (EPD) Georgia Geologic Survey (GGS), Information Circular 61;
- U.S. Geological Survey Groundwater Site Inventory System (GWSI) search data;
- Telephone conversation with City of Waynesboro Water Department personnel, September 4, 2015;
- Telephone conversation with Burke County Health Department; and
- Telephone conversation with Rowell Well Drilling personnel, September 4, 2015.

Amec Foster Wheeler also attempted to physically locate wells within one mile to the north and northeast of the subject property and one-half mile in the remaining directions by performing a vehicular reconnaissance (windshield survey) of the area. We also attempted to visually identify any evidence of private wells (i.e. wellheads, pump houses) while performing the area reconnaissance.

Public Information

The public records review identified no groundwater wells or surface water intakes within the search distance.

Amec Foster Wheeler contacted the City of Waynesboro Water Department and the Burke County Health Department to obtain additional information regarding possible well locations in the site area. Personnel from both entities indicated that they do not maintain records of private water sources. According to the City of Waynesboro Water Department website, the City obtains water from a surface water intake on the Briar Creek, approximately 2.75 miles east-northeast of the subject property, from a groundwater well located on Highway 25 North approximately 1.15 miles northwest of the subject site and from a groundwater well located on 6th Street approximately 0.85 miles southwest of the subject property.

Amec Foster Wheeler also interviewed Mr. Tommy Rowell of Rowell Well Drilling, located at 860 Davis Road in Waynesboro, Georgia. According to Mr. Rowell, they have been in business for 27 years and he is not aware of any drinking water wells located within the search radius. Mr. Rowell indicated that the nearest wells that he was familiar with were the two municipal wells, an irrigation well used in a pecan orchard approximately 1.15 miles west of the subject property, and a few irrigation wells located in a subdivision approximately 1.5 miles north of the subject property.

General Area Reconnaissance

On September 3, 2015, a general reconnaissance of the area within a one-mile radius north and northeast of the subject property boundaries and one-half mile in all other directions was performed. The reconnaissance involved visual observations from public roadways. No potential water supply wells were identified during the area reconnaissance. Municipal water meters were observed at residences and commercial structures in the survey area.

CONCLUSIONS

Based on the data obtained during the water usage survey, Amec Foster Wheeler offers the following conclusions:

- The records review and general area reconnaissance search identified no active wells or surface water intakes used for drinking water in within a one-mile radius north and northeast of the subject site or within one-half mile east, south, or west of the subject site.

- The properties surrounding the subject site are supplied with municipal water.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.

John R. Jedrosko, Jr.
Project Coordinator

Charles T. Ferry, P.E.
Senior Principal

Legion Industries Facilities
Waynesboro, Ga.

Location of Public Water Drinking Supplies and Predicted Maximum Extent of Groundwater Impacts

Prepared by: TDN 10/20/2015

Checked by: SF 10/20/2015

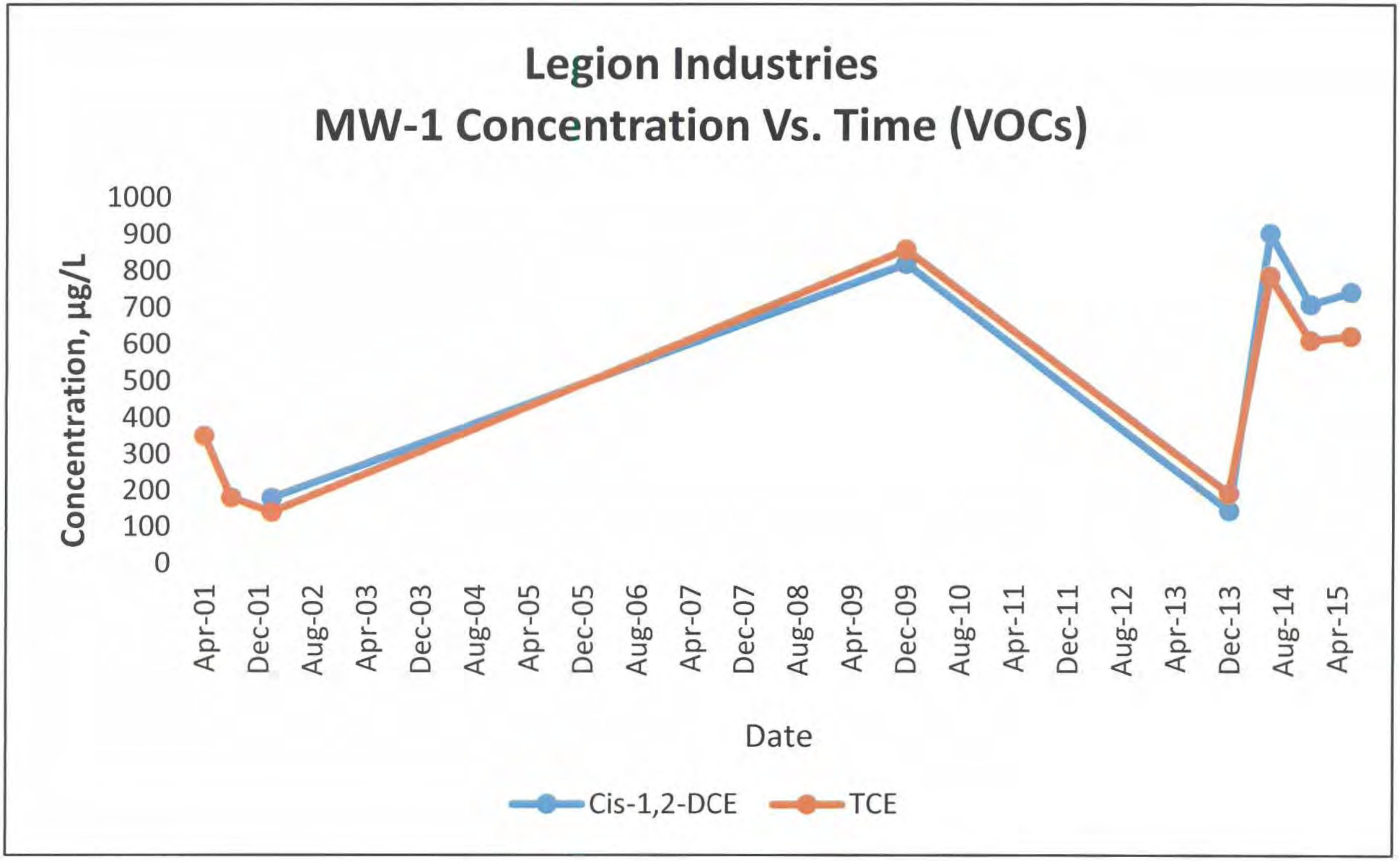
Project Number: 612109044

amec foster wheeler

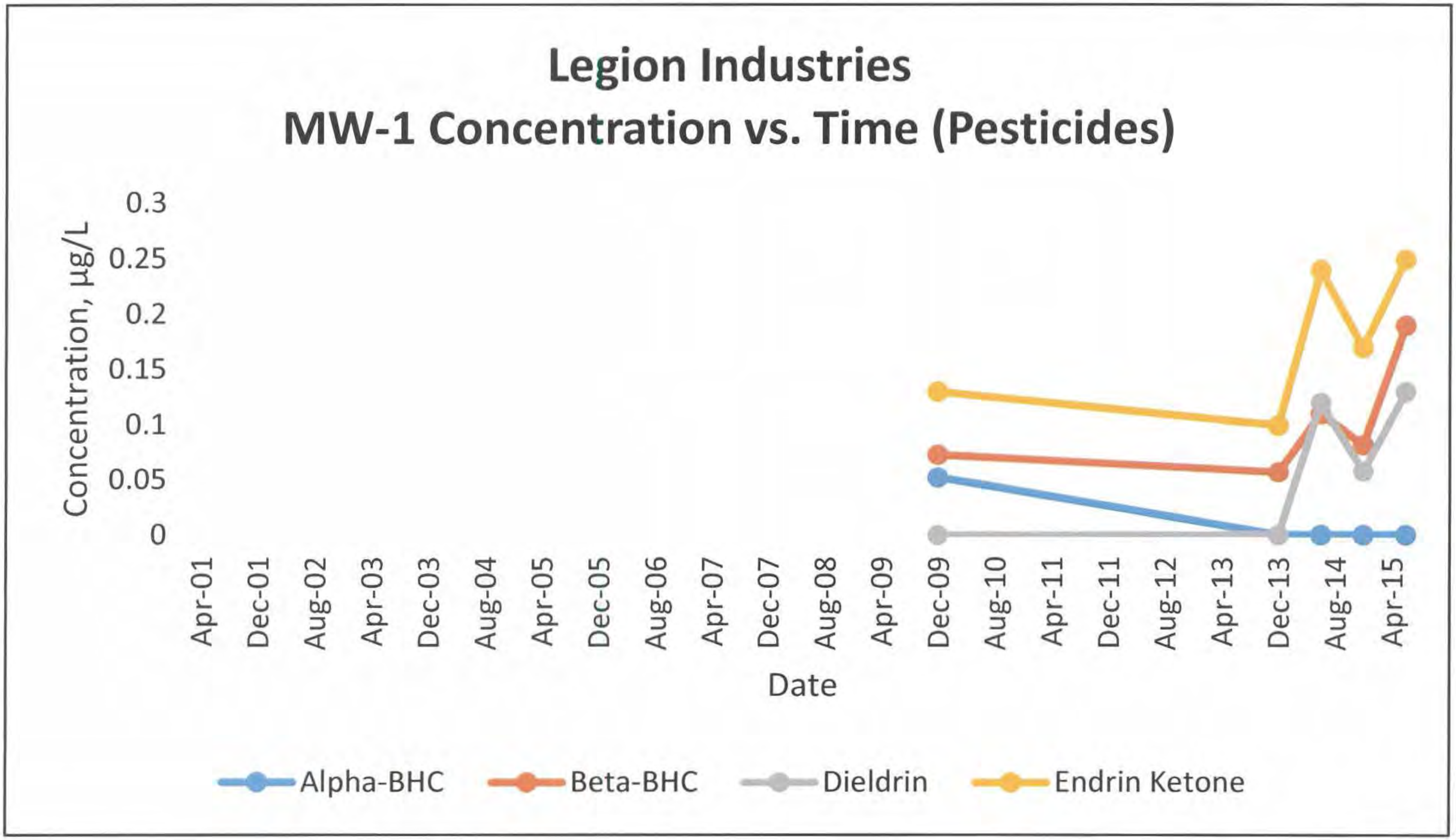
Figure Number: 1

Document Path: G:\Legion Industries\mxd\Site Map.mxd

APPENDIX F
CONTAMINANT ISOPLETH MAPS AND TREND GRAPHS

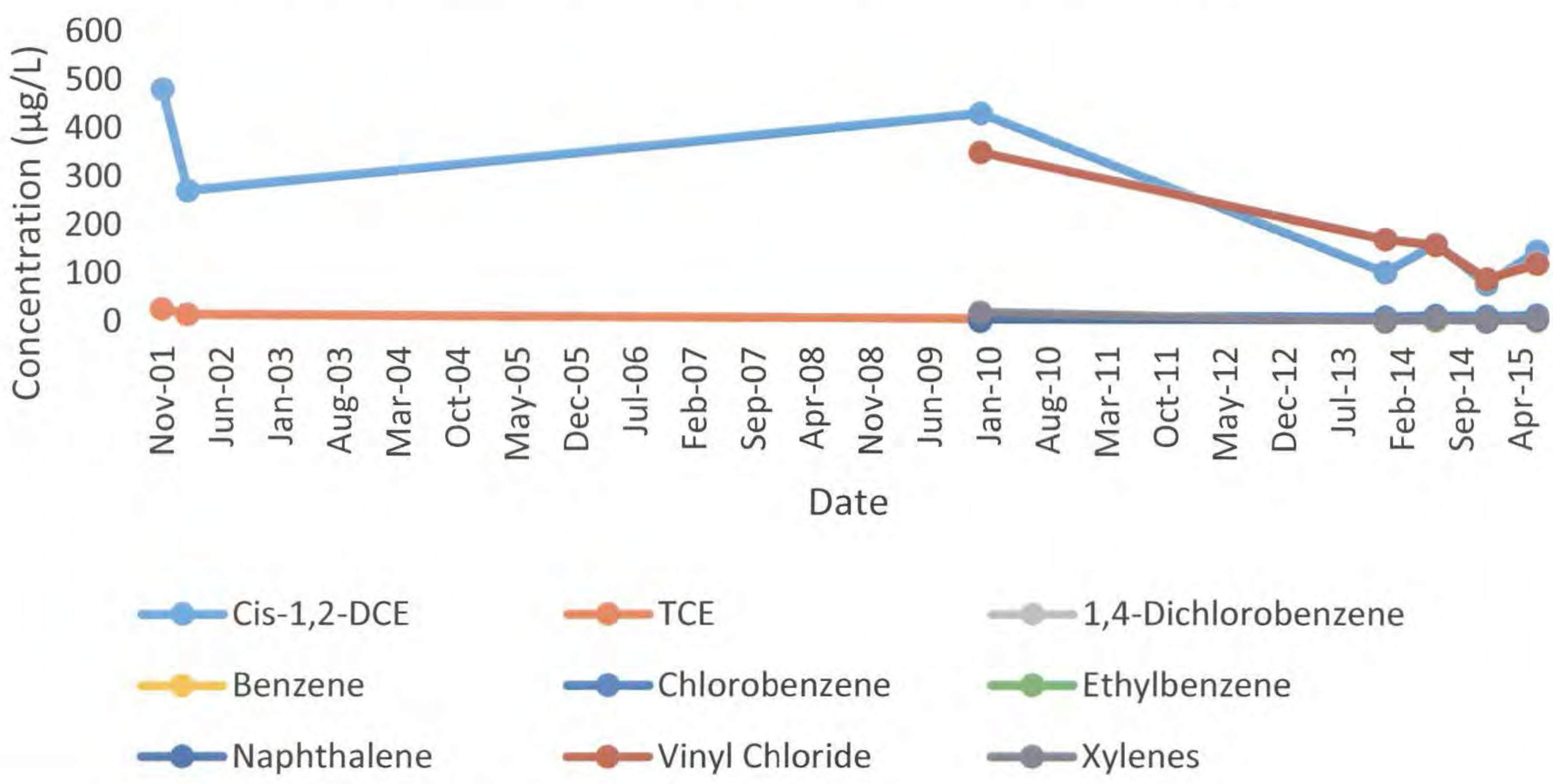


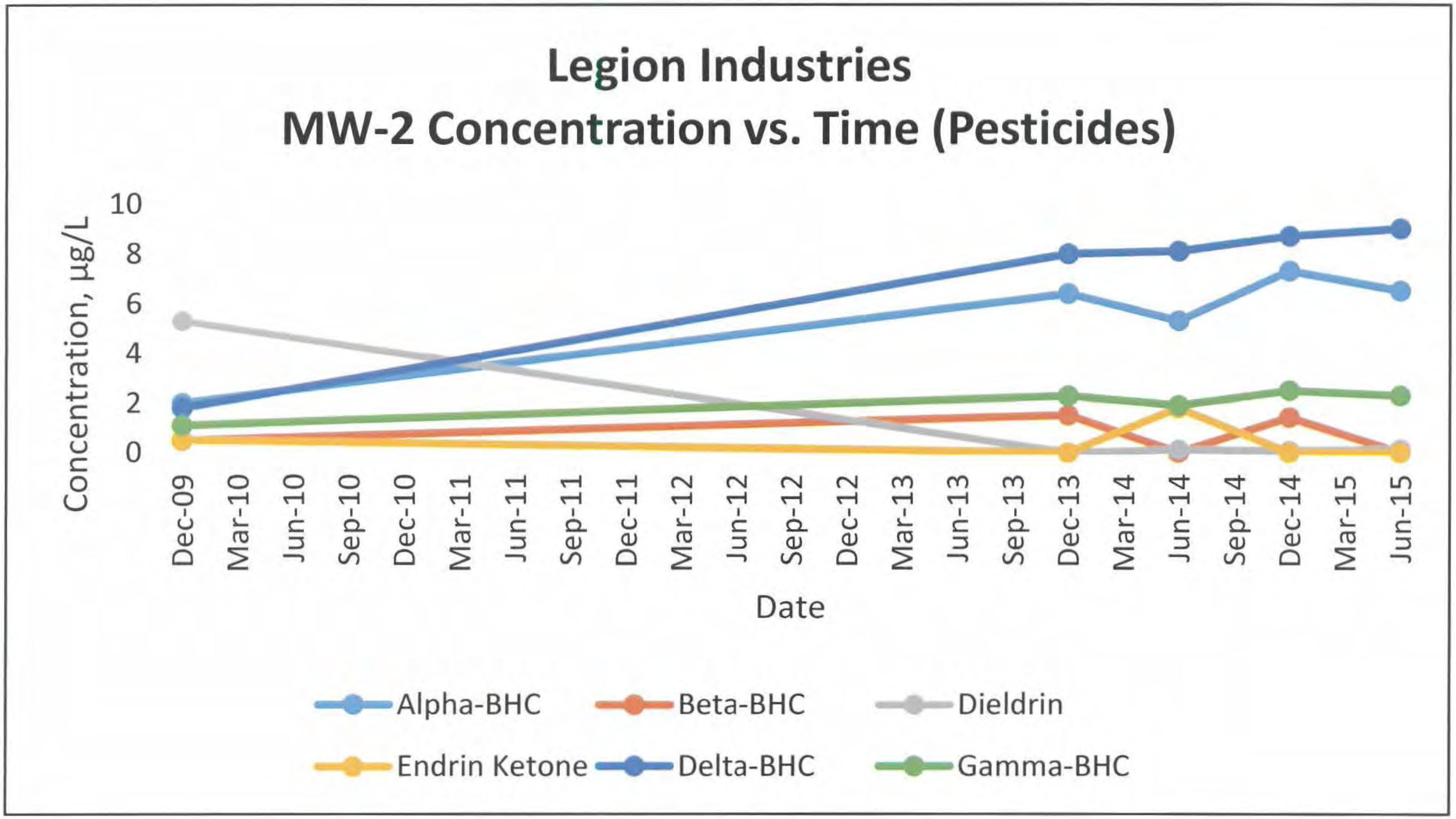
Legion Industries
MW-1 Concentration Vs. Time (VOCs)
Concentration, µg/L
1000
900
800
700
600
500
400
300
200
100
0
Apr-01
Dec-01
Aug-02
Apr-03
Dec-03
Aug-04
Apr-05
Dec-05
Aug-06
Apr-07
Dec-07
Aug-08
Apr-09
Dec-09
Aug-10
Apr-11
Dec-11
Aug-12
Apr-13
Dec-13
Aug-14
Apr-15
Date
Cis-1,2-DCE
TCE

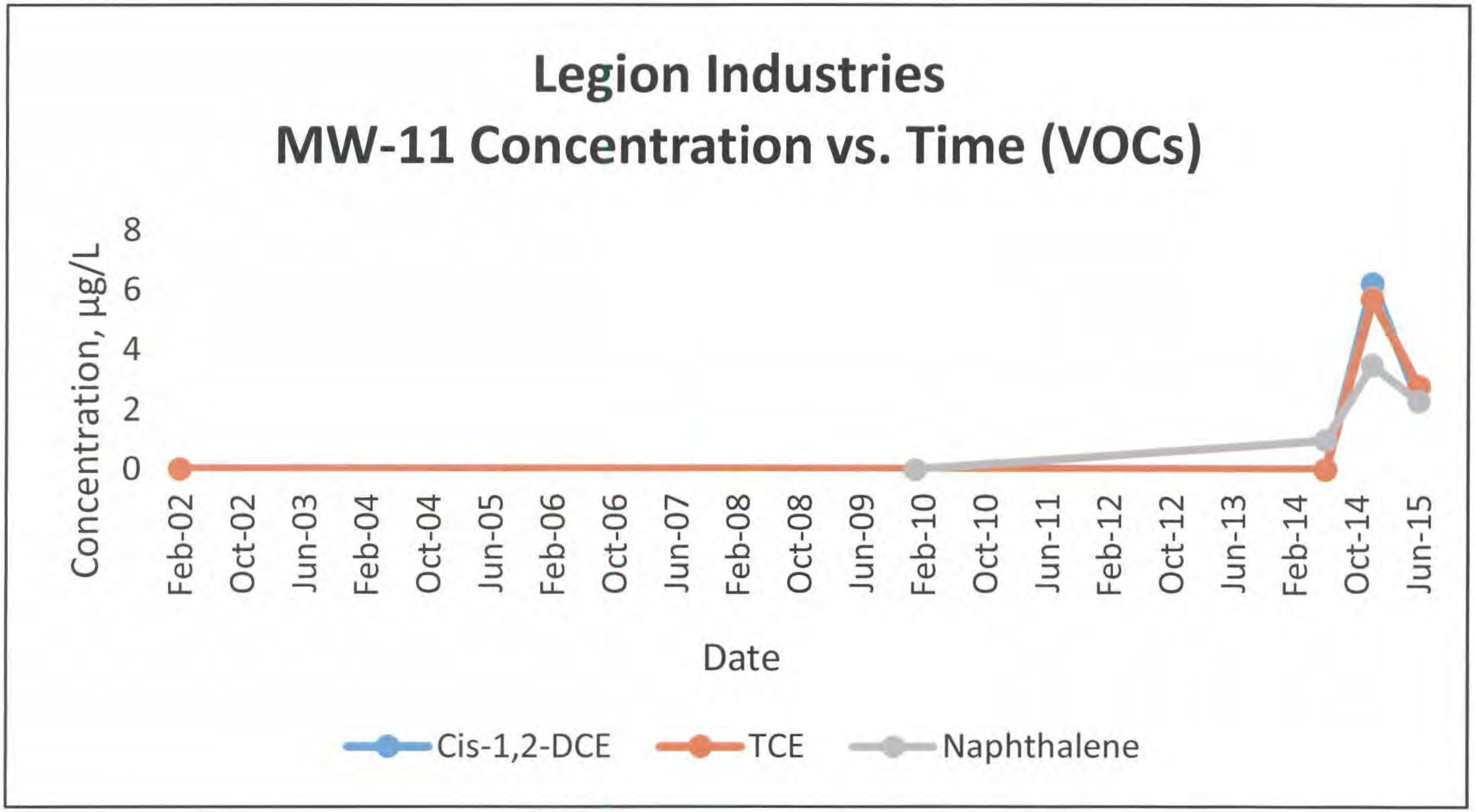


Legion Industries
MW-1 Concentration vs. Time (Pesticides)
Concentration, µg/L
0.3
0.25
0.2
0.15
0.1
0.05
0
Apr-01
Dec-01
Aug-02
Apr-03
Dec-03
Aug-04
Apr-05
Dec-05
Aug-06
Apr-07
Dec-07
Aug-08
Apr-09
Dec-09
Aug-10
Apr-11
Dec-11
Aug-12
Apr-13
Dec-13
Aug-14
Apr-15
Date
Alpha-BHC
Beta-BHC
Dieldrin
Endrin Ketone

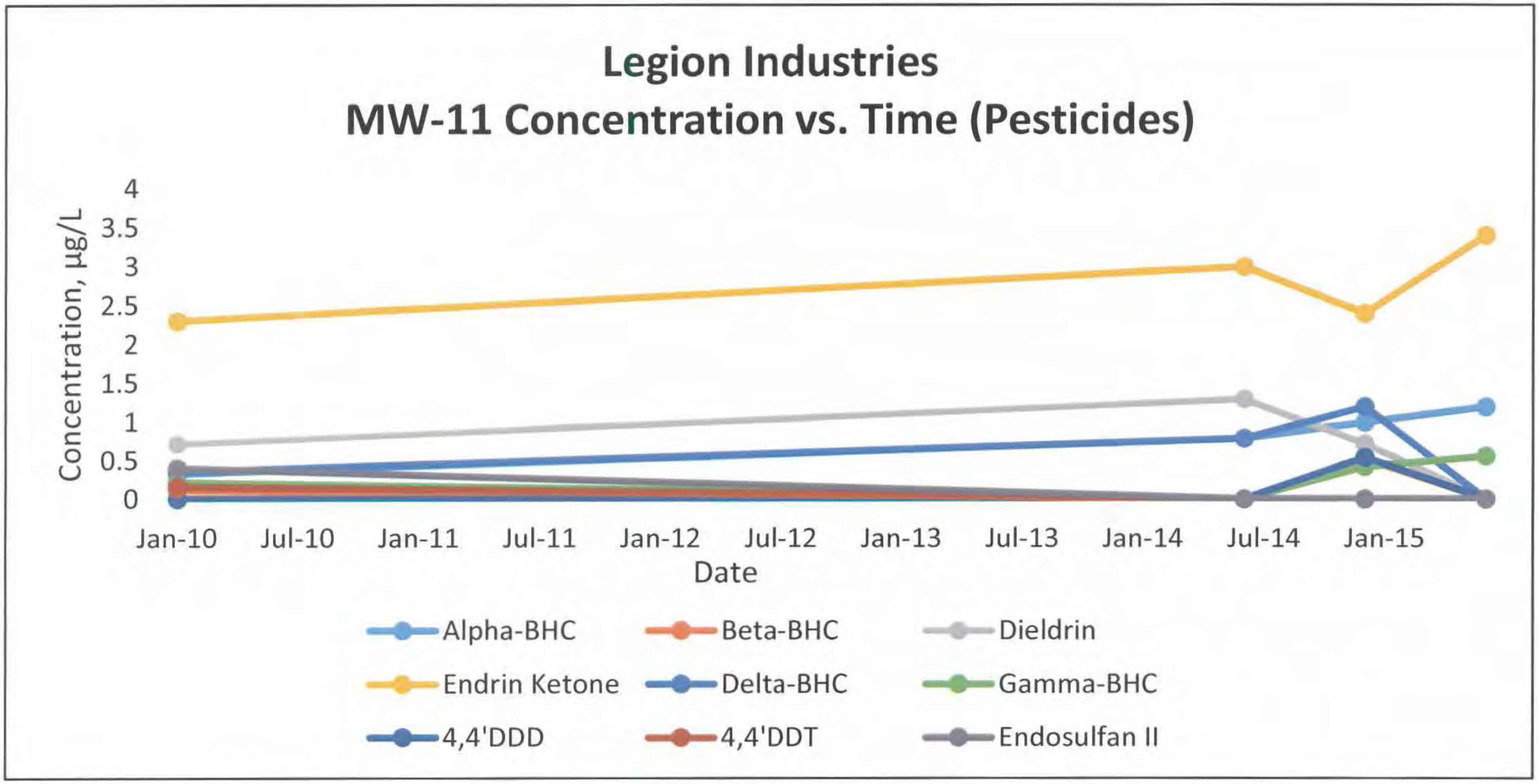
Legion Industries
MW-2 Concentration vs. Time (VOCs)



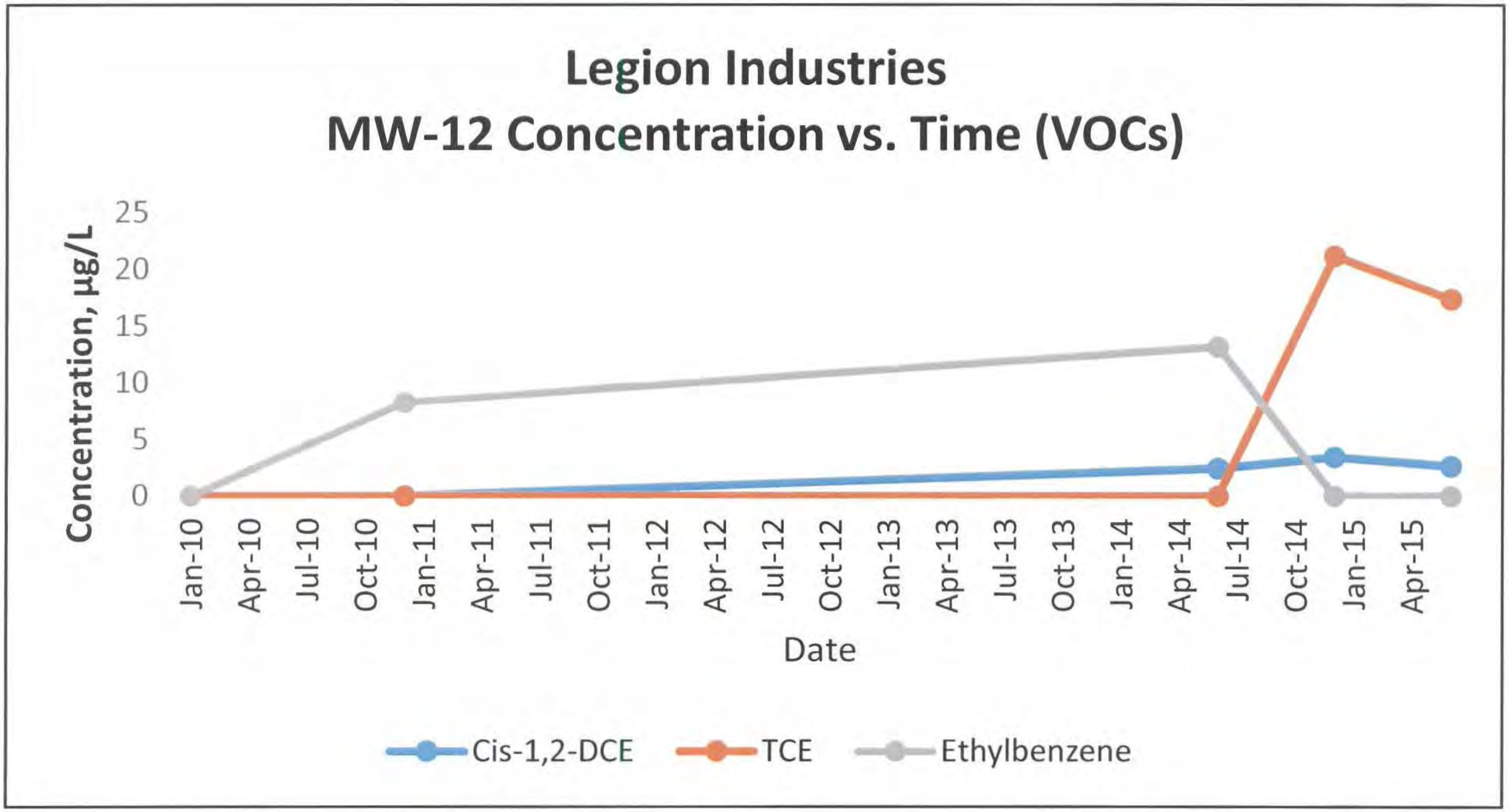

Legion Industries
MW-2 Concentration vs. Time (Pesticides)
Concentration, µg/L
10
8
6
4
2
0
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Date
Alpha-BHC
Beta-BHC
Dieldrin
Endrin Ketone
Delta-BHC
Gamma-BHC

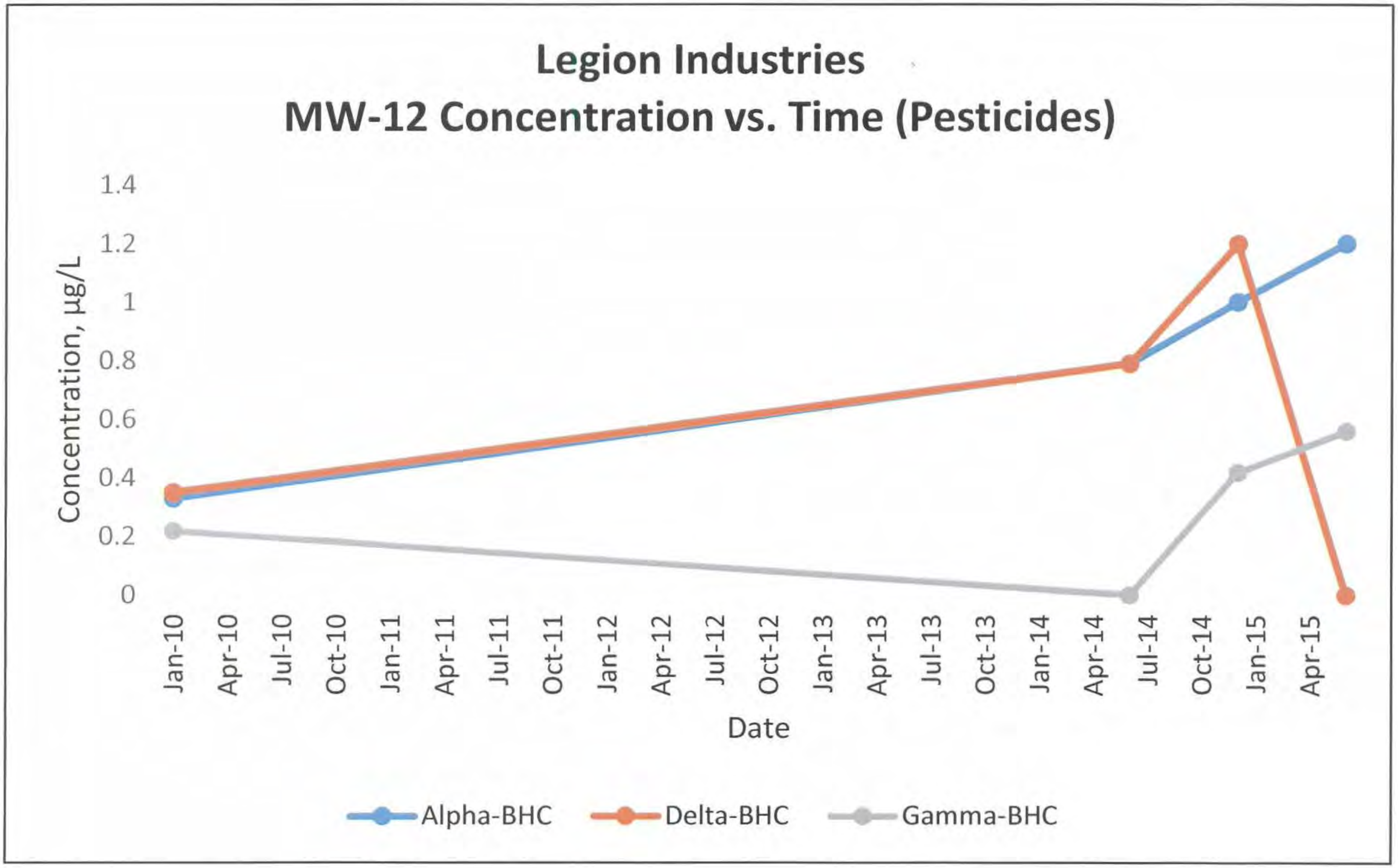


Legion Industries
MW-11 Concentration vs. Time (VOCs)
Concentration, µg/L
8
6
4
2
0
Feb-02
Oct-02
Jun-03
Feb-04
Oct-04
Jun-05
Feb-06
Oct-06
Jun-07
Feb-08
Oct-08
Jun-09
Feb-10
Oct-10
Jun-11
Feb-12
Oct-12
Jun-13
Feb-14
Oct-14
Jun-15
Date
Cis-1,2-DCE
TCE
Naphthalene

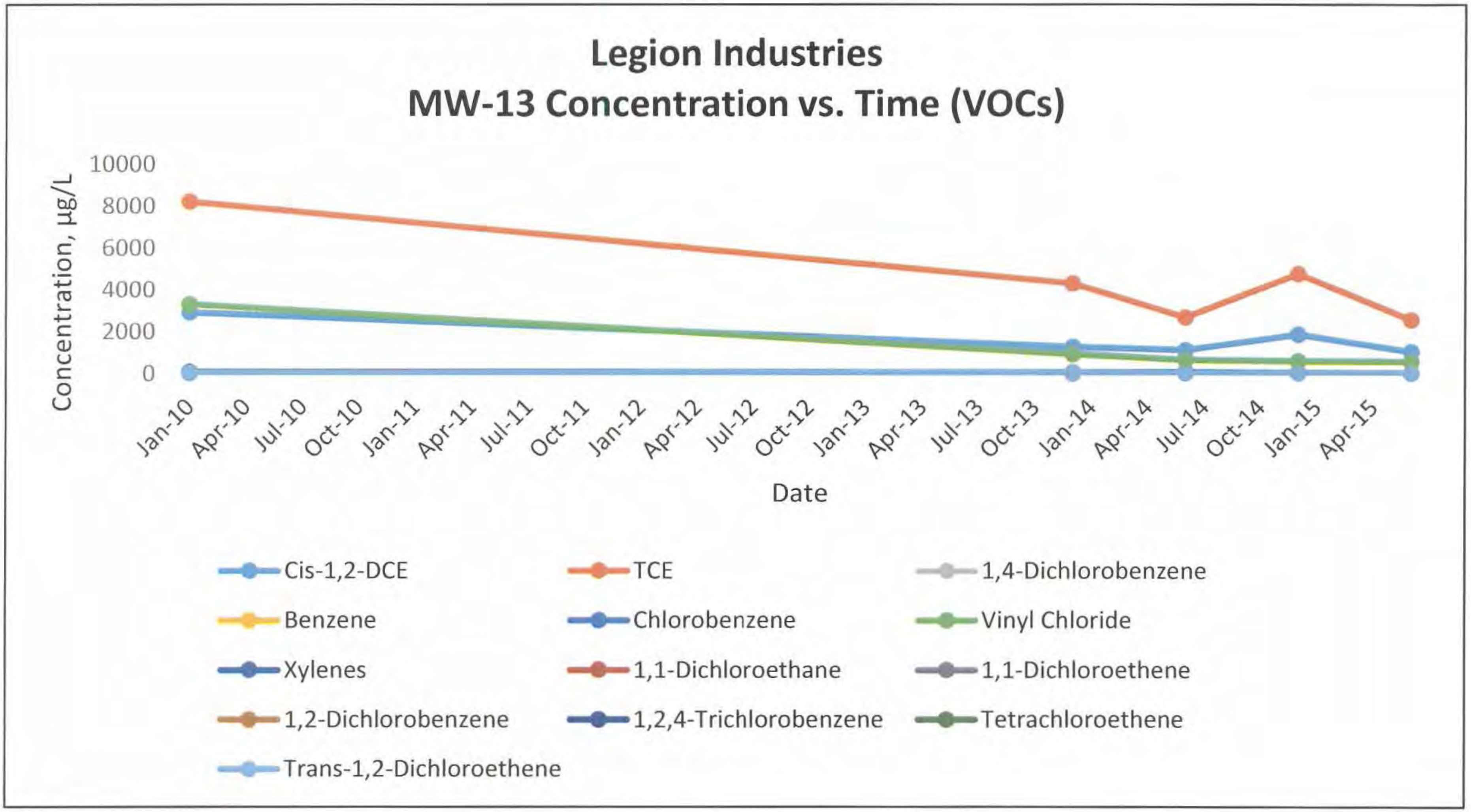


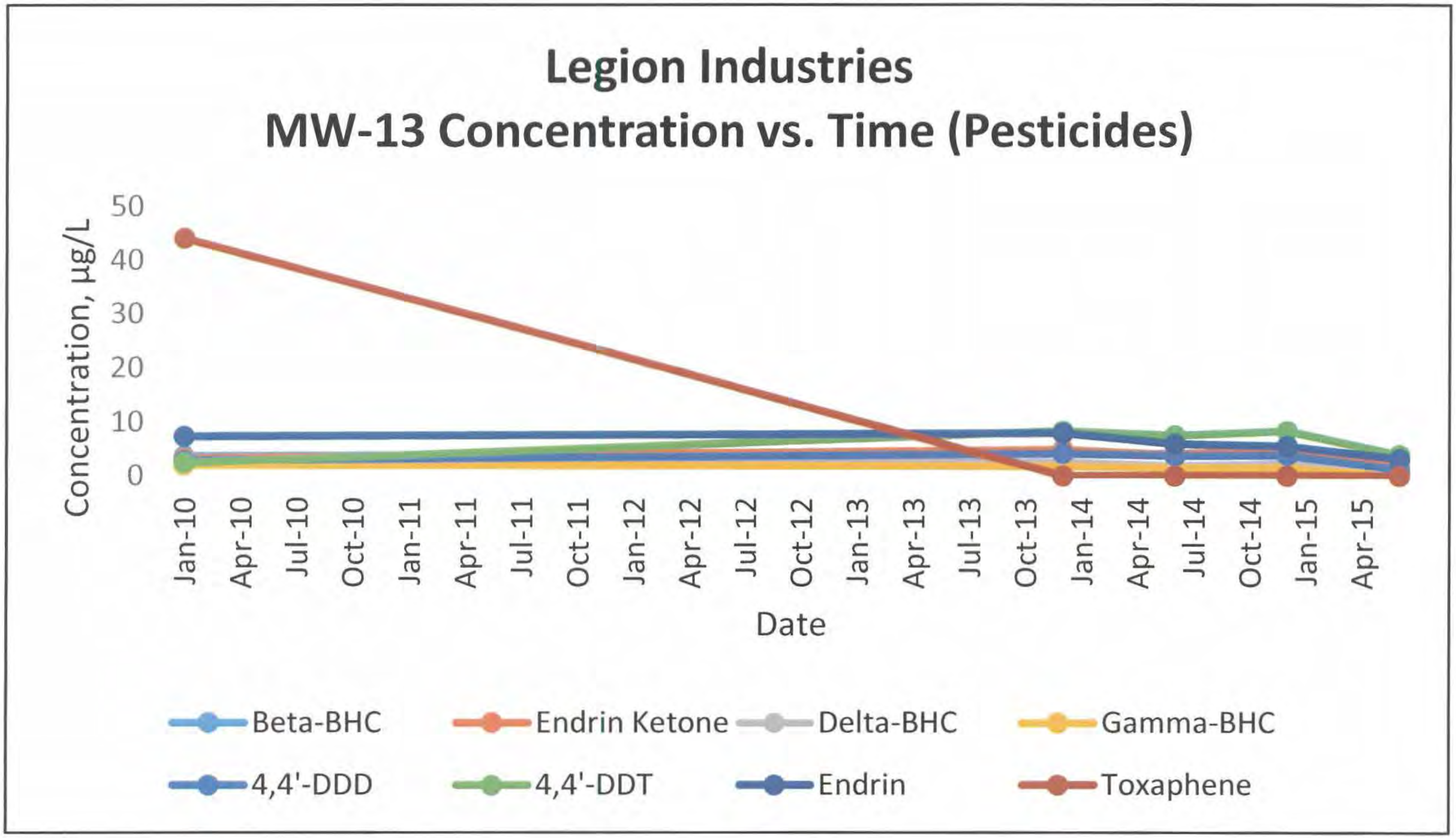
Legion Industries
MW-11 Concentration vs. Time (Pesticides)
Concentration, µg/L
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-10
Jul-10
Jan-11
Jul-11
Jan-12
Jul-12
Jan-13
Jul-13
Jan-14
Jul-14
Jan-15
Date
Alpha-BHC
Beta-BHC
Dieldrin
Endrin Ketone
Delta-BHC
Gamma-BHC
4,4'DDD
4,4'DDT
Endosulfan II

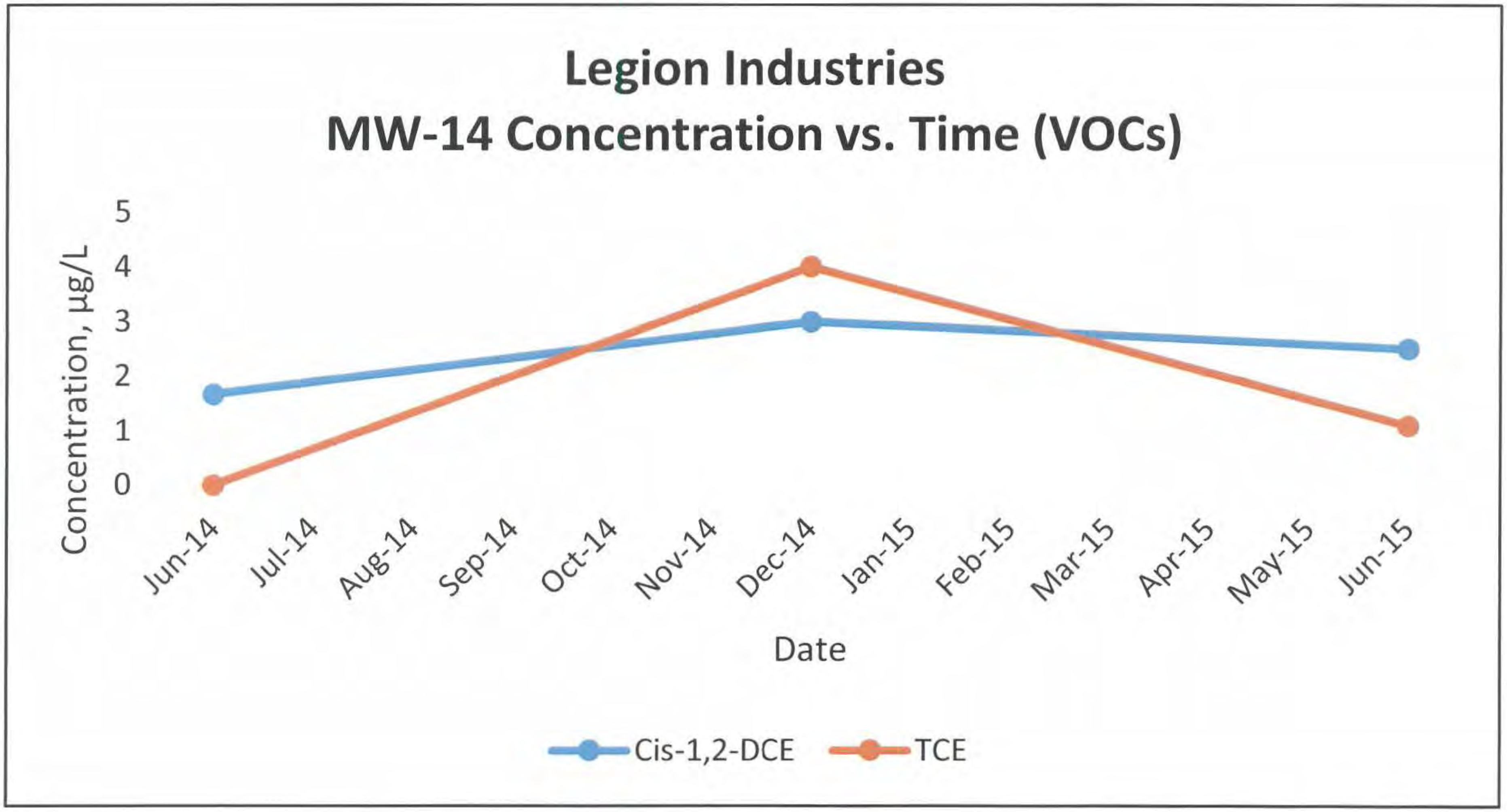

Legion Industries
MW-12 Concentration vs. Time (VOCs)
Concentration, µg/L
25
20
15
10
5
0
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Date
Cis-1,2-DCE
TCE
Ethylbenzene

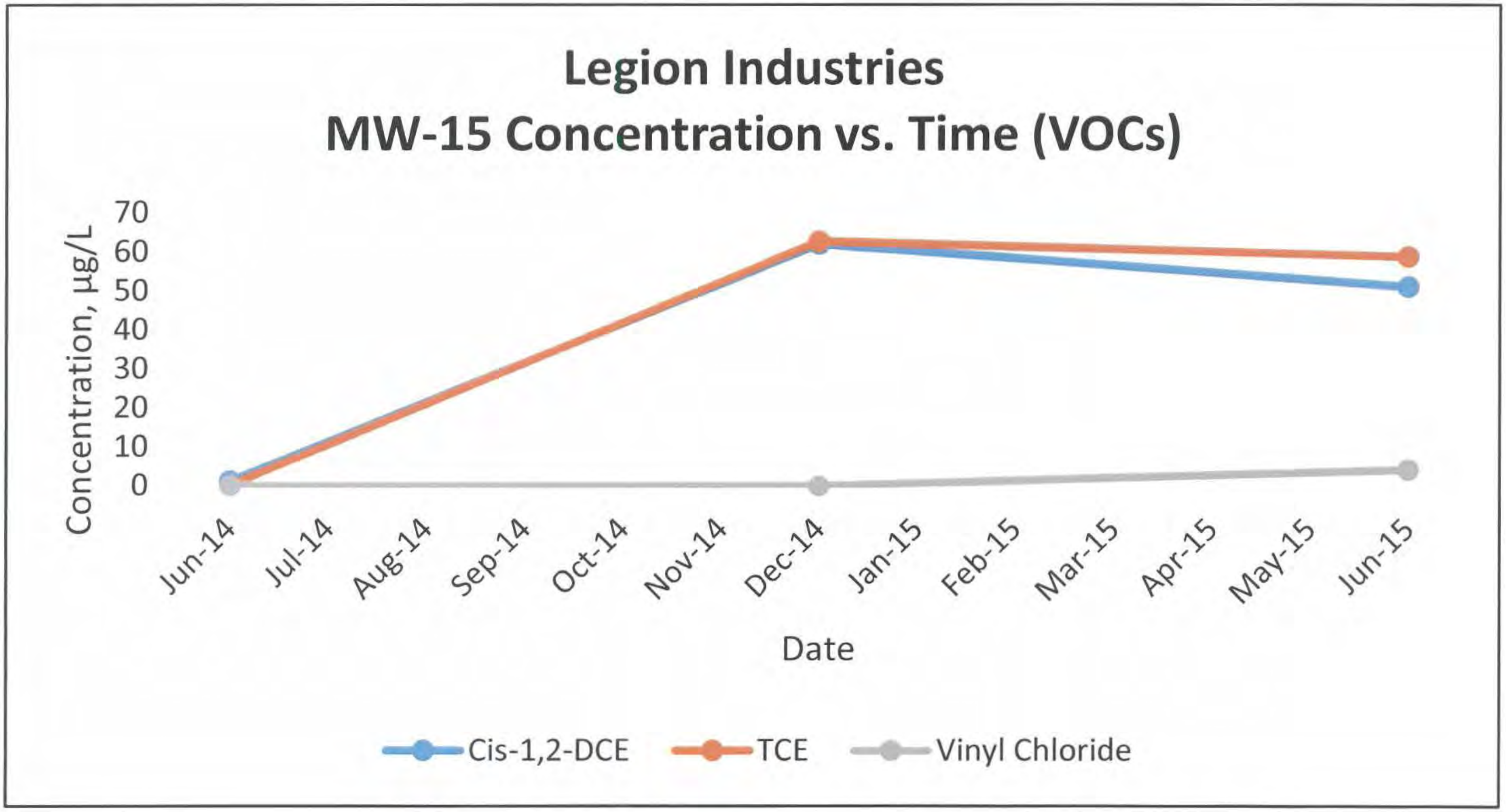


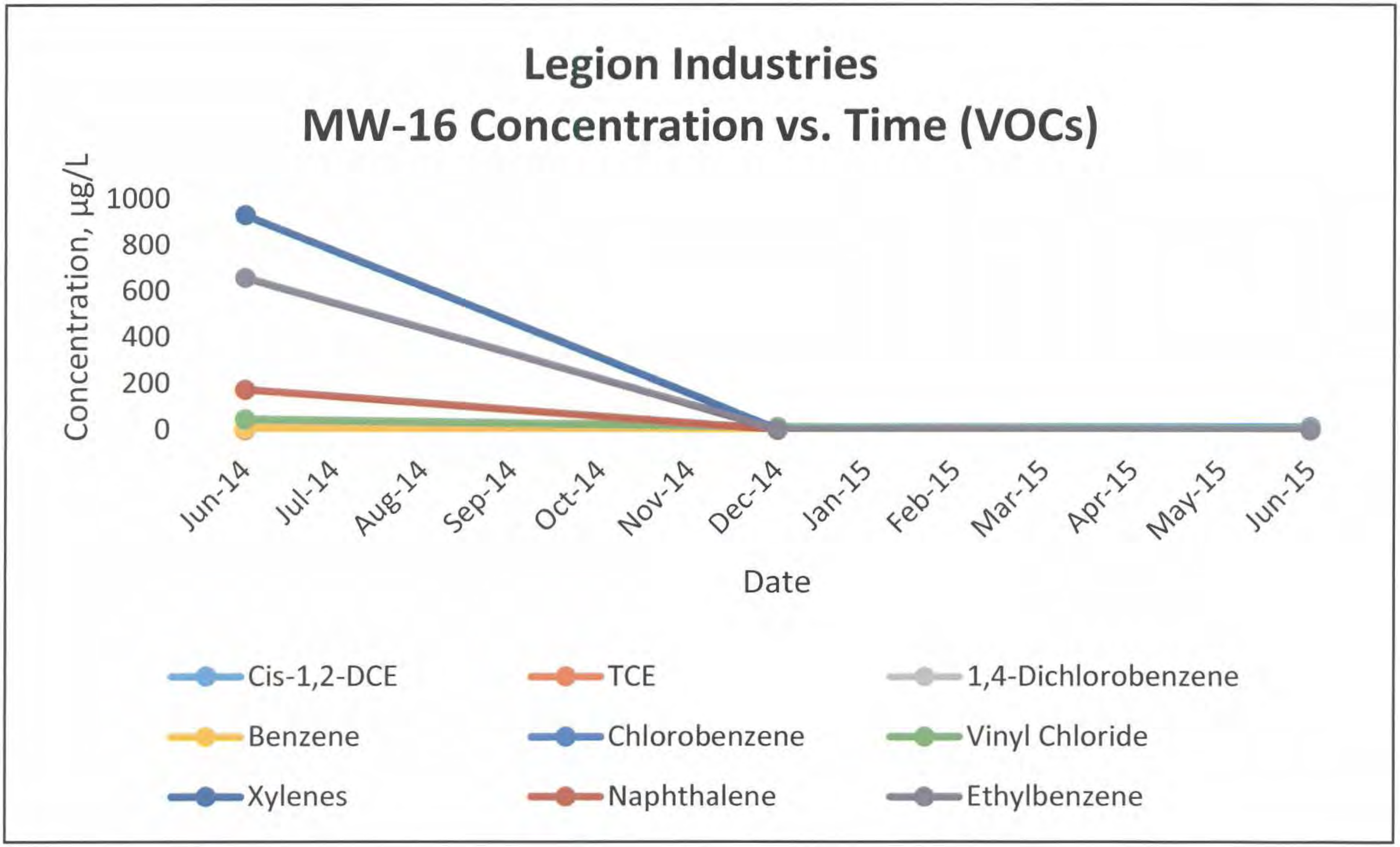
Legion Industries
MW-12 Concentration vs. Time (Pesticides)
Concentration, µg/L
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Date
Alpha-BHC
Delta-BHC
Gamma-BHC

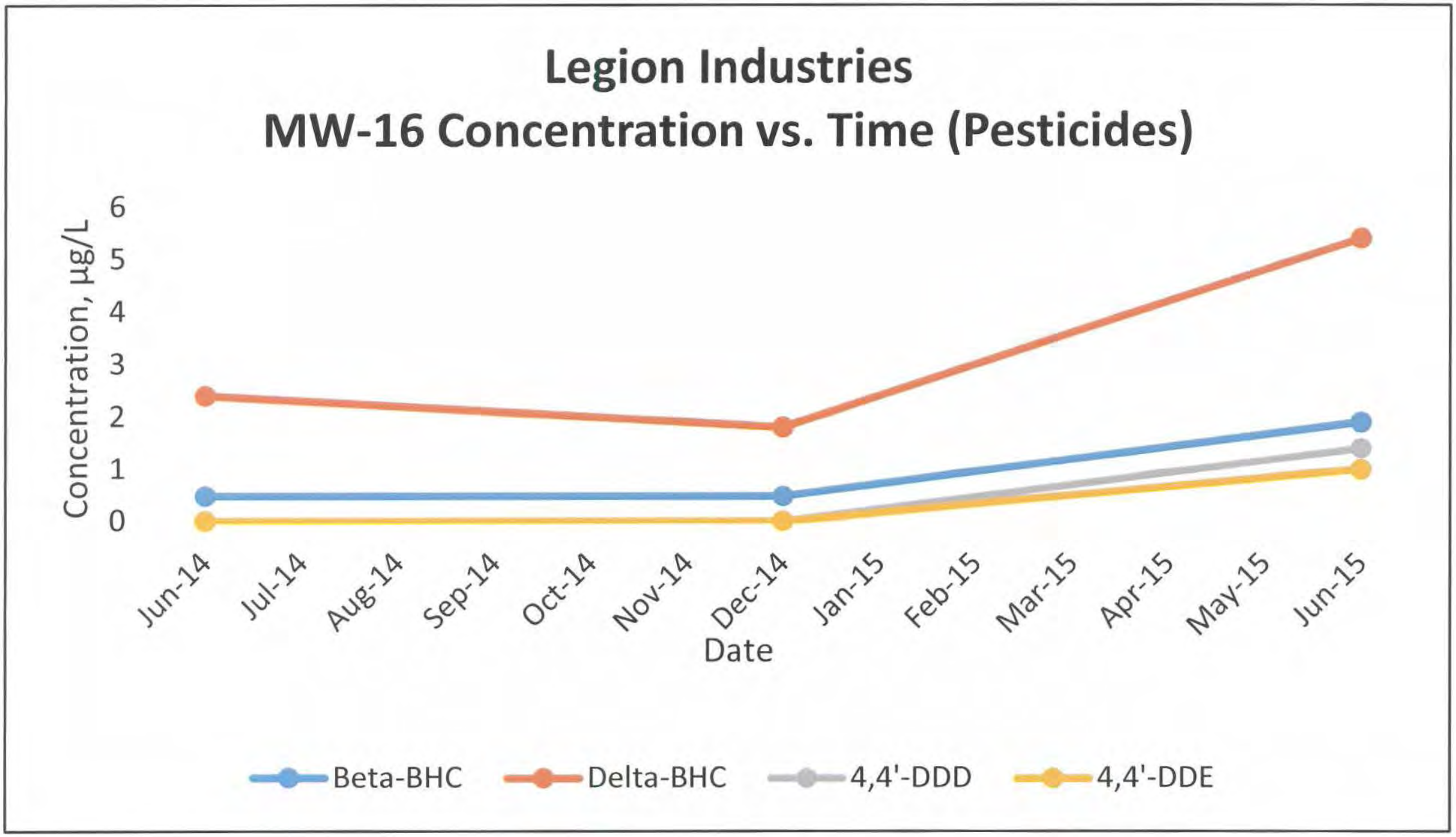

Legion Industries
MW-13 Concentration vs. Time (VOCs)
Concentration, µg/L
10000
8000
6000
4000
2000
0
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Date
Cis-1,2-DCE
TCE
1,4-Dichlorobenzene
Benzene
Chlorobenzene
Vinyl Chloride
Xylenes
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichlorobenzene
1,2,4-Trichlorobenzene
Tetrachloroethene
Trans-1,2-Dichloroethene

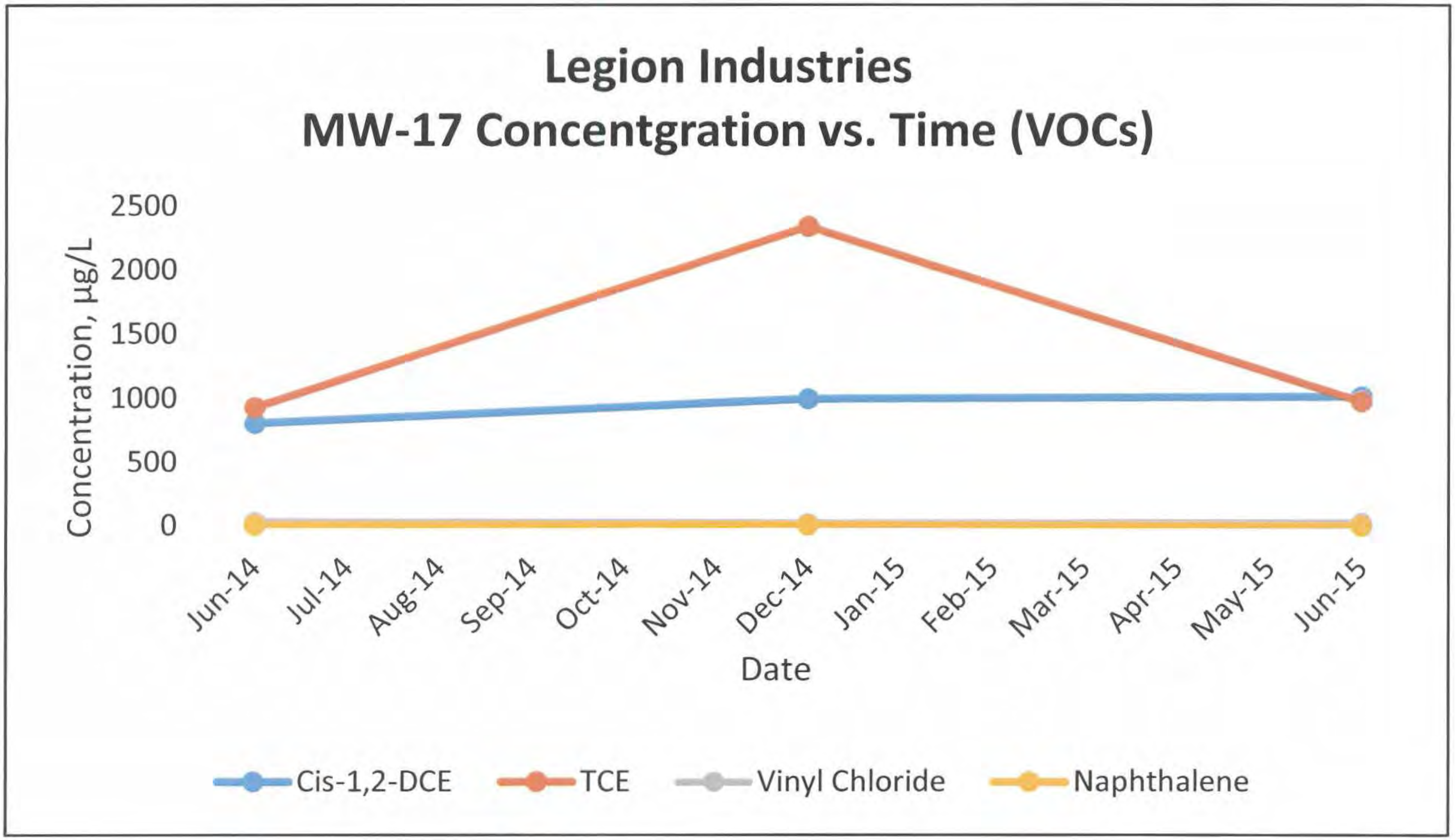

Legion Industries
MW-13 Concentration vs. Time (Pesticides)
Concentration, µg/L
50
40
30
20
10
0
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Date
Beta-BHC
Endrin Ketone
Delta-BHC
Gamma-BHC
4,4'-DDD
4,4'-DDT
Endrin
Toxaphene

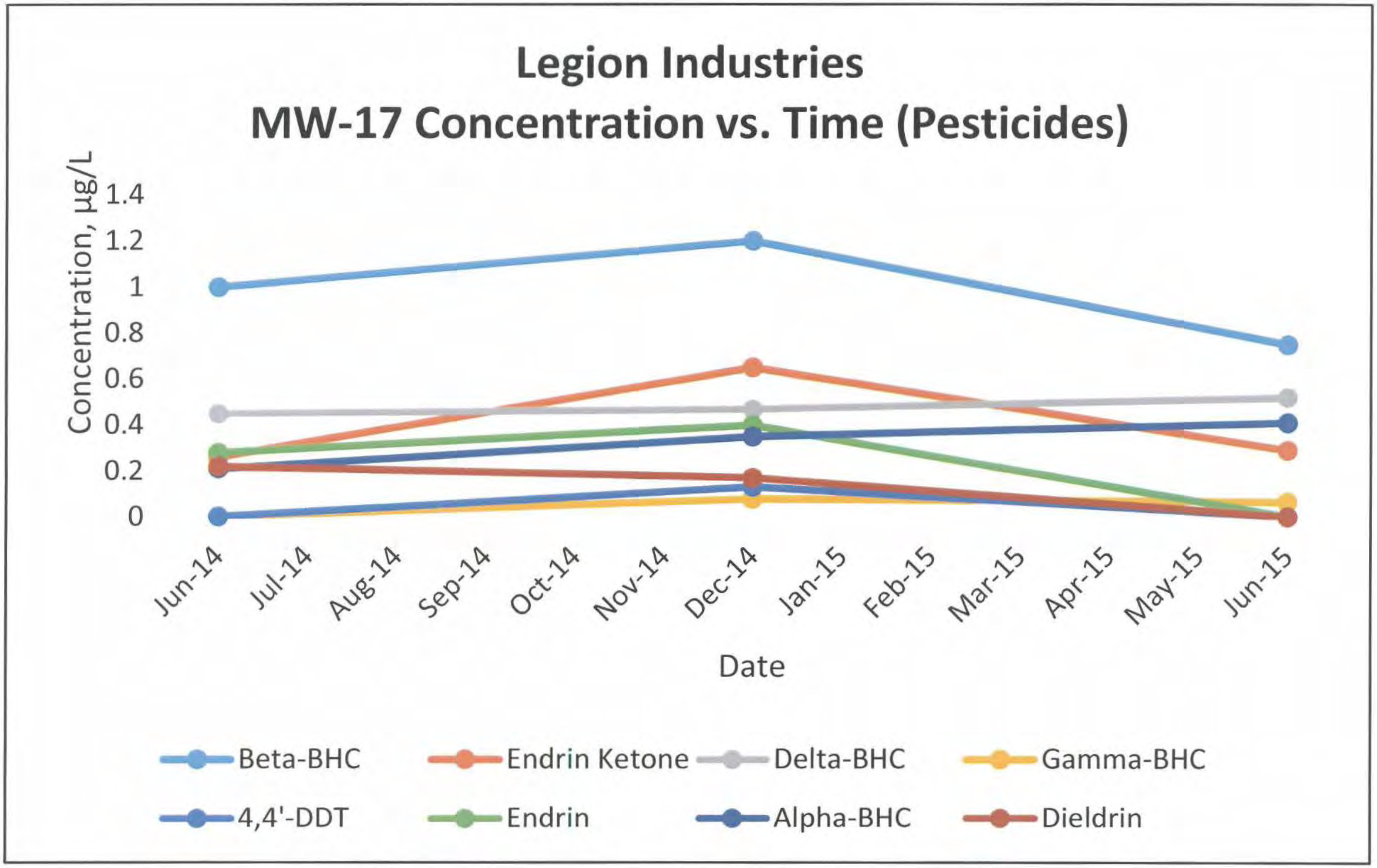

Legion Industries
MW-14 Concentration vs. Time (VOCs)
Concentration, µg/L
0
1
2
3
4
5
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE

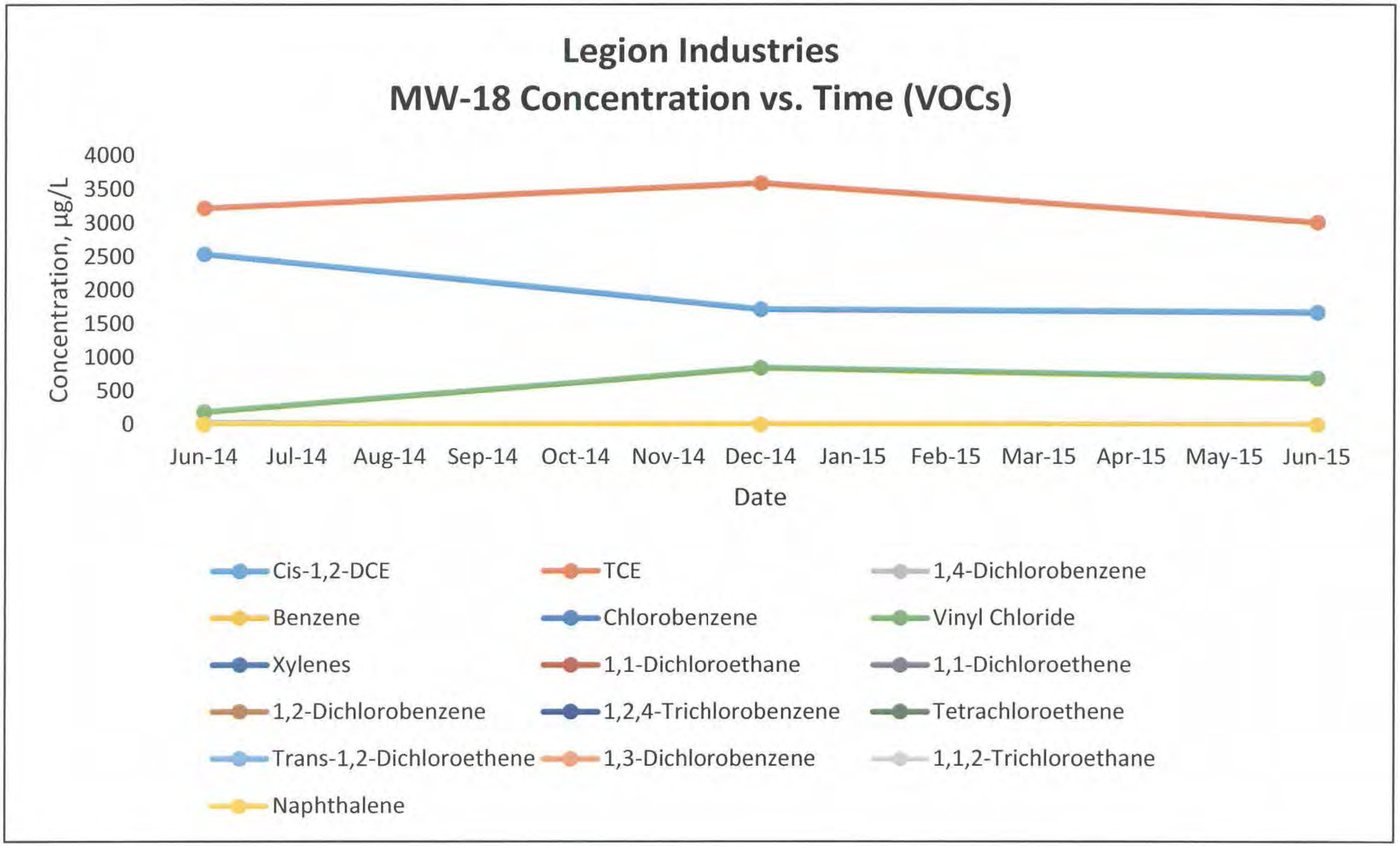

Legion Industries
MW-15 Concentration vs. Time (VOCs)
Concentration, µg/L
70
60
50
40
30
20
10
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE
Vinyl Chloride

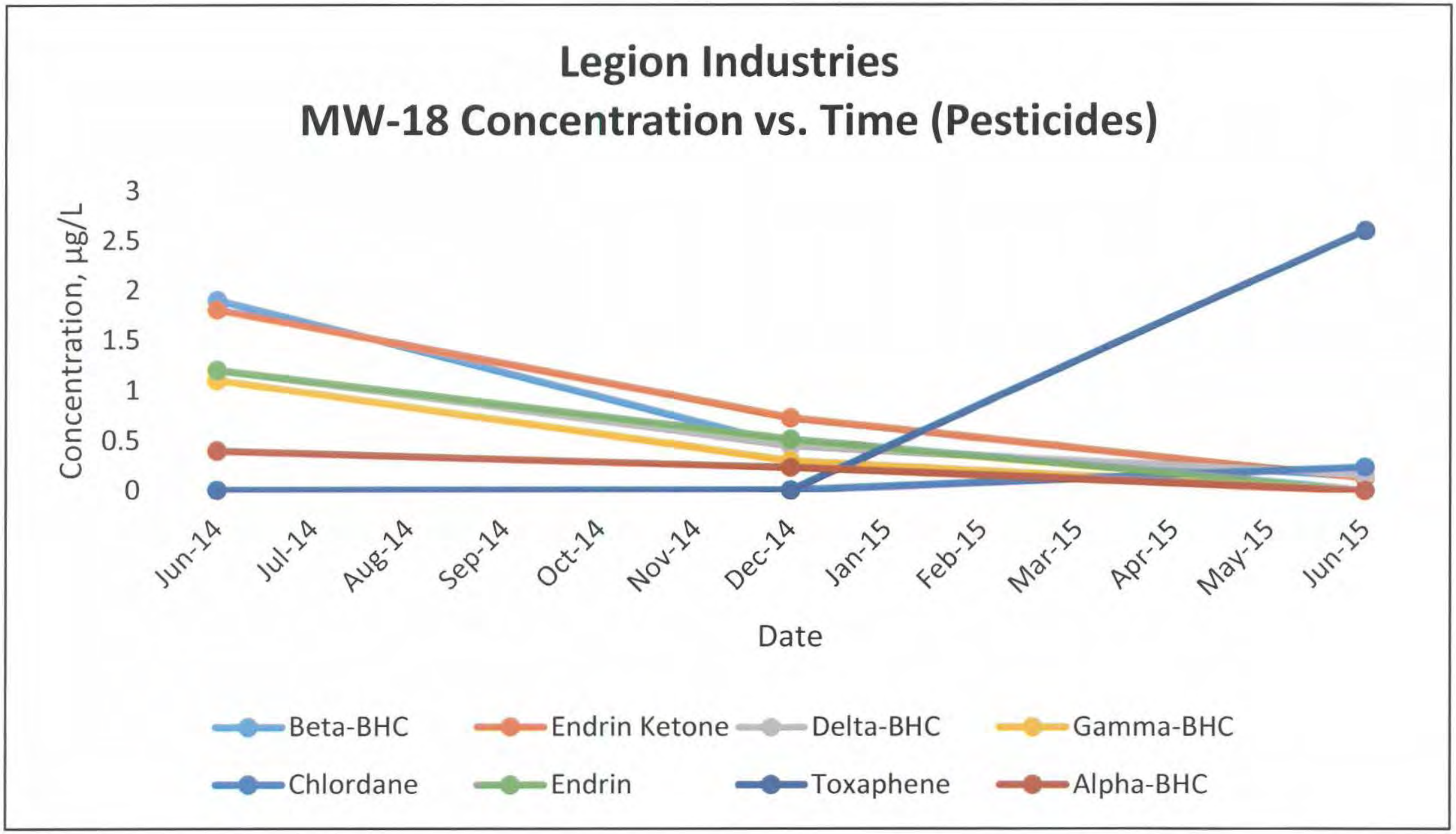

Legion Industries
MW-16 Concentration vs. Time (VOCs)
Concentration, µg/L
1000
800
600
400
200
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE
1,4-Dichlorobenzene
Benzene
Chlorobenzene
Vinyl Chloride
Xylenes
Naphthalene
Ethylbenzene

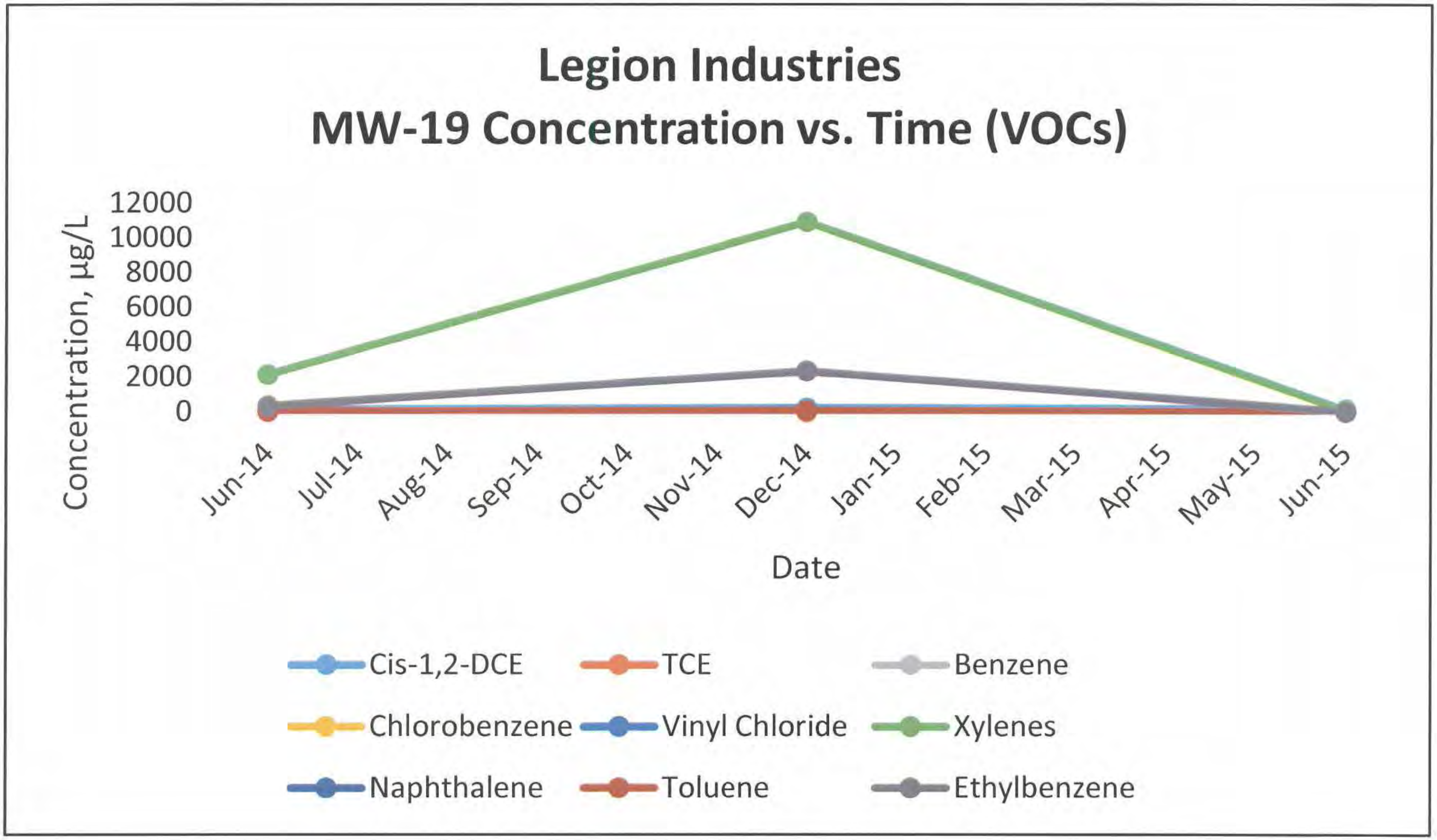

Legion Industries
MW-16 Concentration vs. Time (Pesticides)
Concentration, µg/L
6
5
4
3
2
1
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Beta-BHC
Delta-BHC
4,4'-DDD
4,4'-DDE

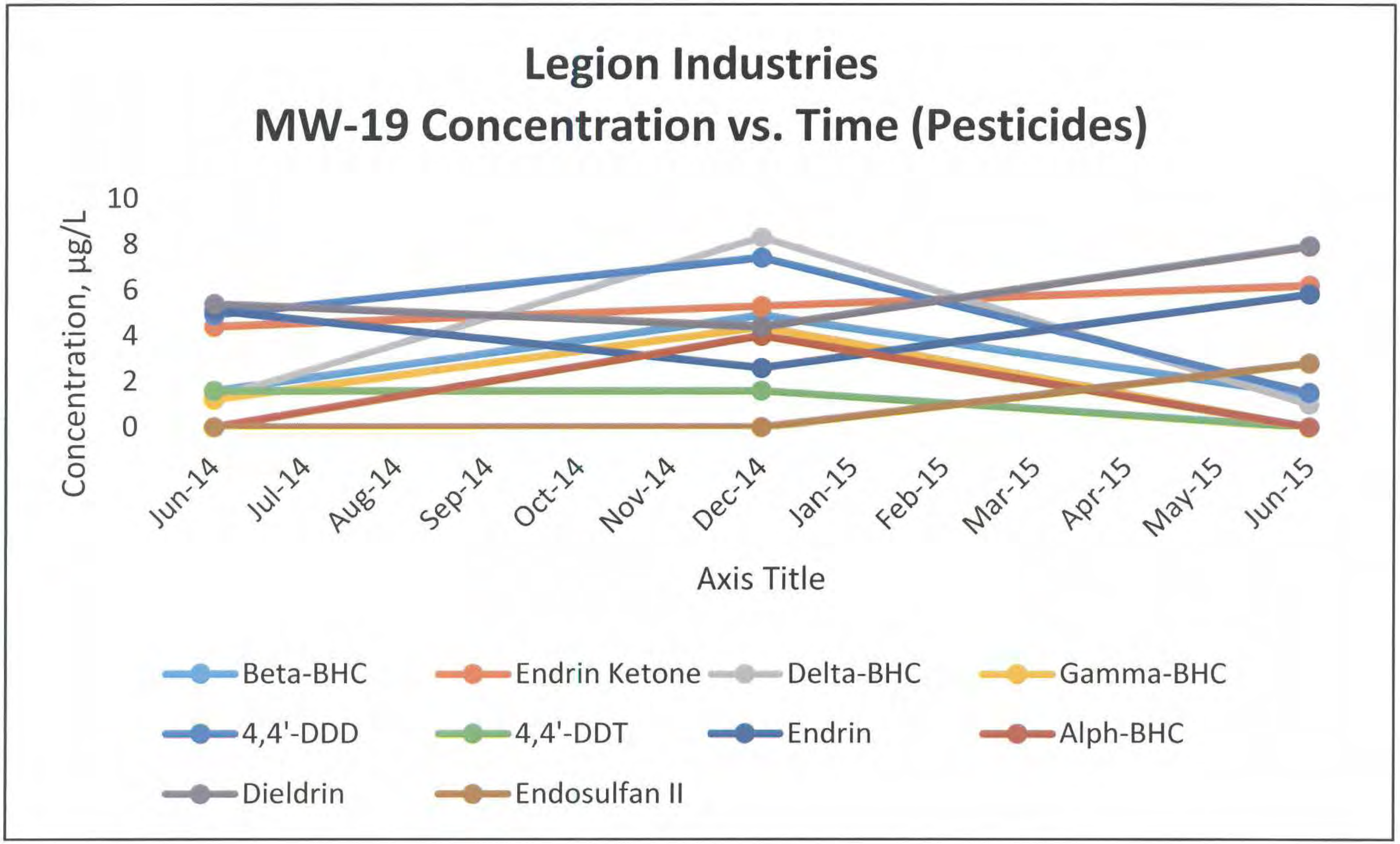

Legion Industries
MW-17 Concentgration vs. Time (VOCs)
Concentration, µg/L
2500
2000
1500
1000
500
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE
Vinyl Chloride
Naphthalene


Legion Industries
MW-17 Concentration vs. Time (Pesticides)
Concentration, µg/L
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Beta-BHC
Endrin Ketone
Delta-BHC
Gamma-BHC
4,4'-DDT
Endrin
Alpha-BHC
Dieldrin

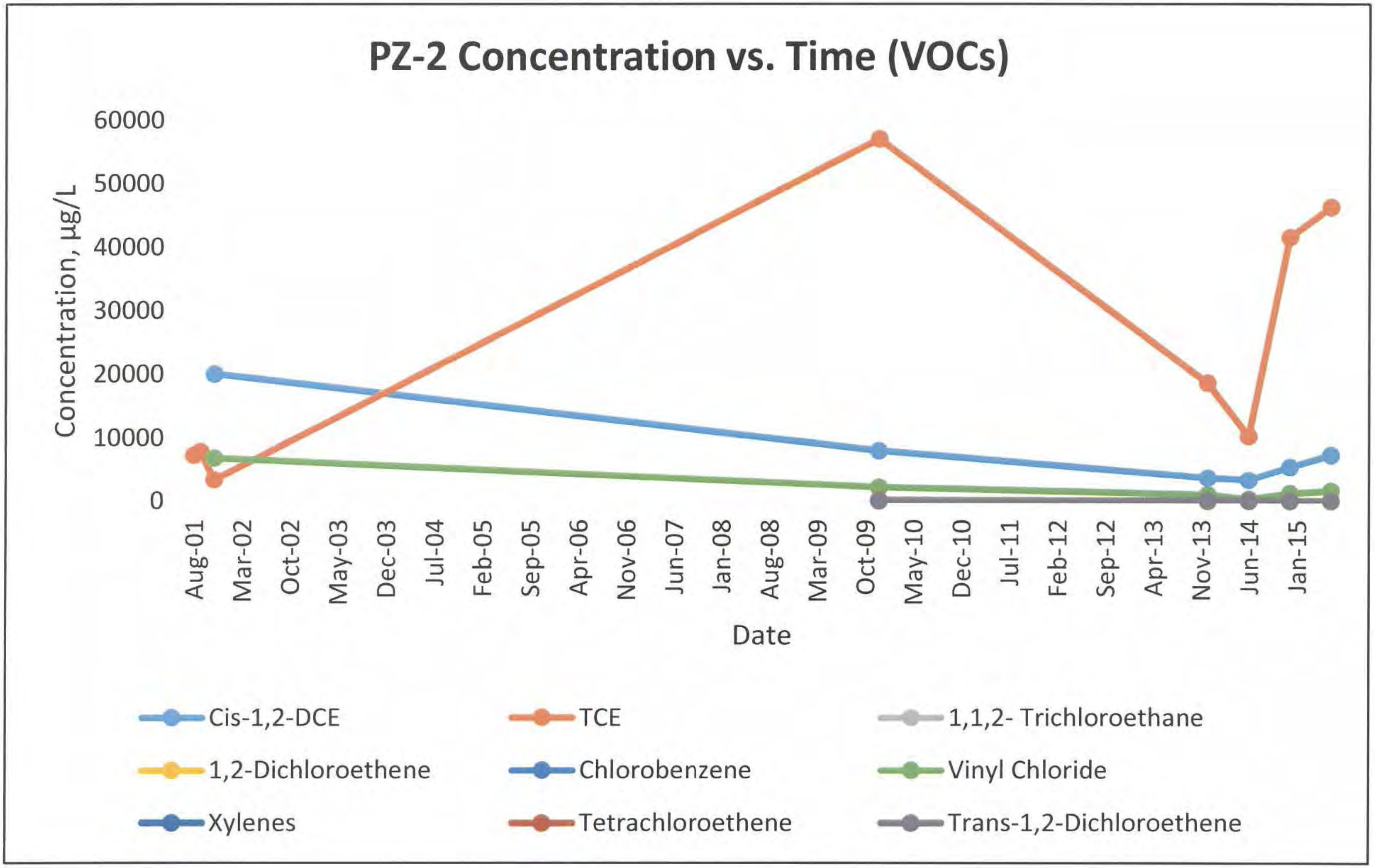

Legion Industries
MW-18 Concentration vs. Time (VOCs)
Concentration, µg/L
4000
3500
3000
2500
2000
1500
1000
500
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE
1,4-Dichlorobenzene
Benzene
Chlorobenzene
Vinyl Chloride
Xylenes
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichlorobenzene
1,2,4-Trichlorobenzene
Tetrachloroethene
Trans-1,2-Dichloroethene
1,3-Dichlorobenzene
1,1,2-Trichloroethane
Naphthalene

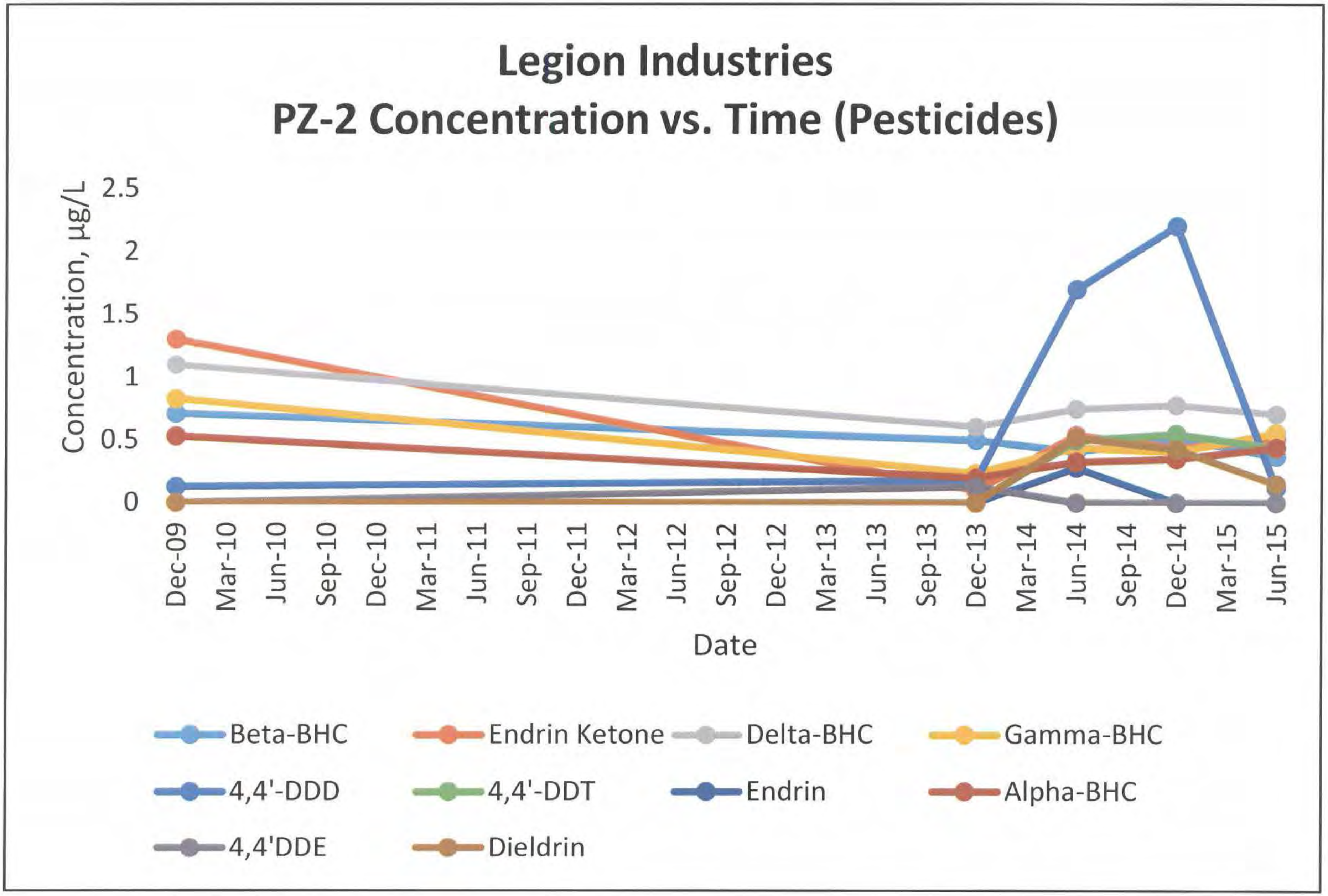

Legion Industries
MW-18 Concentration vs. Time (Pesticides)
Concentration, µg/L
3
2.5
2
1.5
1
0.5
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Beta-BHC
Endrin Ketone
Delta-BHC
Gamma-BHC
Chlordane
Endrin
Toxaphene
Alpha-BHC


Legion Industries
MW-19 Concentration vs. Time (VOCs)
Concentration, µg/L
12000
10000
8000
6000
4000
2000
0
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Date
Cis-1,2-DCE
TCE
Benzene
Chlorobenzene
Vinyl Chloride
Xylenes
Naphthalene
Toluene
Ethylbenzene

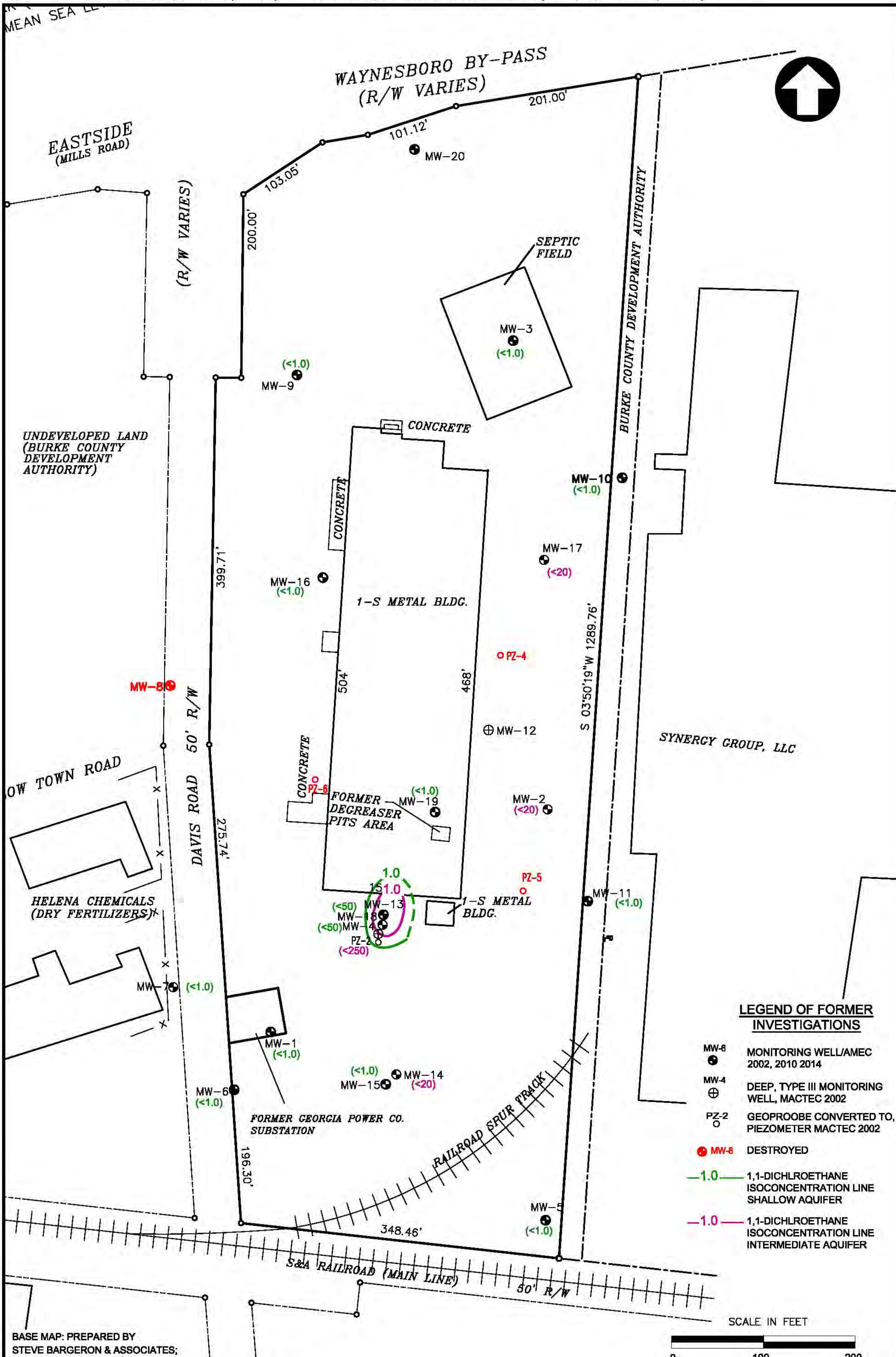


Legion Industries
MW-19 Concentration vs. Time (Pesticides)
Concentration, µg/L
0
2
4
6
8
10
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Axis Title
Beta-BHC
Endrin Ketone
Delta-BHC
Gamma-BHC
4,4'-DDD
4,4'-DDT
Endrin
Alph-BHC
Dieldrin
Endosulfan II


PZ-2 Concentration vs. Time (VOCs)
Concentration, µg/L
60000
50000
40000
30000
20000
10000
0
Aug-01
Mar-02
Oct-02
May-03
Dec-03
Jul-04
Feb-05
Sep-05
Apr-06
Nov-06
Jun-07
Jan-08
Aug-08
Mar-09
Oct-09
May-10
Dec-10
Jul-11
Feb-12
Sep-12
Apr-13
Nov-13
Jun-14
Jan-15
Date
Cis-1,2-DCE
TCE
1,1,2- Trichloroethane
1,2-Dichloroethene
Chlorobenzene
Vinyl Chloride
Xylenes
Tetrachloroethene
Trans-1,2-Dichloroethene

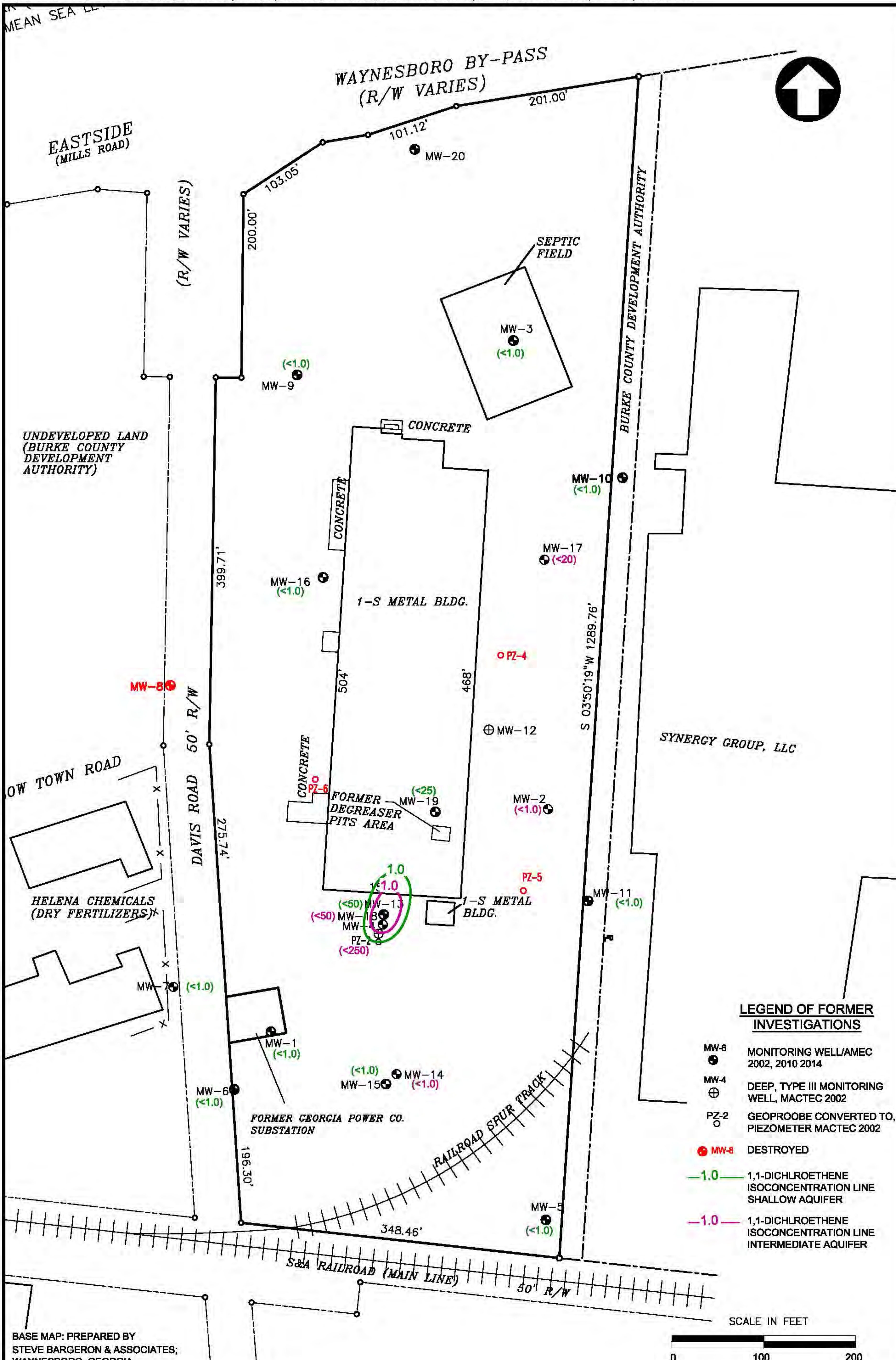


Legion Industries
PZ-2 Concentration vs. Time (Pesticides)
Concentration, µg/L
2.5
2
1.5
1
0.5
0
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Date
Beta-BHC
Endrin Ketone
Delta-BHC
Gamma-BHC
4,4'-DDD
4,4'-DDT
Endrin
Alpha-BHC
4,4'DDE
Dieldrin



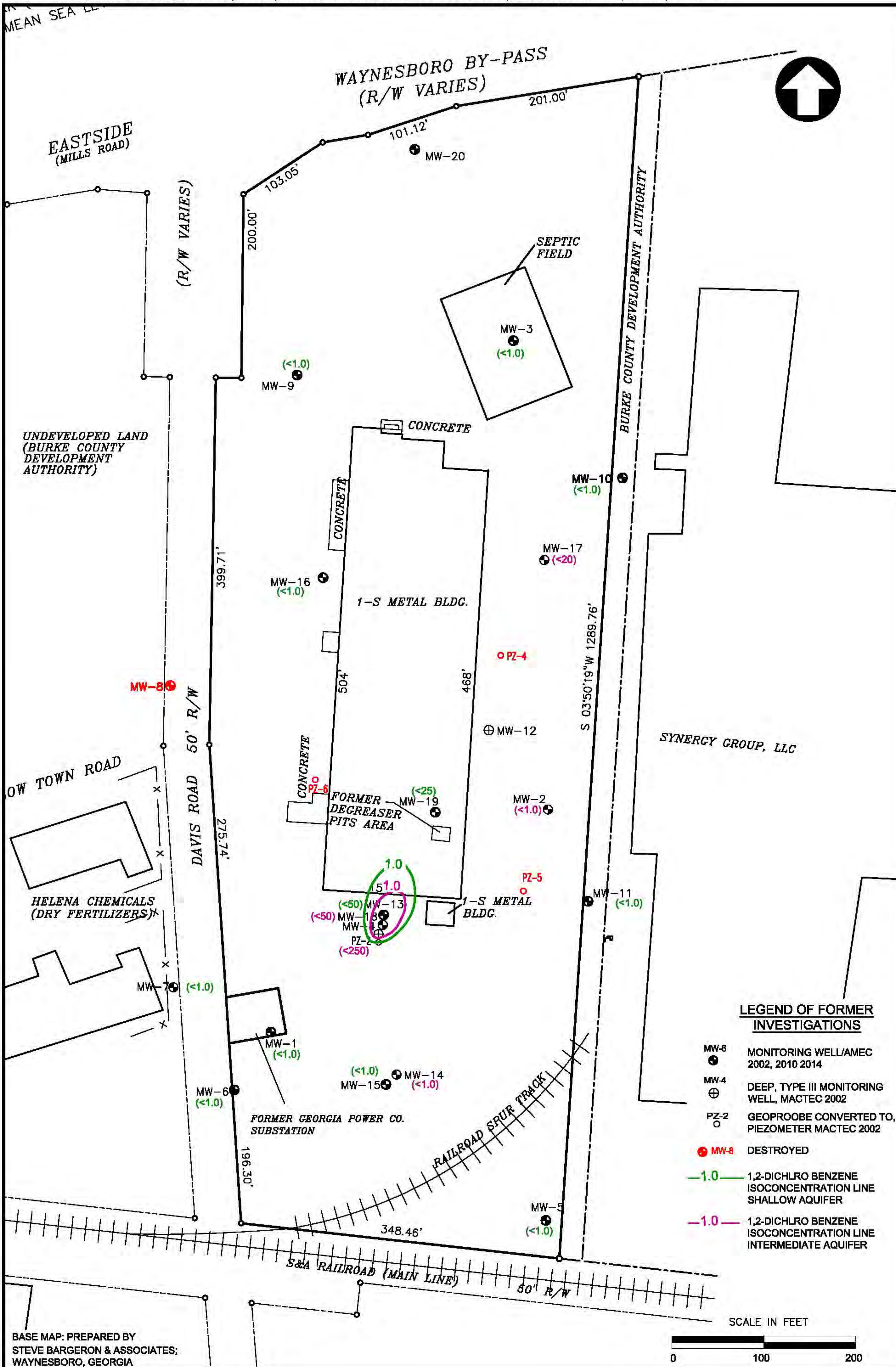
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,1-DICHLROETHANE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-1**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



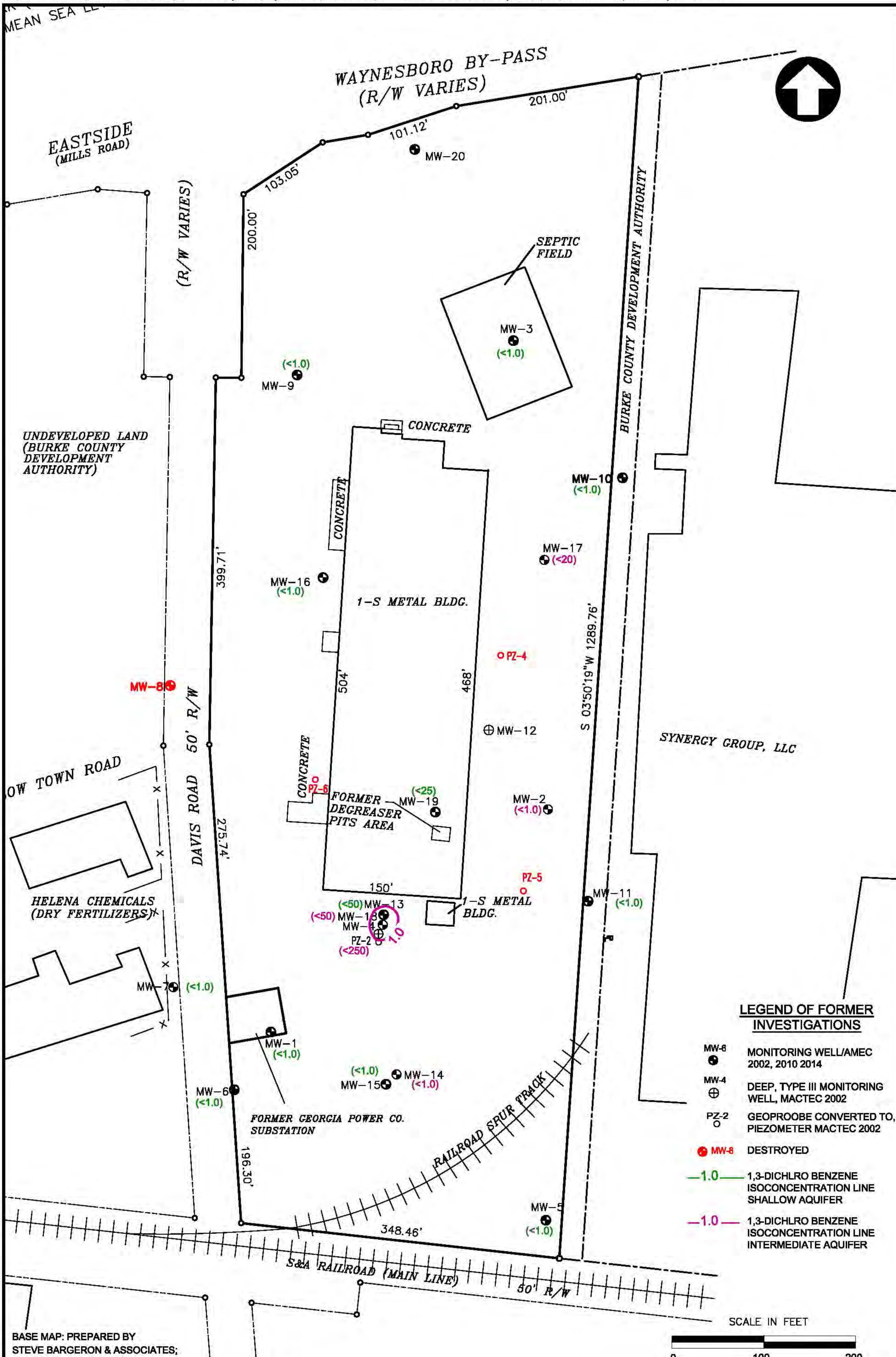
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,1-DICHLROETHENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-2

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



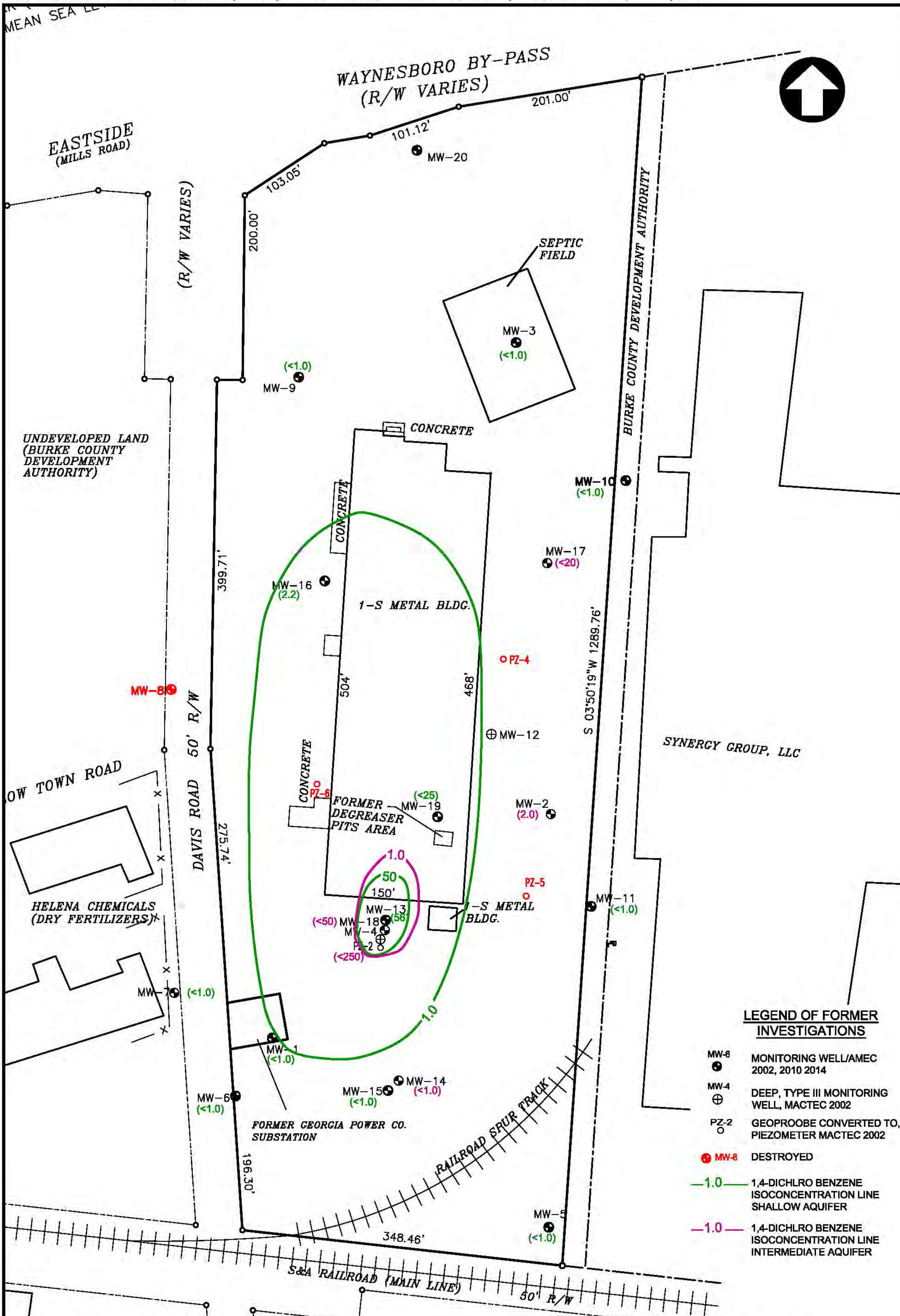
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,2-DICHLORO BENZENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-3

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,3-DICHLORO BENZENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-4

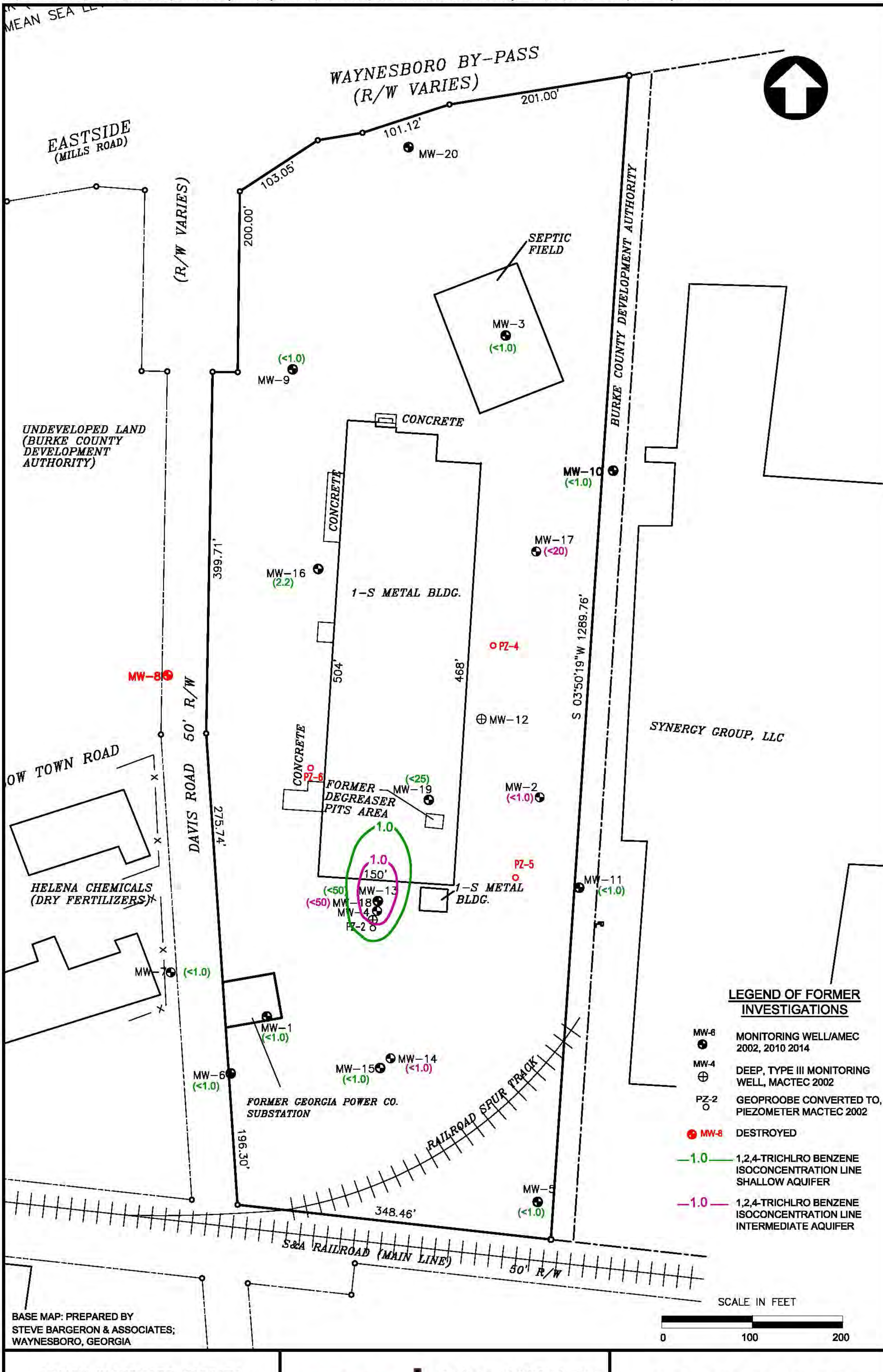
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



BASE MAP: PREPARED BY
STEVE BARGERON & ASSOCIATES;
WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,4-DICHLORO BENZENE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-5**

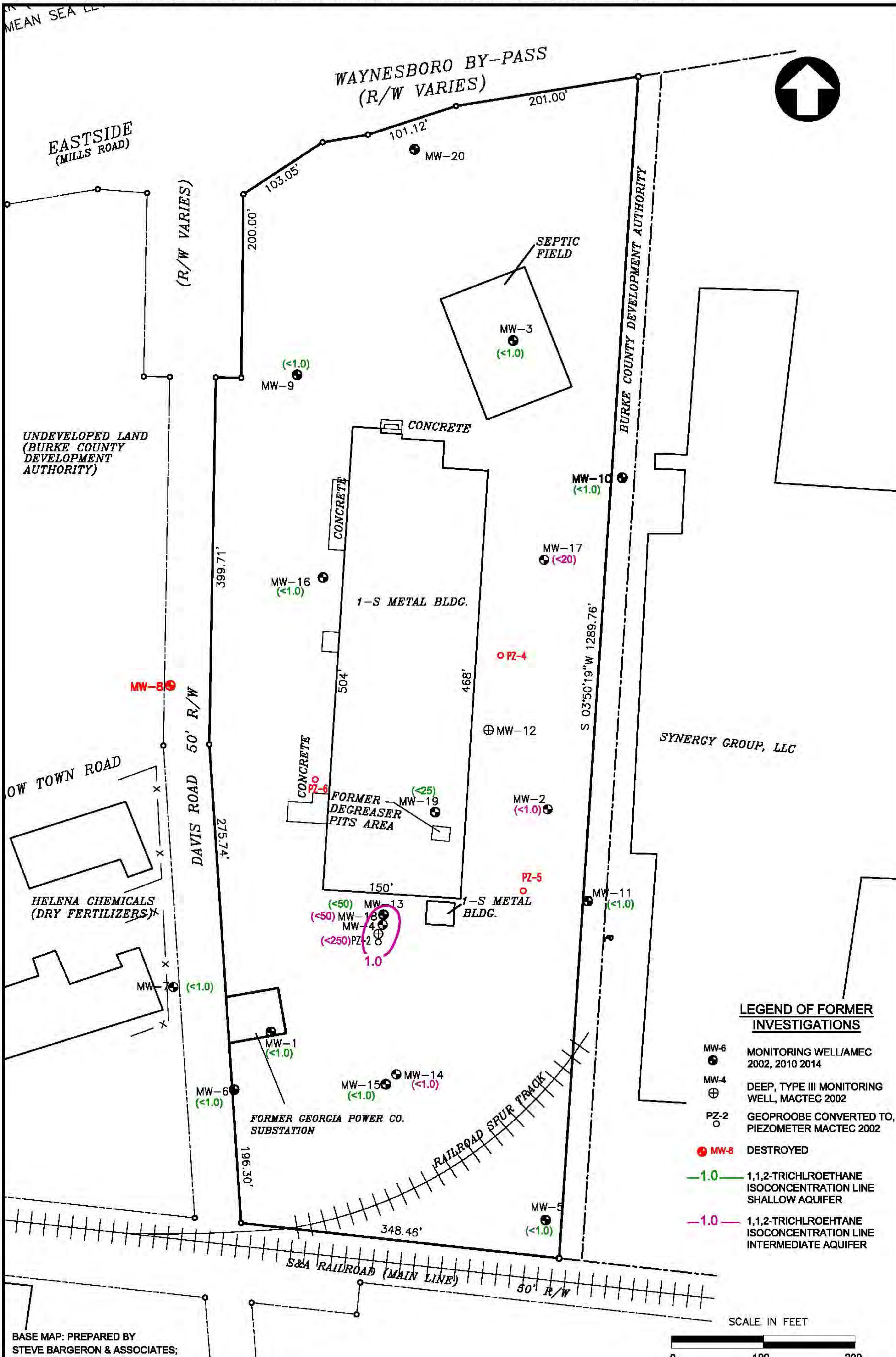
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,2,4-TRICHLORO BENZENE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-6**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

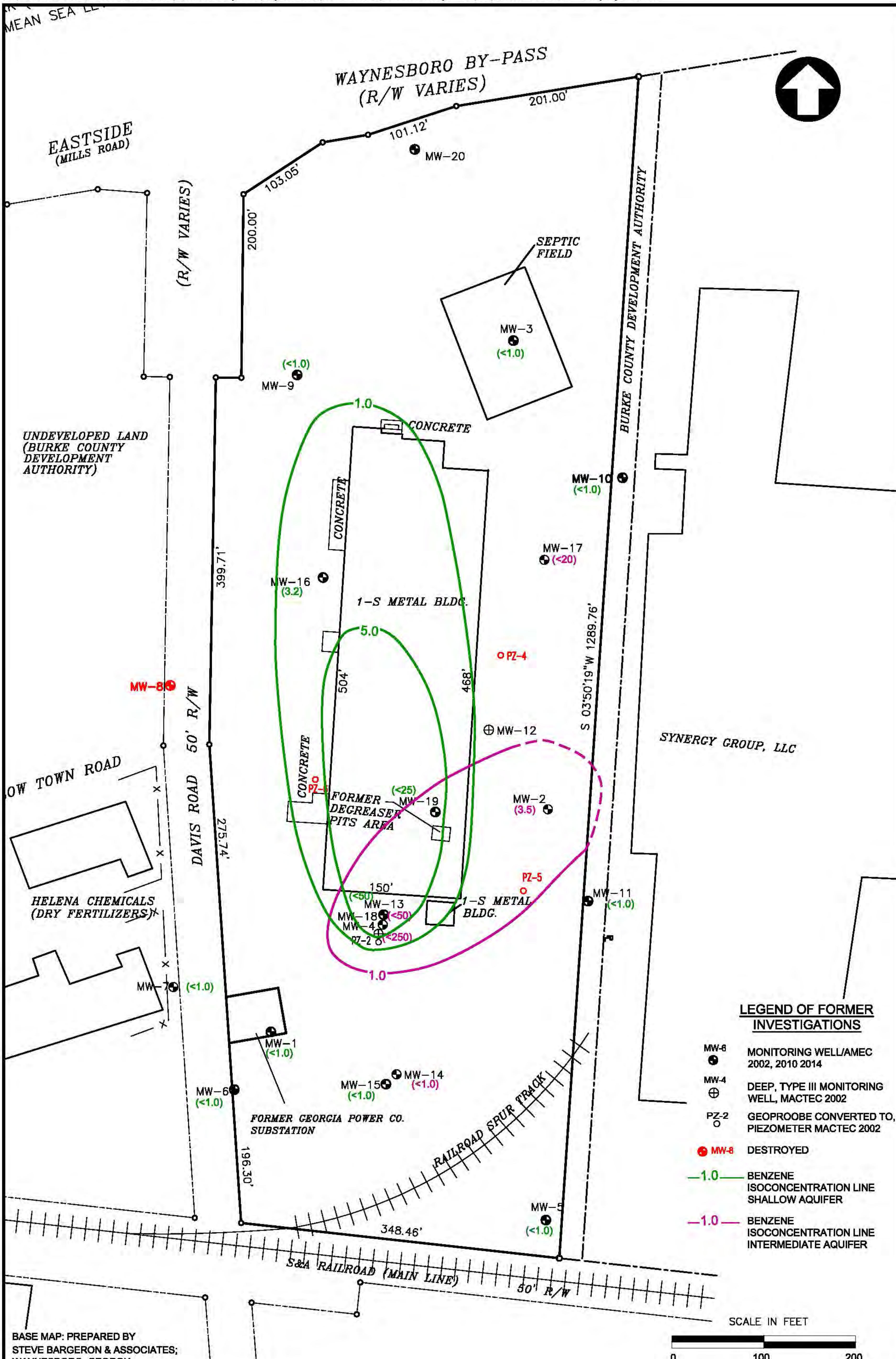
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\JAN 2016\1.1.2--TRICHLOR ETHANE.dwg 09/07/2018 2:48pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,1,2-TRICHLOROETHANE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-7

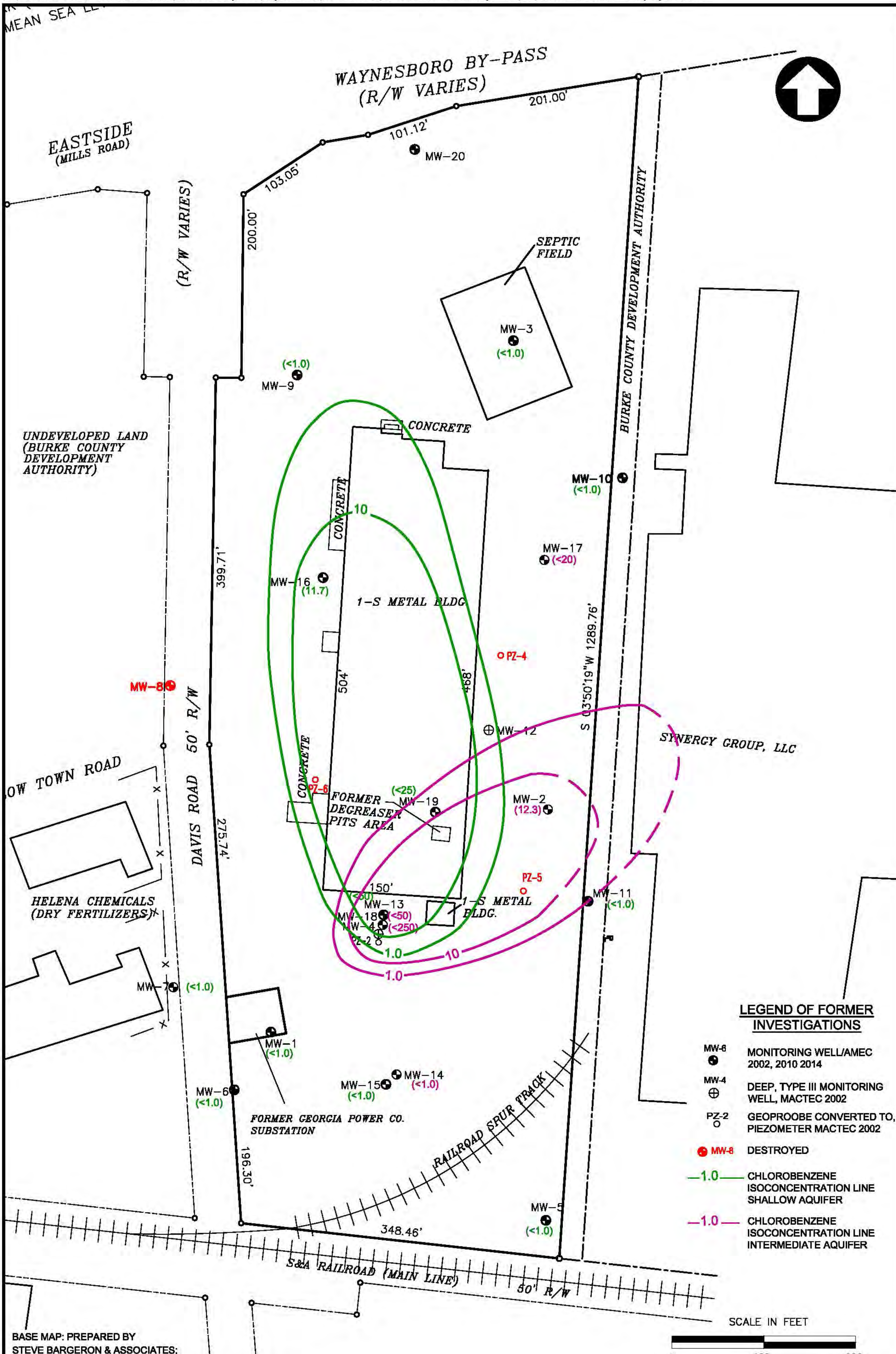
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\BENZENE.dwg 10/11/2018 8:46am Tonya.gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	BENZENE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-8**

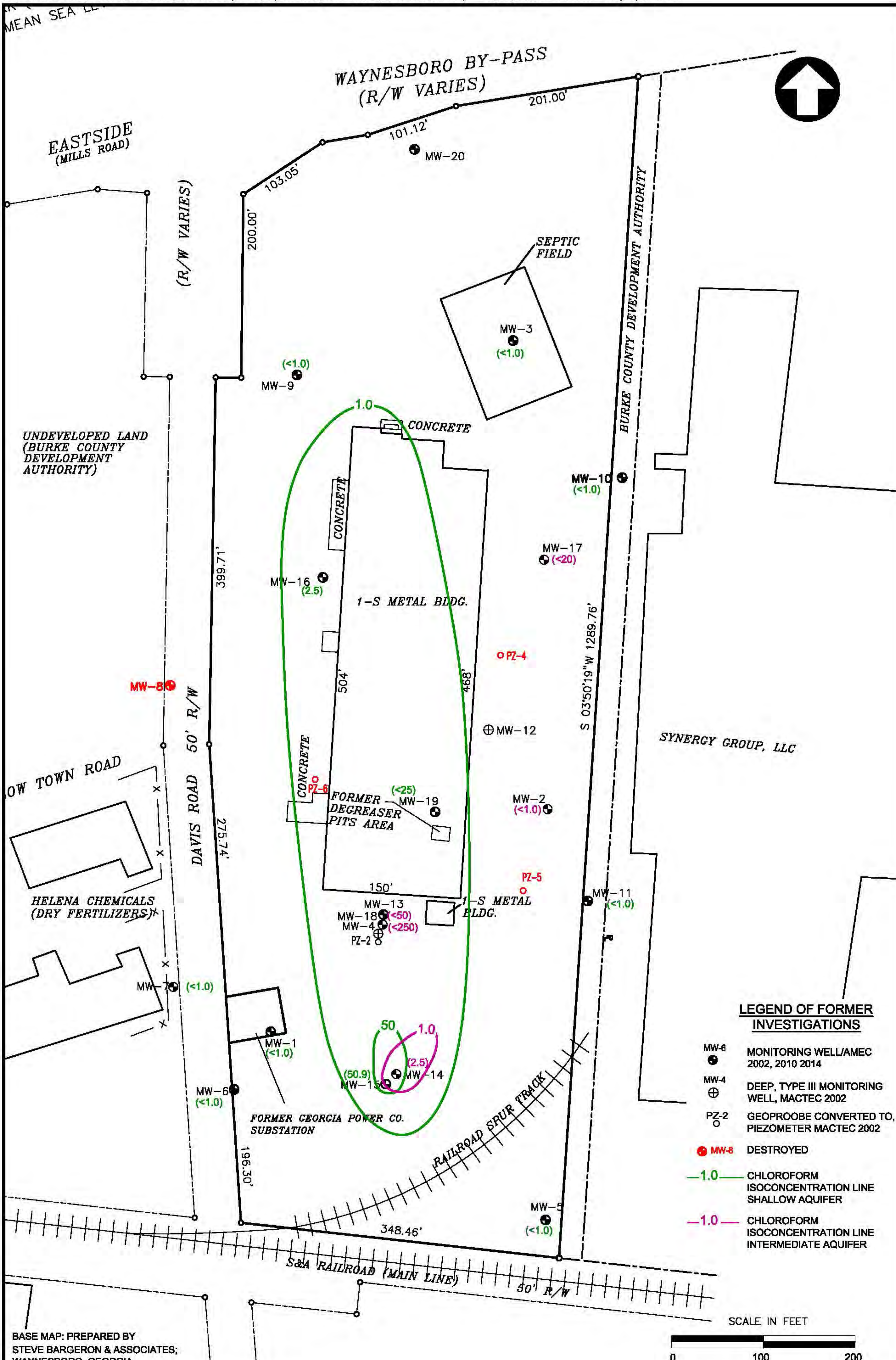
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



BASE MAP: PREPARED BY
STEVE BARGERON & ASSOCIATES;
WAYNESBORO, GEORGIA

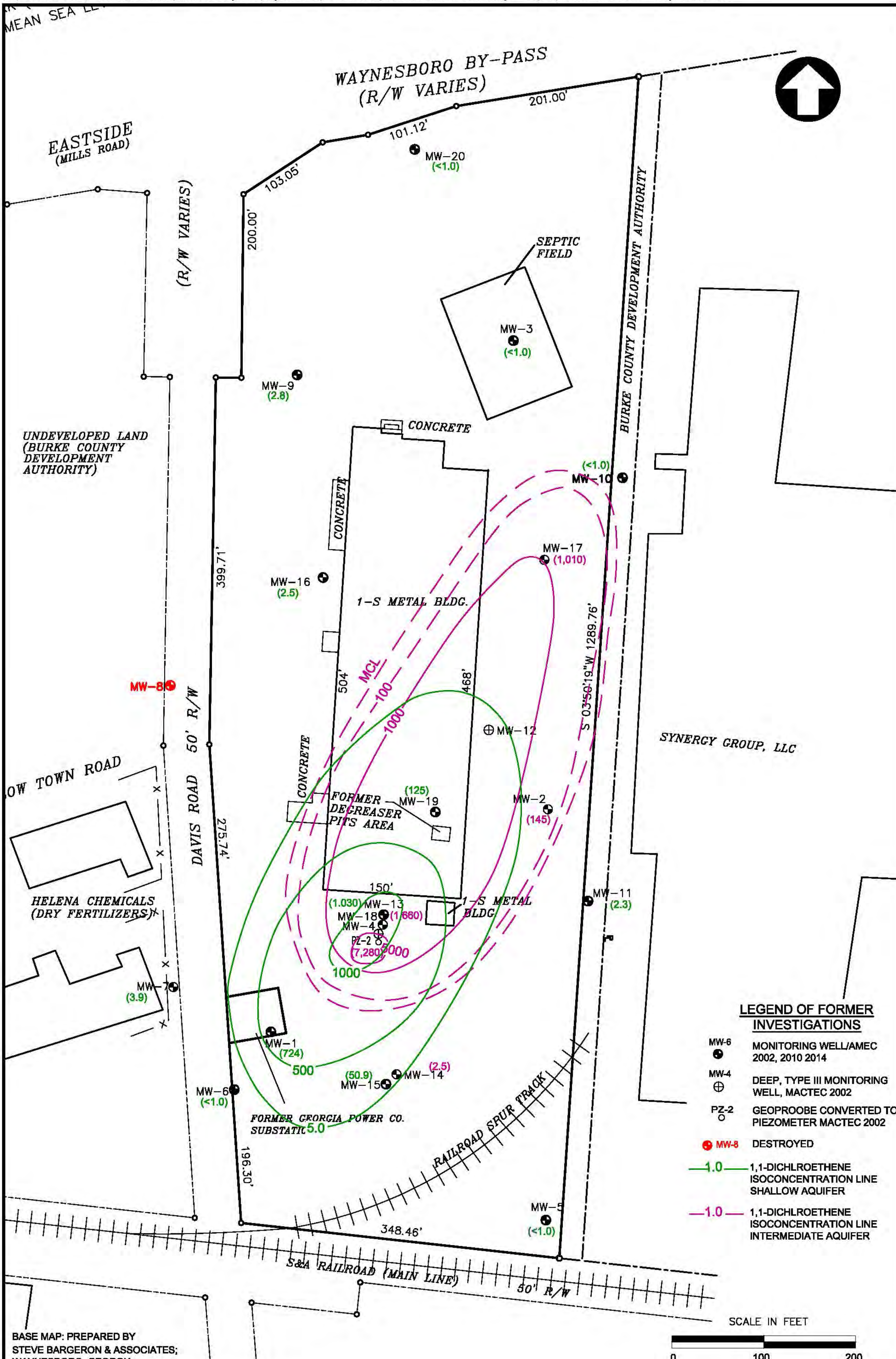
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CHLOROBENZENE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-9**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



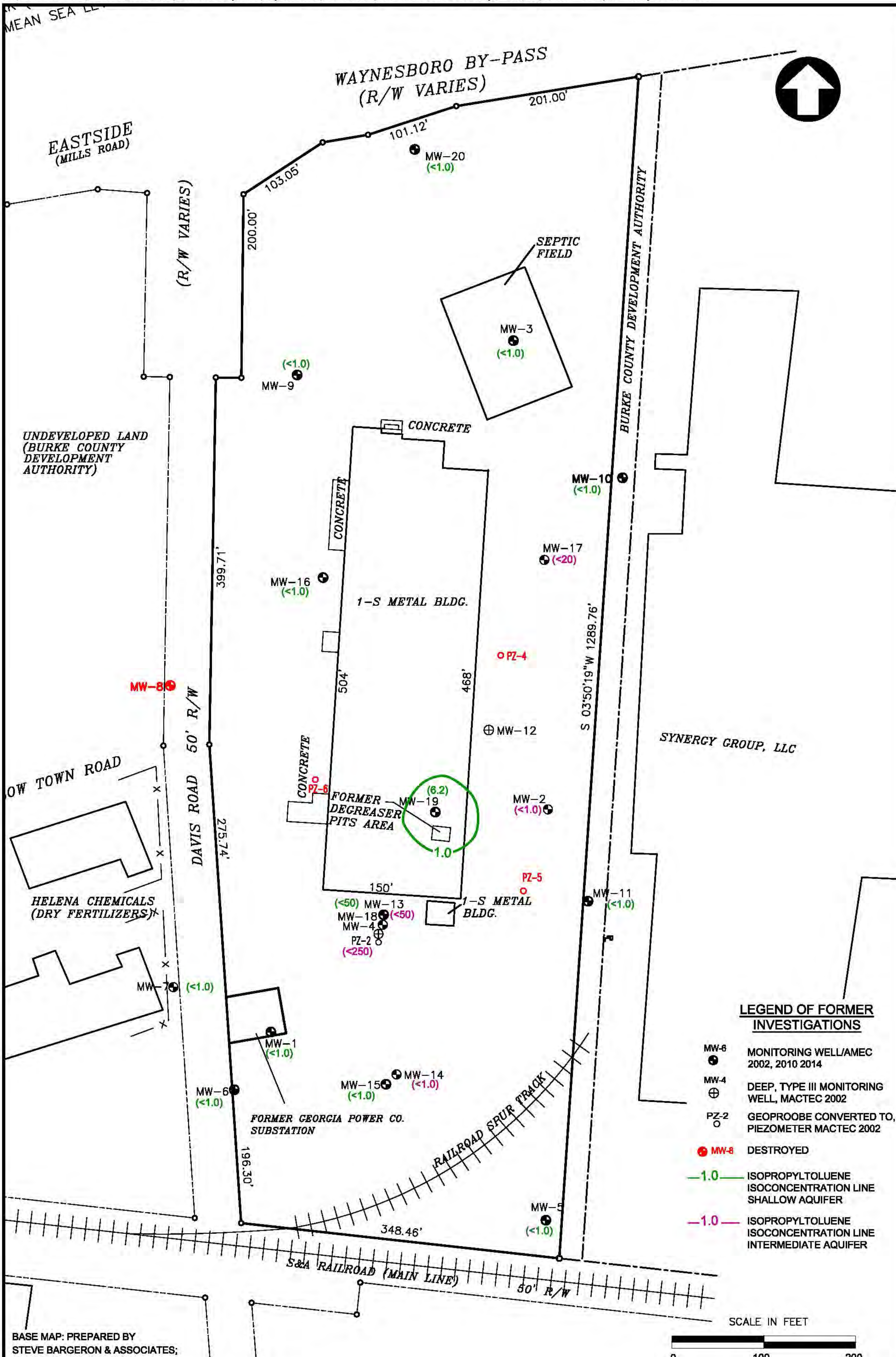
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CHLOROFORM ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-10

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



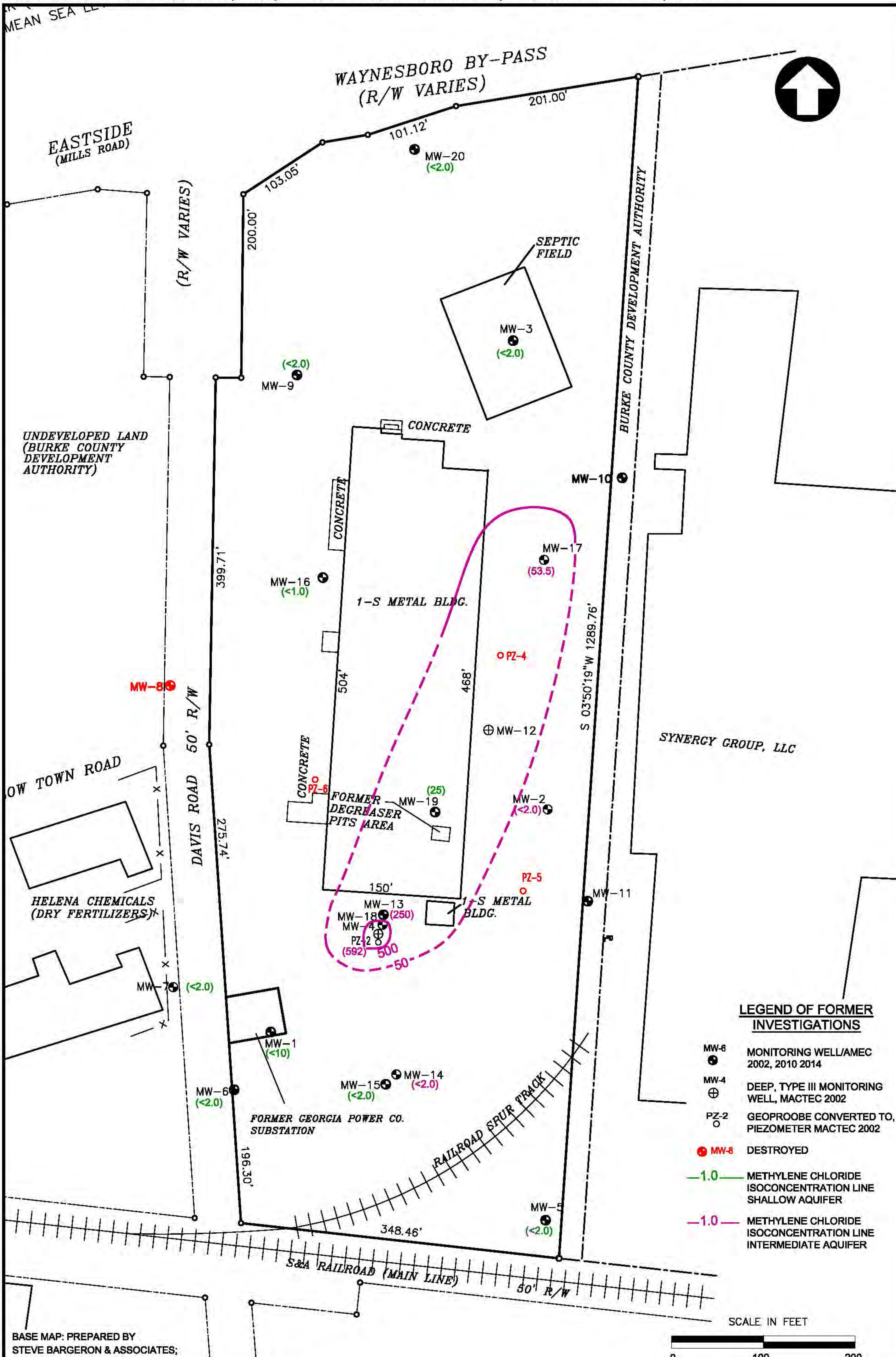
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	1,2-DICHLROETHENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-11

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	ISOPROPYLTOLUENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-12

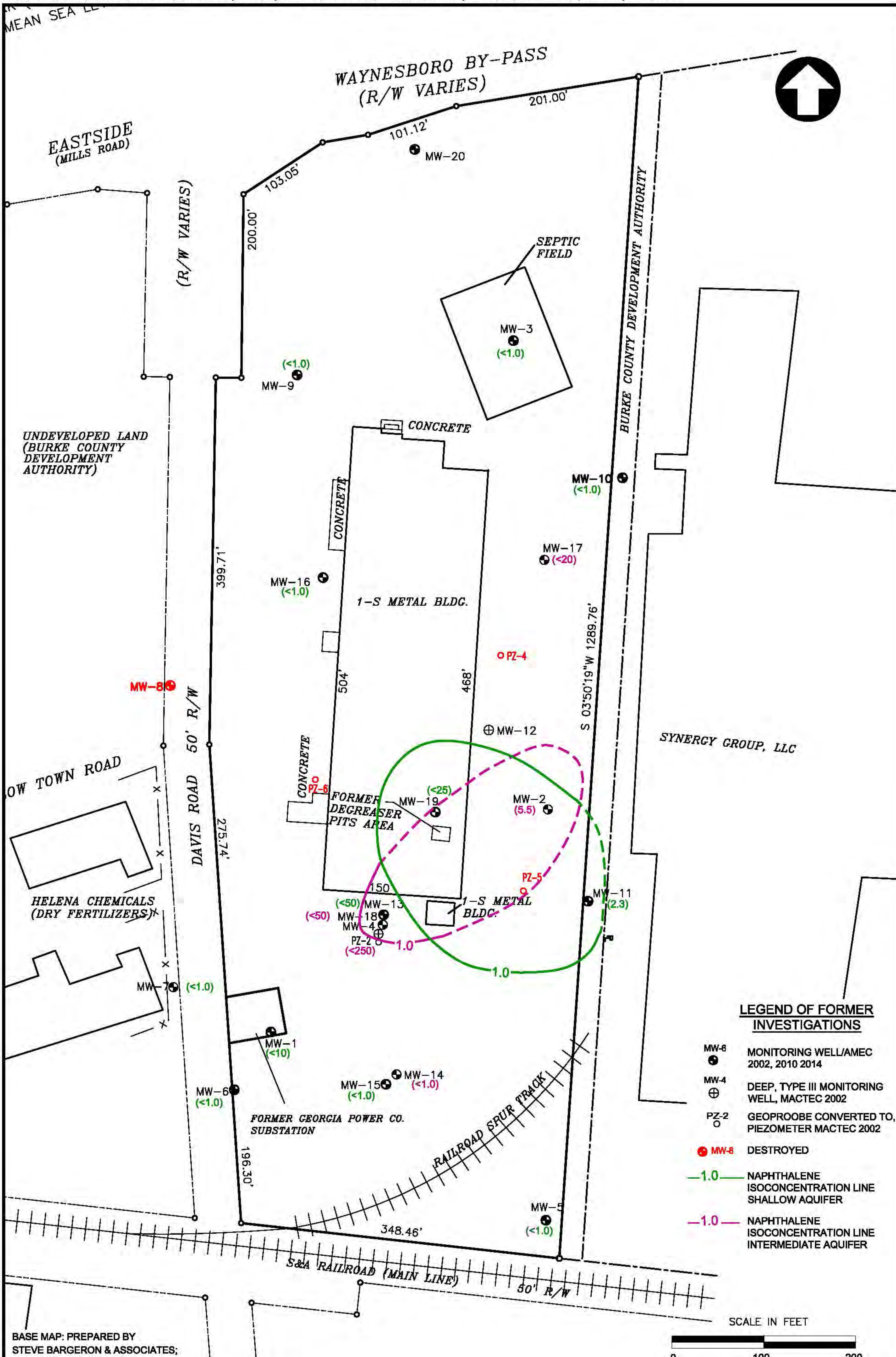
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	METHYLENE CHLORIDE ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-13**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\JAN 2016\NAPHTHALENE.dwg 09/17/2018 2:24pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	NAPHTHALENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-14

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

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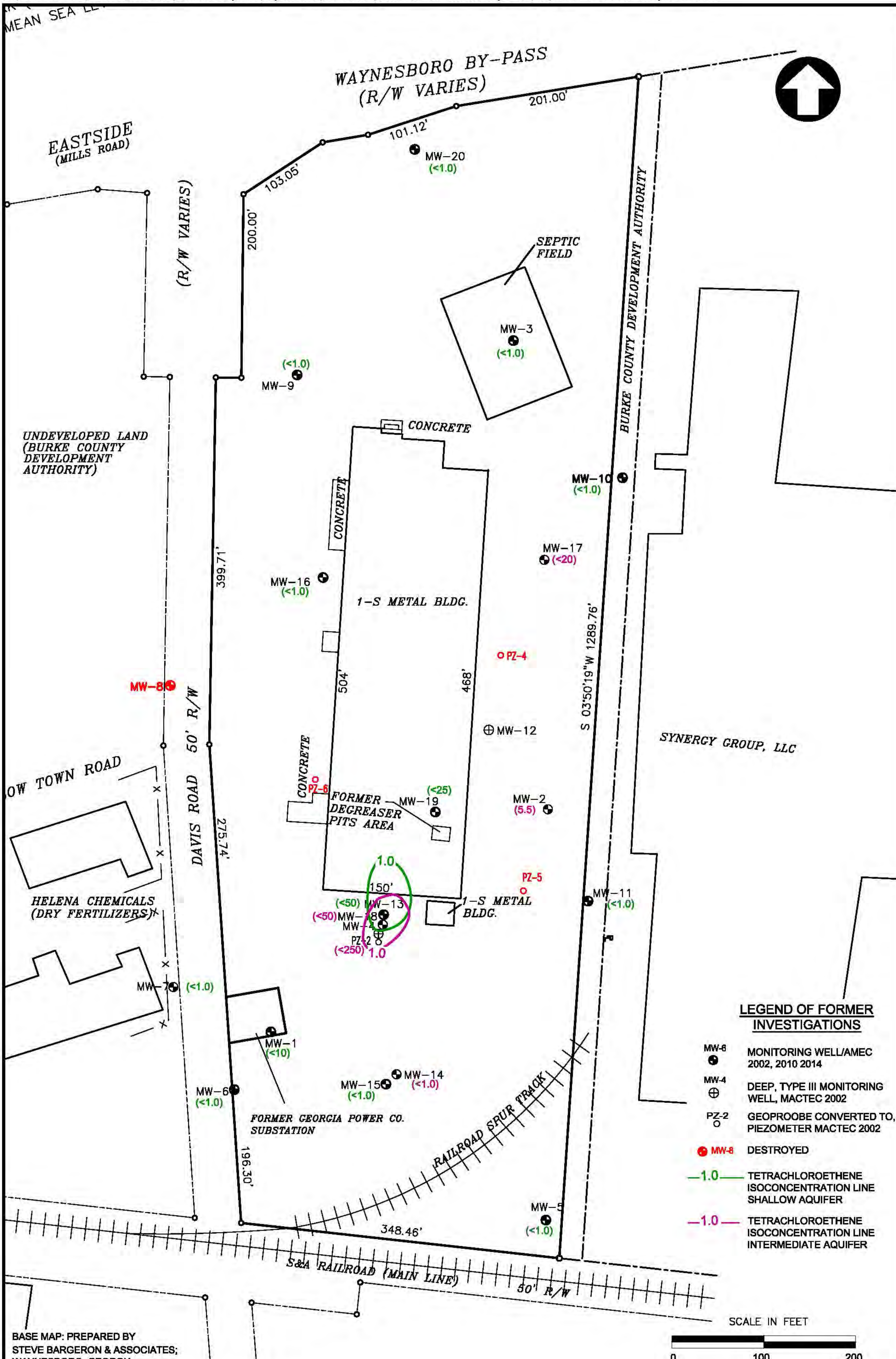


LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

TETRACHLOROETHENE ISOPLETH MAP

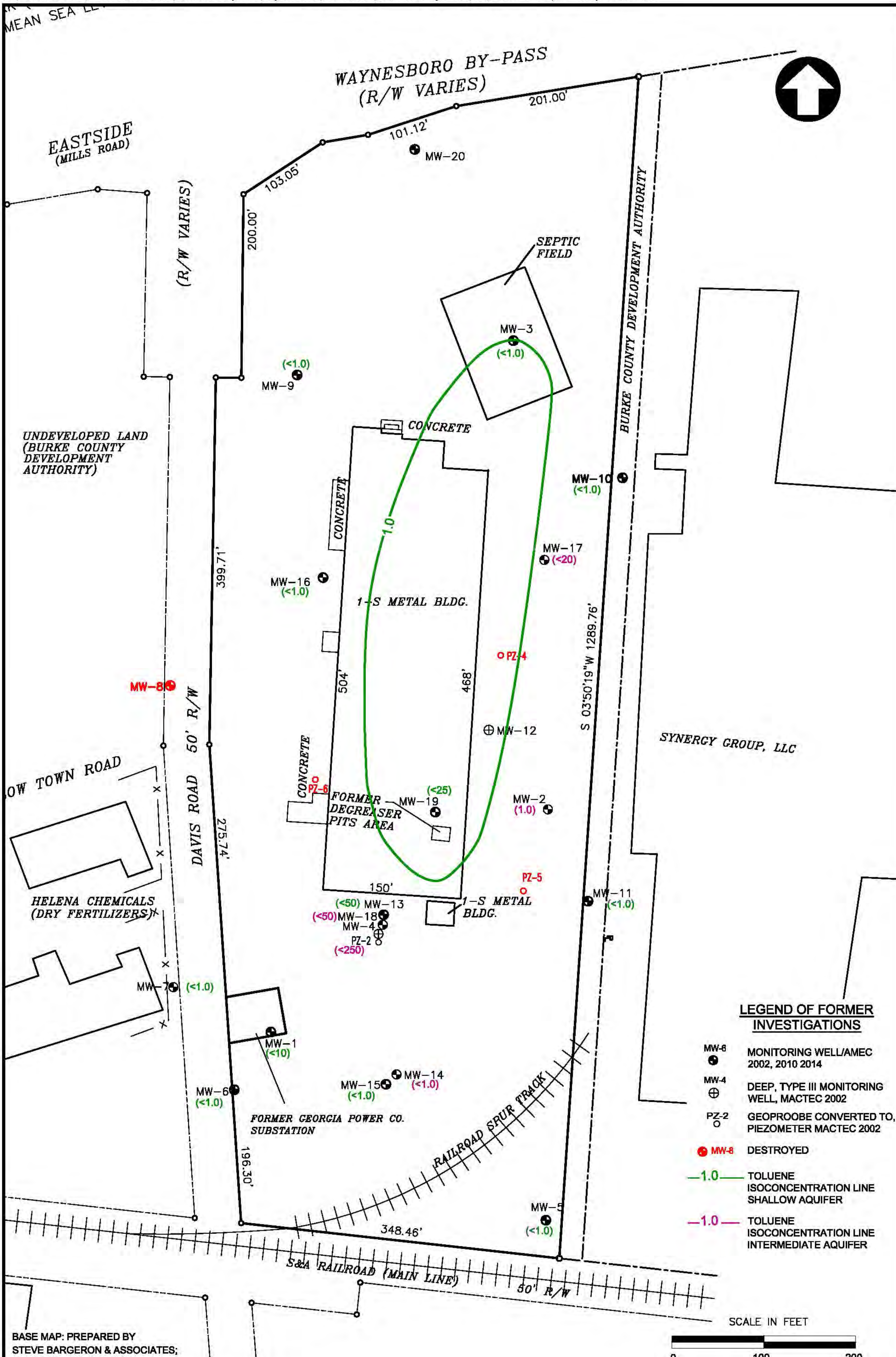
JOB NO. 6121-18-0893

FIGURE F-15

PREPARED BY/DATE TG 9/6/2018

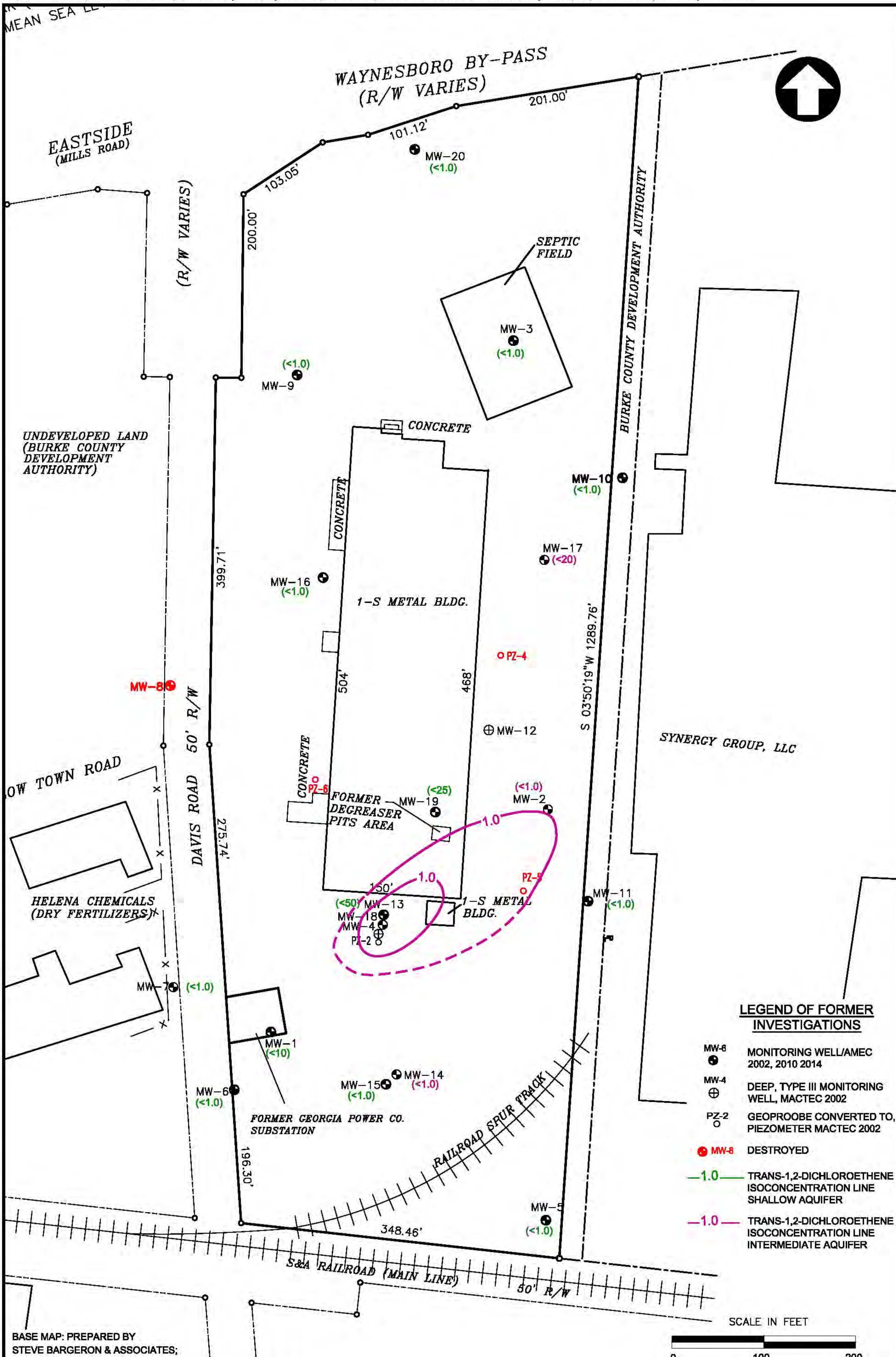
CHECKED BY/DATE SRF 9/6/2018

J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\JAN 2016\TOLUENE.dwg 09/17/2018 3:23pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	TOLUENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-16

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

TRANS-1,2-DICHLOROETHENE
ISOPLETH MAP

JOB NO. **6121-18-0893**

FIGURE **F-17**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

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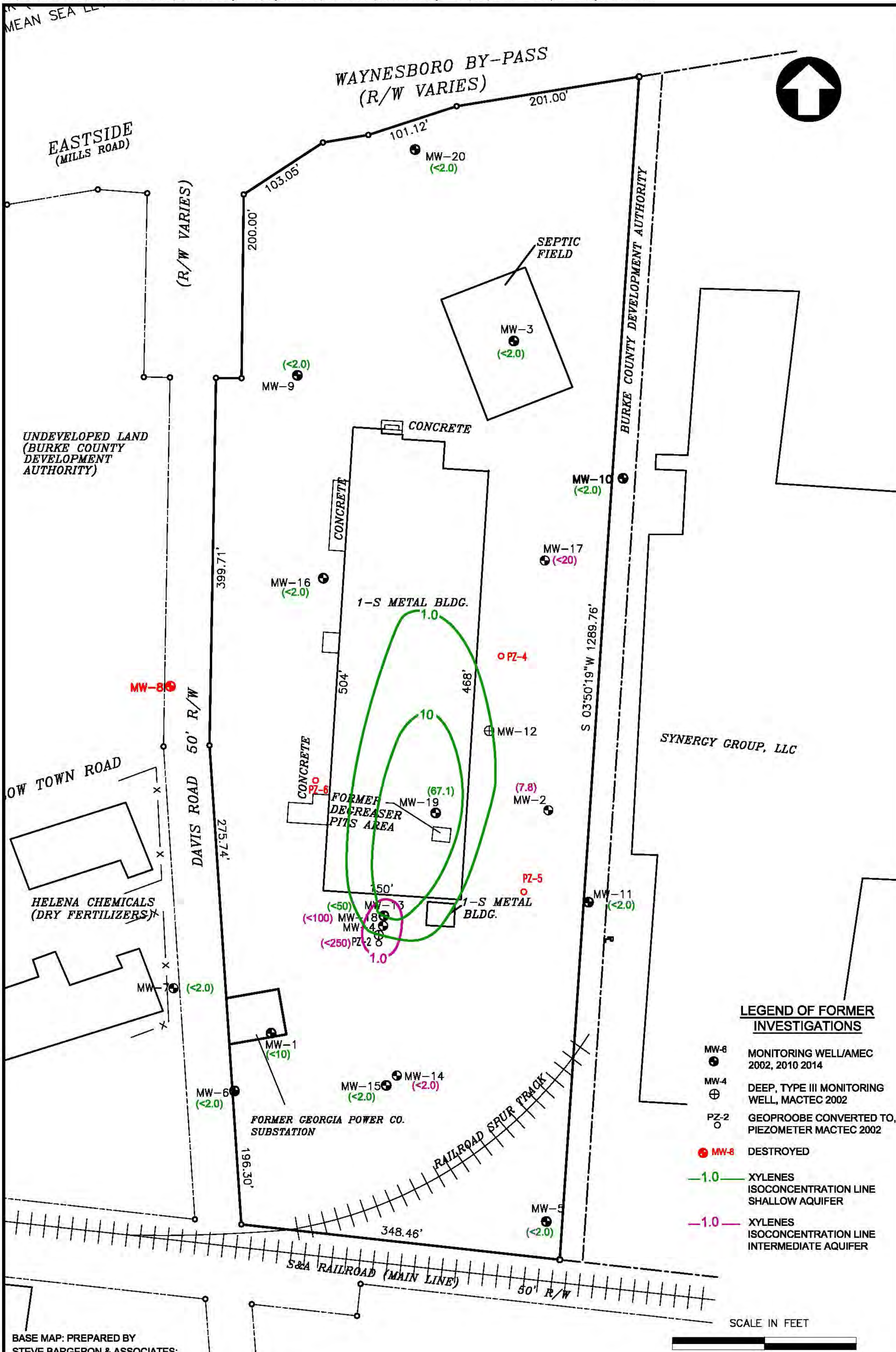


LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

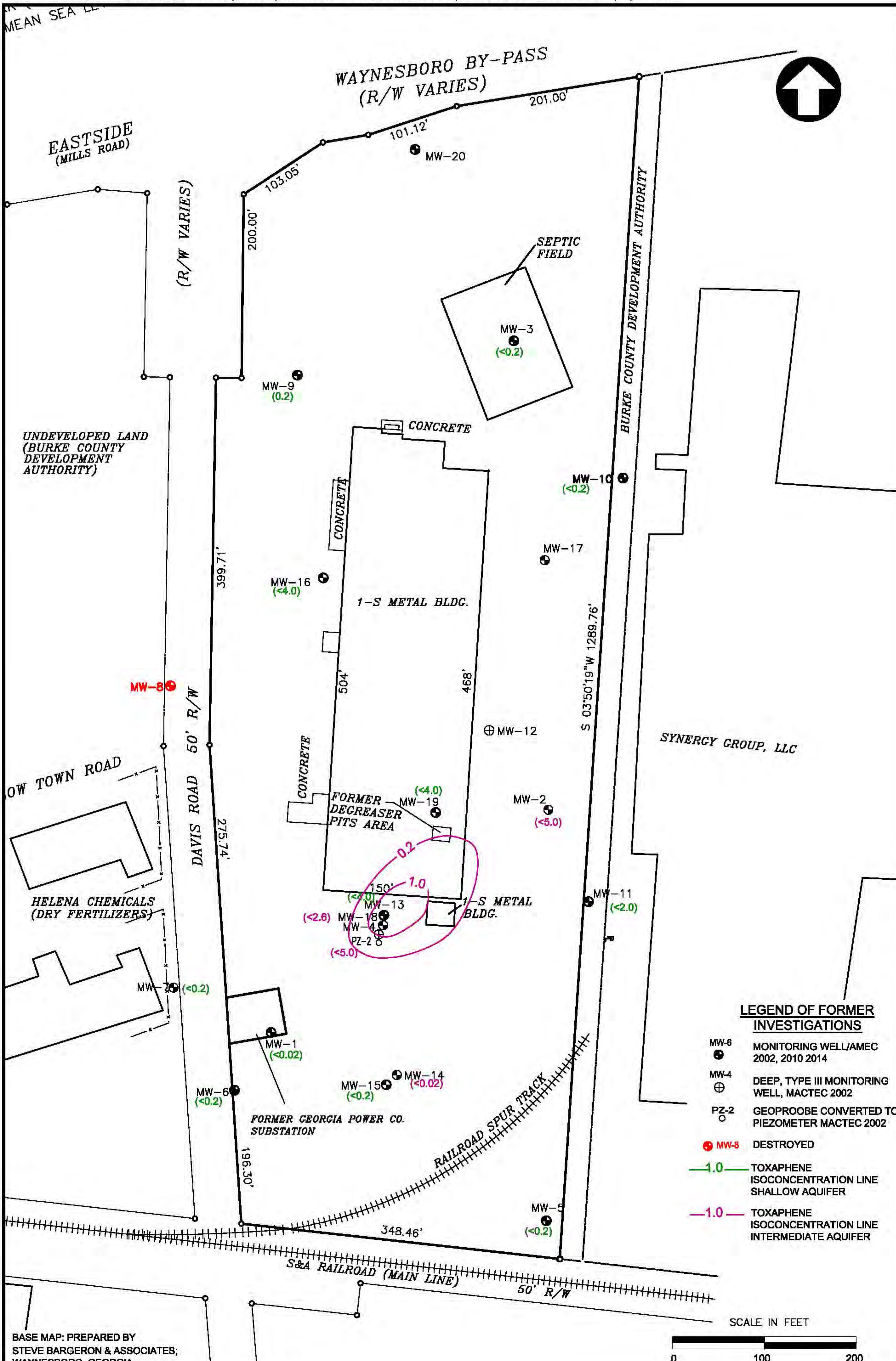
wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

XYLENES
ISOPLETH MAP

JOB NO. 6121-18-0893 FIGURE F-18

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



BASE MAP: PREPARED BY
STEVE BARGERON & ASSOCIATES;
WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	TOXAPHENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-19

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

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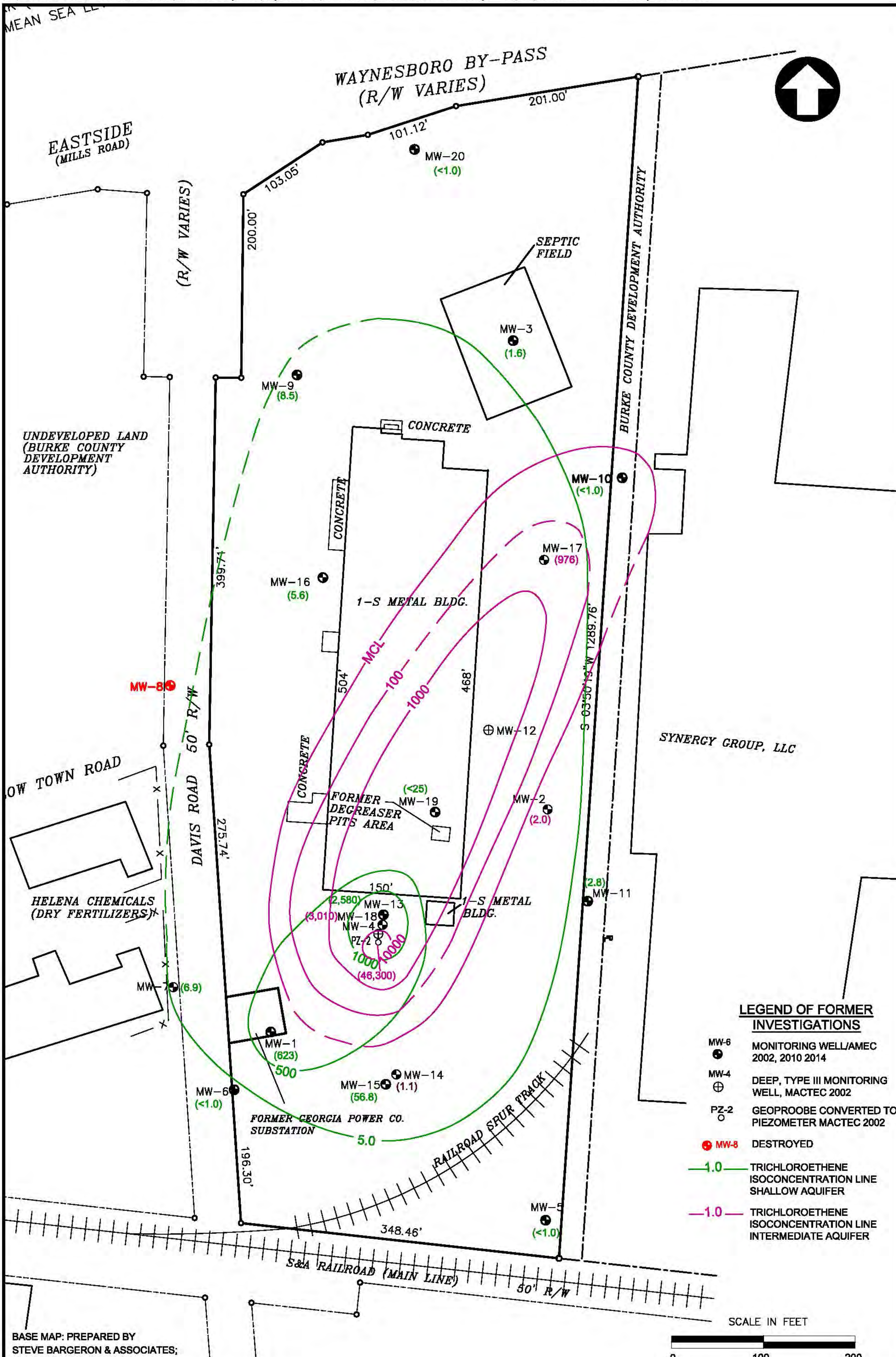
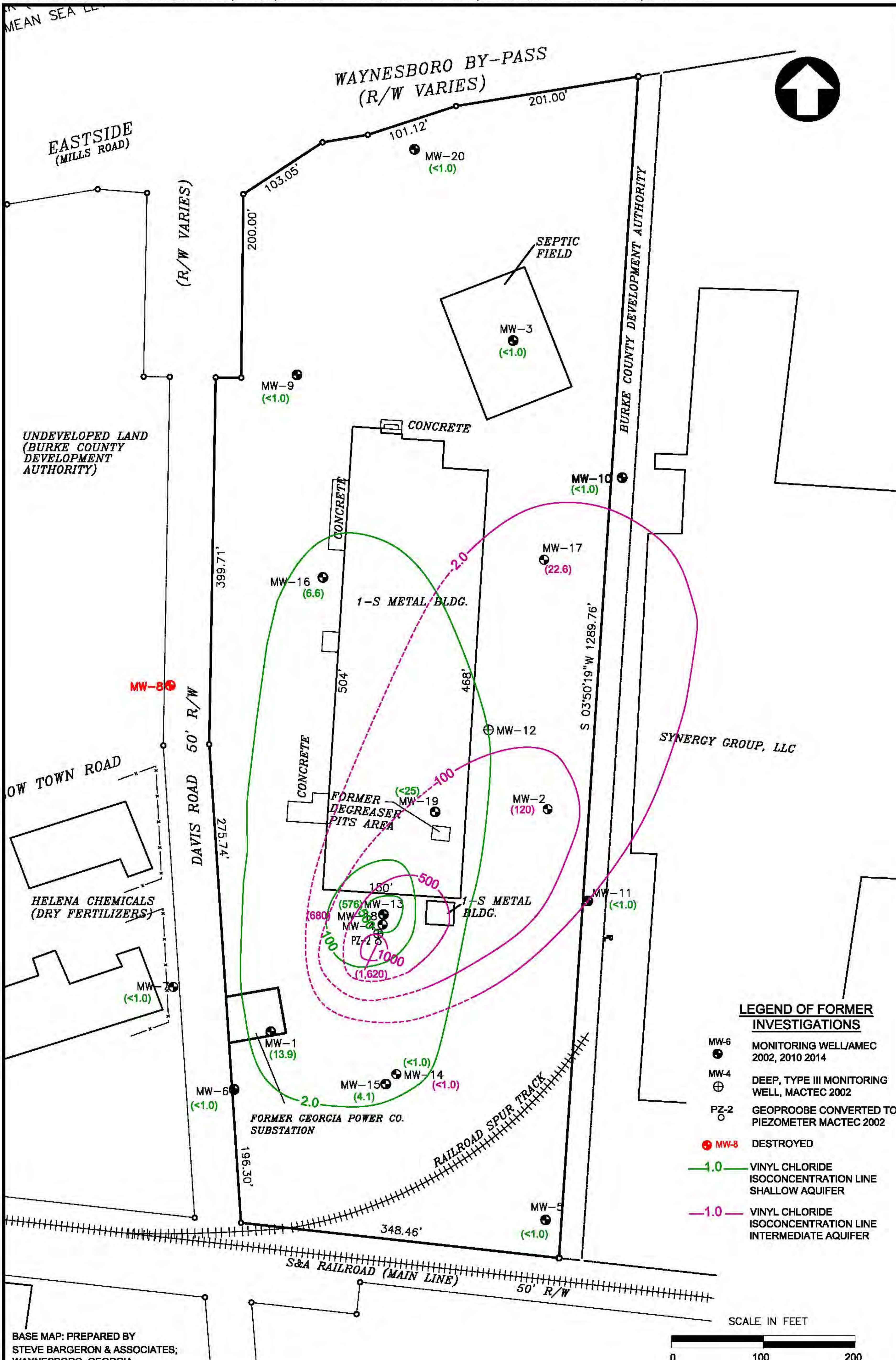


LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	TRICHLOROETHENE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-20

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

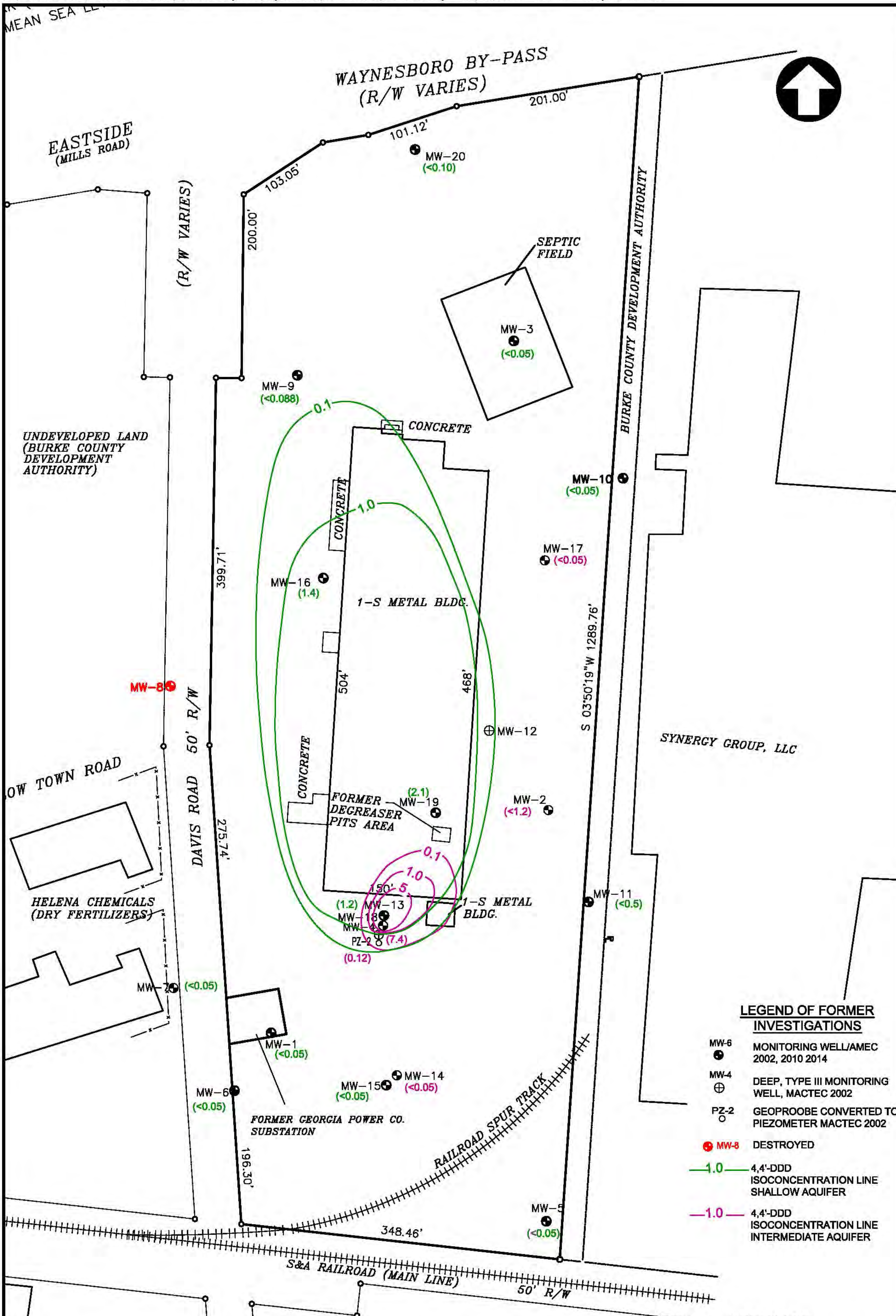


BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	VINYL CHLORIDE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-21

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

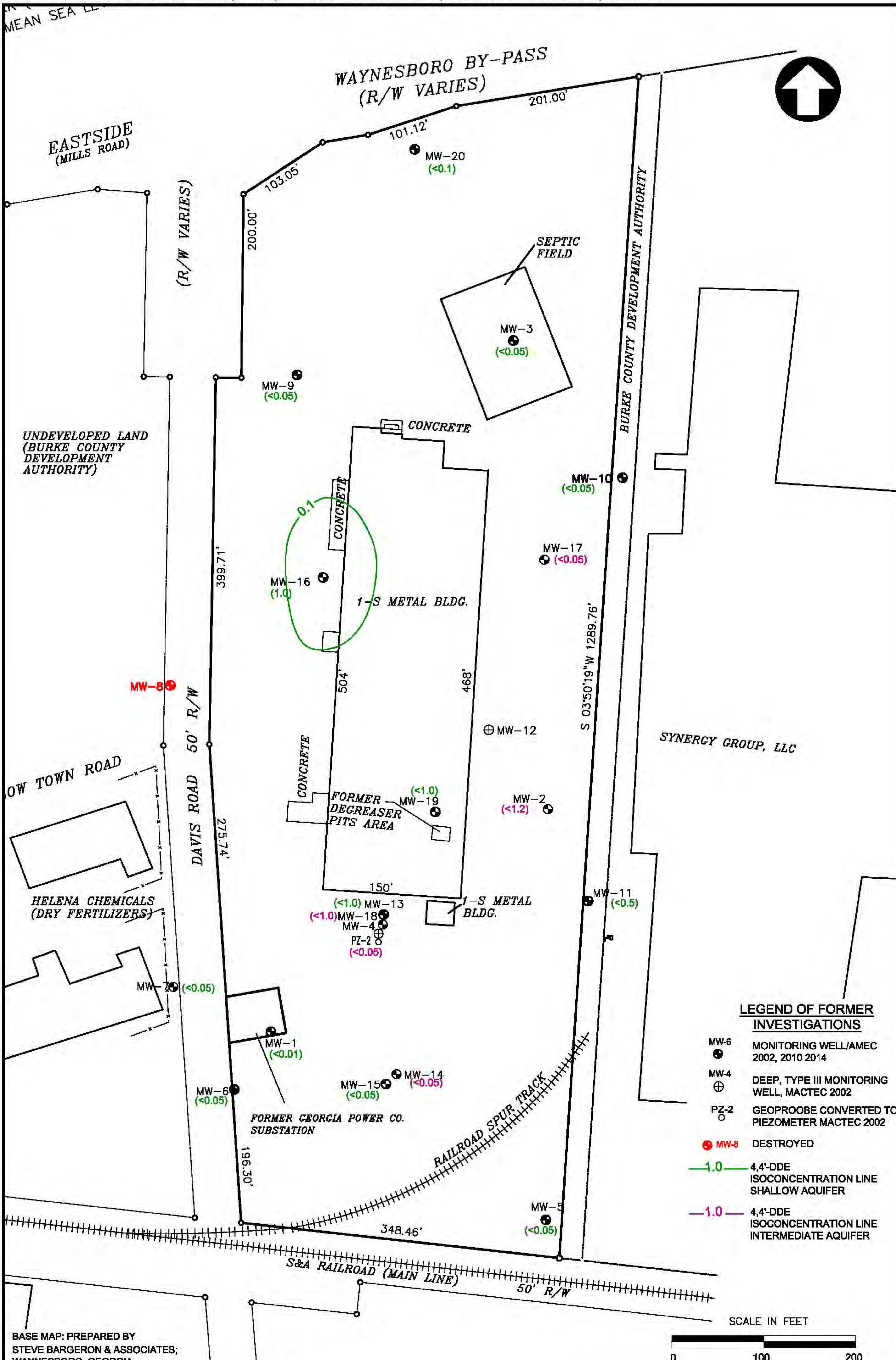
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\4,4-DDD.dwg 09/19/2018 8:33am Tonya.Gladstone



BASE MAP: PREPARED BY
STEVE BARGERON & ASSOCIATES;
WAYNESBORO, GEORGIA

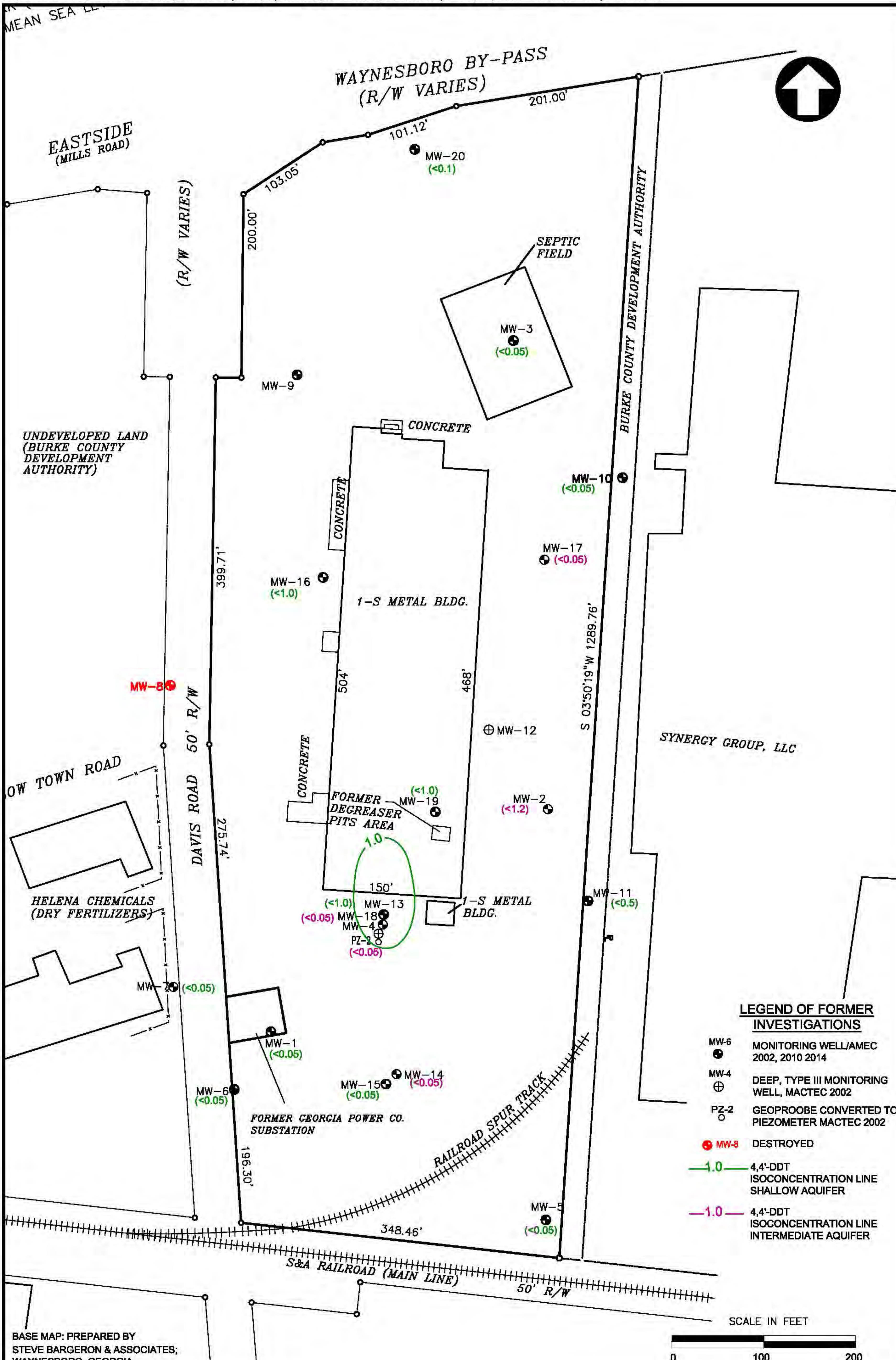
LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	4,4'-DDD ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-22

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	4,4'-DDE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-23

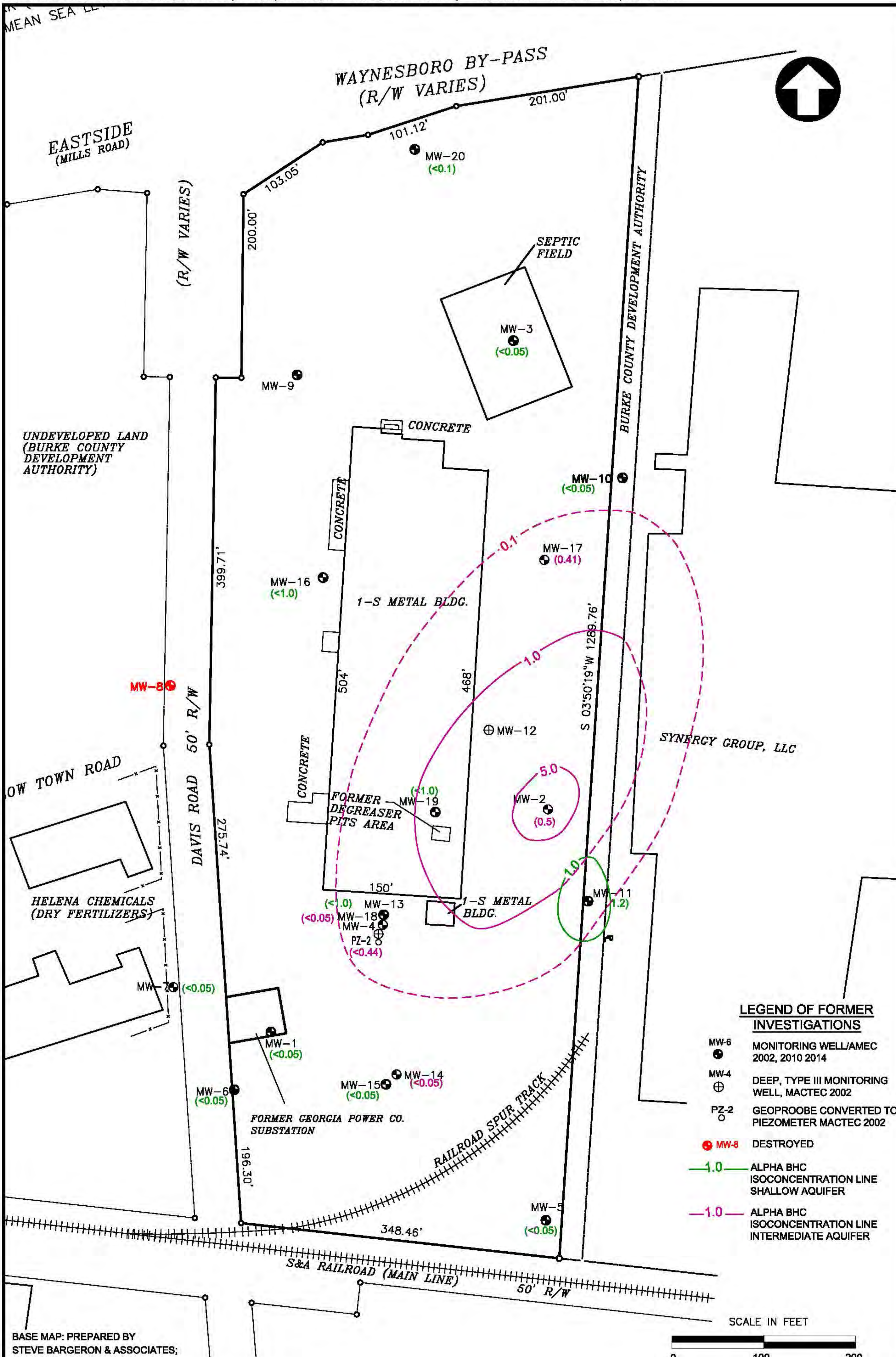
PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	4,4'-DDT ISOPLETH MAP JOB NO. **6121-18-0893** FIGURE **F-24**

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

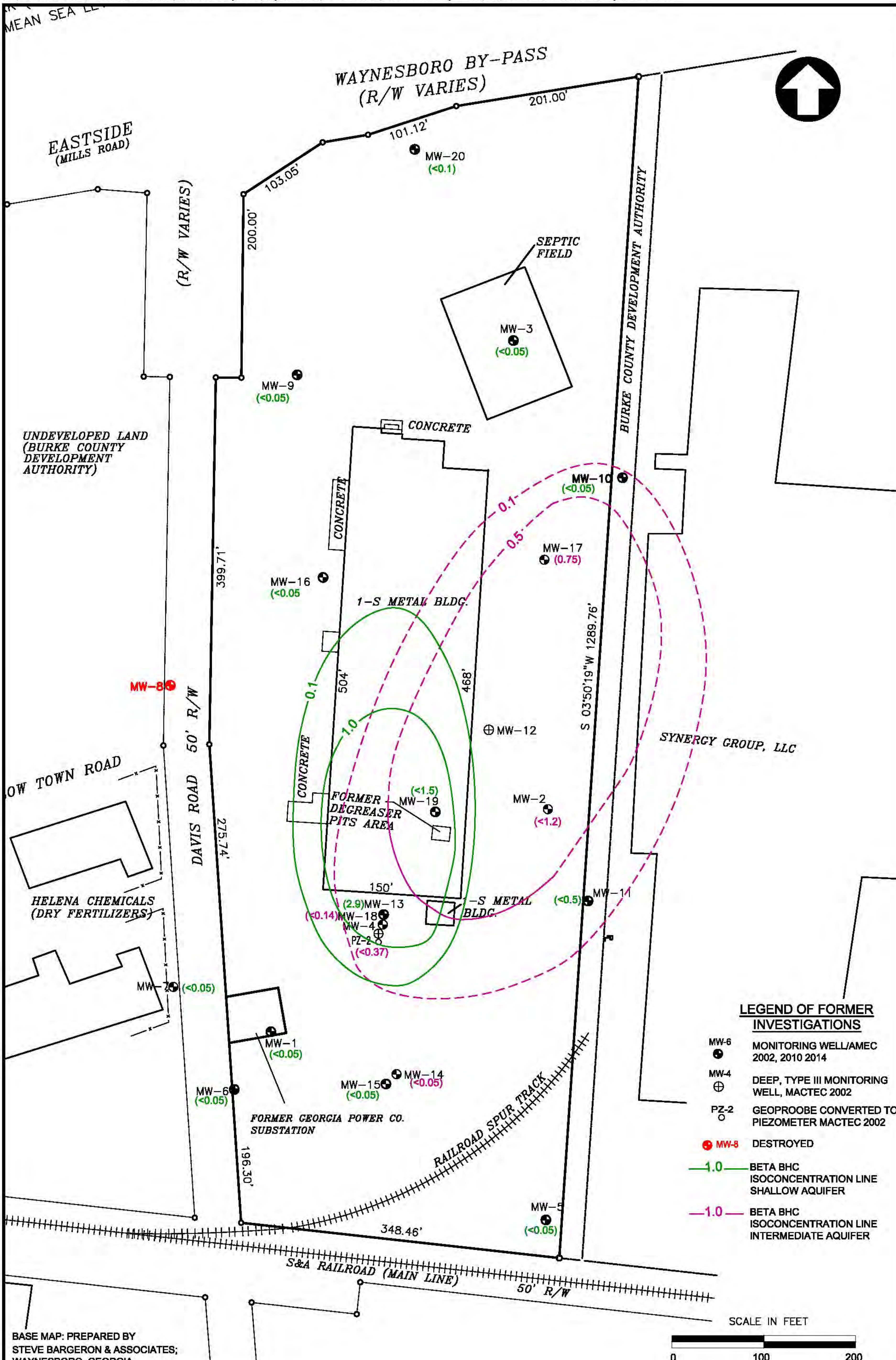
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\ALPHA BHC.dwg 09/19/2018 10:12am Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	ALPHA BHC ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-25

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

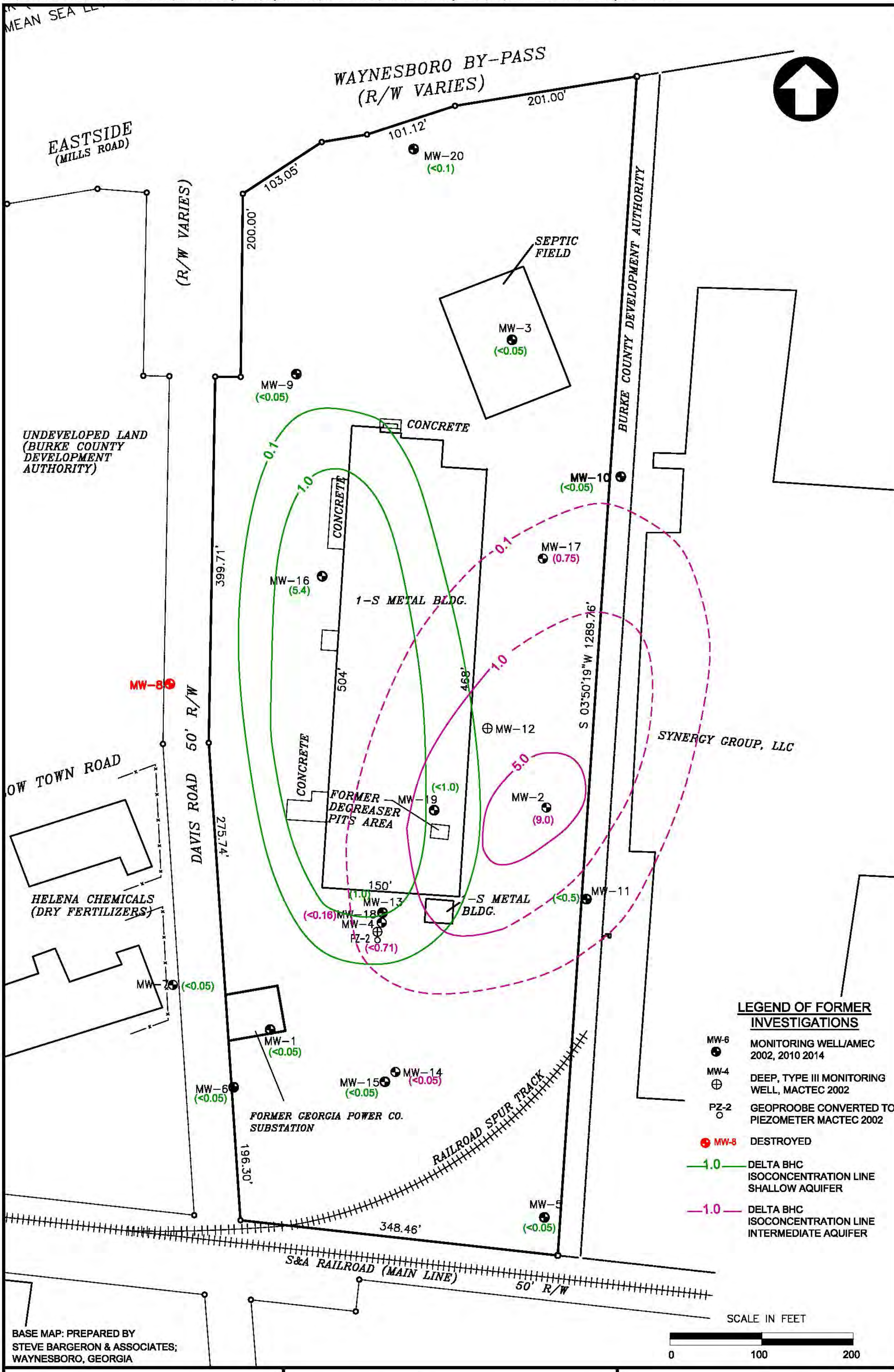
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\BETA BHC.dwg 09/19/2018 10:47am Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	BETA BHC ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-26

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\DELTA BHC.dwg 09/19/2018 11:31am Tonya.Gladstone



LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

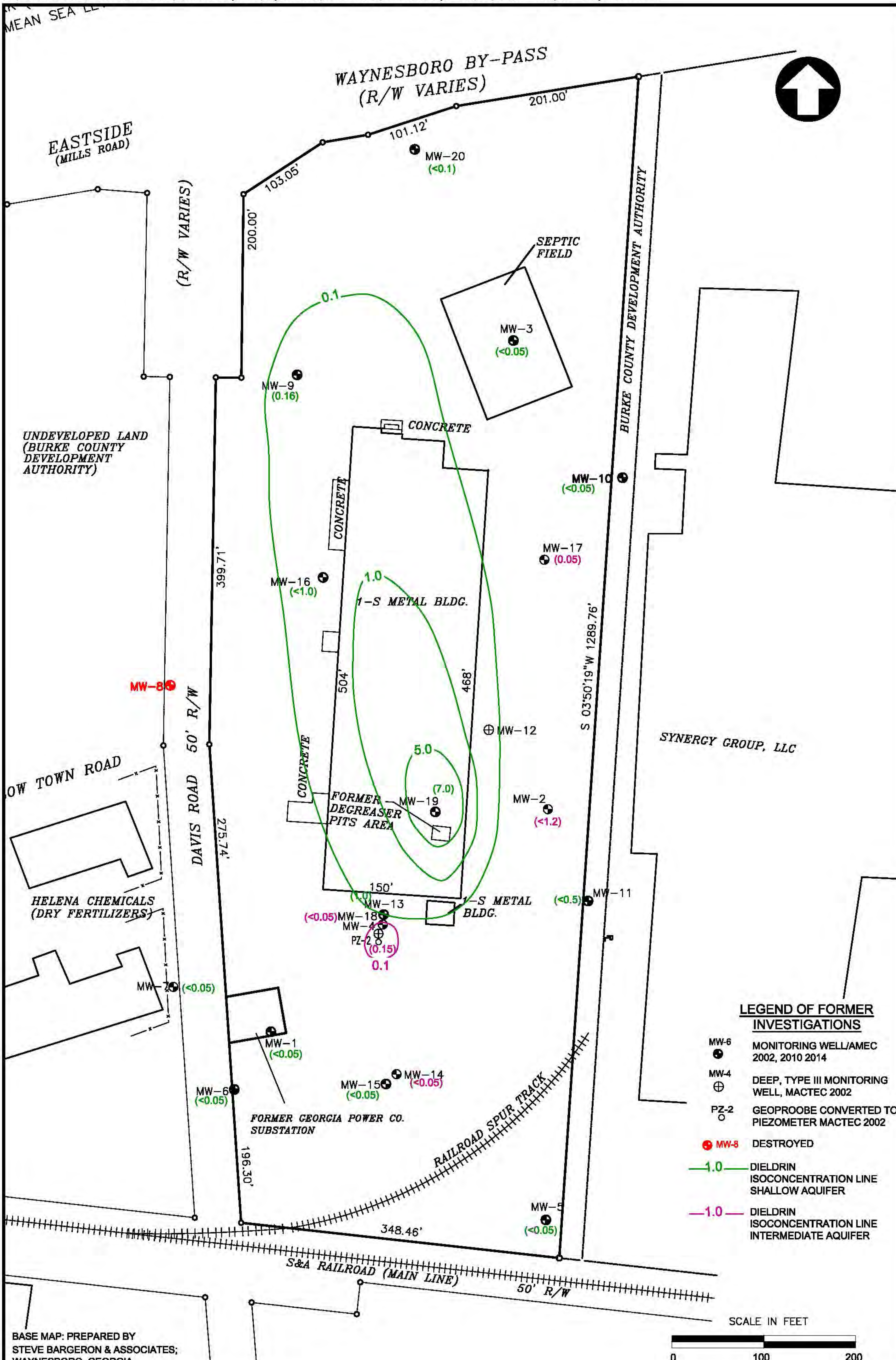
DELTA BHC
ISOPLETH MAP

JOB NO. 6121-18-0893

FIGURE F-27

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

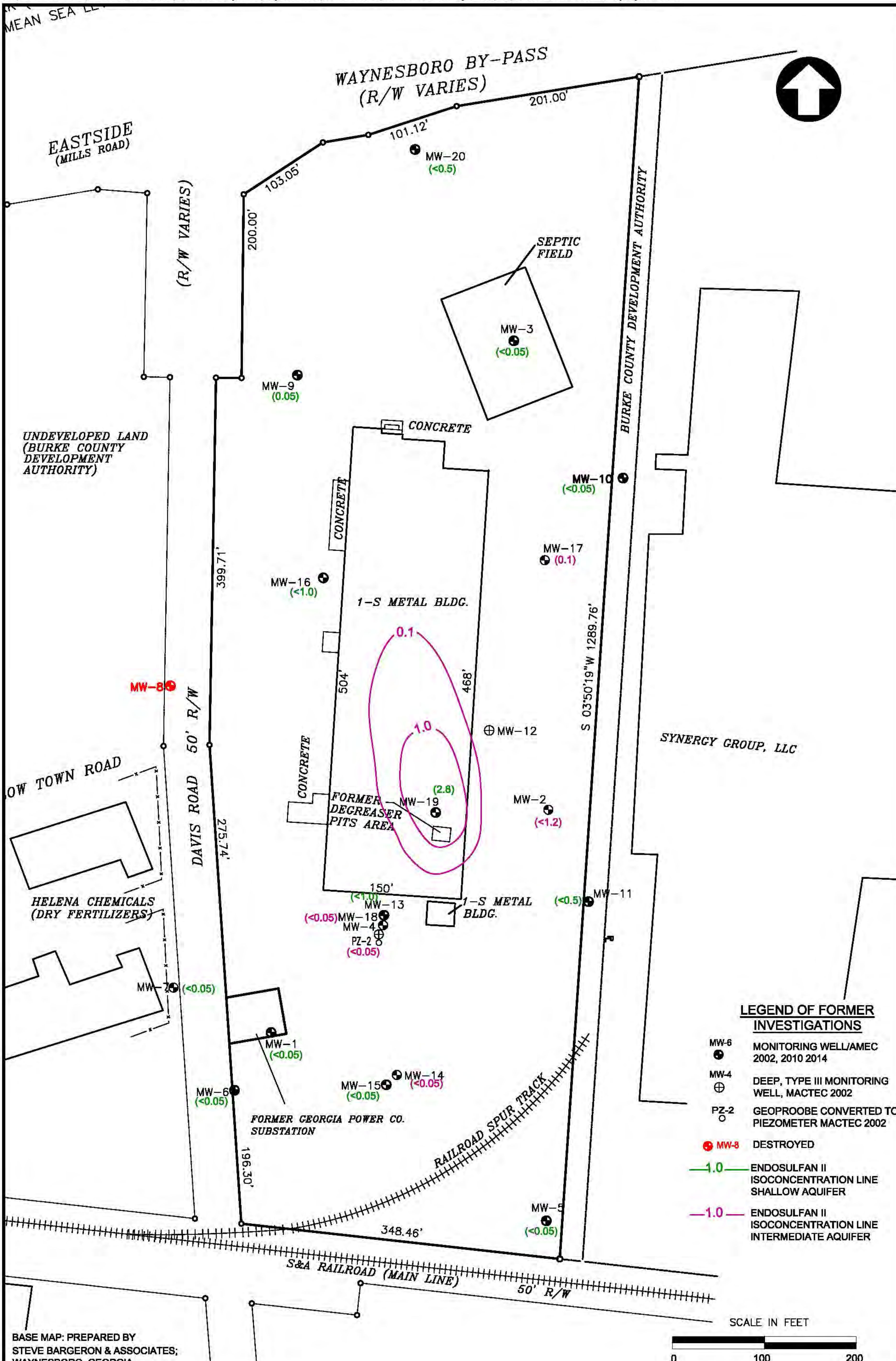
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\DIELDRIN.dwg 09/19/2018 1:16pm Tonya.Gladstone



BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	DIELDRIN ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-28

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018



LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

wood. Environment & Infrastructure Solutions, Inc.

1075 BIG SHANTY ROAD, NW, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

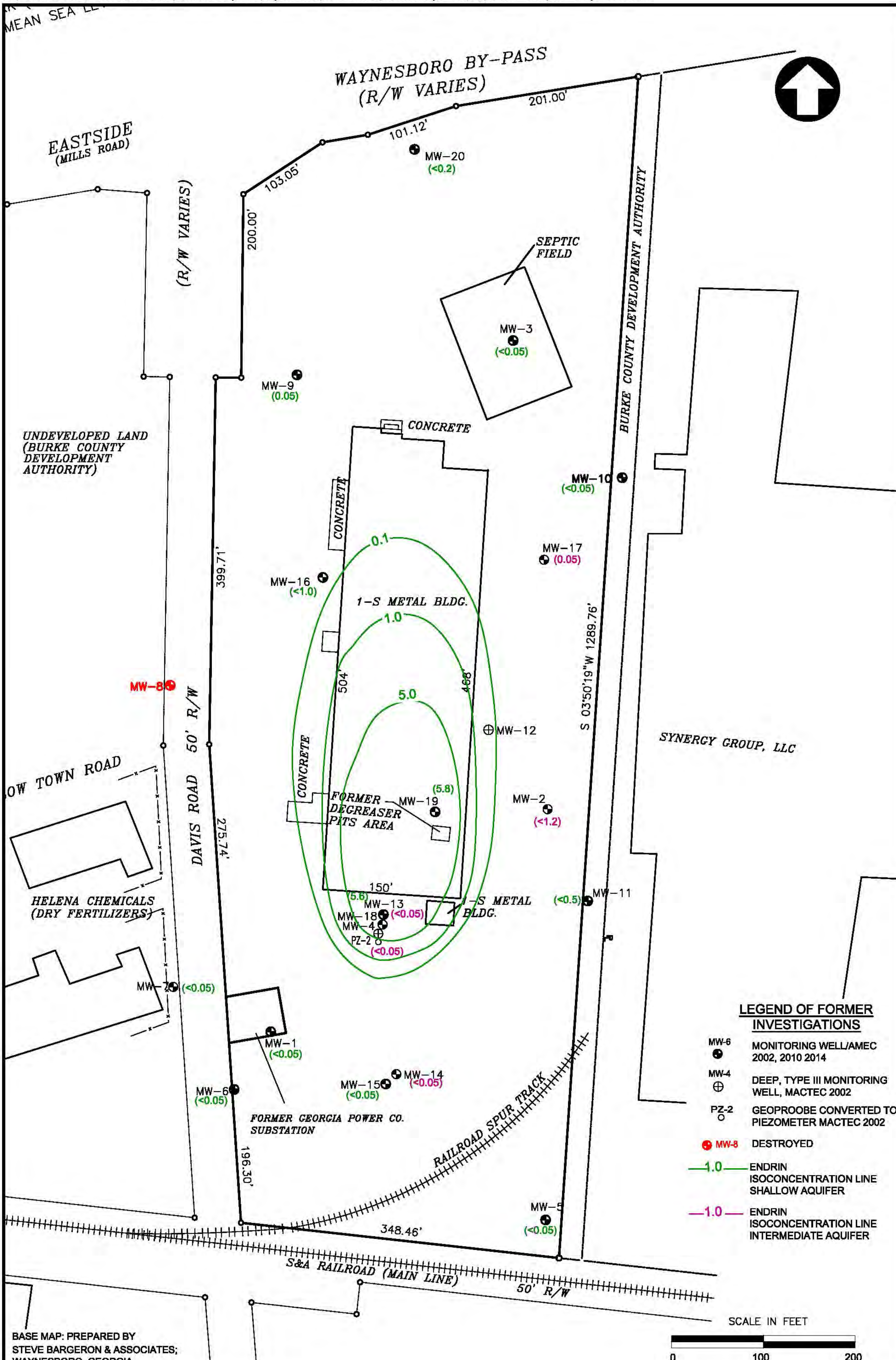
ENDOSULFAN II
ISOPLETH MAP

JOB NO. 6121-18-0893

FIGURE F-29

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

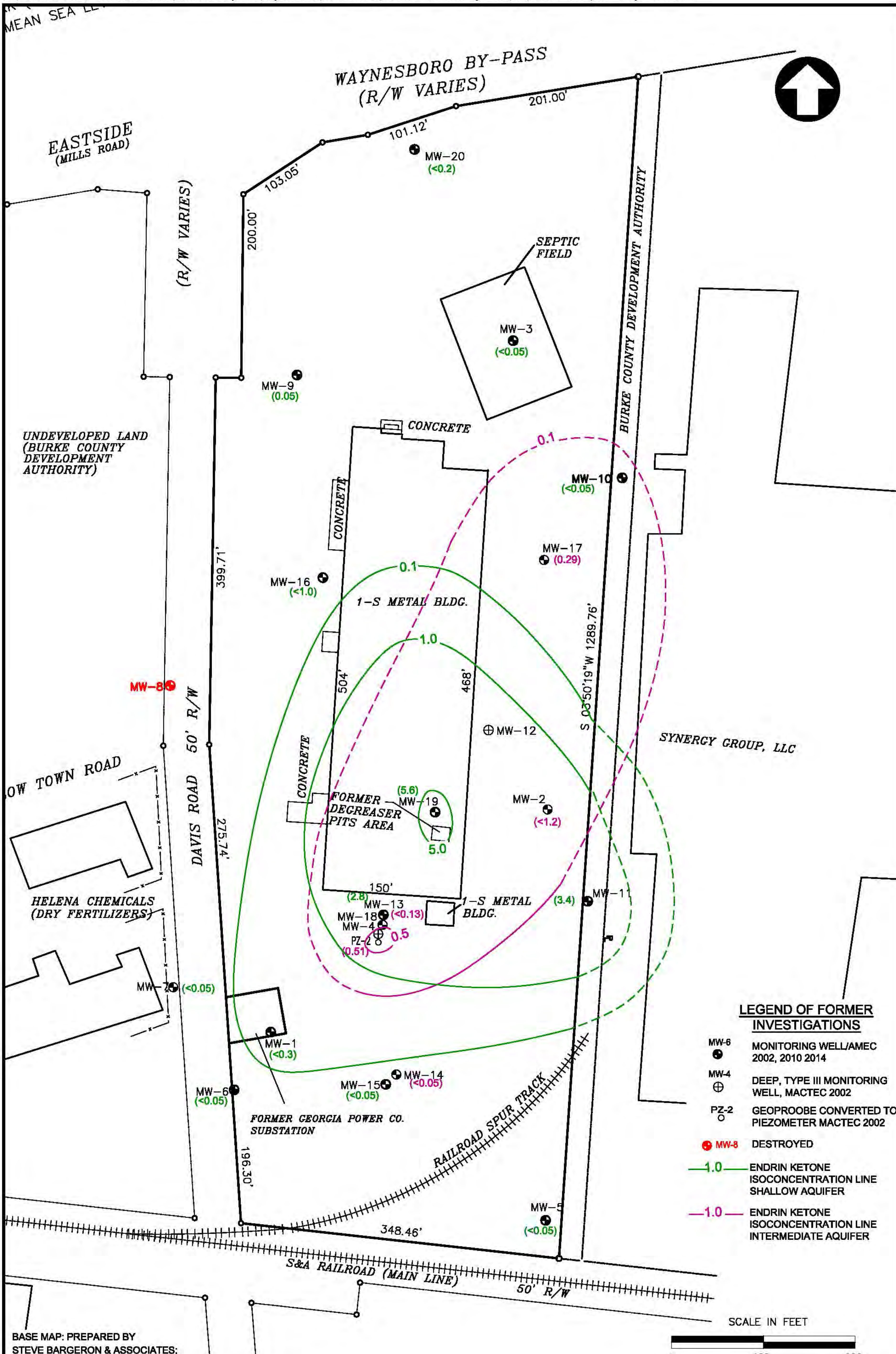
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\ENDRIN.dwg 09/21/2018 1:17pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	ENDRIN ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-30

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

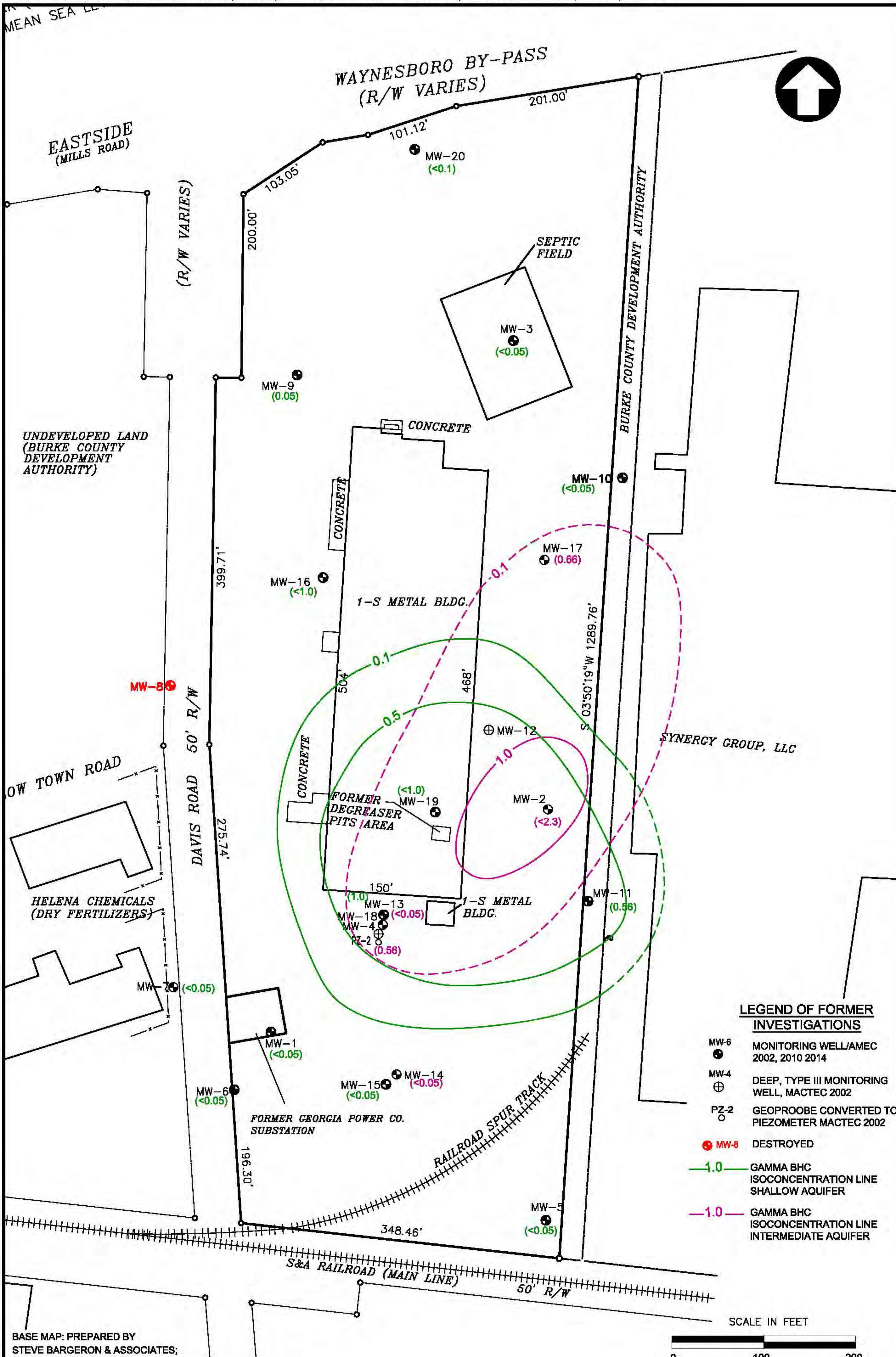
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\ENDRIN KETONE.dwg 09/21/2018 1:45pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	ENDRIN KETONE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-31

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

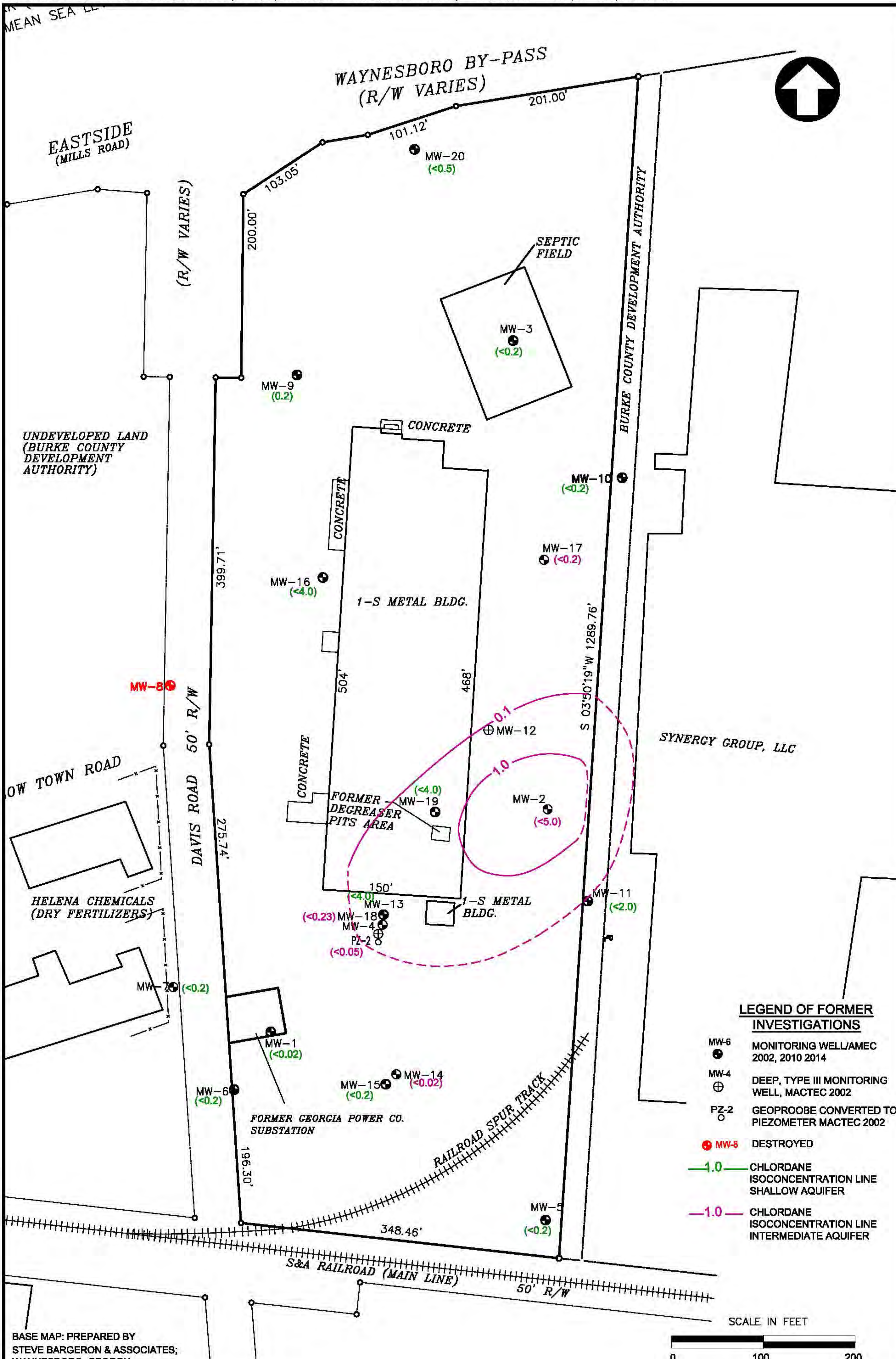
J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\GAMMA BHC.dwg 09/21/2018 2:25pm Tonya.Gladstone



LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	GAMMA BHC ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-32

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

J:\Plasters Ave_PLASTERS CAD\Atlanta Projects\Legion-Ind\SEPT 2018\CHLORDANE.dwg 09/21/2018 2:38pm Tonya.Gladstone



BASE MAP: PREPARED BY STEVE BARGERON & ASSOCIATES; WAYNESBORO, GEORGIA

LEGION INDUSTRIES FACILITY WAYNESBORO, GEORGIA	wood. Environment & Infrastructure Solutions, Inc. 1075 BIG SHANTY ROAD, NW, SUITE 100 KENNESAW, GEORGIA 30144 (770) 421-3400	CHLORDANE ISOPLETH MAP JOB NO. 6121-18-0893 FIGURE F-33

PREPARED BY/DATE TG 9/6/2018 CHECKED BY/DATE SRF 9/6/2018

APPENDIX G
VAPOR INTRUSION MODELING

Table 1 - Summary of Soil Vapor Testing Results Legion Industries							
Sample Designation		Commercial Soil Gas VISLs ($\mu g/m^3$)	SS-1	SS-2	SS-3	SS-4	SS-5
Depth, ft.			1	1	1	1	1
Date			8/10/2018	8/10/2018	8/10/2018	8/10/2018	8/10/2018
VOCs, $\mu g/m^3$							
Benzene		524	<3.2	**6.3**	**34**	<3.2	<3.2
2-Butanone		730000	**42**	**73**	<30	<30	**94**
Chloroform		178	**15**	**130**	<4.9	<4.9	<4.9
1,1-Dichloroethane		2560	**5.5**	**4.6**	<4.1	<4.1	<4.1
cis-1,2-Dichloroethene		--	<4.0	**750**	<4.0	<4.0	<4.0
Ethylbenzene		1640	**11**	**8.7**	**8.5**	**8.7**	**23**
4-Ethyltoluene		--	<5.0	<5.0	<5.0	<5.0	**5.5**
2-Hexanone		4380	<8.3	**10**	<8.3	<8.3	**13**
4-Methyl-2-pentanone		438000	**10**	**24**	**14**	**53**	**45**
Tetrachloroethene		5840	<6.9	**34**	**39**	**120**	**53**
Toluene		730000	**170**	**39**	**42**	**100**	**560**
1,1,1-Trichloroethane		730000	<5.5	**7.2**	<5.5	**21**	<5.5
Trichloroethene		292	**200**	**520**	<5.5	<5.3	<5.3
1,2,4-Trimethylbenzene		8760	**12**	**20**	**13**	**15**	**23**
1,3,5-Trimethylbenzene		8760	<5.0	<5.0	<5.0	<5.0	8.1
Vinyl Chloride		929	<2.6	**11**	<2.6	<2.6	<2.6
m,p-Xylenes		14600	**69**	**40**	**48**	**58**	**100**
o-Xylenes		14600	**27**	**18**	**18**	**24**	**36**
Radon, pCi/L	Indoor Air	100	**0.12**	NT	NT	NT	**0.05**
	Sub-Slab	33,333	**1216**	NT	NT	NT	**750**
	Est. Attenuation		9.9E-05				6.70E-05

(a) Soil Gas Vapor Intrusion Screening Levels calculated using online VISL Calculator, May 2018. Based on hazard index of 1 and cancer risk of 10^{-5}. Commercial Exposure Scenario.

(b) Radon Screening Level = 100 picocuries per liter (OSHA PEL) divided by literature soil gas to indoor air attenuation factor of 0.003.

Concentration exceeds soil gas VISL.

Prepared by: IMR 9/28/18

Checked by: LMS 10/2/18

Table 2
Occupational Assumptions Used in Johnson & Ettinger Model
Legion Industries Site

Parameter	Value	Justification
Average Soil/Water Temp.	22.8^{o} C	Site specific
Depth Below Grade to Enclosed Space Floor	0.2 m	Slab on grade foundation
Depth Below Grade to Soil Gas Sample	0.30 m	Site-specific
Stratum A Soil Vapor Permeability	SC	Sandy Clay; site-specific
SCS Soil Type	SC	Sandy Clay; site-specific
Soil Dry Bulk Density	1.63 g/cm^3	Sandy Clay – Model value
Soil Total Porosity	0.385 unitless	Sandy Clay – Model value
Soil Water-filled Porosity	0.197 cm^3/cm^3	Sandy Clay – Model value
Enclosed Space Floor Thickness	0.2 m	Model default
Enclosed Space Floor Length	9.91 m	Site-specific for office space (32.5 ft)*
Enclosed Space Floor Width	36.58 m	Site-specific for office space (120 ft)*
Enclosed Space Height	4.88 m	Ceiling height (16 ft) in manufacturing area
Floor-Wall Seam Crack Width	0.001 m	Model default
Indoor Air Exchange Rate	1.5/hr	Exposure Factors Handbook – 2011 Update. Mean for commercial buildings
Averaging Time, Carcinogens	70 years	Model default
Averaging Time, Noncarcinogens	25 years	Default for occupational
Exposure Duration	25 years	Default for occupational
Exposure Frequency	250 days/year	Default for occupational
Target Risk for Carcinogens	1 x 10^{-5} unitless	Target Risk
Target Hazard for Noncarcinogens	1 unitless	Target Hazard

*Most of the building consists of manufacturing space which covers an area 470 x 150 ft with 16 ft ceiling height. Offices are at the north end of the building covering a total of 3900 square feet.

Prepared by: IMR 09/26/18
Checked by: LMS 10/4/18

Table 3
Johnson and Ettinger Site-Specific Risk Calculations for the Vapor Intrusion Pathway
Legion Industries Site
Waynesboro, Georgia

Parameter	Maximum Site Soil Gas Concentration[a] (µg/m^3)	Location of Maximum Detected Concentration	Modeled Indoor Air Concentration[b] (µg/m^3)	Incremental Carcinogenic Risk[b] (unitless)	Hazard Quotient (HQ) [b] (unitless)	Inhalation Unit Risk (IUR) (µg/m^3)$^{-1}$	IUR Source*	Reference Concentration (RfC) (mg/m^3)	RfC Source*
Trichloroethylene	520	SS-2	1.60	2.0E-06	0.18	4.1E-06	IRIS	0.002	IRIS
			TOTAL:	**2E-06**	**0.2**				

(a) Maximum detected concentration from SS-1 through SS-5 during the August 2018 sampling event
(b) Calculated using Johnson and Ettinger Model for Subsurface Vapor Intrusion into Buildings (Acessed September, 2018)

µg/m^3 micrograms per cubic meter
mg/m^3 milligrams per cubic meter
IRIS - USEPA's Integrated Risk Information System

Prepared By/Date: IMR 09/26/18
Checked By/Date: LMS 10/4/18

Default VISL Results
Commercial Equation Inputs

Output generated 27SEP2018:10:05:02

Variable	Value
Exposure Scenario	Commercial
Temperature for Groundwater Vapor Concentration C	22.8
THQ (target hazard quotient) unitless	1
TR (target risk) unitless	0.00001
AT_w (averaging time - composite worker)	365
EF_w (exposure frequency - composite worker) day/yr	250
ED_w (exposure duration - composite worker) yr	25
ET_w (exposure time - composite worker) hr	8
LT (lifetime) yr	70
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03

Vapor Intrusion Screening Levels (VISL)

Output generated 27SEP2018:10:05:02

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? (C_{vp} > $C_{i,a}$,Target?)
Benzene	71-43-2	Yes	Yes	Yes
Benzene, Ethylmethyl	25550-14-5	Yes	No	No Inhal. Tox. Info
Chloroform	67-66-3	Yes	Yes	Yes
Dichloroethane, 1,1-	75-34-3	Yes	Yes	Yes
Dichloroethylene, 1,2-cis-	156-59-2	Yes	No	No Inhal. Tox. Info
Ethylbenzene	100-41-4	Yes	Yes	Yes
Hexanone, 2-	591-78-6	Yes	Yes	Yes
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	Yes
Tetrachloroethylene	127-18-4	Yes	Yes	Yes
Trichloroethane, 1,1,1-	71-55-6	Yes	Yes	Yes
Trichloroethylene	79-01-6	Yes	Yes	Yes
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	Yes
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	Yes
Vinyl Chloride	75-01-4	Yes	Yes	Yes
Xylene, P-	106-42-3	Yes	Yes	Yes
Xylene, m-	108-38-3	Yes	Yes	Yes
Xylene, o-	95-47-6	Yes	Yes	Yes

Vapor Intrusion Screening I

Output generated 27SEP2018:10:05:02

Chemical	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? (C_{hc} > $C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-05 or THQ=1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-05 or THQ=1) C_{sg},Target (µg/m^3)	Target Groundwater Concentration (TCR=1E-05 or THQ=1) C_{gw},Target (µg/L)
Benzene	Yes	15.7	CA	**524**	76
Benzene, Ethylmethyl	No Inhal. Tox. Info	-		**-**	-
Chloroform	Yes	5.33	CA	**178**	38.7
Dichloroethane, 1,1-	Yes	76.7	CA	**2560**	363
Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	-		**-**	-
Ethylbenzene	Yes	49.1	CA	**1640**	171
Hexanone, 2-	Yes	131	NC	**4380**	39000
Methyl Ethyl Ketone (2-Butanone)	Yes	21900	NC	**730000**	10400000
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	Yes	13100	NC	**438000**	2610000
Tetrachloroethylene	Yes	175	NC	**5840**	271
Trichloroethane, 1,1,1-	Yes	21900	NC	**730000**	34100
Trichloroethylene	Yes	8.76	NC	**292**	23.9
Trimethylbenzene, 1,2,4-	Yes	263	NC	**8760**	1200
Trimethylbenzene, 1,3,5-	Yes	263	NC	**8760**	841
Vinyl Chloride	Yes	27.9	CA	**929**	25.8
Xylene, P-	Yes	438	NC	**14600**	1750
Xylene, m-	Yes	438	NC	**14600**	1680
Xylene, o-	Yes	438	NC	**14600**	2340

Vapor Intrusion Screening I

Output generated 27SEP2018:10:05:02

Chemical	Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} (22.8 ℃) (µg/m^3)	Maximum Groundwater Vapor Concentration C_{hc} (µg/m^3)	Temperature for Maximum Groundwater Vapor Concentration (℃)	Lower Explosive Limit LEL (% by volume)	LEL Ref	Inhalation Unit Risk (ug/m^3)$^{-1}$	IUR Ref
Benzene	No (5)	398000000	370000000	22.8	1.2	CRC89	0.0000078	I
Benzene, Ethylmethyl		55900000	15300000	22.8	-		-	
Chloroform	Yes (80)	1260000000	1090000000	22.8	-		0.000023	I
Dichloroethane, 1,1-	--	1210000000	1060000000	22.8	5.4	CRC89	0.0000016	C
Dichloroethylene, 1,2-cis-		1040000000	978000000	22.8	3	CRC89	-	
Ethylbenzene	Yes (700)	54800000	48400000	22.8	0.8	CRC89	0.0000025	C
Hexanone, 2-	--	62500000	58000000	22.8	1	CRC89	-	
Methyl Ethyl Ketone (2-Butanone)	--	351000000	471000000	22.8	1.4	CRC89	-	
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	--	107000000	95700000	22.8	1.2	CRC89	-	
Tetrachloroethylene	No (5)	165000000	133000000	22.8	-		0.00000026	I
Trichloroethane, 1,1,1-	No (200)	890000000	829000000	22.8	8	CRC89	-	
Trichloroethylene	No (5)	488000000	468000000	22.8	8	CRC89	0.0000041	I
Trimethylbenzene, 1,2,4-	--	13600000	12500000	22.8	0.9	CRC89	-	
Trimethylbenzene, 1,3,5-	--	16000000	15100000	22.8	1	CRC89	-	
Vinyl Chloride	No (2)	10000000000	9510000000	22.8	3.6	CRC89	0.0000044	I
Xylene, P-	--	50500000	40600000	22.8	1.1	CRC89	-	
Xylene, m-	--	47300000	41900000	22.8	1.1	CRC89	-	
Xylene, o-	--	37700000	33400000	22.8	0.9	CRC89	-	

Vapor Intrusion Screening I

Output generated 27SEP2018:10:05:02

Chemical	RfC (mg/m^3)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-05 $C_{ia,c}$ (µg/m^3)	Noncarcinogenic VISL THQ=1 $C_{ia,nc}$ (µg/m^3)
Benzene	0.03	I	No	15.7	131
Benzene, Ethylmethyl	-		No	-	-
Chloroform	0.0977	A	No	5.33	428
Dichloroethane, 1,1-	-		No	76.7	-
Dichloroethylene, 1,2-cis-	-		No	-	-
Ethylbenzene	1	I	No	49.1	4380
Hexanone, 2-	0.03	I	No	-	131
Methyl Ethyl Ketone (2-Butanone)	5	I	No	-	21900
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	3	I	No	-	13100
Tetrachloroethylene	0.04	I	No	472	175
Trichloroethane, 1,1,1-	5	I	No	-	21900
Trichloroethylene	0.002	I	Mut	29.9	8.76
Trimethylbenzene, 1,2,4-	0.06	I	No	-	263
Trimethylbenzene, 1,3,5-	0.06	I	No	-	263
Vinyl Chloride	0.1	I	Mut	27.9	438
Xylene, P-	0.1	S	No	-	438
Xylene, m-	0.1	S	No	-	438
Xylene, o-	0.1	S	No	-	438

Chemical Properties

Output generated 27SEP2018:10:05:02

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)
Benzene	71-43-2	Yes	Yes	78.12	PHYSPROP	94.8	PHYSPROP	1790
Benzene, Ethylmethyl	25550-14-5	Yes	No	360.6	PHYSPROP	2.88	PHYSPROP	74.5
Chloroform	67-66-3	Yes	Yes	119.4	PHYSPROP	197	PHYSPROP	7950
Dichloroethane, 1,1-	75-34-3	Yes	Yes	98.96	PHYSPROP	227	PHYSPROP	5040
Dichloroethylene, 1,2-cis-	156-59-2	Yes	No	96.94	PHYSPROP	200	PHYSPROP	6410
Ethylbenzene	100-41-4	Yes	Yes	106.2	PHYSPROP	9.6	PHYSPROP	169
Ethylphenol, 4-	123-07-9	No	No	122.2	PHYSPROP	0.0372	PHYSPROP	4900
Hexanone, 2-	591-78-6	Yes	Yes	100.2	PHYSPROP	11.6	PHYSPROP	17200
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	PHYSPROP	90.6	PHYSPROP	223000
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	100.2	PHYSPROP	19.9	PHYSPROP	19000
Tetrachloroethylene	127-18-4	Yes	Yes	165.8	PHYSPROP	18.5	PHYSPROP	206
Trichloroethane, 1,1,1-	71-55-6	Yes	Yes	133.4	PHYSPROP	124	PHYSPROP	1290
Trichloroethylene	79-01-6	Yes	Yes	131.4	PHYSPROP	69	PHYSPROP	1280
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	120.2	PHYSPROP	2.1	PHYSPROP	57
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	120.2	PHYSPROP	2.48	PHYSPROP	48.2
Vinyl Chloride	75-01-4	Yes	Yes	62.5	PHYSPROP	2980	EPI	8800
Xylene, P-	106-42-3	Yes	Yes	106.2	PHYSPROP	8.84	PHYSPROP	162
Xylene, m-	108-38-3	Yes	Yes	106.2	PHYSPROP	8.29	PHYSPROP	161
Xylene, o-	95-47-6	Yes	Yes	106.2	PHYSPROP	6.61	PHYSPROP	178

Chemical Properties

Output generated 27SEP2018:10:05:02

Chemical	S Ref	MCL (ug/L)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	Henry's Law Constant (22.8 ℃)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Enthalpy of vaporization @ groundwater temperature $\Delta H_{v,gw}$ (cal/mol)	Exponent for $\Delta H_{v,gw}$
Benzene	PHYSPROP	5	0.00555	0.227	0.207	0.207	PHYSPROP	7990	0.34900178
Benzene, Ethylmethyl	PHYSPROP	-	0.00501	0.205	-	0.205	EPI	-	0.3
Chloroform	PHYSPROP	80	0.00367	0.15	0.138	0.138	PHYSPROP	7420	0.34546455
Dichloroethane, 1,1-	PHYSPROP	-	0.00562	0.23	0.211	0.211	PHYSPROP	7310	0.35134238
Dichloroethylene, 1,2-cis-	PHYSPROP	70	0.00408	0.167	0.153	0.153	PHYSPROP	7650	0.34425569
Ethylbenzene	PHYSPROP	700	0.00788	0.322	0.286	0.286	PHYSPROP	10000	0.37475515
Ethylphenol, 4-	PHYSPROP	-	0.000000773	3.16E-05	2.63E-05	0.0000263	PHYSPROP	15200	0.39150978
Hexanone, 2-	PHYSPROP	-	0.0000932	0.00381	0.00337	0.00337	EPI	10300	0.38946276
Methyl Ethyl Ketone (2-Butanone)	PHYSPROP	-	0.0000569	0.00233	0.00211	0.00211	PHYSPROP	8260	0.36996089
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	PHYSPROP	-	0.000138	0.00564	0.00504	0.00504	EPI	9650	0.38511401
Tetrachloroethylene	PHYSPROP	5	0.0177	0.724	0.648	0.648	PHYSPROP	9430	0.35479516
Trichloroethane, 1,1,1-	PHYSPROP	200	0.0172	0.703	0.643	0.643	PHYSPROP	7740	0.35535963
Trichloroethylene	PHYSPROP	5	0.00985	0.403	0.366	0.366	PHYSPROP	8240	0.3510035
Trimethylbenzene, 1,2,4-	PHYSPROP	-	0.00616	0.252	0.219	0.219	PHYSPROP	11500	0.38841072
Trimethylbenzene, 1,3,5-	PHYSPROP	-	0.00877	0.359	0.313	0.313	PHYSPROP	11500	0.39240094
Vinyl Chloride	PHYSPROP	2	0.0278	1.14	1.08	1.08	PHYSPROP	4580	0.33644471
Xylene, P-	PHYSPROP	-	0.0069	0.282	0.25	0.25	PHYSPROP	10100	0.37805391
Xylene, m-	PHYSPROP	-	0.00718	0.294	0.26	0.26	PHYSPROP	10100	0.37851289
Xylene, o-	PHYSPROP	-	0.00518	0.212	0.188	0.188	PHYSPROP	10300	0.37437064

Chemical Properties

Output generated 27SEP2018:10:05:02

Chemical	Vapor Pressure VP (22.8 ℃) (mm Hg)	D_{ia} (cm^2/s)	D_{ia} (22.8 ℃) (cm^2/s)	D_{ia} Used in Calcs (cm^2/s)	D_{ia} Ref	D_{iw} (cm^2/s)	D_{iw} (22.8 ℃) (cm^2/s)	D_{iw} Used in Calcs (cm^2/s)
Benzene	363000000	0.0895	0.08854	0.08854	WATER9 (U.S. EPA, 2001)	0.0000103	0.0000102	0.0000102
Benzene, Ethylmethyl	-	0.017	0.016826	0.016826	WATER9 (U.S. EPA, 2001)	4.07E-06	4.0424E-06	4.0424E-06
Chloroform	1160000000	0.0769	0.076066	0.076066	WATER9 (U.S. EPA, 2001)	0.0000109	0.0000108	0.0000108
Dichloroethane, 1,1-	1110000000	0.0836	0.082716	0.082716	WATER9 (U.S. EPA, 2001)	0.0000106	0.0000105	0.0000105
Dichloroethylene, 1,2-cis-	954000000	0.0884	0.087425	0.087425	WATER9 (U.S. EPA, 2001)	0.0000113	0.0000113	0.0000113
Ethylbenzene	48700000	0.0685	0.067705	0.067705	WATER9 (U.S. EPA, 2001)	8.46E-06	8.3932E-06	8.3932E-06
Ethylphenol, 4-	203000	0.0772	0.077169	0.077169	WATER9 (U.S. EPA, 2001)	9.02E-06	9.0166E-06	9.0166E-06
Hexanone, 2-	55300000	0.0704	0.069576	0.069576	WATER9 (U.S. EPA, 2001)	8.44E-06	8.3779E-06	8.3779E-06
Methyl Ethyl Ketone (2-Butanone)	319000000	0.0914	0.090431	0.090431	WATER9 (U.S. EPA, 2001)	0.0000102	0.0000101	0.0000101
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	95500000	0.0698	0.069005	0.069005	WATER9 (U.S. EPA, 2001)	8.35E-06	8.2858E-06	8.2858E-06
Tetrachloroethylene	148000000	0.0505	0.049906	0.049906	WATER9 (U.S. EPA, 2001)	9.46E-06	9.385E-06	9.385E-06
Trichloroethane, 1,1,1-	813000000	0.0648	0.064098	0.064098	WATER9 (U.S. EPA, 2001)	0.0000096	9.5279E-06	9.5279E-06
Trichloroethylene	443000000	0.0687	0.0679	0.0679	WATER9 (U.S. EPA, 2001)	0.0000102	0.0000101	0.0000101
Trimethylbenzene, 1,2,4-	11800000	0.0607	0.060002	0.060002	WATER9 (U.S. EPA, 2001)	7.92E-06	7.8621E-06	7.8621E-06
Trimethylbenzene, 1,3,5-	14000000	0.0602	0.059557	0.059557	WATER9 (U.S. EPA, 2001)	7.84E-06	7.7849E-06	7.7849E-06
Vinyl Chloride	9530000000	0.107	0.105931	0.105931	WATER9 (U.S. EPA, 2001)	0.000012	0.0000119	0.0000119
Xylene, P-	44800000	0.0682	0.067491	0.067491	WATER9 (U.S. EPA, 2001)	8.42E-06	8.3575E-06	8.3575E-06
Xylene, m-	42000000	0.0684	0.067607	0.067607	WATER9 (U.S. EPA, 2001)	8.44E-06	8.3768E-06	8.3768E-06
Xylene, o-	33400000	0.0689	0.068155	0.068155	WATER9 (U.S. EPA, 2001)	8.53E-06	8.4682E-06	8.4682E-06

Chemical Properties

Output generated 27SEP2018:10:05:02

Chemical	D_{iw} Ref	Normal Boiling Point T_{boil} (K)	**BP Ref**	Critical Temperature T_{crit} (K)	T_{crit} Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$ (cal/mol)	$\Delta H_{v,b}$ Ref	K_{oc} (cm^3/g)	K_{oc} Ref
Benzene	WATER9 (U.S. EPA, 2001)	353.15	PHYSPROP	562	CRC89	7340	CRC89	145.8	EPI
Benzene, Ethylmethyl	WATER9 (U.S. EPA, 2001)	435.15	EPI	-		-		715.8	EPI
Chloroform	WATER9 (U.S. EPA, 2001)	334.25	PHYSPROP	536	CRC89	6990	Weast	31.82	EPI
Dichloroethane, 1,1-	WATER9 (U.S. EPA, 2001)	330.55	PHYSPROP	523	CRC89	6900	CRC89	31.82	EPI
Dichloroethylene, 1,2-cis-	WATER9 (U.S. EPA, 2001)	333.25	PHYSPROP	536	CRC89	7220	CRC89	39.6	EPI
Ethylbenzene	WATER9 (U.S. EPA, 2001)	409.25	PHYSPROP	617	CRC89	8500	CRC89	446.1	EPI
Ethylphenol, 4-	WATER9 (U.S. EPA, 2001)	491.05	PHYSPROP	716	CRC89	11900	YAWS	573	EPI
Hexanone, 2-	WATER9 (U.S. EPA, 2001)	400.75	PHYSPROP	587	CRC89	8690	CRC89	14.98	EPI
Methyl Ethyl Ketone (2-Butanone)	WATER9 (U.S. EPA, 2001)	352.65	PHYSPROP	537	CRC89	7480	CRC89	4.51	EPI
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	WATER9 (U.S. EPA, 2001)	389.65	PHYSPROP	575	CRC89	8240	CRC	12.6	EPI
Tetrachloroethylene	WATER9 (U.S. EPA, 2001)	394.45	PHYSPROP	620	YAWS	8290	Weast	94.94	EPI
Trichloroethane, 1,1,1-	WATER9 (U.S. EPA, 2001)	347.15	PHYSPROP	545	YAWS	7140	Weast	43.89	EPI
Trichloroethylene	WATER9 (U.S. EPA, 2001)	360.35	PHYSPROP	571	YAWS	7510	Weast	60.7	EPI
Trimethylbenzene, 1,2,4-	WATER9 (U.S. EPA, 2001)	442.45	PHYSPROP	649	CRC89	9370	T	614.3	EPI
Trimethylbenzene, 1,3,5-	WATER9 (U.S. EPA, 2001)	437.85	PHYSPROP	637	CRC89	9320	T	602.1	EPI
Vinyl Chloride	WATER9 (U.S. EPA, 2001)	259.85	PHYSPROP	425	CRC89	4970	CRC89	21.73	EPI
Xylene, P-	WATER9 (U.S. EPA, 2001)	411.38	PHYSPROP	616	CRC89	8530	Weast	375.3	EPI
Xylene, m-	WATER9 (U.S. EPA, 2001)	412.25	PHYSPROP	617	CRC89	8520	Weast	375.3	EPI
Xylene, o-	WATER9 (U.S. EPA, 2001)	417.65	PHYSPROP	630	CRC89	8660	Weast	382.9	EPI

Chemical Properties

Output generated 27SEP2018:10:05:02

Chemical	Lower Explosive Limit LEL (% by volume)	LEL Ref
Benzene	1.2	CRC89
Benzene, Ethylmethyl	-	
Chloroform	-	
Dichloroethane, 1,1-	5.4	CRC89
Dichloroethylene, 1,2-cis-	3	CRC89
Ethylbenzene	0.8	CRC89
Ethylphenol, 4-	-	
Hexanone, 2-	1	CRC89
Methyl Ethyl Ketone (2-Butanone)	1.4	CRC89
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	1.2	CRC89
Tetrachloroethylene	-	
Trichloroethane, 1,1,1-	8	CRC89
Trichloroethylene	8	CRC89
Trimethylbenzene, 1,2,4-	0.9	CRC89
Trimethylbenzene, 1,3,5-	1	CRC89
Vinyl Chloride	3.6	CRC89
Xylene, P-	1.1	CRC89
Xylene, m-	1.1	CRC89
Xylene, o-	0.9	CRC89

Model Input **Site Name/Run Number:** Legion Industries SG

Note:
-Yellow highlighted cells indicate parameters that typically are changed or must be inputted by the user.
-Dotted outline cells indicate default values that may be changed with justification.
-Toxicity values are taken from Regional Screening Level tables. These tables are updated semi-annually and may not reflect the most current toxicity information.

Use English / Metric Converter

Source Characteristics:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Source medium		Source	Sub-slab Soil Gas					
Soil gas concentration	(ug/m3)	Cmedium	520		NA			
Depth below grade to soil gas sample	(m)	Ls	0.30		Vary - 50	NA		
Average vadose zone temperature	(^{o}C)	Ts	22.8	25	3-30			
Calc: Source vapor concentration	(ug/m3)	Cs	520					
Calc: % of pure component saturated vapor concentration	(%)	%Sat	0.000%					

Chemical:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Chemical Name		Chem	Trichloroethylene					
CAS No.		CAS	79-01-6					
Toxicity Factors								
Unit risk factor	(ug/m^3)$^{-1}$	IUR	see note	see note	NA	NA		
Mutagenic compound		Mut	Yes	NA	NA	NA		
Reference concentration	(mg/m^3)	RfC	2.00E-03	2.00E-03	NA	NA		

Chemical Properties:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Pure component water solubility	(mg/L)	S	1.28E+03	1.28E+03	NA	NA		
Henry's Law Constant @ 25^{o}C	(atm-m^3/mol)	Hc	9.85E-03	9.85E-03	NA	NA		
Calc: Henry's Law Constant @ 25^{o}C	(dimensionless)	Hr	4.03E-01	4.03E-01				
Calc: Henry's Law Constant @ system temperature	(dimensionless)	Hs	3.65E-01	4.06E-01				
Diffusivity in air	(cm2/s)	Dair	6.87E-02	6.87E-02	NA	NA		
Diffusivity in water	(cm2/s)	Dwater	1.02E-05	1.02E-05	NA	NA		

Building Characteristics:

Select Building Assumptions

- ● Use ratio for Qsoil/Qbuilding (recommended if no site specific data available)
- ○ Specify Qsoil and Qbuilding separately; calculate ratio

	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Building setting		Bldg_Setting	Commercial	Commercial				
Foundation type		Found_Type	Slab-on-grade	Slab-on-grade				
Depth below grade to base of foundation	(m)	Lb	0.20	0.20	0.1 - 2.44	NA		
Foundation thickness	(m)	Lf	0.20	0.20	0.1 - 0.25	NA		
Fraction of foundation area with cracks	(-)	eta	0.001	0.001	0.00019-0.0019	1.00		
Enclosed space floor area	(m2)	Abf	362.51	362.51	80-1000	NA		
Enclosed space mixing height	(m)	Hb	4.88	4.88	2.13 - 3.05	NA	WARNING	Value is outside of reasonable range (2.13 – 3.05 m).
Indoor air exchange rate	(1 / hr)	ach	1.50	1.50	.3-4.1	NA		
Qsoil/Qbuilding	(-)	Qsoil_Qb	0.0030	0.0030	0.0001 - 0.05	1.24		
Calc: Building ventilation rate	(m3/hr)	Qb	2653.56	2653.56	NA	0.30		
Calc: Average vapor flow rate into building	(m3/hr)	Qsoil	7.96	7.96	NA	NA		

Model Input Site Name/Run Number: Legion Industries SG

Chemical Name: Trichloroethylene CAS No. 79-01-6

Depth below grade to soil gas sample: 0.30 meters

Vadose zone characteristics:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Stratum A (Top of soil profile):								
Stratum A SCS soil type		SCS_A	Sandy Clay					
Stratum A thickness (from surface)	(m)	hSA	0.30					
Stratum A total porosity	(-)	nSA	0.385	0.385	NA	0.20		
Stratum A water-filled porosity	(-)	nwSA	0.197	0.197	0.117 - 0.28	0.25		
Stratum A bulk density	(g/cm^3)	rhoSA	1.630	1.630	NA	0.05		
Stratum B (Soil layer below Stratum A):								
Stratum B SCS soil type		SCS_B	Not Present					
Stratum B thickness	(m)	hSB	0.00					
Stratum B total porosity	(-)	nSB			NA	NA		
Stratum B water-filled porosity	(-)	nwSB			NA	NA		
Stratum B bulk density	(g/cm^3)	rhoSB			NA	NA		
Stratum C (Soil layer below Stratum B):								
Stratum C SCS soil type		SCS_C	Not Present					
Stratum C thickness	(m)	hSC	0.00					
Stratum C total porosity	(-)	nSC			NA	NA		
Stratum C water-filled porosity	(-)	nwSC			NA	NA		
Stratum C bulk density	(g/cm^3)	rhoSC			NA	NA		
Stratum containing soil gas sample								
Stratum A, B, or C		src_soil	Stratum A					
					NA	NA		
					NA			
					NA			

Exposure Parameters:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Target risk for carcinogens	(-)	Target_CR	1.00E-05	1.00E-06	NA	NA	WARNING	Value is different from default value; please justify.
Target hazard quotient for non-carcinogens	(-)	Target_HQ	1	1	NA	NA		
Exposure Scenario		Scenario	Commercial	Commercial				
Averaging time for carcinogens	(yrs)	ATc	70	70	NA	NA		
Averaging time for non-carcinogens	(yrs)	ATnc	25	25	NA	NA		
Exposure duration	(yrs)	ED	25	25	NA	NA		
Exposure frequency	(days/yr)	EF	250	250	NA	NA		
Exposure time	(hrs/24 hrs)	ET	8	8	NA	NA		
Mutagenic mode-of-action factor	(yrs)	MMOAF	72	72	NA	NA		MMOAF used in place of ED in risk calculations

Model Output **Site Name/Run Number:** Legion Industries SG

Chemical Name: Trichloroethylene CAS No. 79-01-6

Range is based on the reasonable range of Qsoil/Qbuilding values, as reported in the literature.

Source to Indoor Air Attenuation Factor	Units	Symbol	Value	Range	Default	Default Range	Flag	Comment
Soil gas to indoor air attenuation coefficient	**(-)**	**alpha**	**3.0E-03**	1.0E-04 - 5.0E-02	**3.0E-03**	1.0E-04 - 5.0E-02	WARNING	Please review warning messages

Predicted Indoor Air Concentration	Units	Symbol	Value	Range	Default	Default Range	Flag	Comment
Indoor air concentration due to vapor intrusion	(ug/m3)	**Cia**	**1.6E+00**	5.2E-02 - 2.6E+01	**1.6E+00**	5.2E-02 - 2.6E+01		
	(ppbv)		**2.9E-01**	9.7E-03 - 4.8E+00	**2.9E-01**	9.7E-03 - 4.8E+00	WARNING	Please review warning messages

Predicted Vapor Conc. Beneath Foundation	Units	Symbol	Value	Range	Default	Default Range	Flag	Comment
Subslab vapor concentration	(ug/m3)	**Css**	**5.2E+02**	5.2E+02 - 5.2E+02	**5.2E+02**	5.2E+02 - 2.6E+05		
	(ppbv)		**9.7E+01**	9.7E+01 - 9.7E+01	**9.7E+01**	9.7E+01 - 4.8E+04		

Diffusive Transport Upward Through Vadose Zone	Units	Symbol	Value	Range	Default	Default Range	Flag	Comment
Effective diffusion coefficient through Stratum A	(cm2/sec)	DeffA	1.8E-03	-	1.8E-03	-		
Effective diffusion coefficient through Stratum B	(cm2/sec)	DeffB		-		-		
Effective diffusion coefficient through Stratum C	(cm2/sec)	DeffC		-		-		
				-		-		
Effective diffusion coefficient through unsaturated zone	(cm2/sec)	DeffT	1.8E-03	-	1.8E-03	-		

Critical Parameters		Symbol	Value	Range	Default	Default Range	Flag
α for diffusive transport from source to building with dirt floor foundation	(-)	A_Param	8.7E-04	-	8.7E-04		
Pe (Peclet Number) for transport through the foundation (advection / diffusion)	(-)	B_Param	6.6E+03	2.2E+02 - 1.1E+05	6.6E+03	2.2E+02 - 1.1E+05	
α for convective transport from subslab to building	(-)	C_Param	3.0E-03	1.0E-04 - 5.0E-02	3.0E-03	1.0E-04 - 5.0E-02	

Interpretation

Advection is the dominant mechanism across the foundation.
Diffusion through soil and advection through foundation both control intrusic

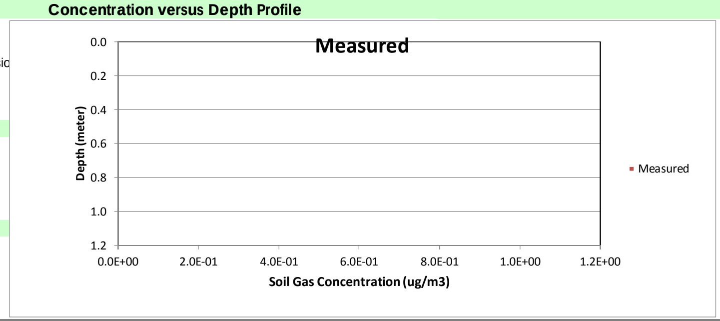
Critical Parameters

Hb, Ls, DeffT, ach, Qsoil_Qb

Non-Critical Parameters

Lf, DeffA, eta

Concentration versus Depth Profile



Please check WARNING or ERROR flags

Model Output Site Name/Run Number: Legion Industries SG

Chemical Name: Trichloroethylene CAS No. 79-01-6

Risk Calculations	Units	Symbol	Value	Range	Default	Range	Flag	Comment
Risk-Based Target Screening Levels Scenario: Commercial								
Target risk for carcinogens	(-)	Target_CR	1E-05	-	1E-06	-		
Target hazard quotient for noncarcinogens	(-)	Target_HQ	1	-	1	-		
Target indoor air concentration	**(ug/m3)**	**Target_IA**	**2.05E+01**	-	**2.05E+00**	-	Target indoor air concentration based on both cancer risk and non-cancer toxicity	
	(ppbv)		**3.82E+00**	-	**3.82E-01**	-		
Target soil gas concentration	**(ug/m3)**	**Target_SV**	**6.84E+03**	**4.1E+02 - 2.1E+05**	**6.84E+02**	**4.1E+01 - 2.1E+04**		
Incremental Risk Estimates								
Incremental cancer risk from vapor intrusion	**(-)**	**Cancer_Risk**	**2.02E-06**	**6.7E-08 - 3.4E-05**	**2.02E-06**	**6.7E-08 - 3.4E-05**		
Hazard quotient from vapor intrusion	**(-)**	**HQ**	**1.78E-01**	**5.9E-03 - 3.0E+00**	**1.78E-01**	**5.9E-03 - 3.0E+00**		

APPENDIX H
NEIGHBORING PROPERTY CONTACT DOCUMENTATION

HELENA CHEMICAL COMPANY
225 Schilling Blvd., Suite 300
Collierville, Tennessee 38017
Phone: (901) 761-0050

December 9, 2013

Charles A. Brown
President
Legion Industries, Inc.
370 Mills Rd.
Waynesboro, GA 30830

Dear Mr. Brown,

I am in receipt of your letter to our Mr. George Tedder of our Waynesboro, GA branch location. Your letter requests that Helena enter into a Site Access Agreement with your consultant, AMEC, for the purpose of installing a groundwater monitoring well on Helena property.

Helena has no interest in having a groundwater monitoring well placed on its property at 900 Davis Rd. in Waynesboro. Therefore we will not be entering into a Site Access Agreement with AMEC.

Sincerely,

Ed Brist

Ed Brister
Director, Regulatory Compliance/Engineering
Helena Chemical Co.

From: (901) 537-8601
April Martin
Helena Chemical Company
225 Schilling Blvd.

Collierville, TN 38017

Origin ID: HKAA

FedEx Express

E

J13201306280326

Ship Date: 09DEC13
ActWgt: 1.0 LB
CAD: 9061454/INET3430

Delivery Address Bar Code

SHIP TO: (706) 554-4411 BILL SENDER

Charles A. Brown
Legion Industries Inc
370 Mills Road

WAYNESBORO, GA 30830

Ref # 90411
Invoice #
PO #
Dept #

TUE - 10 DEC 4:30P
PRIORITY OVERNIGHT

TRK# 7973 4745 4514
0201

30830
GA-US
CAE

XH AGSA

51AG4/99D5/1A9E

Express

RT 867 1 A 4514 12.10 FZ

Align bottom of peel and stick airbill or pouch here.

Chuck Brown

From:	Matt Piell [mpiell@synergywms.com]
Sent:	Friday, October 02, 2015 8:26 AM
To:	<cbrown@legionindustries.com>
Subject:	Re: Georgia's Voluntary Remediation Program 10/2/15

I sent your email to Bill last week and he was checking into whether we could help or not. He will be contacting you either today or early next week. His name is Bill Creekmore - wcreekmore@synergywms.com

Matt

Sent from my iPhone

On Oct 2, 2015, at 4:31 AM, Chuck Brown <cbrown@legionindustries.com> wrote:

> I would appreciate your advising Legion who the Synergy contact person is for our future communications re your property:
>
> 321 Mills Road
> Waynesboro, Ga. 30830
>
> Thanks,
>
> Chuck Brown
>
> cbrown@legionindustries.com
>
> ---
>
> **From:** Chuck Brown [mailto:cbrown@legionindustries.com]
> **Sent:** Friday, September 25, 2015 12:01 PM
> **To:** (mpiell@synergywms.com)
> **Subject:** Georgia's Voluntary Remediation Program
>
> Mat,
> I was pleased that I reached you to discuss our potential request to install a monitoring well on the Synergy property and your willingness to participate.
>
> - The Legion property is in Georgia's Voluntary Remediation Program due to historical contamination released before our operation began.
> - There is no evidence to indicate the Synergy property has been affected.
> - Legion is in the process of demonstrating to EPD that the Legion property is not a risk to the public so it can be removed from regulatory oversight.
> - As part of that demonstration, EPD may want Legion to install a monitoring well on the Synergy property as a conservative measure.
> - Legion is going to meet with EPD in October and would like to represent Synergy's willingness to cooperate, if needed.
>
> You indicated that you would forward our request to another individual in Georgia to discuss our potential request for:
> 321 Mills Road
> Waynesboro, Ga. 30830

I would appreciate a copy of your contact to the Synergy Georgia contact for our future communications.

I can be reached through the information shown in the attachment to discuss the details with the appropriate Synergy person, and be advised of Synergy's decision.

Thanks for your help – I look forward to our next discussions.

Chuck Brown
cbrown@legionindustries.com

<CB Information 092515.doc>

From: William B Creekmore [wcreekmore@synergywms.com]
Sent: Friday, October 02, 2015 9:00 AM
To: cbrown@legionindustries.com
Cc: Matt Piell
Subject: Waynesboro

Charles,

Nice speaking to you today. As I said, after speaking to our attorney and lender, we will not be able to allow any monitoring wells on our property.

I hope all goes well for you in the future.

Thank you,

William Creekmore
770 318-5412

Sent from my iPhone

Chuck Brown

From: Matt Piell [mpiell@synergywms.com]
Sent: Friday, October 02, 2015 8:26 AM
To: <cbrown@legionindustries.com>
Subject: Re: Georgia's Voluntary Remediation Program 10/2/15

I sent your email to Bill last week and he was checking into whether we could help or not. He will be contacting you either today or early next week. His name is Bill Creekmore - wcreekmore@synergywms.com

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> **To:** (mpiell@synergywms.com)
> **Subject:** Georgia's Voluntary Remediation Program
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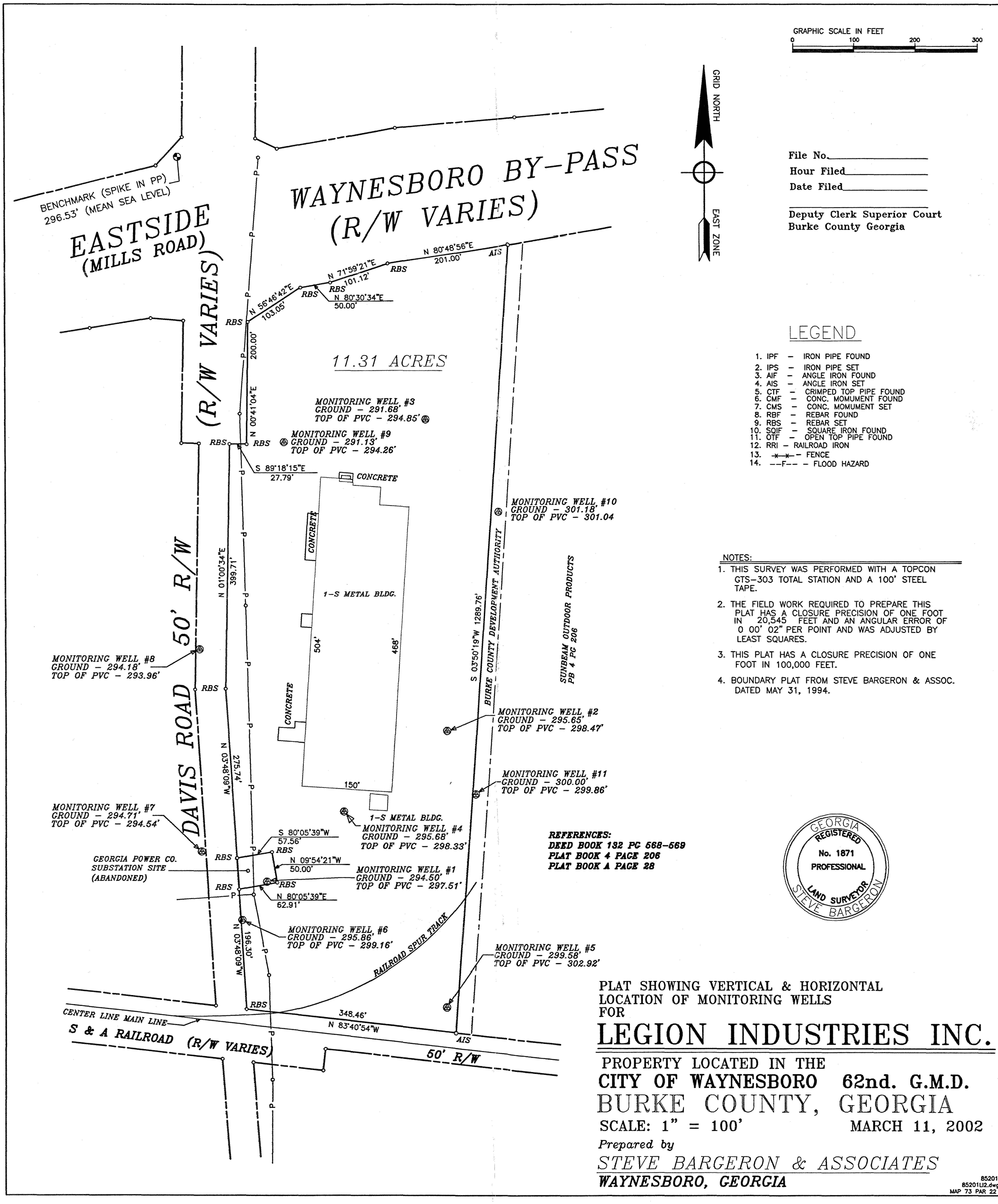
Thanks for your help – I look forward to our next discussions.

Chuck Brown
cbrown@legionindustries.com

<CB Information 092515.doc>

APPENDIX I
SITE SURVEY



GRAPHIC SCALE IN FEET
0 100 200 300
GRID NORTH
EAST ZONE
File No.
Hour Filed
Date Filed
Deputy Clerk Superior Court
Burke County Georgia
BENCHMARK (SPIKE IN PP)
296.53' (MEAN SEA LEVEL)
WAYNESBORO BY-PASS
(R/W VARIES)
EASTSIDE
(MILLS ROAD)
(R/W VARIES)
N 56°46'42"E
103.05'
N 71°59'21"E
101.12'
N 80°48'56"E
201.00'
N 80°30'34"E
50.00'
RBS
AIS
11.31 ACRES
200.00'
N 00°41'04"E
MONITORING WELL #3
GROUND – 291.68'
TOP OF PVC – 294.85'
MONITORING WELL #9
GROUND – 291.13'
TOP OF PVC – 294.26'
S 89°18'15"E
27.79'
CONCRETE
MONITORING WELL #10
GROUND – 301.18'
TOP OF PVC – 301.04
1-S METAL BLDG.
504'
468'
150'
N 01°00'34"E
399.71'
S 03°50'19"W 1289.76'
BURKE COUNTY DEVELOPMENT AUTHORITY
SUNBEAM OUTDOOR PRODUCTS
PB 4 PG 206
DAVIS ROAD 50' R/W
MONITORING WELL #8
GROUND – 294.18'
TOP OF PVC – 293.96'
MONITORING WELL #2
GROUND – 295.65'
TOP OF PVC – 298.47'
N 03°48'09"W
275.74'
MONITORING WELL #11
GROUND – 300.00'
TOP OF PVC – 299.86'
MONITORING WELL #7
GROUND – 294.71'
TOP OF PVC – 294.54'
S 80°05'39"W
57.56'
N 09°54'21"W
50.00'
1-S METAL BLDG.
MONITORING WELL #4
GROUND – 295.68'
TOP OF PVC – 298.33'
GEORGIA POWER CO.
SUBSTATION SITE
(ABANDONED)
MONITORING WELL #1
GROUND – 294.50'
TOP OF PVC – 297.51'
N 80°05'39"E
62.91'
REFERENCES:
DEED BOOK 132 PG 568-569
PLAT BOOK 4 PAGE 206
PLAT BOOK A PAGE 28
MONITORING WELL #6
GROUND – 295.86'
TOP OF PVC – 299.16'
N 03°48'09"W
196.30'
RAILROAD SPUR TRACK
MONITORING WELL #5
GROUND – 299.58'
TOP OF PVC – 302.92'
CENTER LINE MAIN LINE
348.46'
N 83°40'54"W
S & A RAILROAD (R/W VARIES)
50' R/W
LEGEND
1. IPF – IRON PIPE FOUND
2. IPS – IRON PIPE SET
3. AIF – ANGLE IRON FOUND
4. AIS – ANGLE IRON SET
5. CTF – CRIMPED TOP PIPE FOUND
6. CMF – CONC. MOMUMENT FOUND
7. CMS – CONC. MOMUMENT SET
8. RBF – REBAR FOUND
9. RBS – REBAR SET
10. SQIF – SQUARE IRON FOUND
11. OTF – OPEN TOP PIPE FOUND
12. RRI – RAILROAD IRON
13. –x–x– FENCE
14. – –F– – – FLOOD HAZARD
NOTES:
1. THIS SURVEY WAS PERFORMED WITH A TOPCON GTS-303 TOTAL STATION AND A 100' STEEL TAPE.
2. THE FIELD WORK REQUIRED TO PREPARE THIS PLAT HAS A CLOSURE PRECISION OF ONE FOOT IN 20,545 FEET AND AN ANGULAR ERROR OF 0 00' 02" PER POINT AND WAS ADJUSTED BY LEAST SQUARES.
3. THIS PLAT HAS A CLOSURE PRECISION OF ONE FOOT IN 100,000 FEET.
4. BOUNDARY PLAT FROM STEVE BARGERON & ASSOC. DATED MAY 31, 1994.
GEORGIA
REGISTERED
No. 1871
PROFESSIONAL
LAND SURVEYOR
STEVE BARGERON
PLAT SHOWING VERTICAL & HORIZONTAL
LOCATION OF MONITORING WELLS
FOR
LEGION INDUSTRIES INC.
PROPERTY LOCATED IN THE
CITY OF WAYNESBORO 62nd. G.M.D.
BURKE COUNTY, GEORGIA
SCALE: 1" = 100'
MARCH 11, 2002
Prepared by
STEVE BARGERON & ASSOCIATES
WAYNESBORO, GEORGIA
85201
85201LI2.dwg
MAP 73 PAR 22

APPENDIX J
WASTE MANIFESTS

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12518

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas Mactejewski — Signature: X [signature] — Month 06 Day 20 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
GAD054223987	1	404-431-2951	12519

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 20 Year 13

15. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X 389 Billy Greer — Signature: X Billy Greer — Month X 6 Day 20 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: — Signature: — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12520

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X254 Leon Hayes — Signature: X Leon Hayes — Month 6 Day 20 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12521

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
Susan Riggs on behalf of Legion Industries		6	20	13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter	Printed/Typed Name	Signature	Month	Day	Year
Transporter 1	X 248 Larry Houghton	X Larry Houghton	X 6	20	13
Transporter 2					

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of: 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12522

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X248 Larry Houghton — Signature: X — Month 6 Day 20 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09) — GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: GAD054223987	2. Page 1 of 1	3. Emergency Response Phone: 404-431-2951	4. Waste Tracking Number: 12523

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X 384 [illegible] — Signature: X [illegible] — Month Day Year

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12524

GENERATOR

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 20 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X 254 Leon Hayes — Signature: X Leon Hayes — Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: — Signature: — Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12525

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X 248 Larry Houghton — Signature: X — Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987

2. Page 1 of: 1

3. Emergency Response Phone: 404-431-2951

4. Waste Tracking Number: 12526

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: Davis Hauling

U.S. EPA ID Number:

7. Transporter 2 Company Name:

U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature:
Month: 6 Day: 20 Year: 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: x Leon Hayes
Signature: x Leon Hayes
Month: x6 Day: 20 Year: 13

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name:
Signature:
Month: Day: Year:

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12527

5. Generator's Name and Mailing Address

Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address

Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Larry Houghton — Signature: X Larry Houghton — Month X 6 Day 20 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12528

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [illegible] — Month 6 Day 20 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible] — Signature: X [illegible] — Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12529

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling TRK F [illegible] 383
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries   Signature: [illegible]   Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S.   Port of entry/exit:
Transporter Signature (for exports only):   Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEWSKI   Signature: X Thomas Maciejewski   Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name   Signature   Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)   U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)   Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name   Signature   Month Day Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12530

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling Truck #257
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [illegible]
Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Leon Hayes
Signature: Leon Hayes
Month 6 Day 20 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

169-BLC-O 6 10498 (Rev. 9/09)

GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: GAD054223987	2. Page 1 of 1	3. Emergency Response Phone: 404-431-2951	4. Waste Tracking Number: 12531

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X [illegible] — Signature: X [illegible] — Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

169-BLC-O 6 10498 (Rev. 9/09) — GENERATOR'S/SHIPPER'S INITIAL COPY

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987	2. Page 1 of 1	3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12532		

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck# 278 — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Larry Houghton — Signature: X [signature] — Month 6 Day 20 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12533

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling T# 383
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month: 6 Day: 20 Year: 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEWSKI
Signature: X [signature]
Month: 6 Day: 20 Year: 13

Transporter 2 Printed/Typed Name: Signature: Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name Signature Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09) GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12534

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
Susan Biggs on behalf of Legion Industries		6	20	13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

	Printed/Typed Name	Signature	Month	Day	Year
Transporter 1	x Ricky Greer	x Ricky Greer	x 6	20	13
Transporter 2					

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12535

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling Truck 354
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature:
Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Lyon Hoyt
Signature: X
Month X 6 Day 20 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12536

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Larry Haughton
Signature: X [signature]
Month 6 Day 20 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12537

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Trk 383 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEWSKI — Signature: X [illegible] — Month 6 Day 20 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12535

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling TRK # 383
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month 6 Day 20 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEUSKI
Signature: X Thomas Maciejewski
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	
1. Generator ID Number	GAD054223987
2. Page 1 of	1
3. Emergency Response Phone	404-431-2951
4. Waste Tracking Number	12539
5. Generator's Name and Mailing Address	Legion Industries, Inc. 370 Mills Road Waynesboro, GA 30830
Generator's Phone:	706-554-4411
Generator's Site Address (if different than mailing address)	
6. Transporter 1 Company Name	Davis Hauling Truck # 248
U.S. EPA ID Number	
7. Transporter 2 Company Name	
U.S. EPA ID Number	
8. Designated Facility Name and Site Address	Augusta Deans Bridge Road Landfill 4330 Deans Bridge Road Blythe, GA 30805
Facility's Phone:	706-592-3200
U.S. EPA ID Number	

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [illegible] — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Larry Houghton — Signature: X [illegible] — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09) GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12540

GENERATOR

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling Truck # 384
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130322

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month 6 Day 21 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Ricky Breen
Signature: X [signature]
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12541

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling Truck 4254 — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 21 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Leon Hayes — Signature: X Leon Hayes — Month 6 Day 21 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054228987
2. Page 1 of 1
3. Emergency Response Phone: 404-491-2951
4. Waste Tracking Number: 12542

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck # 383 — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200

U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job # 130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Thomas MACIEJEWSKI — Signature: X [signature] — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987	2. Page 1 of: 1	3. Emergency Response Phone: 404-431-2951	4. Waste Tracking Number: 12543

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling Truck # 248

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: x Larry Houghton
Signature: x
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054238987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12544

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck # 384 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805 — U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X [illegible] — Signature — Month 6 Day 21 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987	2. Page 1 of 1	3. Emergency Response Phone: 404-431-2951	4. Waste Tracking Number: 12545

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling Truck # 254 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [illegible] — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Leon Hayes — Signature: X Leon Hayes — Month 6 Day 21 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12546

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck #

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805

U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: K. Larry Houghton
Signature: K. Larry Houghton
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name
Signature
Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09)

GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12547

GENERATOR

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling Truck # 383
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month 6 Day 21 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Thomas MACIEJEWSKI
Signature: X Thomas Maciejewski
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

169-BLC-O 6 10498 (Rev. 9/09)

GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12548

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck #25Y — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: x Leon Hayes — Signature: x Leon Hayes — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

169-BLC-O 6 10498 (Rev. 9/09) GENERATOR'S/SHIPPER'S INITIAL COPY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: GAD054223987	2. Page 1 of 1	3. Emergency Response Phone: 404-431-2951	4. Waste Tracking Number: 12549

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830
Generator's Site Address (if different than mailing address):
Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck #384 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:
Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ricky Green — Signature: Ricky Green — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12550

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck # 248 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] Houghton — Signature: [illegible] — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

Side labels: GENERATOR, INT'L, TRANSPORTER, DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12551

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name Davis Hauling TRAIL # 383 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Biggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEVSKI — Signature: X Thomas Maciejewski — Month 6 Day 21 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12562

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck # 384 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805 — U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12553

5. Generator's Name and Mailing Address

Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck # 21 — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number:

Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Leon Hayes — Signature: Leon Hay — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12555

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling T. K.L 383
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature: [signature]
Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Thomas MACIEJEWSKI
Signature: X Thomas Maciejewski
Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name / Signature / Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name / Signature X / Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	GAD054223987	1	404-431-2951	12556

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling Truck 11 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Larry Houghton — Signature: X Larry Houghton — Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	GAD054223987
2. Page 1 of	1
3. Emergency Response Phone	404-431-2951
4. Waste Tracking Number	12557

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling Truck # 384 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Kelly Bacon — Signature: X [signature] — Month 6 Day 24 Year 13
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12558

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling Truck # 254
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0630	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
A&D Environmental lab #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Leon Hayes
Signature: Leon Hayes
Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR · TRANSPORTER · INT'L · DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12559

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling 2/3 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Thomas Maciejewski — Signature: x Thomas Maciejewski — Month 6 Day 24 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of: 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12560

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 248 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: — Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Larry Houghton — Signature: Larry Houghton — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12561

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 384
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Ricky Green
Signature: Ricky Green
Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
GAD054223987	1	404-431-2951	12562

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

ACD Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [illegible] — Month 6 Day 27 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [illegible] — Month 6 Day 27 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	GAD054223987
2. Page 1 of	1
3. Emergency Response Phone	404-431-2951
4. Waste Tracking Number	12563

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Thomas MACIEJEWSKI — Signature: Thomas Maciejewski — Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12564

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 248 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Larry Houghton — Signature — Month 6 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-491-2751	4. Waste Tracking Number 12565

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 384 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 21 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Ricky Green — Signature: X Ricky Green — Month 6 Day 21 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-[illegible]1-2951	4. Waste Tracking Number 12567

GENERATOR

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 251 — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805 — U.S. EPA ID Number

Facility's Phone: 706-592-3200

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
	1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
	2.				
	3.				
	4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Leon Hayes — Signature X — Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12568

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830
Generator's Site Address (if different than mailing address):
Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:
Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Thomas MACIEJEWSKI — Signature: Thomas Maciejewski — Month 6 Day 24 Year 13
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12569

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling 248 — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 24 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Larry Houghton — Signature — Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12570

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Davis Hauling 254
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month 6 Day 24 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: X Leon Hayes
Signature: X Leon Hayes 22
Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Da

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12571

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Davis Hauling

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200

U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries
Signature
Month Day Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name
Signature
Month Day Year

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name
Signature
Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12572

GENERATOR

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
706-554-4411

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
706-592-3200

U.S. EPA ID Number

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
Susan Riggs on behalf of Legion Industries	[illegible]	6	26	13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
X [illegible]	X [illegible]	6	26	13

Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name	Signature	Month	Day	Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12573

5. Generator's Name and Mailing Address: Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830

Generator's Site Address (if different than mailing address)

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805

Facility's Phone: 706-592-3200 — U.S. EPA ID Number

GENERATOR

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature — Month 6 Day 24 Year 13

INT'L

15. International Shipments [ ] Import to U.S. [ ] Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Leon Hayes — Signature: X Leon Hayes — Month 6 Day 24 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space [ ] Quantity [ ] Type [ ] Residue [ ] Partial Rejection [ ] Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12574

5. Generator's Name and Mailing Address
Legion Industries, Inc.
370 Mills Road
Waynesboro, GA 30830
706-554-4411

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Augusta Deans Bridge Road Landfill
4330 Deans Bridge Road
Blythe, GA 30805
Facility's Phone: 706-592-3200
U.S. EPA ID Number:

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
Susan Riggs on behalf of Legion Industries	[signature]	6	26	13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

	Printed/Typed Name	Signature	Month	Day	Year
Transporter 1	Leon Hayes	Leon Hayes	6	26	13
Transporter 2					

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number GAD054223987	2. Page 1 of 1	3. Emergency Response Phone 404-431-2951	4. Waste Tracking Number 12575

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Site Address (if different than mailing address):

Generator's Phone: 706-554-4411

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month 6 Day 26 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Ricky Green — Signature: X Ricky Green — Month 6 Day 26 Year 13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: — Signature: — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: GAD054223987
2. Page 1 of 1
3. Emergency Response Phone: 404-431-2951
4. Waste Tracking Number: 12576

5. Generator's Name and Mailing Address: Legion Industries, Inc., 370 Mills Road, Waynesboro, GA 30830

Generator's Phone: 706-554-4411

Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: Davis Hauling — U.S. EPA ID Number:

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Augusta Deans Bridge Road Landfill, 4330 Deans Bridge Road, Blythe, GA 30805 — U.S. EPA ID Number:

Facility's Phone: 706-592-3200

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval #13-0530	001	DT	Est. 18	T
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information

A&D Environmental Job #130392

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Susan Riggs on behalf of Legion Industries — Signature: [signature] — Month/Day/Year: 6/24/13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ricky Green — Signature: Ricky Green — Month/Day/Year: 6/24/13

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY