Voluntary Remediation Plan Application

Legion Industries Plant Site
370 Mills Road, Waynesboro, Georgia
Hazardous Site Inventory No. 10614

Prepared by:

AMEC E&I, Inc.
396 Plasters Avenue
Atlanta, Georgia

January 2012

AMEC Project No. 6121-09-0444

January 26, 2012

Mr. David Reuland
Hazardous Sites Response and Remediation Program
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive, SE
Suite 1462 East Floyd Tower
Atlanta, Georgia 30334

Subject: **Voluntary Remediation Plan Application and Fee**
Pursuant to the Georgia Voluntary Remediation Program Act
Legion Industries Plant Site
370 Mills Road, Waynesboro, Georgia
Hazardous Site Inventory No. 10614
AMEC Project 6121-09-0444

Dear Mr. Reuland:

On behalf of Legion Industries, Inc., AMEC Environment & Infrastructure, Inc. (AMEC) respectfully submits this Voluntary Remediation Plan Application along with the attached $5,000.00 application fee to enroll the subject site under the Georgia Voluntary Remediation Program Act.

Please contact the undersigned if any questions arise.

Sincerely,

AMEC Environment & Infrastructure, Inc.

Stephen R. Foley, P.G.
Senior Geologist

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

Enclosures

cc: Mr. Charles A. Brown, Legion Industries

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1.0 INTRODUCTION

AMEC Environment & Infrastructure, Inc. (AMEC, formerly MACTEC Engineering and Consulting, Inc.) has prepared this Voluntary Remediation Program (VRP) application for the Legion Industries Plant Site (site). The site is located within Burke County tax parcel 073 022, addressed at 370 Mills Road Waynesboro, Georgia and is listed on the Hazardous Site Inventory (HSI) as Site No. 10614. A Site Location/Topographic Map is provided as Figure 1 and a Boundary Survey Map is provided in Appendix A. 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 as shown on the attached Site and Vicinity Aerial Photograph (Figure 2).

The subject site is currently owned by Legion Industries, Inc. (Legion) and meets the criteria of a "qualifying property" as defined by the Georgia Voluntary Remediation Program Act (VRPA).

The Georgia Environmental Protection Division (EPD) listed the site on the HSI due to the detection of a variety of chlorinated volatile organic compounds in soil and groundwater. Subsequent assessments also identified pesticide compounds in soil and groundwater. The substances identified in soil at the site include: 1,4-dichlorobenzene, chlorobenzene, cis-1,2-dichlorobenzene, 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, methoxychlor 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-dichlorobenzene, 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.

The previous reports have summarized the site history and facility operations, presented the results of all previous site investigations, and described the horizontal and vertical extent of regulated substances in site soils and groundwater in relation to risk-reduction standards (RRS). The most recent submittal was a Revised Compliance Status Report (CSR) data March 31, 2010. EPD provided comments on the Revised

CSR in a letter dated October 27, 2011 which, in part, mentioned the VRP as a possible pathway to "no further action" status for the site and allowed for a VRP application in lieu of a CAP by January 27, 2012.

This voluntary remediation plan describes anticipated corrective actions consistent with provisions of the Georgia VRPA. This VRP application is submitted with the intention of moving the site from the Hazardous Sites Response and Remediation Program into the Voluntary Remediation Program as such, activities required in association with the HSI CSR have been suspended pending EPD's review and approval of this VRP application, with the exception that corrections to figures, tables and risk reduction calculations have been made herein as designated in EPD's October 27, 2011 letter.

2.0 SITE SETTING

Understanding the site setting is important in evaluating the fate and transport of contaminants in the subsurface.

2.1 SITE SPECIFIC GEOLOGY

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 have been formed by in-place chemical and physical weathering of marine sediments and 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 installed during previous assessments generally encountered a thin layer of fill soil at the surface which overlaid sedimentary 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 Figure 5 in Appendix B for cross-sections through the subject site.

2.2 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 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 groundwater table.

Typically, the water table in shallow unconfined aquifer units is not a level surface, but a subdued reflection of the land surface while that of deeper independent units may vary significantly. Also, the depth to the water table is variable, being dependant 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 within wells screened in deeper units will be dependent upon the hydraulic head within that aquifer unit, particularly in the case of confined aquifers.

2.2.1 Surface Water Drainage

Surface water drainage in the surrounding area is controlled by shallow drainage ditches along the streets and another 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 across the site is to the north, following the path of a north-trending drainage swale that formerly crossed the site and was occupied by an intermittent stream according to a historical topographic map. The nearest perennial stream is an unnamed tributary of Brier Creek, located north of Mills Road. Brier Creek, the dominant surface water drainage feature in the area, is located approximately 2.4 miles north of the site.

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.

2.2.2 Unconfined Aquifer

Based on our observations of soils obtained from the logged boreholes, subsurface materials beneath the site can predominantly be characterized as clayey fine to medium grained sand interlayered with occasional lenses of sand, sandy clay, or clay at various depths. The uppermost aquifer occurs at shallow depth across the site, generally ranging from four to six feet below ground surface (bgs).

Based on the measured groundwater elevations, the interpreted groundwater flow direction within the uppermost unconfined aquifer across the subject site is generally in a northerly or northwesterly direction (see Figure 6 in Appendix B). Groundwater elevations measured in several intermediate depth wells and piezometers (MW-2, PZ-4, PZ-5 and PZ-6) indicate a northeasterly groundwater flow direction (see Figure 7 in Appendix B). These results indicate a separate flow regime may be present although the groundwater testing data obtained from MW-2, which indicated the presence of both VOCs and pesticides, indicates that there is significant communication between the two aquifer units.

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. Groundwater elevations measured in these two wells were significantly lower than in other wells on site, 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 between the upper and lower zones. The detection of very low levels of VOCs in MW-4 in the 2002 assessment and pesticides in MW-12 in the 2010 assessment indicates that there may be some communication between the upper and lower aquifer zones. However, it is possible that the low concentrations of constituents were the result of artifacts of drilling through the more heavily impacted shallow water bearing unit as subsequent testing did not identify VOCs in MW-4 after the initial sampling event.

2.2.3 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).

Results of the in-situ hydraulic conductivity tests are summarized in Table 2 in Appendix C. The average hydraulic conductivity of the shallow wells, MW-1, MW-2 and MW-3, based on the slug-test data, was 4.83×10^{-4} cm/sec. The average hydraulic conductivity of the deep wells, MW-4 and MW-12, was 4.4×10^{-4} cm/sec.

A summary of the well depths, screened intervals, depth to groundwater and water table elevations is presented in Table 1 in Appendix C. A potentiometric surface map of the shallow aquifer unit was prepared based on the groundwater elevation data measured in January 2010 (see Figure 7 in Appendix B). Based on these data, shallow groundwater flow is generally to the north. The horizontal groundwater gradient measured within the central portion of the site along the trace of the former drainage swale is approximately 1.5%.

Effective porosity was assumed to be 15% (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) = 1.37 ft/day
i = hydraulic gradient (feet per foot) = 0.015 ft/ft
n_e = effective porosity (unitless) = 0.15

Based on the data input, an estimated groundwater velocity of approximately 0.137 feet/day or approximately 50 feet per year was calculated for the site. We note, however, that organic constituents do not migrate at the same rate as groundwater and also attenuate as they migrate.

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 January 29, 2010. The difference in groundwater elevation was 22.84 feet with the deeper well exhibiting the lower groundwater elevation, which would indicate a downward hydraulic gradient of 0.43 ft/ft. We note, however, that this high gradient is likely not representative as the two aquifer units are believed to have only limited connection. Comparison of water table contours between the shallow and intermediate depth water bearing units indicates a slight upward gradient may exist within the area just south of the building.

3.0 REGULATED CONSTITUENTS

The presence of regulated constituents was characterized in various media between 1993 and 2010.

3.1 SOURCE AREAS

3.1.1 Pesticide Source

The subject site was used for approximately 20 years 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. Limited testing conducted by CSRA in 1994 did not identify pesticides in soil or groundwater. In response to EPD's NOD letter in 2009/2010, additional assessment was conducted within the building and in the area immediately south of the building which included testing of soil and groundwater for pesticides and herbicides in addition to VOCs. As discussed in more detail in the Revised CSR, eight 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. Very low to moderate pesticide concentrations were detected immediately south of the building and in the vicinity of a previously identified geophysical anomaly. No herbicides have been detected on site to date.

3.1.2 VOC Source

The most likely source of VOC release at the property is thought to be small undocumented releases of solvents in connection with general solvent handling practices related to the manufacture of commercial kitchen equipment, a process that involved the use of chlorinated solvent degreasers until the early 1990s. In particular, practices associated with the former non-contained drum storage system reportedly utilized by the former owner (Legion Utensil Company) are suspected of being the cause of much of the VOC impacts. This conclusion was based on a number of factors, including:

- The highest concentrations of VOCs detected in soil and groundwater 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 and the degree of biodegradation of the TCE (to cis-1,2-dichloroethene and vinyl chloride) is consistent with releases that occurred at least 20 years prior to the 2001/2002 assessment.

- Systematic efforts to identify a subsurface source indicate there are no subsurface objects acting as a current 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 or other solvents in their 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.

3.2 SOIL QUALITY CONDITIONS

Extensive soil sampling and testing, both within and outside of the facility has been conducted between 1994 and 2010. A total of 49 boring have been installed on site. Refer to Figure 4 for a plan of existing boring locations and a summary of soil test results. The bulk of this testing was conducted by AMEC's predecessors Law Engineering and MACTEC. The substances identified in soil at the site include: 1,4-dichlorobenzene, chlorobenzene, cis-1,2-dichlorobenzene, 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. As detailed in the Revised CSR, based on the results of the soil sampling and testing conducted by MACTEC, delineation of the lateral and vertical extent of contamination to background has been largely completed except along a portion of the eastern property boundary and a very small area south of the building (see Figures 8 and 9). EPD's 2011 CSR comment letter also requested further delineation in the former degreaser pit area inside the building. Laboratory results from all soil samples analyzed to date are summarized on Table 3.

3.3 GROUNDWATER QUALITY CONDITIONS

Groundwater assessment activities on site have been conducted by MACTEC and others between 2001 and 2010. A total of 13 groundwater monitoring wells and six piezometers have been installed on site, several of which have been destroyed. Refer to Figure 3 for a plan of the existing monitoring well locations and a summary of groundwater test results. 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-dichlorobenzene, 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. Laboratory results from all groundwater samples analyzed to date are summarized on Table 2.

3.4 SURFACE WATER QUALITY CONDITIONS

In addition to the groundwater sampling and testing that was performed in 2009/2010, MACTEC 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.

4.0 DELINEATION CRITERIA

The data collected between 2001 and 2010 were used to delineate the extent of regulated constituents in soil, groundwater and surface water on site to non-detect. We note that delineation to background concentrations (i.e. laboratory reporting limits) has not been completed for soil or groundwater at this time.

4.1 SOIL

As detailed in the Revised CSR, extensive soil testing conducted on site has largely delineated the lateral extent of VOCs and pesticides to background concentrations within the boundaries of the site (Figures 8 and 9). Vertical delineation sampling indicates that the vertical extent of impacted soil extends to the water table which occurs at shallow depth across the site. The data collected to date indicated the highest concentrations of pesticides and VOCs are located beneath the floor slab in the southern portion of the building and elevated concentrations of VOCs are present in a limited area south of the building.

4.2 GROUNDWATER

Groundwater testing conducted between 2001 and 2010 indicates that delineation of VOCs in groundwater is not yet completed in a small area near the southwest corner of the site and delineation of pesticides in groundwater is not yet complete along a portion of the site's eastern property boundary. The highest concentrations of VOCs were detected in PZ-2 and MW-13 located just south of the building. The highest concentrations of pesticides were detected in MW-13 and MW-2, located east of the building. Minor VOC and pesticide impacts were detected in the deep well MW-12, located east of the building, but may represent artifacts of well installation through the impacted shallow aquifer.

4.3 SURFACE WATER

Surface water samples collected by MACTEC in 2010 did not identify regulated constituents in surface water from the drainage ditch located along the northern property boundary. Based on data obtained to date, surface water is not being impacted above laboratory reporting limits as a result of the on-site groundwater plume. Surface water analytical results are summarized on Figure 3.

5.0 REMEDIATION CRITERIA AND EXPOSURE

An examination of potential exposure pathways was conducted for the site. Based on the data collected to date, the potential exposure pathways include:

- 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 beneath the building.

The site and surrounding area consist of non-residential property.

5.1 SOIL CRITERIA

There is some potential for direct exposure of commercial workers to impacted soil at the site, primarily in the area of a former degreaser pit and in an area immediately south of the building which have exhibited VOC impacts above applicable RRS. The potential for exposure to pesticides in soil is limited to the primary area of soil impact located beneath the concrete floor of the building.

AMEC calculated both residential and non-residential Risk Reduction Standards (RRS) for constituents detected in soil. Type 1, 2, 3 and 4 RRS were calculated for the constituents of concern (COCs) detected on site using default exposure assumptions (see Appendix B). As requested by EPD in the 2011 comment letter, a revised toxicity value for cis-1,2-dichloroethene was used.

A total of 27 HSRA-regulated constituents have been detected in soil on site. Type 3 and 4 RRS for all constituents detected in soil on site are presented below in Table 1 along with the highest concentration of each constituent detected on site and the corresponding sample location.

TABLE 1 - RISK REDUCTION STANDARDS FOR SOIL

Regulated Substance	Highest Concentration mg/kg	Location	Non-Residential	
			Type 3 RRS Criteria, mg/kg	Type 4 RRS Criteria, mg/kg
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
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	18	DP-2-3	7.0	6.0
Ethylbenzene	680	DP-2-3'	70	16
Isopropylbenzene	10.0	DP-2-3'	22	33
Toluene	13.0	DP-2-3'	100	72
Trichloroethene	190	DP-2-3'	0.50	0.27
Vinyl Chloride	3.2	DP-2-3'	0.20	0.014
Xylenes	4,700	DP-8-3	1,000	200
4,4-DDD	2800	DP-8-3'	0.66	56.0
4,4'-DDE	150	DP-8-3'	0.66	40.0
4,4'-DDT	4300	DP-1-3'	0.66	57.0
Aldrin	1.4	DP-1-3'	0.66	0.55
Alpha-BHC	87.0	DP-8-3'	0.66	0.053
Beta-BHC	18.0	DP-8-3'	0.66	0.19
Delta-BHC	79.0	DP-8-3'	0.005	0.19
Gamma-BHC	150	DP-8-3'	0.66	0.30
Chlordane	160	DP-8-3'	9.2	11.0
Dieldrin	8.9	DP-3-3'	0.66	0.14
Endrin	370	DP-8-3'	10.0	25.0
Endrin Ketone	270	DP-8-3'	10.0	0.081
Heptachlor	42	DP-8-3'	0.66	1.1
Methoxychlor	7.8	DP-8-3'	1.7	0.13
Toxaphene	2700	DP-8-3'	11.0	15.0

mg/kg - milligrams per kilogram (equivalent to parts per million)
Note: Shaded values exceed all applicable RRS

Based on the soil testing data collected to date, the subject site is currently not in compliance with applicable RRS for soil for the following constituents: cis-1,2-DCE, ethylbenzene, trichloroethene, vinyl chloride, xylenes, 4,4-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, alpha-BHC, beta-BHC, delta-BHC, gamma-BHC, chlordane, dieldrin, endrin, endrin ketone, heptachlor, methoxychlor and toxaphene

5.2 GROUNDWATER CRITERIA

The general groundwater flow in the area of the site is to the north, toward an unnamed tributary of Brier Creek, located in a wooded area north of the site. Brier Creek is located approximately 2.4 miles north of the site. The City of Waynesboro obtains its water from a well located approximately 1.5 miles west-northwest of the site and from a surface water intake on Brier Creek. This well is approximately 700 feet deep and is screened in the confined Dublin-Midville Aquifer System. Regional groundwater flow within this aquifer system is typically in the down-dip direction, from northwest to southeast. Therefore, this well is located upgradient of the site and due to its depth and the presence of multiple overlying confining layers, it is not hydraulically connected to the shallow impacted groundwater at the site. The Brier Creek surface water intake is located approximately 2.2 miles downstream of its confluence with the unnamed tributary located north of the site. Due to the length of the flow path between the site and the surface water intake and the fact that surface waters on site have not been impacted by the release, there is no potential for impact to the surface water intake. For these reasons, the groundwater exposure pathway is incomplete. Based on our research, no drinking water wells have been identified which could be impacted by the release from the site.

AMEC previously calculated RRS for the constituents detected in groundwater on site. The Type 1 through 4 RRS criteria were derived using default exposure assumptions. As requested by EPD in the 2011 comment letter, a revised toxicity value for cis-1,2-dichloroethene was used. Type 3 and 4 RRS for all constituents detected in groundwater on site are presented below in Table 2. HSRA RRS criteria for groundwater for the detected constituents are shown compared to their highest concentrations detected on site.

TABLE 2 - RISK REDUCTION STANDARDS FOR GROUNDWATER

Regulated Substance	Highest Concentration µg/L	Location	Non-Residential	
			Type 3 RRS Criteria, µg/L	Type 4 RRS Criteria, µg/L
1,2-dichlorobenzene	12	MW-13	600	548
1,4-dichlorobenzene	50	MW-13	70	519
1,1-dichloroethane	19	MW-13	4,000	46.4
1,1-dichloroethene	11	MW-13	7.0	523
1,2,4-trichlorobenzene	51	MW-13	70	5.79
1,1,2-trichloroethane	14	PZ-2	200	4.46
Benzene	16	MW-13	5.0	8.8
Chlorobenzene	65	MW-13	100	130
Cis-1,2-dichloroethene	20,000	PZ-2	70	200
Isopropylbenzene	7.3	MW-13	5.0	1,000
Trichloroethene	57,000	PZ-2	5.0	38
Vinyl Chloride	6,800	PZ-2	2.0	3.3
Xylenes	18	MW-2	10,000	290
4,4-DDD	2.9	MW-13	0.1	12
4,4'-DDT	2.4	MW-13	0.1	8.4
Alpha-BHC	2.0	MW-2	0.05	0.45
Beta-BHC	3.7	MW-13	0.05	1.6
Delta-BHC	2.3	MW-13	0.05	1.6
Gamma-BHC	1.1	MW-2	0.2	2.6
Chlordane	1.3	MW-2	2.0	8.2
Dieldrin	0.72	MW-11	0.1	0.18
Endrin	7.3	MW-13	2.0	31
Endrin Ketone	3.3	MW-13	0.1	ND
Toxaphene	44.0	MW-13	5.0	2.6

µg/kg - micrograms per liter (equivalent to parts per billion)
Note: Shaded values exceed all applicable RRS

Based on the groundwater testing data available to AMEC and presented herein, groundwater at the site does not currently comply with groundwater RRS for the following constituents: benzene, cis-1,2-DCE, trichloroethene and vinyl chloride, Alpha-BHC, Beta-BHC, Delta-BHC, dieldrin, endrin ketone and

toxaphene. Based on the location of the site with respect to local drinking water sources, although groundwater conditions are not currently in compliance with applicable RRS, the risk to human health and the environment posed by the groundwater on site is negligible. Further, the condition of the groundwater on site is expected to improve over time following removal of source materials and due to the natural attenuation of regulated constituents.

5.3 SURFACE WATER

Drainage ditches are located along the eastern and northern boundaries of the site. COCs have not been detected in surface water samples tested from the ditch. It is not known whether groundwater discharges into these ditches but the northern ditch was observed to contain flow water during the 2009/2010 assessment indicating potential groundwater discharge.

6.0 CONCEPTUAL REMEDATION PLAN

It is Legion's intent to remove the site from the Hazardous Site Inventory (HSI) through implementation of a voluntary remediation plan that is protective of human health and the environment. Based on current site conditions, Legion proposes the following voluntary remediation remedies:

- The horizontal extent of contaminants in surface and subsurface soils have been largely delineated within site boundaries. However, for purposes of soil remediation, more definitive bounding of the pesticide and VOC-impacted soils is planned in order to more closely define the extent of site soils that will require removal to achieve compliance with appropriate RRS. Per EPD's 2011 comments, the areas requiring additional delineation are those around the former degreaser pit and the area around borings SS-8 and SS-12, south of the building.

- Due to the shallow water table depth, the vertical extent of impacted soil is generally assumed to extend to the water table, although soils requiring remediation may not always extend that deep, as is the case at boring SS-12. An effective remedy for soil has been determined to be excavation and removal.

- Following delineation, impacted soils in the area of the former degreaser pit and in the area south of the building will be excavated and properly disposed off-site. Area averaging may be applied as allowed under the VRPA. The excavations in each area will most likely be extended to the water table which typically occurs at a depth of approximately four feet below ground surface. Soil verification samples will be collected from the walls of the excavations to confirm removal of impacted materials exceeding appropriate RRS. Bottom verification samples will not be collected unless the excavation is terminated above the water table, which is not anticipated. Following completion of the soil removal, the excavations will be backfilled and the floor slab overlying interior excavations will be replaced.

- The horizontal extent of constituents in groundwater has not been completely delineated. As required by EPD in their October 27, 2011 comment letter, five additional groundwater monitoring wells will be installed at the locations specified in the comment letter. As such, further evaluation is necessary prior to development and implementation of a final remedy for groundwater.

- Upon completion of groundwater delineation, the extent of the VOC plume will be used to determine the structures with the potential for exposure to vapor intrusion. Such structures will be evaluated in accordance with the February 22, 2004 USEPA "User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings".

- The scope of planned corrective action will continue to be developed. EPD will be informed through regular updates regarding the progress of additional property characterization efforts. A final remediation plan will be submitted during one of the regular updates, which may include adjacent properties. Refer to the attached GANTT chart for the currently projected milestones.

7.0 MILESTONE SCHEDULE AND COST ESTIMATE

Upon EPD's acceptance of the site into the VRP, a Work Plan schedule will be prepared along with a projected milestone schedule that describes the planned activities and an estimate of the anticipated cost for their implementation and reporting. At that time, Legion will issue a financial assurance instrument to cover the cost to implement the Work Plan and the estimated cost of reasonably anticipated remedial action to implement the final remedy.

ATTACHMENT

VOLUNTARY REMEDIATION PLAN APPLICATION FORM AND CHECKLIST

Voluntary Remediation Plan Application Form and Checklist

VRP APPLICANT INFORMATION

COMPANY NAME	Legion Industries, Inc.				
CONTACT PERSON/TITLE	Charles A. Brown				
ADDRESS	373 Huntsville Road, Dallas, Pennsylvania 18612				
PHONE	(570) 574-3362	**FAX**		**E-MAIL**	cbrown@legionindustries.com

GEORGIA CERTIFIED PROFESSIONAL GEOLOGIST OR PROFESSIONAL ENGINEER OVERSEEING CLEANUP

NAME	Charles T. Ferry			**GA PE/PG NUMBER**	PE 10957
COMPANY	AMEC Environment & Infrastructure, Inc.				
ADDRESS	396 Plasters Avenue				
PHONE	404-873-4761	**FAX**	404-817-0183	**E-MAIL**	chuck.ferry@amec.com

APPLICANT'S CERTIFICATION

In order to be considered a qualifying property for the VRP:

(1) The property must have a release of regulated substances into the environment;
(2) The property shall not be:
- (A) Listed on the federal National Priorities List pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601.
- (B) Currently undergoing response activities required by an order of the regional administrator of the federal Environmental Protection Agency; or
- (C) A facility required to have a permit under Code Section 12-8-66.

(3) Qualifying the property under this part would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or similar authorization from the United States Environmental Protection Agency.
(4) Any lien filed under subsection (e) of Code Section 12-8-96 or subsection (b) of Code Section 12-13-12 against the property shall be satisfied or settled and released by the director pursuant to Code Section 12-8-94 or Code Section 12-13-6.

In order to be considered a participant under the VRP:
- (1) The participant must be the property owner of the voluntary remediation property or have express permission to enter another's property to perform corrective action.
- (2) The participant must not be in violation of any order, judgment, statute, rule, or regulation subject to the enforcement authority of the director.

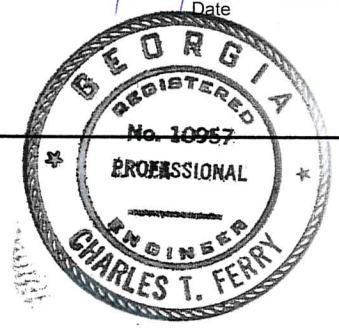
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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.

I also certify that this property is eligible for the Voluntary Remediation Program (VRP) as defined in Code Section 12-8-105 and I am eligible as a participant as defined in Code Section 12-8-106.

APPLICANT'S SIGNATURE	Charles A. Brown		
APPLICANT'S NAME/TITLE (PRINT)	Charles A. Brown, President	**DATE**	January 26, 2017

QUALIFYING PROPE INFORMATION			
TAX PARCEL ID	073 022	PROPERTY SIZE (ACRES)	11.3
PROPERTY ADDRESS	370 Mills Road		
CITY	Waynesboro	COUNTY	Burke
LATITUDE	33.10242	LONGITUDE	-82.00799
PROPERTY OWNER(S)	Legion Industries, Inc.	PHONE #	706-554-4411
MAILING ADDRESS	370 Mills Road		
CITY	Waynesboro	STATE/ZIP	Georgia 30830

ITEM #	DESCRIPTION OF REQUIREMENT	Location in VRP (i.e. pg., Table #, Figure #, etc.)	For EPD Comment Only (Leave Blank)
1.	**$5,000 APPLICATION FEE** IN THE FORM OF A CHECK PAYABLE TO THE GEORGIA DEPARTMENT OF NATURAL RESOURCES.	**Paid 1/27/2012**	
2.	**SURVEY PLAT** FOR QUALIFYING PROPERTY.	**Appendix A**	
3.	**TAX PLAT** OR OTHER FIGURE INCLUDING QUALIFYING PROPERTY BOUNDARIES, ABUTTING PROPERTIES, AND TAX PARCEL IDENTIFICATION NUMBER(S).	**Appendix A**	
4.	**ONE (1) PAPER COPY AND TWO (2) COMPACT DISC (CD) COPIES** OF THE VOLUNTARY REMEDIATION PLAN IN A SEARCHABLE PORTABLE DOCUMENT FORMAT (PDF).	**Attached**	
5.	The VRP participant's initial plan and application must include , using all reasonably available current information to the extent known at the time of application, a graphic three-dimensional preliminary conceptual site model (CSM) including a preliminary remediation plan with a table of delineation standards, brief supporting text, charts, and figures (no more than 10 pages, total) that illustrates the site's surface and subsurface setting, the known or suspected source(s) of contamination, how contamination might move within the environment, the potential human health and ecological receptors, and the complete or incomplete exposure pathways that may exist at the site; the preliminary CSM must be updated as the investigation and remediation progresses and an up-to-date CSM must be included in each semi-annual status report submitted to the director by the participant; a **PROJECTED MILESTONE SCHEDULE** for investigation and remediation of the site, and after enrollment as a participant, must update the schedule in each semi-annual status report to the director describing implementation of the plan during the preceding period. A Gantt chart format is preferred for the milestone schedule. The following four (4) generic milestones are required in all initial plans with the results reported in the participant's next applicable semi-annual reports to the director. The director may extend the time for or waive these or other milestones in the participant's plan where the director determines, based on a showing by the participant, that a longer time period is reasonably necessary:	**Sections 3.0, 4.0, 5.0 and 6.0, Tables 1 through 3, Figures 3 through 9, and Appendices B and C**	

5.a.	Within the first 12 months after enrollment, the cipant must complete horizontal delineation of the release and associated constituents of concern on property where access is available at the time of enrollment;	**Section 6.0**	
5.b.	Within the first 24 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern extending onto property for which access was not available at the time of enrollment;	**Section 6.0**	
5.c.	Within 30 months after enrollment, the participant must update the site CSM to include vertical delineation, finalize the remediation plan and provide a preliminary cost estimate for implementation of remediation and associated continuing actions; and	**Section 6.0** **Section 7.0**	
5.d.	Within 60 months after enrollment, the participant must submit the compliance status report required under the VRP, including the requisite certifications.	**Section 7.0**	
6.	**SIGNED AND SEALED PE/PG CERTIFICATION** AND SUPPORTING DOCUMENTATION: "I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances. Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division. 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." Charles T. Ferry #10957 Printed Name and GA PE/PG Number Charles T. Ferry Signature and Stamp 1/26/12 Date 		

TABLES

Table 1 – Groundwater Elevation Data

Well No.	Top of Casing Elevation, Ft.	Screened Interval, Ft.	Depth to Water, Ft.	Groundwater Elevation, Ft.
MW-1	297.51	3 - 8	4.55	292.96
MW-2	298.47	16 - 21	9.18	289.29
MW-3	294.85	7 - 12	6.31	288.54
MW-4 (deep)	298.33	56 - 66	27.72	270.61
MW-5	302.92	3 - 13	7.96	294.96
MW-6	299.16	3 - 13	6.61	292.55
MW-9	291.13	3 - 13	6.67	284.46
MW-10	301.04	15 – 25	5.95	295.09
MW-11	299.86	6 - 16	5.02	294.84
MW-12 (deep)	299.89	54 - 64	29.28	270.61
MW-13	298.64	3 - 13	5.19	293.45
PZ-2	298.51	30 – 35	6.95	291.56
PZ-4	292.60	19 - 24	4.30	288.30
PZ-5	293.54	17 – 22	3.58	289.96
PZ-6	295.06	17 - 22	2.88	292.18

Table 2 – Summary of Groundwater Testing Results, ug/l

Constituent	MW-1				MW-2			MW-3					MW-4		
Date	4/25/01	8/03/01	2/19/02	12/11/09	11/29/01	2/19/02	12/11/09	4/25/01	12/13/01	2/19/02	12/11/09	12/11/09 (dup)	2/19/02	3/11/09	12/10/09
VOCS															
1,1,2-Trichloroethane	NT	NT	NT	<5.0	NT	NT	<5.0	NT	NT	NT	<5.0	<5.0	NT	NT	<5.0
1,1-Dichloroethene	NT	NT	<5.0	<5.0	<20	<10	<5.0	NT	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	NT	NT	NT	<5.0	NT	NT	10	NT	NT	NT	<5.0	<5.0	NT	NT	<5.0
Cis-1,2-Dichloroethene	NT	NT	180	820	480	270	430	NT	<5.0	<5.0	<5.0	<5.0	15	<5.0	<5.0
Tetrachloroethene	NT	NT	NT	<5.0	NT	NT	<5.0	NT	NT	NT	<5.0	<5.0	NT	NT	<5.0
Trans-1,2-Dichloroethene	NT	NT	<5.0	<5.0	<20	<10	<5.0	NT	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	350	180	140	860	25	14	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	11	<5.0	<5.0
Vinyl Chloride	NT	NT	<10	5.0	<40	<20	350	NT	<10	<10	<2.0	<2.0	<10	<10	<2.0
Xylenes	NT	NT	NT	<5.0	NT	NT	18	NT	NT	NT	<5.0	<5.0	NT	NT	<5.0
Chlorinated Pesticides															
4,4'-DDD	NT	NT	NT	<0.10	NT	NT	<0.10	NT	NT	NT	<0.10	<0.10	NT	NT	<0.10
Alpha-BHC	NT	NT	NT	0.052	NT	NT	2.0	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Alpha-Chlordane	NT	NT	NT	<0.05	NT	NT	1.3	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Beta-BHC	NT	NT	NT	0.073	NT	NT	0.49	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Delta-BHC	NT	NT	NT	<0.05	NT	NT	1.8	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Dieldrin	NT	NT	NT	<0.10	NT	NT	0.50	NT	NT	NT	<0.10	<0.10	NT	NT	<0.10
Endrin Ketone	NT	NT	NT	0.13	NT	NT	0.31	NT	NT	NT	<0.10	<0.10	NT	NT	<0.10
Gamma-BHC	NT	NT	NT	<0.05	NT	NT	1.1	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Gamma-Chlordane	NT	NT	NT	<0.05	NT	NT	0.92	NT	NT	NT	<0.05	<0.05	NT	NT	<0.05
Chlorinated Herbicides	NT	NT	NT	BRL	NT	NT	BRL	NT	NT	NT	BRL	BRL	NT	NT	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NT - Not Tested
NS - Not Sampled (well could not be located)
BRL - Below Reporting Limit

Table 2 – Summary of Groundwater Testing Results, ug/l (continued)

Constituent	MW-5		MW-6			MW-7			MW-8		MW-9	
Date	2/19/02	12/11/09	2/19/02	3/11/02	12/11/09	2/19/02	3/11/02	12/11/09	2/19/02	12/11/09	2/19/02	12/11/09
VOCS												
1,1,2-Trichloroethane	NT	<5.0	NT	NT	<5.0	NT	NT	NS	<5.0	NS	NT	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	<5.0	NS	<5.0	<5.0
Chlorobenzene	NT	<5.0	NT	NT	<5.0	NT	NT	NS	<5.0	NS	NT	<5.0
Cis-1,2-Dichloroethene	<5.0	<5.0	10	6	<5.0	130	110	NS	<5.0	NS	<5.0	<5.0
Tetrachloroethene	NT	<5.0	NT	NT	<5.0	NT	NT	NS	<5.0	NS	NT	<5.0
Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	NT	<5.0	NS	<5.0	NS	<5.0	<5.0
Trichloroethene	<5.0	<5.0	17	11	14	59	66	NS	<5.0	NS	<5.0	<5.0
Vinyl Chloride	<10	<2.0	<10	<10	<2.0	NT	<10	NS	<2.0	NS	<10	<2.0
Xylenes	NT	<5.0	NT	NT	<5.0	NT	NT	NS	<5.0	NS	NT	<5.0
Chlorinated Pesticides												
4,4'-DDD	NT	<0.10	NT	NT	<0.10	NT	NT	NS	<0.10	NS	NT	0.20
Alpha-BHC	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Alpha-Chlordane	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Beta-BHC	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Delta-BHC	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Dieldrin	NT	<0.10	NT	NT	<0.10	NT	NT	NS	<0.10	NS	NT	0.31
Endrin Ketone	NT	<0.10	NT	NT	<0.10	NT	NT	NS	<0.10	NS	NT	<0.10
Gamma-BHC	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Gamma-Chlordane	NT	<0.05	NT	NT	<0.05	NT	NT	NS	<0.05	NS	NT	<0.05
Chlorinated Herbicides	NT	BRL	NT	NT	BRL	NT	NT	NS	BRL	NS	NT	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NT - Not Tested
NS - Not Sampled (Well could not be located)
BRL - Below Reporting Limit

Table 2 – Summary of Groundwater Testing Results, ug/l (continued)

Constituent	MW-10			MW-11		PZ-2				SW-1	SW-2	Field Blank
Date	2/19/02	3/11/02	1/28/10	2/19/02	1/28/10	8/3/01	9/25/01	11/29/02	12/10/09	12/11/09	12/11/09	12/10/09
VOCS												
1,1,2-Trichloroethane	NT	NT	<5.0	NT	<5.0	NT	NT	NT	14	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	NT	NT	<1,000	21	<5.0	<5.0	<5.0
Chlorobenzene	NT	NT	<5.0	NT	<5.0	NT	NT	NT	6.9	<5.0	<5.0	<5.0
Cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	NT	NT	20,000	8,000	<5.0	<5.0	<5.0
Tetrachloroethene	NT	NT	<5.0	NT	<5.0	NT	NT	NT	130	<5.0	<5.0	<5.0
Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	NT	NT	<1,000	17	<5.0	<5.0	<5.0
Trichloroethene	16	11	<5.0	<5.0	<5.0	7,200	7,800	3,300	57,000	<5.0	<5.0	<5.0
Vinyl Chloride	<10	<10	<2.0	<10	<2.0	NT	NT	6,800	2,200	<2.0	<2.0	<2.0
Xylenes	NT	<5.0	<5.0	NT	<5.0	NT	NT	NT	5.4	<5.0	<5.0	<5.0
Chlorinated Pesticides												
4,4'-DDD	NT	NT	<0.10	NT	<0.10	NT	NT	NT	0.13	<0.10	<0.10	<0.10
4,4'-DDT	NT	NT	<0.10	NT	0.15	NT	NT	NT	<0.10	<0.10	<0.10	<0.10
Alpha-BHC	NT	NT	<0.05	NT	0.33	NT	NT	NT	0.53	<0.05	<0.05	<0.05
Alpha-Chlordane	NT	NT	<0.05	NT	<0.05	NT	NT	NT	<0.05	<0.05	<0.05	<0.05
Beta-BHC	NT	NT	<0.05	NT	0.11	NT	NT	NT	0.71	<0.05	<0.05	<0.05
Delta-BHC	NT	NT	<0.05	NT	0.35	NT	NT	NT	1.1	<0.05	<0.05	<0.05
Dieldrin	NT	NT	<0.10	NT	0.72	NT	NT	NT	<0.10	<0.10	<0.10	<0.10
Endosulfan II	NT	NT	<0.10	NT	0.40	NT	NT	NT	<0.10	<0.10	<0.10	<0.10
Endrin Ketone	NT	NT	<0.10	NT	2.3	NT	NT	NT	1.3	<0.10	<0.10	<0.10
Gamma-BHC	NT	NT	<0.05	NT	0.22	NT	NT	NT	0.83	<0.05	<0.05	<0.05
Gamma-Chlordane	NT	NT	<0.05	NT	<0.05	NT	NT	NT	<0.05	<0.05	<0.05	<0.05
Chlorinated Herbicides	NT	NT	BRL	NT	BRL	NT	NT	NT	BRL	BRL	BRL	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NT - Not Tested
NS - Not Sampled (Well could not be located)
BRL- Below Reporting Limit

Table 2 – Summary of Groundwater Testing Results, ug/l (continued)

Constituent	MW-12	MW-13
Date	1/28/10	1/28/10
VOCS		
1,1-Dichloroethane	<5.0	19
1,1-Dichloroethene	<5.0	11
1,2,4-Trichlorobenzene	<5.0	51
1,2-Dichlorobenzene	<5.0	12
1,4-Dichlorobenzene	<5.0	50
Benzene	<5.0	16
Chlorobenzene	<5.0	65
Cis-1,2-Dichloroethene	<5.0	2900
Isopropylbenzene	<5.0	7.3
Methylene Chloride	<5.0	5.4
Tetrachloroethene	<5.0	19
Trans-1,2-Dichloroethene	<5.0	6.0
Trichloroethene	14	8200
Vinyl Chloride	<2.0	3300
Xylenes	<8.2	9.8
Chlorinated Pesticides		
4,4'-DDD	<0.10	2.9
4,4'-DDT	<0.10	2.4
Alpha-BHC	0.11	<0.25
Alpha-Chlordane	<0.05	<0.25
Beta-BHC	<0.05	3.7
Delta-BHC	0.08	2.3
Dieldrin	<0.10	<0.50
Endrin	<0.10	7.3
Endrin Ketone	<0.10	3.3
Gamma-BHC	0.25	2.0
Gamma-Chlordane	<0.05	<0.25
Toxaphene	<5.0	44
Chlorinated Herbicides	BRL	BRL

µg/L - milligrams per Liter NS - Not Sampled (Well could not be located)
VOCs - Volatile Organic Compounds BRL - Below Reporting Limit

Table 3 – Summary of Soil Testing Results

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'
VOCs, ug/kg								
1,4-Dichlorobenzene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Chlorobenzene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Cis-1,2-Dichloroethene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	29
Ethylbenzene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Isopropylbenzene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Tetrachloroethene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	180
Toluene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Trichloroethene	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	1900
Vinyl Chloride	<11	<8.9	<7.5	<10	<10	<9.4	<8.4	69
Xylenes	<5.7	<4.4	<3.7	<5.2	<5.2	<4.7	<4.2	<4.6
Metals, mg/kg								
Barium	<5.7	9.45	13.3	9.96	<4.63	22.3	34.7	<5.48
Chromium	14.5	15.6	17.3	21.6	12.6	21.9	15.8	20.2
Lead	<5.7	5.48	4.84	6.33	5.36	5.81	9.75	<5.48
Pesticides, ug/kg								
4,4'-DDD	<3.9	<3.8	<3.9	<3.9	<3.9	<4.0	<4.0	5.4
4,4'-DDE	<3.9	<3.8	<3.9	<3.9	<3.9	<4.0	<4.0	<4.2
4,4'-DDT	<3.9	4.5	<3.9	<3.9	<3.9	<4.0	<4.0	12
Aldrin	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Alpha-BHC	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Alpha Chlordane	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Beta-BHC	<2.0	<1.9	8.7	<2.0	<2.0	<2.0	<2.0	<2.1
Delta-BHC	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Dieldrin	<3.9	<3.8	64	<3.9	<3.9	<4.0	<4.0	<4.2
Endrin	<3.9	<3.8	<3.9	<3.9	<3.9	<4.0	<4.0	<4.2
Endrin Ketone	<3.9	<3.8	11	<3.9	<3.9	<4.0	<4.0	<4.2
Gamma-BHC	<3.9	<3.8	<3.9	<3.9	<3.9	<4.0	<4.0	<4.2
Gamma-Chlordane	<2.0	<1.9	13	<2.0	<2.0	<2.0	<2.0	<2.1
Heptachlor	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Heptachlor Epoxide	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Methoxychlor	<20	<19	<20	<20	<20	<20	<20	<21
Toxaphene	<200	<190	520	<200	<200	<200	<200	<210
Herbicides, ug/kg	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NS - Not Sampled (Well could not be located)
BRL - Below Reporting Limit

Table 3 – Summary of Soil Testing Results (continued)

Constituent	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)
VOCs, ug/kg								
1.4-Dichlorobenzene	<5.3	11	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Chlorobenzene	<5.3	38	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Cis-1,2-Dichloroethene	<5.3	<4.3	<4.9	12	<4.7	<4.5	<5.8	<6.3
Ethylbenzene	<5.3	<4.3	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Isopropylbenzene	<5.3	<4.3	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Tetrachloroethene	<5.3	<4.3	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Toluene	<5.3	<4.3	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Trichloroethene	<5.3	5.0	12	70	<4.7	<4.5	<5.8	<6.3
Vinyl Chloride	<11	<8.6	<9.8	<10	<9.3	<9.0	<12	<13
Xylenes	<5.3	<4.3	<4.9	<5.0	<4.7	<4.5	<5.8	<6.3
Metals, mg/kg								
Barium	5.9	15.0	10.7	19.4	16.6	22.4	9.3	10.2
Chromium	15.2	27.1	19.2	18.9	21.7	21.4	24.6	25.7
Lead	5.12	4.55	6.30	7.82	5.53	6.65	5.41	5.38
Pesticides, ug/kg								
4,4'-DDD	<4.0	4600	170	1800	<3.8	<4.0	<3.9	<3.9
4,4'-DDE	<4.0	220	46	480	4.4	<4.0	<3.9	<3.9
4,4'-DDT	<4.0	6600	180	5500	12	<4.0	<3.9	<3.9
Aldrin	<2.0	120	<2.0	16	<2.0	<2.0	<2.0	<2.0
Alpha-BHC	<2.0	<9.6	4.3	<10	<1.9	<2.0	<2.0	<2.0
Alpha Chlordane	<2.0	230	29	130	<1.9	<2.0	<2.0	<2.0
Beta-BHC	<2.0	30	14	18	<1.9	<2.0	<2.0	<2.0
Delta-BHC	<2.0	41	7.2	<10	<1.9	<2.0	<2.0	<2.0
Dieldrin	<4.0	220	130	270	<3.8	<4.0	<3.9	<3.9
Endrin	<4.0	<19	11	190	<3.8	<4.0	<3.9	<3.9
Endrin Ketone	<4.0	<19	33	440	<3.8	<4.0	<3.9	<3.9
Gamma-BHC	<4.0	<19	<4.0	<20	<3.8	<4.0	<3.9	<3.9
Gamma-Chlordane	<2.0	560	28	140	<1.9	<2.0	<2.0	<2.0
Heptachlor	<2.0	<9.6	2.4	12	<1.9	<2.0	<2.0	<2.0
Heptachlor Epoxide	<2.0	<9.6	12	<10	<1.9	<2.0	<2.0	<2.0
Toxaphene	<200	<960	520	4300	<190	<200	<200	<200
Methoxychlor	<20	<96	<20	270	<19	<20	<20	<20
Herbicides, ug/kg	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NS - Not Sampled (Well could not be located)
BRL - Below Reporting Limit

Table 3 – Summary of Soil Testing Results (continued)

Constituent	GP-4-3'	DP-1-3'	DP-2-3'	DP-2-3' (dup)	DP-3-3'	DP-4-3'
VOCs, ug/kg						
1.4-Dichlorobenzene	<4.4	<5.2	<620	<26,000	<450	<4.2
Chlorobenzene	<4.4	<5.2	<620	<26,000	<450	<4.2
Cis-1,2-Dichloroethene	<4.4	120	9,800	6,900	3,600	42
Ethylbenzene	<4.4	53	680,000	370,000	8,900	330
Isopropylbenzene	<4.4	<5.2	10,000	<26,000	<450	14
Tetrachloroethene	<4.4	<5.2	<620	<26,000	<450	<4.2
Toluene	<4.4	<5.2	13,000	8,100	<450	11
Trichloroethene	<4.4	37	36,000	18,000	810	51
Vinyl Chloride	<8.8	<10	<1200	<51,000	3,200	16
Xylenes	<4.4	420	4,200,000	2,400,000	52,000	2,200
Metals, mg/kg						
Barium	20.3	8.59	11.0	11.4	9.47	5.0
Chromium	17.5	21.3	16.0	17.5	15.0	12.0
Lead	5.85	4.88	4.63	6.04	4.92	<3.89
Pesticides, ug/kg						
4,4'-DDD	<3.8	32,000	4,800	6,400	48,000	470
4,4'-DDE	<3.8	2,800	690	770	3,300	110
4,4'-DDT	4.2	180,000	5,300	23,000	3,700	2,300
Aldrin	<1.9	1,400	43	830	940	19
Alpha-BHC	<1.9	300	19	870	670	9.1
Alpha Chlordane	<1.9	4,300	340	510	7,600	250
Beta-BHC	<1.9	<200	19	260	<39	41
Delta-BHC	<1.9	210	22	1,100	1,200	28
Dieldrin	<3.8	2,800	600	840	8,900	540
Endrin	<3.8	11,000	120	3,400	<78	320
Endrin Ketone	<3.8	5,400	260	800	1,800	350
Gamma-BHC	<3.8	<390	28	1,300	590	16
Gamma-Chlordane	<1.9	5,200	300	680	8,800	320
Heptachlor	<1.9	2,300	28	980	720	18
Heptachlor Epoxide	<1.9	<200	<10	<39	<39	<1.9
Methoxychlor	<19	7800	<100	<390	<390	<19
Toxaphene	<190	98,000	5,900	38,000	61,000	5,400
Herbicides, ug/kg	BRL	BRL	BRL	BRL	BRL	BRL

µg/L - milligrams per Liter
VOCs - Volatile Organic Compounds
NS - Not Sampled (Well could not be located)
BRL - Below Reporting Limit

Table 3 – Summary of Soil Testing Results (continued)

Constituent	DP-5-3'	DP-6-3'	DP-7-3'	DP-8-3'
VOCs, ug/kg				
1,4-Dichlorobenzene	<5.7	<4.4	<4.8	<44,000
1,2,4-Trichlorobenzene	5.7	<4.4	<4.8	<44,000
Chlorobenzene	<5.7	<4.4	<4.8	<44,000
Cis-1,2-Dichloroethene	69	<4.4	11	<44,000
Ethylbenzene	660	7.0	<4.8	680,000
Isopropylbenzene	<5.7	<4.4	<4.8	<44,000
Tetrachloroethene	<5.7	<4.4	<4.8	<44,000
Toluene	9.4	<4.4	<4.8	<44,000
Trichloroethene	28	<4.4	<4.8	<44,000
Vinyl Chloride	<11	<8.7	29	<44,000
Xylenes	4,700	17	<4.8	4,700,000
Pesticides, ug/kg				
4,4'-DDD	10,000	210	270	2,800,000
4,4'-DDE	1,700	<20	<20	150,000
4,4'-DDT	79,000	93	28	4,300,000
Aldrin	<9.9	<10	<10	<9,800
Alpha-BHC	40	<10	15	8,700
Alpha Chlordane	1,300	11	25	160,000
Beta-BHC	44	<10	<10	18,000
Delta-BHC	66	<10	<10	79,000
Dieldrin	<2,000	<20	23	<98,000
Endrin	4,300	<20	<20	370,000
Endrin Ketone	3,300	<20	<20	270,000
Gamma-BHC	34	<20	<20	150,000
Gamma-Chlordane	1,500	13	41	180,000
Heptachlor	150	<10	<10	42,000
Heptachlor Epoxide	<9.9	<10	<10	<49,000
Methoxychlor	<9,900	<100	<100	<490,000
Toxaphene	56,000	<1000	<1000	2,700,000
Herbicides, ug/kg	BRL	BRL	BRL	BRL

µg/L - milligrams per Liter NS - Not Sampled (Well could not be located)
VOCs - Volatile Organic Compounds BRL - Below Reporting Limit

Table 3 – Summary of Soil Testing Results (continued)

Constituent	PDL-1-3'	PDL-2-3'	PDL-3-3'	PDL-4-3'	Background #1-3'	Background #2-3'
Metals, mg/kg						
Barium	14.7	14.9	18.7	12.5	7.67	8.68
Chromium	21.5	27.6	29.6	20.3	17.1	21.2
Lead	6.29	5.23	<5.80	5.46	<5.03	5.32

µg/L - milligrams per Liter NS - Not Sampled (Well could not be located)
VOCs - Volatile Organic Compounds BRL - Below Reporting Limit

FIGURES

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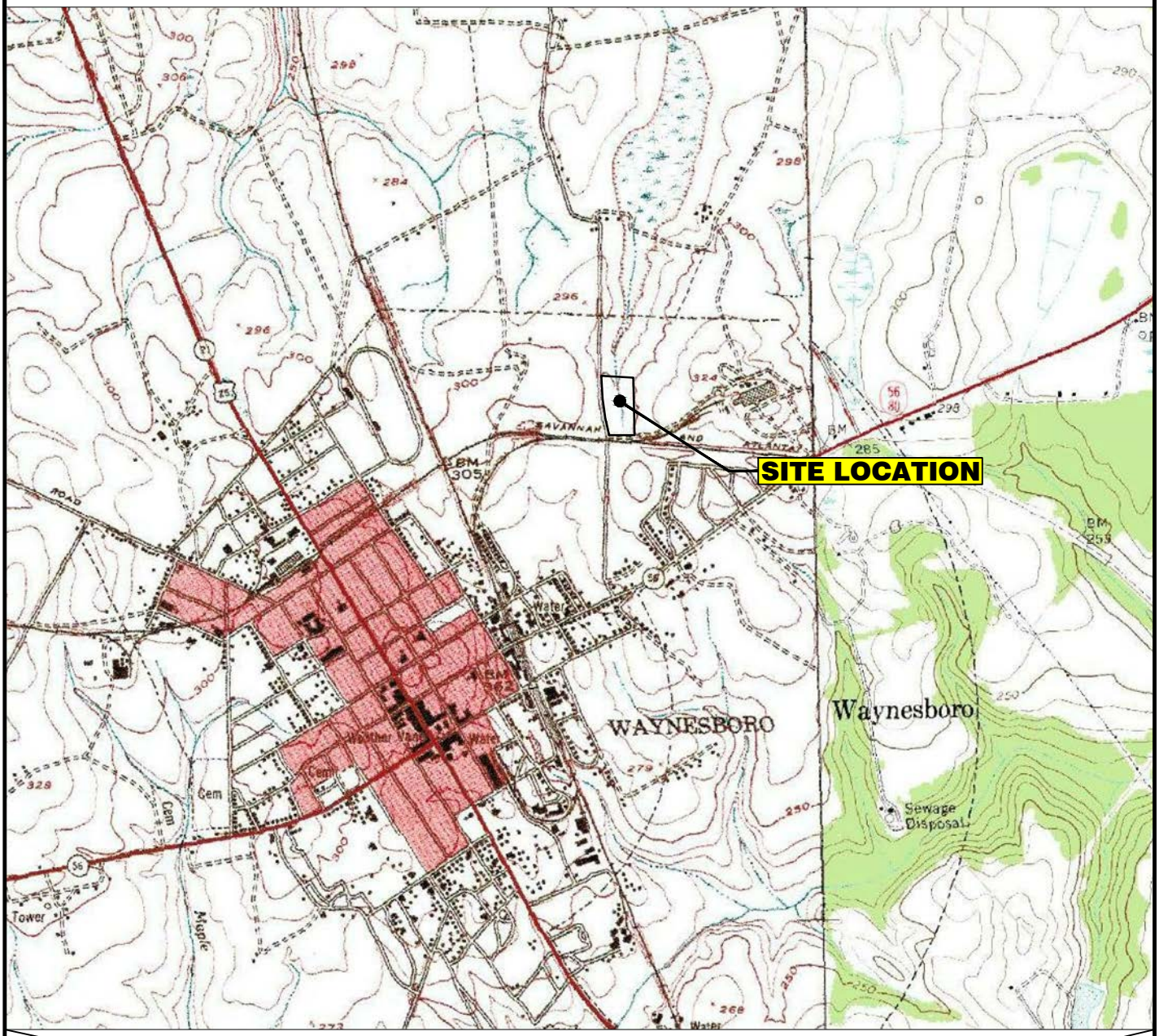


SCALE IN FEET

0 2000 4000

USA PHOTO'S WAYNESBORO, GEORGIA, 7/1/1970

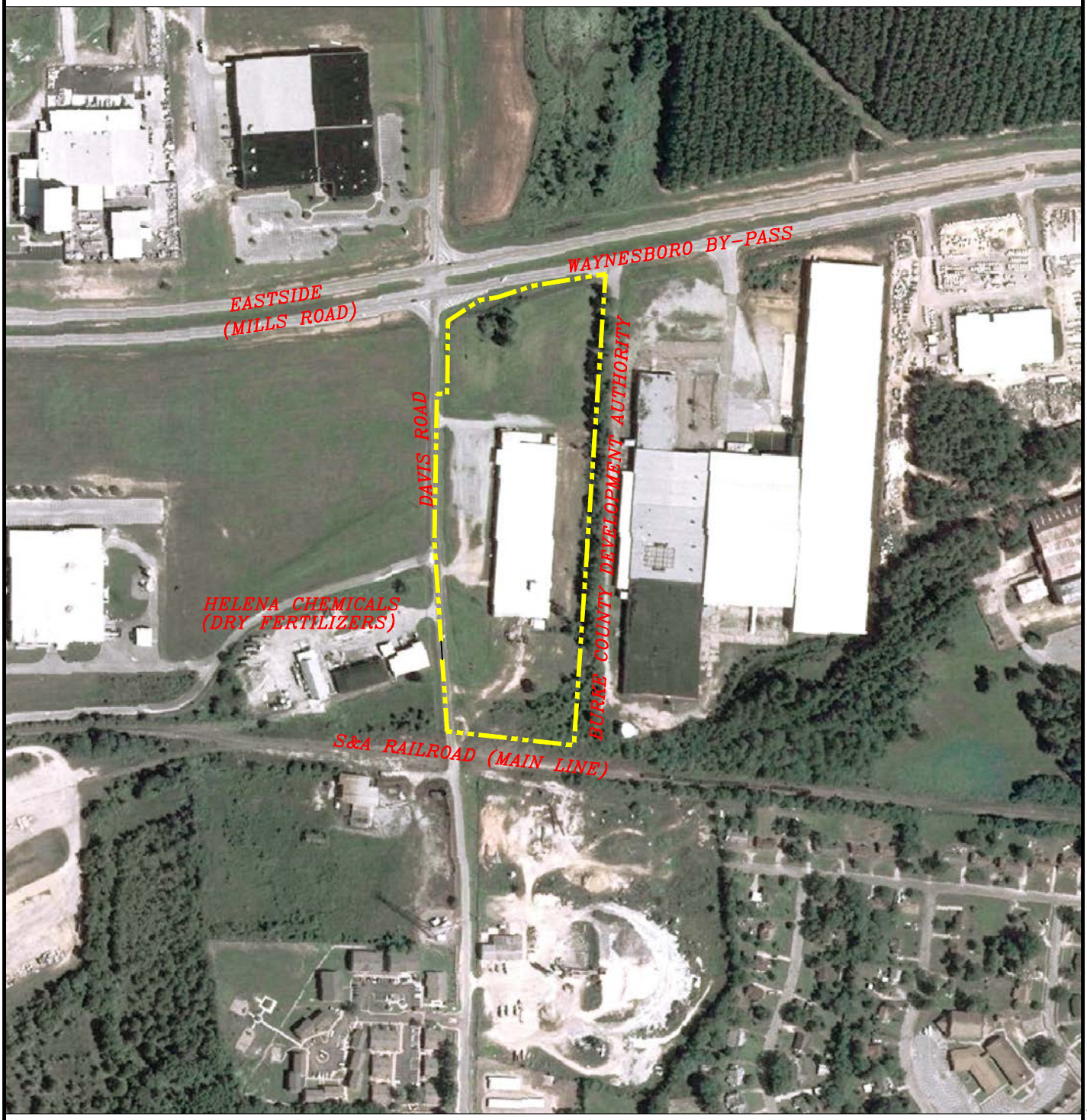
LEGION INDUSTRIES
FACILITIES
WAYNESBORO, GA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SITE LOCATION / TOPOGRAPHIC MAP

JOB NO. 6121-09-0444 FIGURE 1

PREPARED BY/DATE TG 3/24/2010
CHECKED BY/DATE SF 3/24/2010



SOURCE: USDA NRCS NATIONAL AERIAL IMAGERY PROJECT (NAIP 2009)

SCALE IN FEET

0 400 800

LEGION INDUSTRIES
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WAYNESBORO, GA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SITE AND VICINITY
AERIAL PHOTOGRAPH

JOB NO. 6121-09-0444 FIGURE 2

PREPARED BY/DATE TG 3/24/2010
CHECKED BY/DATE SF 3/24/2010

J:_PLASTERS CAD\Atlanta Projects\Legion-Ind\JAN 2012\GW TESTING RESULTS.dwg 01/13/2012 5:01pm tonya.gladstone

LEGEND

- MW-6 ⊕ MONITORING WELL, MACTEC 2002
- MW-7 ⊕ WELL COULD NOT BE LOCATED
- MW-4 ⊕ DEEP, TYPE III MONITORING WELL, MACTEC 2002
- PZ-2 ○ GEOPROBE CONVERTED TO, PIEZOMETER MACTEC 2002
- ● SURFACE WATER SAMPLE LOCATION
- ▭ EXCEEDS THE LEAST STRINGENT RRS
- VOCs VOLATILE ORGANIC COMPOUNDS
- TCA TRICHLOROETHANE
- TCE TRICHLOROETHENE
- DCE DICHLOROETHENE
- PCE TETRACHLOROETHENE
- BRL BELOW REPORTING LIMIT

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

SW-1	Dec-09
VOCs	BRL
PESTICIDES	BRL
HERBICIDES	BRL

SW-2	Dec-09
VOCs	BRL
PESTICIDES	BRL
HERBICIDES	BRL

MW-3	Apr-01	Dec-01	Feb-02	Dec-09
VOCs	BRL	BRL	BRL	BRL
PESTICIDES	NT	NT	NT	BRL
HERBICIDES	NT	NT	NT	BRL

MW-9	Feb-02	Dec-09
VOCs ug/L	BRL	BRL
PESTICIDES ug/L		
4.4'-DDD	NT	0.2
DIELDRiN	NT	0.31
HERBICIDES ug/L	NT	BRL

MW-2	Nov-01	Feb-02	Dec-09
VOCs			
CHLOROBENZENE	NT	NT	10
CIS-1,2-DCE	480	270	430
TCE	25	14	5.6
VINYL CHLORIDE	<40	<20	350
XYLENES	NT	NT	18
PESTICIDES			
ALPHA BHC	NT	NT	2
ALPHA CHLORDANE	NT	NT	1.3
BETA BHC	NT	NT	0.49
DELTA BHC	NT	NT	1.8
DIELDRIN	NT	NT	0.5
ENDRIN KETONE	NT	NT	0.31
GAMMA BHC	NT	NT	1.1
GAMMA CHLORDANE	NT	NT	0.92
HERBICIDES	NT	NT	BRL

MW-8	Feb-02
VOCs	BRL
PESTICIDES	NT
HERBICIDES	NT

MW-4	Feb-02	Mar-02	Dec-09
VOCs			
CIS-1,2-DCE	15	<5	<5
TCE	11	<5	<5
PESTICIDES	NT	NT	BRL
HERBICIDES	NT	NT	BRL

MW-1	Apr-01	Aug-01	Feb-02	Dec-09
VOCs				
CIS-1-2 DCE	NA	NA	180	820
TCE	350	180	140	860
VINYL CHLORIDE	NA	NA	<10	5
PESTICIDES				
ALPHA BHC	NT	NT	NT	0.052
BETA BHC	NT	NT	NT	0.073
ENDRIN KETONE	NT	NT	NT	0.13
HERBICIDES	NT	NT	NT	BRL

MW-7	Feb-02	Mar-02
VOCs		
CIS-1,2 DCE	130	110
TCE	59	66
PESTICIDES	NT	NT
HERBICIDES	NT	NT

MW-6	Feb-02	Mar-02	Dec-09
VOCs			
CIS-1,2-DCE	10	6	<5
TCE	17	11	14
PESTICIDES	NT	NT	BRL
HERBICIDES	NT	NT	BRL

MW-5	Feb-02	Dec-09
VOCs	BRL	BRL
PESTICIDES	NT	BRL
HERBICIDES	NT	BRL

MW-10	Feb-02	Mar-02	Jan-10
VOCs			
TCE	16	11	<5.0
PESTICIDES	NT	NT	BRL
HERBICIDES	NT	NT	BRL

MW-12	Jan-10
VOCs	BRL
TCE	14
XYLENES	8.2
PESTICIDES	
ALPHA BHC	0.11
DELTA BHC	0.08
GAMMA BHC	0.25
HERBICIDES	BRL

MW-13	Jan-10
VOCs	
1,1-DCA	19
1,1-DCE	11
1,2,4-TCB	51
1,2-DCB	12
1,4-DCB	50
BENZENE	16
CHLOROBENZENE	65
CIS-1,2-DCE	2900
ISOPROPYLBENZENE	7.3
METHYLENE CHLORIDE	5.4
PCE	19
TRANS-1,2-DCE	6
TCE	8200
VINYL CHLORIDE	3300
XYLENES	9.8
PESTICIDES	
4,4-DDD	2.9
4,4-DDT	2.4
BETA BHC	3.7
DELTA BHC	2.3
ENDRIN	7.3
ENDRIN KETONE	3.3
GAMMA BHC	2
TOXAPHENE	44
HERBICIDES	BRL

MW-11	Feb-02	Jan-10
VOCs	BRL	BRL
PESTICIDES		
4,4-DDT	NT	0.15
ALPHA-BHC	NT	0.33
BETA BHC	NT	0.11
DELTA BHC	NT	0.35
DIELDRIN	NT	0.72
ENEDOSULFAN II	NT	0.4
ENDRIN KETONE	NT	2.3
GAMMA-BHC	NT	0.22
HERBICIDES	NT	BRL

PZ-2	Aug-01	Sep-01	Nov-01	Dec-09
VOCs				
1,1,2-TCA	NT	NT	NT	14
1,1-DCE	NT	NT	<1,000	21
CHLOROBENZENE	NT	NT	NT	6.9
CIS-1,2-DCE	NT	NT	20,000	8,000
PCE	NT	NT	NT	130
TCE	7,200	7,800	3,300	57,000
TRANS-1,2-DCE	NT	NT	<1,000	17
VINYL CHLORIDE	NT	NT	6,800	2,200
XYLENES	NT	NT	NT	5.4
PESTICIDES				
4.4' -DDD	NT	NT	NT	0.13
ALPHA BHC	NT	NT	NT	0.53
BETA BHC	NT	NT	NT	0.71
DELTA BHC	NT	NT	NT	1.1
ENDRIN KETONE	NT	NT	NT	1.3
GAMMA BHC	NT	NT	NT	0.83
HERBICIDES	NT	NT	NT	BRL

SCALE IN FEET
0 100 200

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

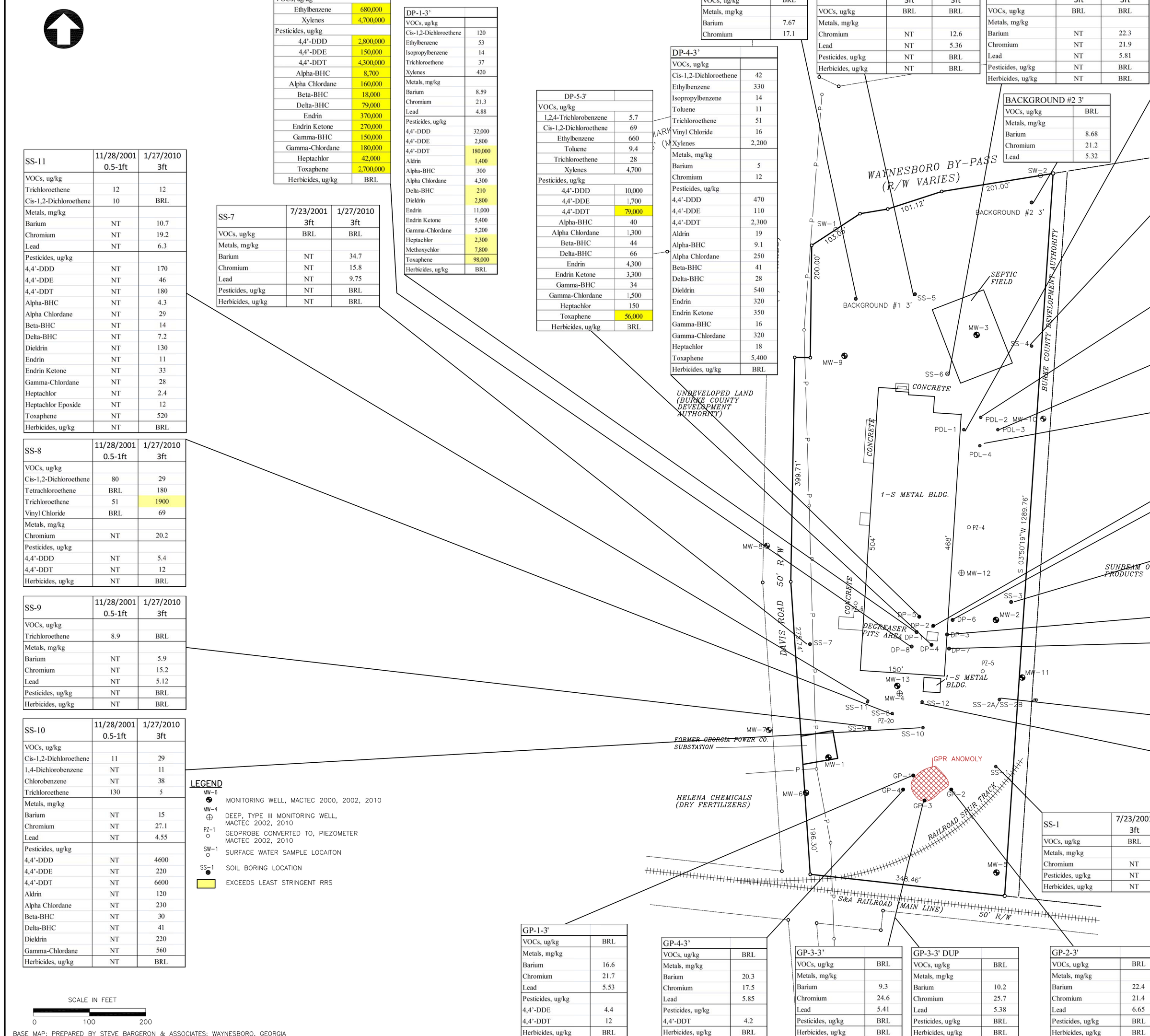
LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

AMEC Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SUMMARY OF GROUNDWATER TESTING RESULTS

JOB NO. 6121-09-0444 FIGURE 3

PREPARED BY/DATE TG 1/13/2012 CHECKED BY/DATE 1/13/2012



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

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-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

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

DP-8-3'	
VOCs, ug/kg	
Ethylbenzene	680,000
Xylenes	4,700,000
Pesticides, ug/kg	
4,4'-DDD	2,800,000
4,4'-DDE	150,000
4,4'-DDT	4,300,000
Alpha-BHC	8,700
Alpha Chlordane	160,000
Beta-BHC	18,000
Delta-BHC	79,000
Endrin	370,000
Endrin Ketone	270,000
Gamma-BHC	150,000
Gamma-Chlordane	180,000
Heptachlor	42,000
Toxaphene	2,700,000
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	2,300
Methoxychlor	7,800
Toxaphene	98,000
Herbicides, ug/kg	BRL

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-5-3'	
VOCs, ug/kg	
1,2,4-Trichlorobenzene	5.7
Cis-1,2-Dichloroethene	69
Ethylbenzene	660
Toluene	9.4
Trichloroethene	28
Xylenes	4,700
Pesticides, ug/kg	
4,4'-DDD	10,000
4,4'-DDE	1,700
4,4'-DDT	79,000
Alpha-BHC	40
Alpha Chlordane	1,300
Beta-BHC	44
Delta-BHC	66
Endrin	4,300
Endrin Ketone	3,300
Gamma-BHC	34
Gamma-Chlordane	1,500
Heptachlor	150
Toxaphene	56,000
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

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

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
Cis-1,2-Dichloroethene	6,900
Toluene	8,100
Trichloroethene	18,000
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

DP-6-3'	
VOCs, ug/kg	
Ethylbenzene	7
Xylenes	17
Pesticides, ug/kg	
4,4'-DDD	210
4,4'-DDT	93
Alpha Chlordane	11
Gamma-Chlordane	13
Herbicides, ug/kg	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-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

DP-3-3' 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

DP-7-3'	
VOCs, ug/kg	
Cis-1,2-Dichloroethene	11
Vinyl Chloride	29
Pesticides, ug/kg	
4,4'-DDD	270
4,4'-DDT	28
Alpha-BHC	15
Alpha Chlordane	25
Dieldrin	23
Gamma-Chlordane	41
Herbicides, ug/kg	BRL

SS-2B	11/28/2001 2ft	1/27/2010 3ft
VOCs, ug/kg		
Trichloroethene	780	NT
Metals, mg/kg		
Barium	NT	9.45
Chromium	NT	15.6
Lead	NT	5.48
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	4,300
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

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

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

SCALE IN FEET

0 100 200

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

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED T. GLADSTONE
DRAWN T. GLADSTONE
CHECKED S. FOLEY
IN CHARGE
DATE 1/13/2012

LEGION INDUSTRIES FACILITY

WAYNESBORO, GEORGIA

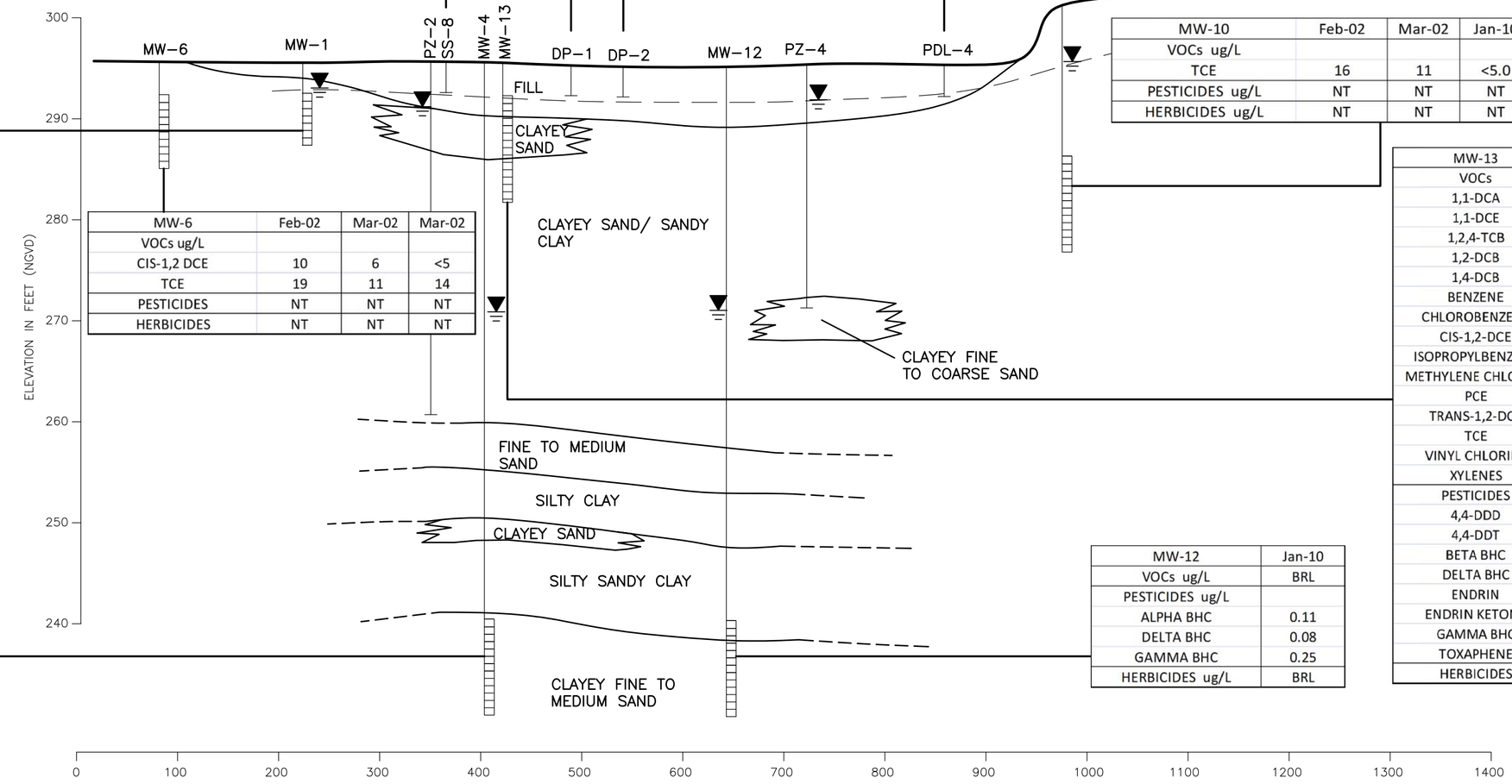
amec
Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

2009 SOIL TESTING RESULTS

SCALE AS SHOWN
CONTRACT 6121-09-0444
DWG. NO. FIG 4
REV PAGE NO

J:\PLASTERS CAD\Atlanta Projects\Legion-Inv\JAN 2012\SOIL TEST BORING LOCATIONS.dwg — Layout1 01/16/2012 11:06am tonyc.gladstone

SOUTHWEST A — NORTHEAST A'



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

MW-6	Feb-02	Mar-02	Mar-02
VOCs ug/L			
CIS-1,2 DCE	10	6	<5
TCE	19	11	14
PESTICIDES	NT	NT	NT
HERBICIDES	NT	NT	NT

MW-1	Apr-01	Aug-01	Feb-02	Dec-09
VOCs ug/L				
CIS-1-2 DCE	NT	NT	180	820
TCE	350	180	140	860
VINYL CHLORIDE	NT	NT	<10	5
PESTICIDES ug/L				
ALPHA BHC	NT	NT	NT	0.052
BETA BHC	NT	NT	NT	0.073
ENDRIN KETONE	NT	NT	NT	0.13
HERBICIDES ug/L	NT	NT	NT	BRL

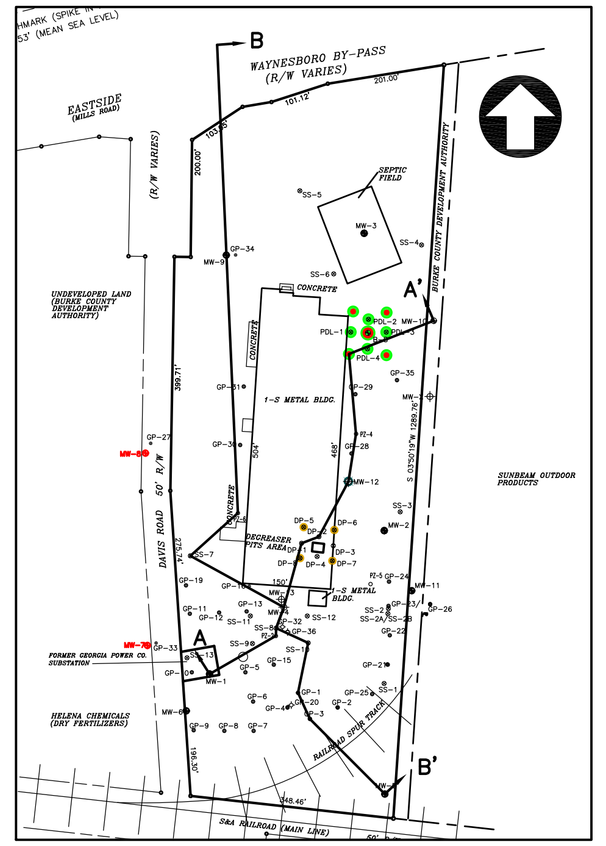
MW-4	Feb-02	Mar-02	Dec-09
VOCs ug/L			
CIS-1,2-DCE	15	<5	<5
TCE	11	<5	<5
PESTICIDES ug/L	NT	NT	BRL
HERBICIDES ug/L	NT	NT	BRL

MW-10	Feb-02	Mar-02	Jan-10
VOCs ug/L			
TCE	16	11	<5.0
PESTICIDES ug/L	NT	NT	NT
HERBICIDES ug/L	NT	NT	NT

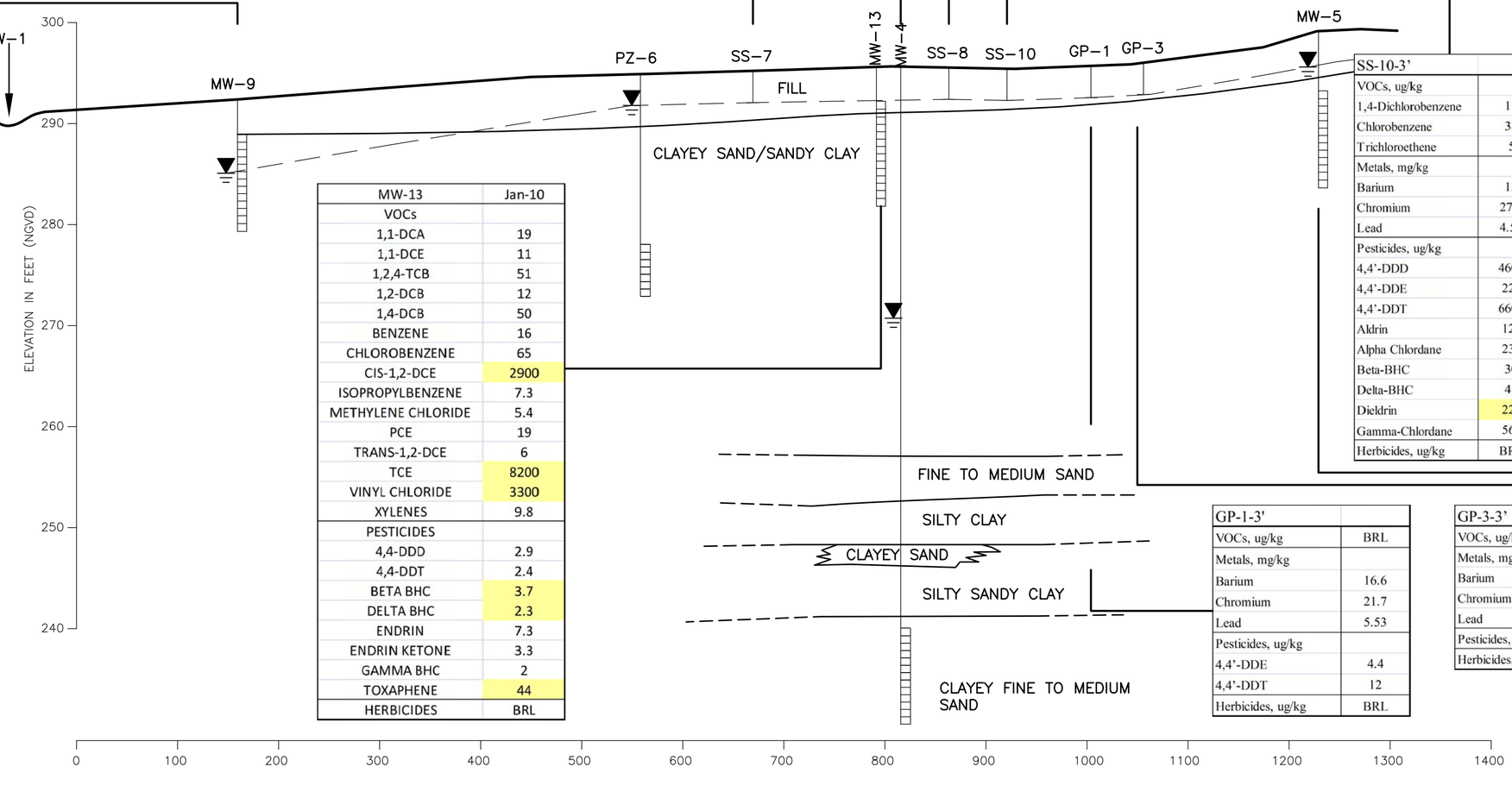
PDL-4-3	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	12.5
Chromium	20.3

MW-13	Jan-10
VOCs	
1,1-DCA	19
1,1-DCE	11
1,2,4-TCB	51
1,2-DCB	12
1,4-DCB	50
BENZENE	16
CHLOROBENZENE	65
CIS-1,2-DCE	2900
ISOPROPYLBENZENE	7.3
METHYLENE CHLORIDE	5.4
PCE	19
TRANS-1,2-DCE	6
TCE	8200
VINYL CHLORIDE	3300
XYLENES	9.8
PESTICIDES	
4,4-DDD	2.9
4,4-DDT	2.4
BETA BHC	3.7
DELTA BHC	2.3
ENDRIN	7.3
ENDRIN KETONE	3.3
GAMMA BHC	2
TOXAPHENE	44
HERBICIDES	BRL

MW-12	Jan-10
VOCs ug/L	BRL
PESTICIDES ug/L	
ALPHA BHC	0.11
DELTA BHC	0.08
GAMMA BHC	0.25
HERBICIDES ug/L	BRL



NORTHWEST B — SOUTHEAST B'



MW-4	Feb-02	Mar-02	Dec-09
VOCs ug/L			
CIS-1,2-DCE	15	<5	<5
TCE	11	<5	<5
PESTICIDES ug/L	NT	NT	BRL
HERBICIDES ug/L	NT	NT	BRL

SS-7-3'	
VOCs, ug/kg	BRL
Metals, mg/kg	
Barium	34.7
Chromium	15.8
Lead	9.75
Pesticides, ug/kg	BRL
Herbicides, ug/kg	BRL

MW-9	Feb-02	Dec-09
VOCs ug/L	BRL	BRL
PESTICIDES ug/L		
4.4'-DDD	NT	0.2
DIELDRINE	NT	0.31
HERBICIDES ug/L	NT	BRL

MW-13	Jan-10
VOCs	
1,1-DCA	19
1,1-DCE	11
1,2,4-TCB	51
1,2-DCB	12
1,4-DCB	50
BENZENE	16
CHLOROBENZENE	65
CIS-1,2-DCE	2900
ISOPROPYLBENZENE	7.3
METHYLENE CHLORIDE	5.4
PCE	19
TRANS-1,2-DCE	6
TCE	8200
VINYL CHLORIDE	3300
XYLENES	9.8
PESTICIDES	
4,4-DDD	2.9
4,4-DDT	2.4
BETA BHC	3.7
DELTA BHC	2.3
ENDRIN	7.3
ENDRIN KETONE	3.3
GAMMA BHC	2
TOXAPHENE	44
HERBICIDES	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

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

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-3-3'		GP-3-3' DUP	
VOCs, ug/kg	BRL	VOCs, ug/kg	BRL
Metals, mg/kg		Metals, mg/kg	
Barium	9.3	Barium	10.2
Chromium	24.6	Chromium	25.7
Lead	5.41	Lead	5.38
Pesticides, ug/kg	BRL	Pesticides, ug/kg	BRL
Herbicides, ug/kg	BRL	Herbicides, ug/kg	BRL

MW-5	Feb-02	Dec-09
VOCs ug/L	BRL	BRL
PESTICIDES ug/L	NT	BRL
HERBICIDES ug/L	NT	BRL

LEGEND

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

SCALE IN FEET
0
10
100

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED: S. FOLEY
DRAWN: T. GLADSTONE
CHECKED: S. FOLEY
IN CHARGE:
DATE: 1/17/2012

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

amec
Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

CROSS SECTIONS A–A' AND B–B'

SCALE: AS SHOWN
CONTRACT: 6121-09-0444
DWG. NO.: FIG 5
REV
PAGE NO

J:_PLASTERS CAD\Atlanta Projects\Legion-md\JAN 2012\CROSS SECTIONS.dwg — Layout1 01/16/2012 10:57am tonya.gladstone

WAYNESBORO BY-PASS
(R/W VARIES)

EASTSIDE
(MILLS ROAD)

(R/W VARIES)

201.00'
101.12'
103.05'
200.00'

ALIGNMENT OF FORMER
DRAINAGE SWALE

SEPTIC
FIELD

284 285 286 287 288 289 290 291 292 293 294 295

(288.54)
MW-3

MW-9
(284.46)

CONCRETE

UNDEVELOPED LAND
(BURKE COUNTY
DEVELOPMENT
AUTHORITY)

BURKE COUNTY DEVELOPMENT AUTHORITY

MW-10 (295.09)

CONCRETE

399.71'

1-S METAL BLDG.

MW-8

504'

468'

PZ-4
(288.30)

S 03°50'19" W 1289.76'

SUNBEAM OUTDOOR
PRODUCTS

DAVIS ROAD 50' R/W

MW-12(DEEP)
(270.61)

CONCRETE
(292.18)
PZ-6

275.74'

DEGREASER
PITS AREA

MW-2
(289.29)

(289.96)
PZ-5

150'

MW-11
(294.84)

(293.45)
MW-13

1-S METAL
BLDG.

MW-4
(270.61)

PZ-2o
(291.56)

PZ-1

MW-7

FORMER GEORGIA POWER CO.
SUBSTATION

MW-1
(292.96)

PZ-3

HELENA CHEMICALS
(DRY FERTILIZERS)

MW-6
(292.55)

196.30'

RAILROAD SPUR TRACK

MW-5
(294.96)

348.46'

S&A RAILROAD (MAIN LINE)
50' R/W

LEGEND OF FORMER INVESTIGATIONS

MW-6 ⊕	MONITORING WELL
MW-4 ⊕	DEEP, TYPE III MONITORING WELL, MACTEC 2002
PZ-1 o	GEOPROBE CONVERTED TO, PIEZOMETER MACTEC 2002
(294.84)	WATER TABLE ELEVATION USED TO ESTABLISH POTENTIOMETRIC CONTOUR
(294.84)	WATER TABLE ELEVATION NOT UTILIZED DUE TO SIGNIFICANTLY DIFFERENT WELL SCREEN ELEVATIONS
MW-7 ⊕	WELL DESTROYED

SCALE IN FEET
0 100 200

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

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
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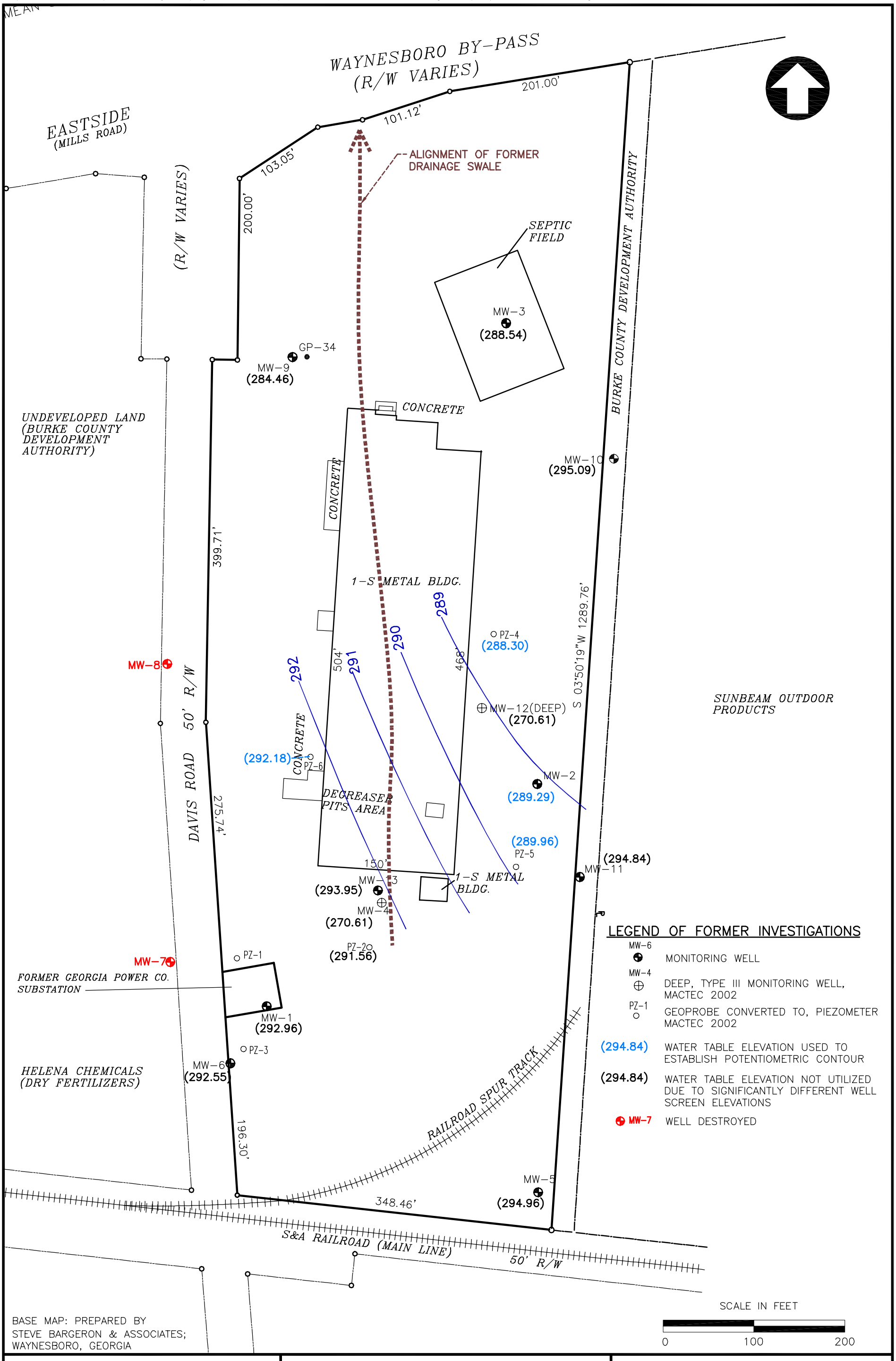
POTENTIOMETRIC SURFACE MAP
WATER TABLE
JANUARY 29, 2010

JOB NO. 6121-09-0444 FIGURE 6

PREPARED BY/DATE TG 2/8/2010 CHECKED BY/DATE SF 2/8/2010



LEGION INDUSTRIES FACILITY
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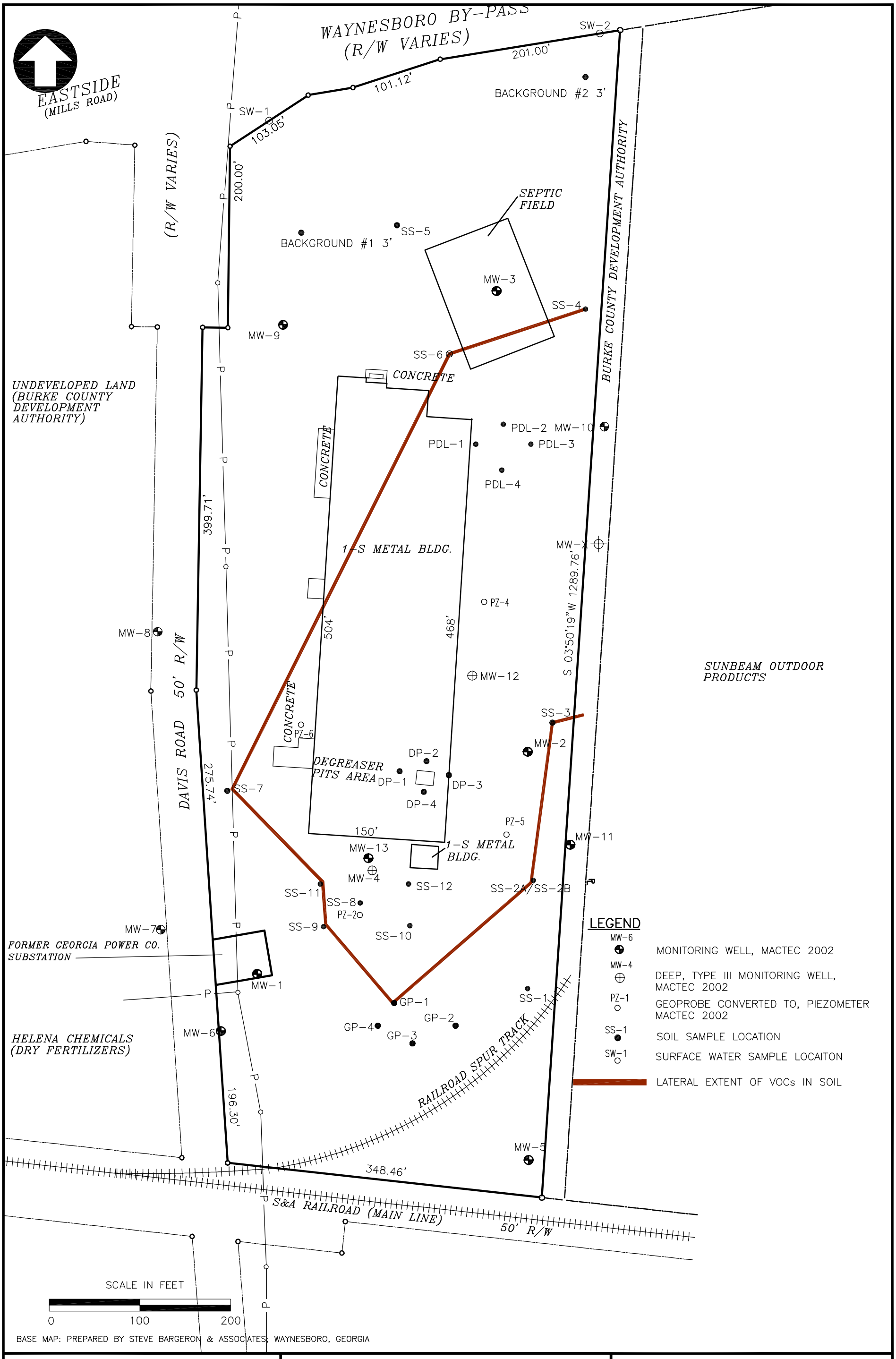
POTENTIOMETRIC SURFACE MAP
INTERMEDIATE DEPTH
JANUARY 29, 2010

JOB NO. 6121-09-0444 FIGURE 7

PREPARED BY/DATE TG 2/8/2010 CHECKED BY/DATE SF 2/8/2010

J:_PLASTERS CAD\Atlanta Projects\Legion-Ind\2010\VOCs IN SOIL.dwg 03/30/2010 7:49am tgladsto



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

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
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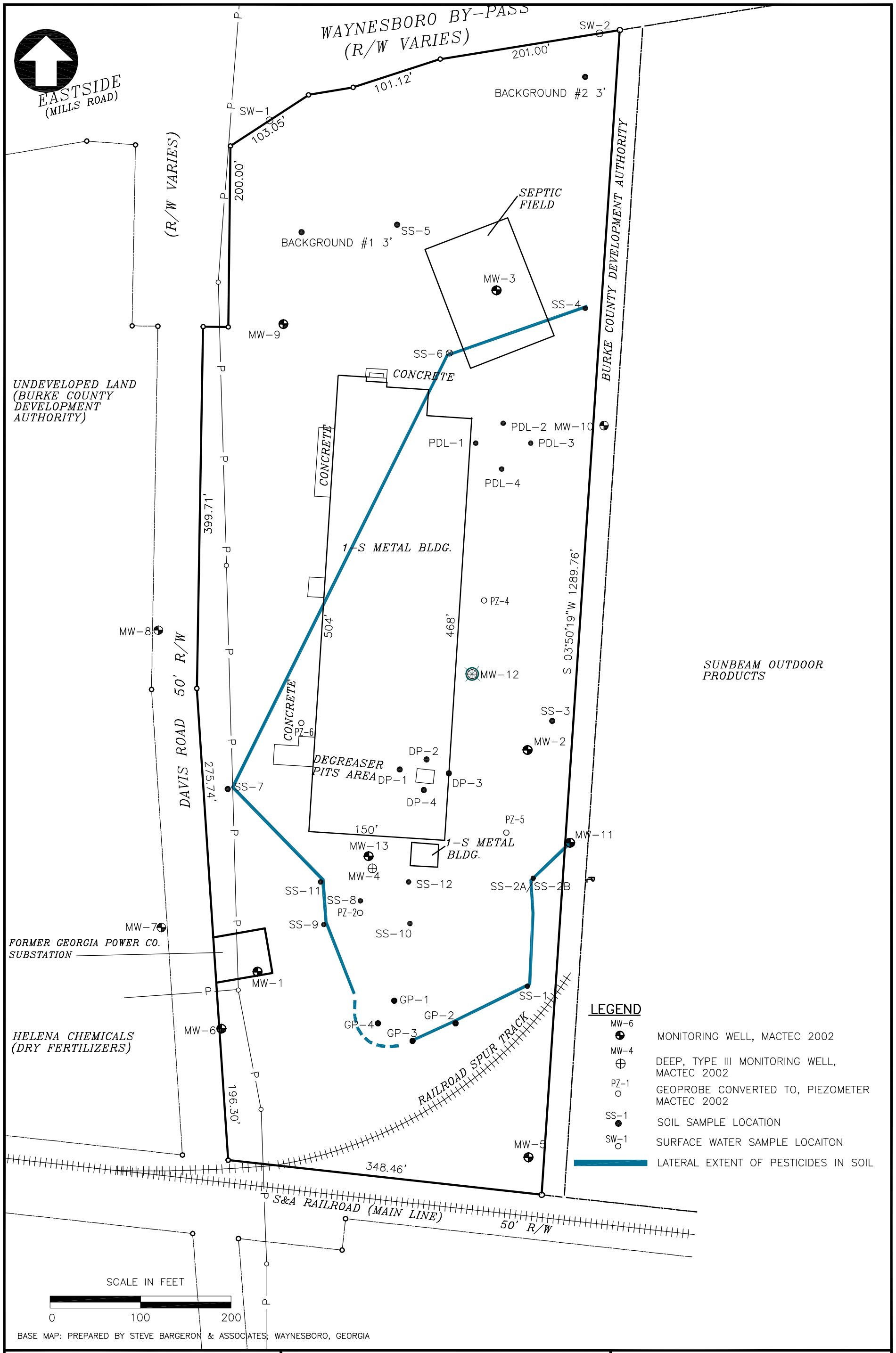
SOIL DELINEATION
VOCs

JOB NO. **6121-09-0444** FIGURE **8**

PREPARED BY/DATE TG 3/22/2010 CHECKED BY/DATE SF 3/22/2010

J:_PLASTERS CAD\Atlanta Projects\Legion-Ind\2010\SOIL DELINEATION PESTICIDES.dwg 03/30/2010 7:49am tgladsto



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

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SOIL DELINEATION
PESTICIDES

JOB NO. **6121-09-0444** FIGURE **9**

PREPARED BY/DATE TG 3/22/2010 CHECKED BY/DATE SF 3/22/2010

J:_PLASTERS CAD\Atlanta Projects\Legion-Ind\2010\SOIL EXTENT EXCEEDS RRS VOCs.dwg 03/30/2010 10:10am tgladsto

WAYNESBORO BY-PASS
(R/W VARIES)

EASTSIDE
(MILLS ROAD)

(R/W VARIES)

SW-2
201.00'
101.12'
SW-1
103.05'
200.00'
399.71'
275.74'
196.30'
348.46'
150'
504'
468'
S 03°50'19"W 1289.76'

BACKGROUND #2 3'
BACKGROUND #1 3'
SS-5
SEPTIC FIELD
MW-3
SS-4
MW-9
SS-6
CONCRETE
PDL-2 MW-10
PDL-1
PDL-3
PDL-4
CONCRETE
1-S METAL BLDG.
PZ-4
MW-12
SS-3
MW-2
CONCRETE
PZ-6
DECREASER PITS AREA
DP-2
DP-1
DP-3
DP-4
SS-7
PZ-5
MW-11
MW-13
1-S METAL BLDG.
MW-4
SS-12
SS-2A/SS-2B
SS-11
SS-8
PZ-2
SS-9
SS-10
SS-1
MW-8
MW-7
MW-1
MW-6
GP-1
GP-2
GP-4
GP-3
MW-5

BURKE COUNTY DEVELOPMENT AUTHORITY

UNDEVELOPED LAND
(BURKE COUNTY DEVELOPMENT AUTHORITY)

DAVIS ROAD 50' R/W

FORMER GEORGIA POWER CO. SUBSTATION

HELENA CHEMICALS
(DRY FERTILIZERS)

RAILROAD SPUR TRACK

S&A RAILROAD (MAIN LINE) 50' R/W

SUNBEAM OUTDOOR PRODUCTS

LEGEND

MW-6 ⊕	MONITORING WELL, MACTEC 2002
MW-4 ⊕	DEEP, TYPE III MONITORING WELL, MACTEC 2002
PZ-1 ○	GEOPROBE CONVERTED TO, PIEZOMETER MACTEC 2002
SS-1 ●	SOIL SAMPLE LOCATION
SW-1 ○	SURFACE WATER SAMPLE LOCATION
▬	DELINEATION OF SOILS EXCEEDING APPLICABLE RRS FOR VOCs

SCALE IN FEET
0 100 200

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

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

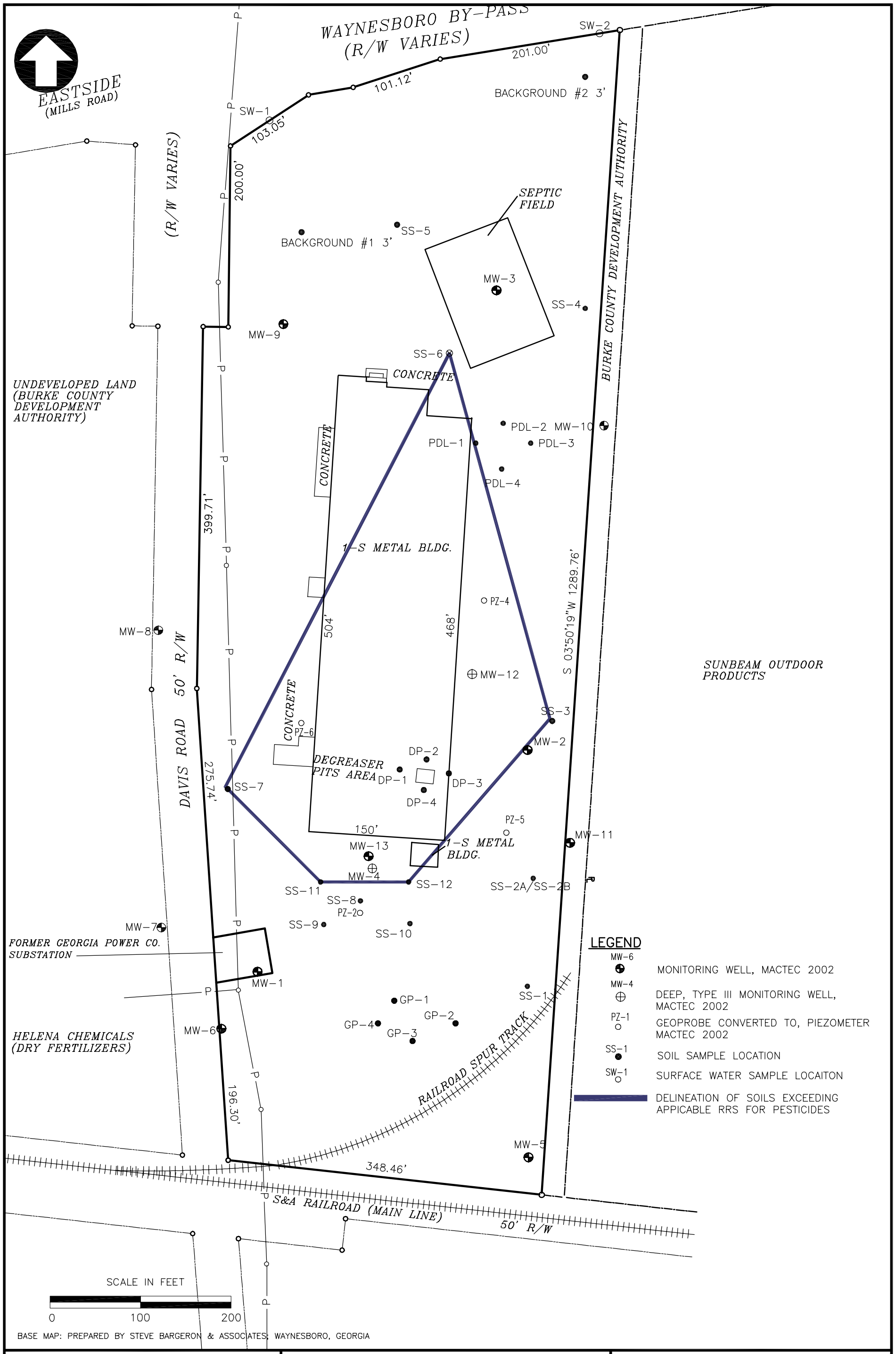
MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

2009 SOIL TESTING RESULTS
EXTENT OF SOILS EXCEEDING
RRS-VOCs

JOB NO. **6121-09-0444** FIGURE **10**

PREPARED BY/DATE TG 3/24/2010 CHECKED BY/DATE SF 3/24/2010

J:_PLASTERS CAD\Atlanta Projects\Legion-Ind\2010\SOIL EXTENT EXCEEDS RRS PEST.dwg 03/30/2010 10:11am tgladsto



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

LEGION INDUSTRIES FACILITY
WAYNESBORO, GEORGIA

MACTEC
MACTEC Engineering and Consulting, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

2009 SOIL TESTING RESULTS
EXTENT OF SOILS EXCEEDING
RRS-PESTICIDES

JOB NO. **6121-09-0444** FIGURE **11**

PREPARED BY/DATE TG 3/24/2010 CHECKED BY/DATE SF 3/24/2010

APPENDIX A

BOUNDARY SURVEY MAP

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)

EASTSIDE
(MILLS ROAD)

WAYNESBORO BY-PASS
(R/W VARIES)

DAVIS ROAD 50' R/W

11.31 ACRES

RBS
N 56°46'42"E
103.05'
RBS
N 71°59'21"E
101.12'
RBS
N 80°48'56"E
201.00'
AIS
RBS
N 80°30'34"E
50.00'
N 00°41'04"E
200.00'

MONITORING WELL #3
GROUND - 291.68'
TOP OF PVC - 294.85'

MONITORING WELL #9
GROUND - 291.13'
TOP OF PVC - 294.26'

RBS
RBS
S 89°18'15"E
27.79'

CONCRETE
CONCRETE
1-S METAL BLDG.
504'
468'
CONCRETE
150'

N 01°00'34"E
399.71'

MONITORING WELL #8
GROUND - 294.18'
TOP OF PVC - 293.96'

RBS

N 03°48'09"W
275.74'

MONITORING WELL #7
GROUND - 294.71'
TOP OF PVC - 294.54'

S 80°05'39"W
57.56'
RBS
RBS
N 09°54'21"W
50.00'
RBS
RBS
N 80°05'39"E
62.91'

GEORGIA POWER CO.
SUBSTATION SITE
(ABANDONED)

N 03°48'09"W
196.30'

MONITORING WELL #6
GROUND - 295.86'
TOP OF PVC - 299.16'

MONITORING WELL #10
GROUND - 301.18'
TOP OF PVC - 301.04

S 03°50'19"W 1289.76'

BURKE COUNTY DEVELOPMENT AUTHORITY

SUNBEAM OUTDOOR PRODUCTS
PB 4 PG 206

MONITORING WELL #2
GROUND - 295.65'
TOP OF PVC - 298.47'

MONITORING WELL #11
GROUND - 300.00'
TOP OF PVC - 299.86'

1-S METAL BLDG.
MONITORING WELL #4
GROUND - 295.68'
TOP OF PVC - 298.33'

MONITORING WELL #1
GROUND - 294.50'
TOP OF PVC - 297.51'

MONITORING WELL #5
GROUND - 299.58'
TOP OF PVC - 302.92'

RAILROAD SPUR TRACK

RBS
348.46'
N 83°40'54"W
AIS

CENTER LINE MAIN LINE
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.

REFERENCES:
DEED BOOK 132 PG 568-569
PLAT BOOK 4 PAGE 206
PLAT BOOK A PAGE 28

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 B

RISK REDUCTION STANDARD CALCULATIONS

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

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

(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'/Þb	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)

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

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

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

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

Exposure Parameters	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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CHECKED/DATE:LMS 1/18/2012

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

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

(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

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

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	95th 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

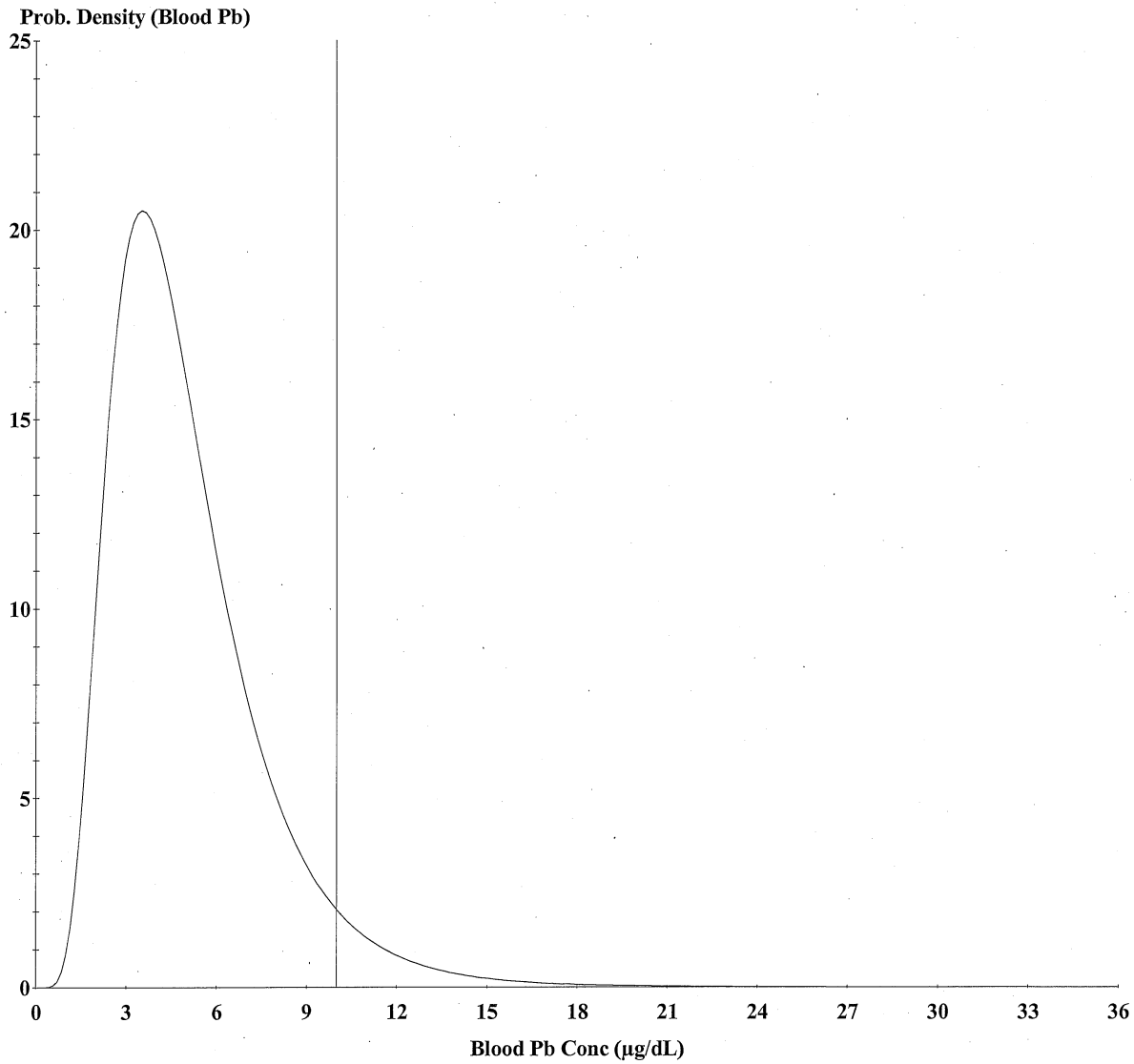
****** Maternal Contribution: Infant Model ******

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

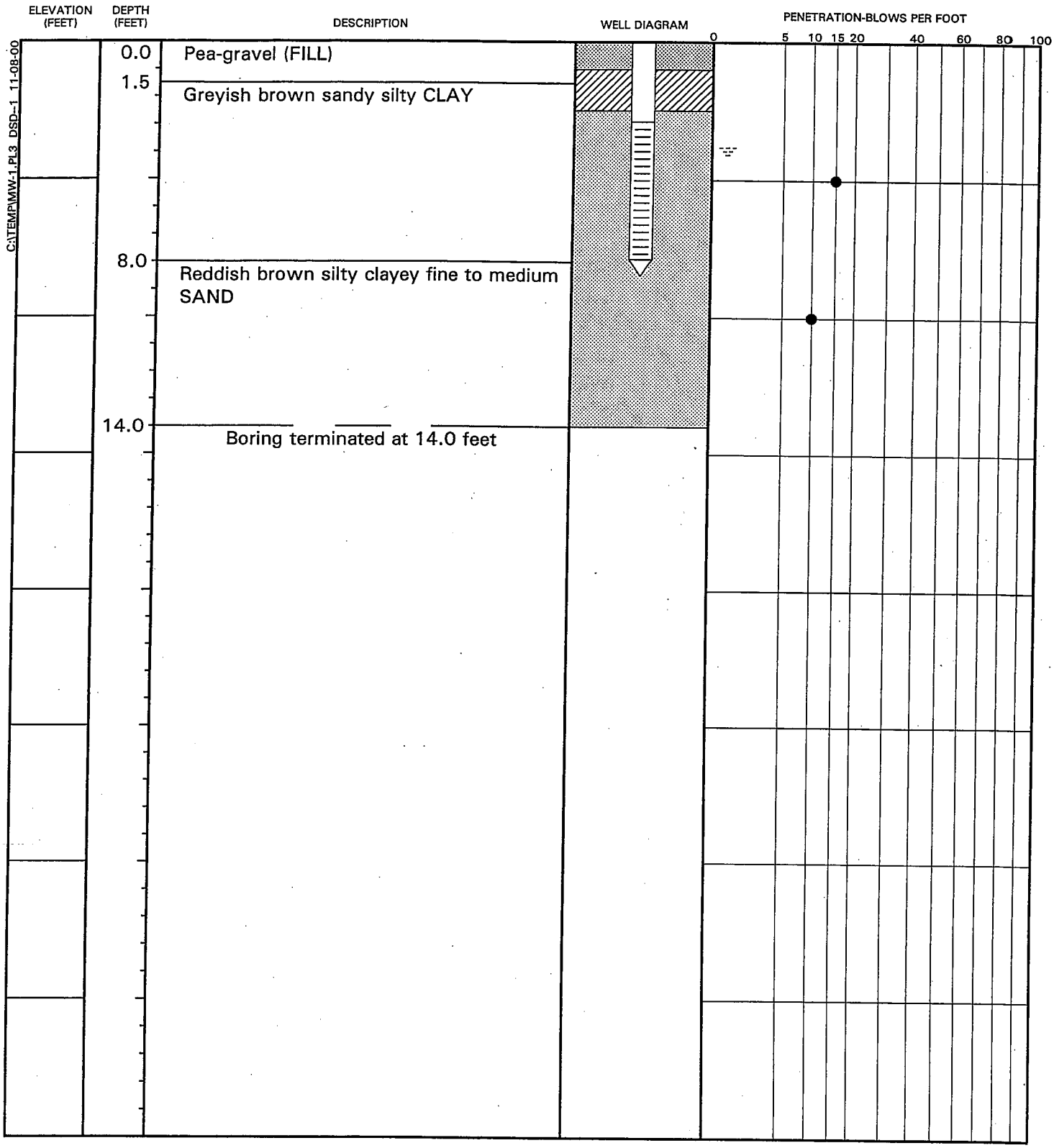
Run Mode = Research

APPENDIX C

MONITORING WELL LOGS

TEST BORING RECORD

HEIGHT OF RISER: +3.0'



REMARKS:

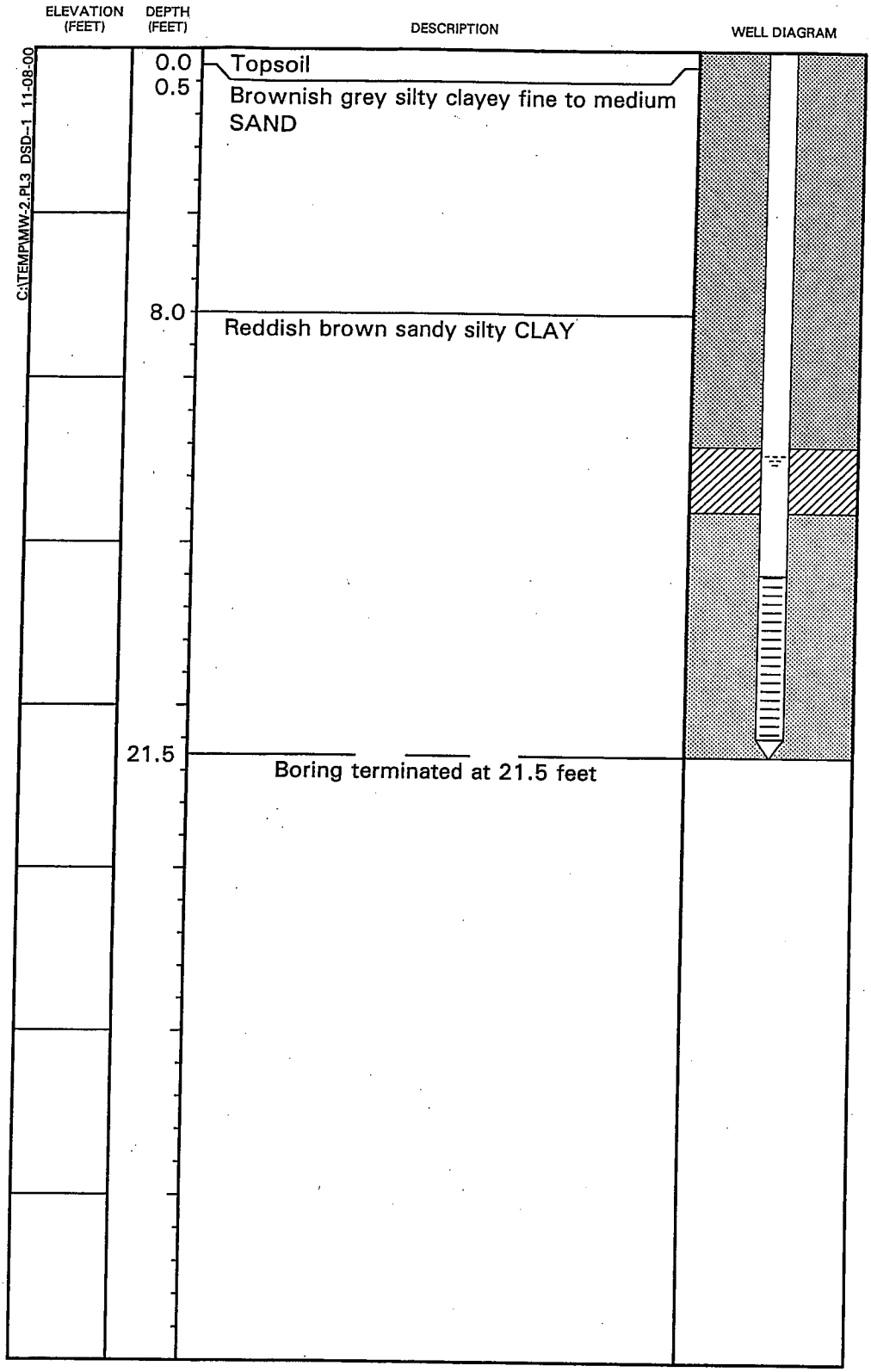
1. Boring installed using 8 3/4-inch O.D. hollow-stem augers.
2. Well materials: 5-foot length of 2-inch I.D. PVC well screen attached to 2-inch PVC riser.
3. Drilling water level of 3.95 feet bgs measured on 11/1/00.

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'



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

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TEST BORING RECORD

HEIGHT OF RISER: +3.0'
DATUM ELEVATION:

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

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

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

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TEST BORING RECORD

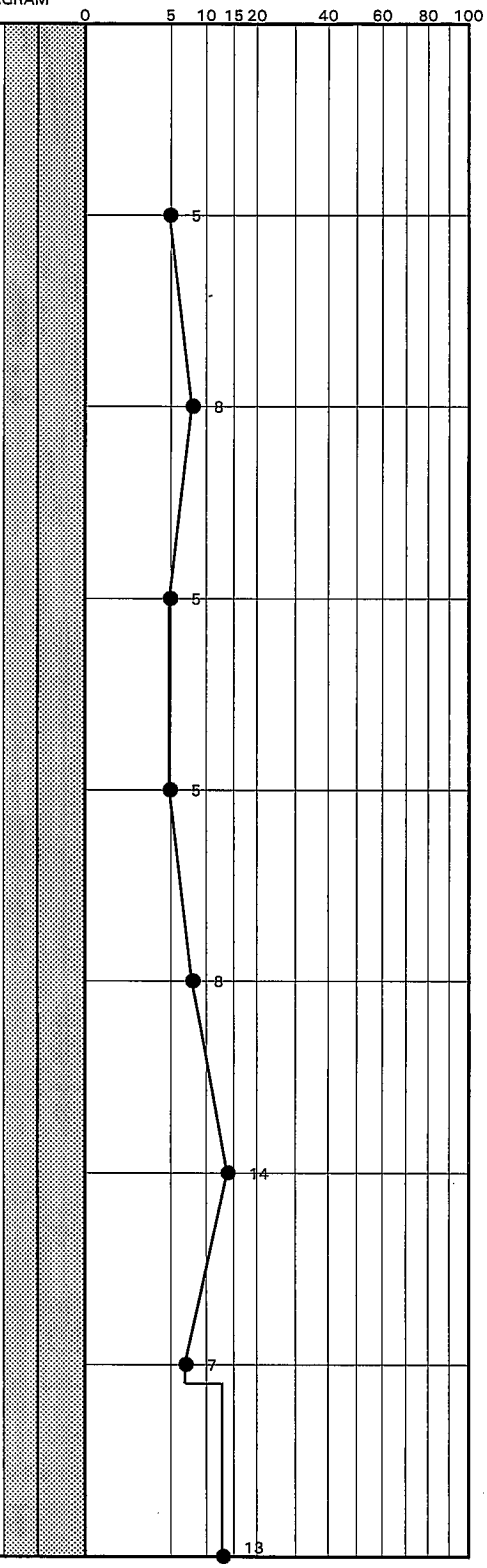
HEIGHT OF RISER: 2.65 ft.
DATUM ELEVATION: 298.33 ft. NGVD

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		

WELL DIAGRAM

PENETRATION-BLOWS PER FOOT



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) ⏚ Water level measured on 3/6/02.

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
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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

0 5 10 15 20 40 60 80 100

18
3
7
15

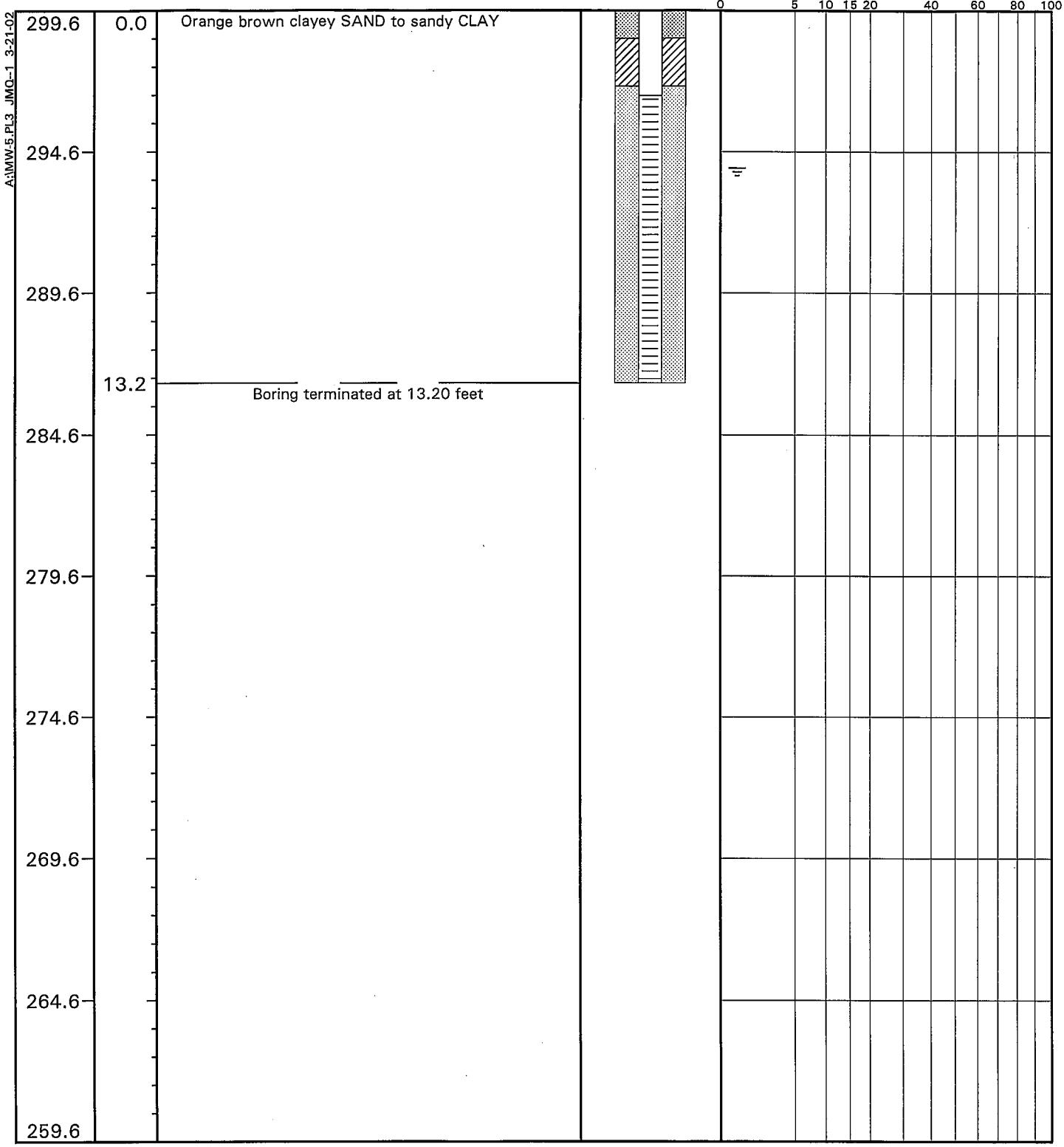
REMARKS:

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



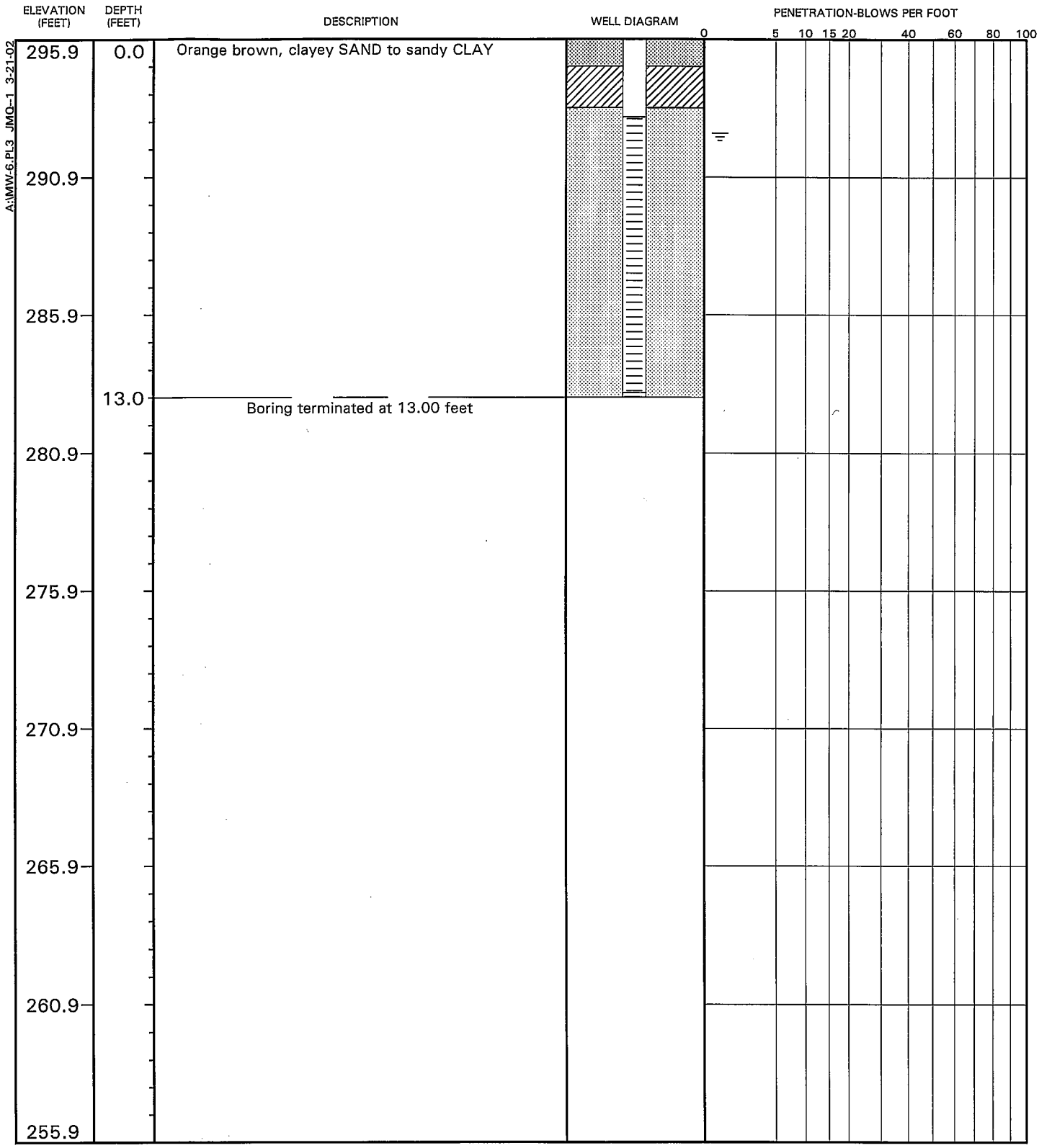
REMARKS:
1) Boring Advanced using direct-push techniques.
2) ⊽ Water level on 3-06-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW	BORING NUMBER	MW-5
LOGGED BY	TMK	DATE STARTED	2/13/02
CHECKED BY	CK	DATE COMPLETED	2/14/02
		JOB NUMBER	12000-0-2129

LAW
ENGINEERING AND ENVIRONMENTAL SE

TEST BORING RECORD

HEIGHT OF RISER: 3.30
DATUM ELEVATION: 299.16



A:\MW-6.PI3 JMO-1 3-21-02

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.

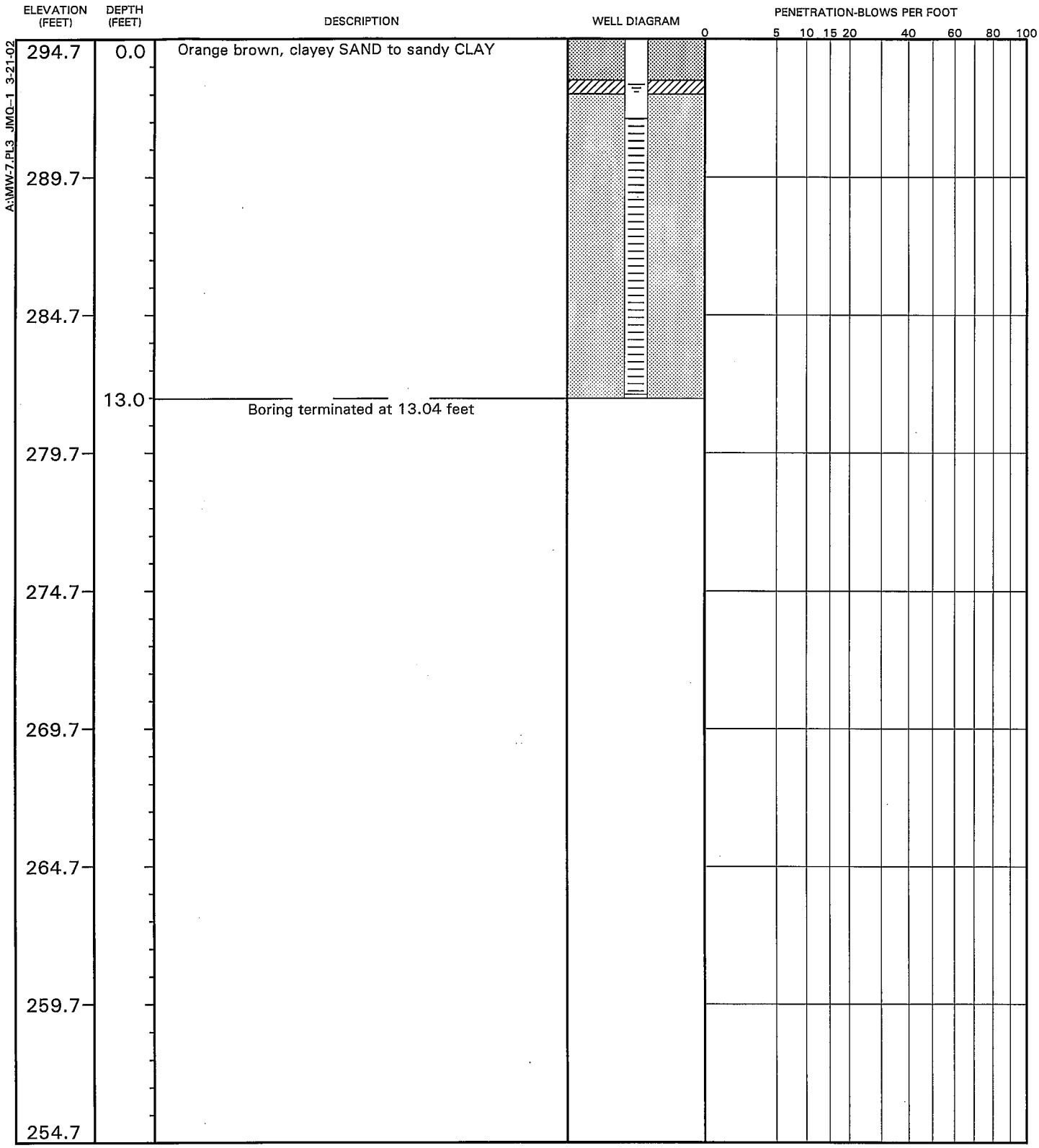
DRILLED BY	LAW
LOGGED BY	TMK
CHECKED BY	CK

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



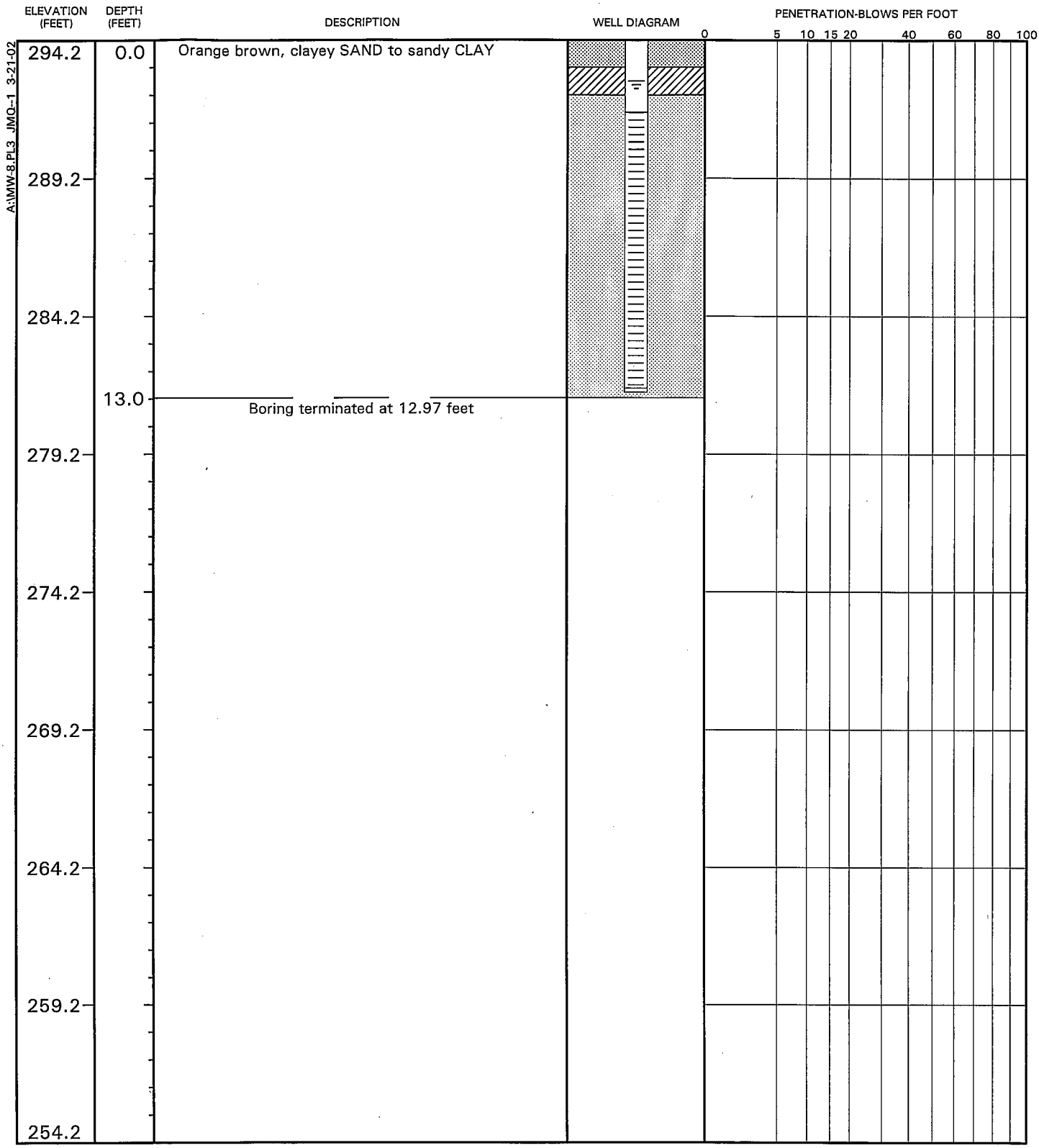
REMARKS:
1) Boring Advanced using direct-push techniques
2) ⌅ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW	BORING NUMBER	MW-7
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: -0.22
DATUM ELEVATION: 293.96



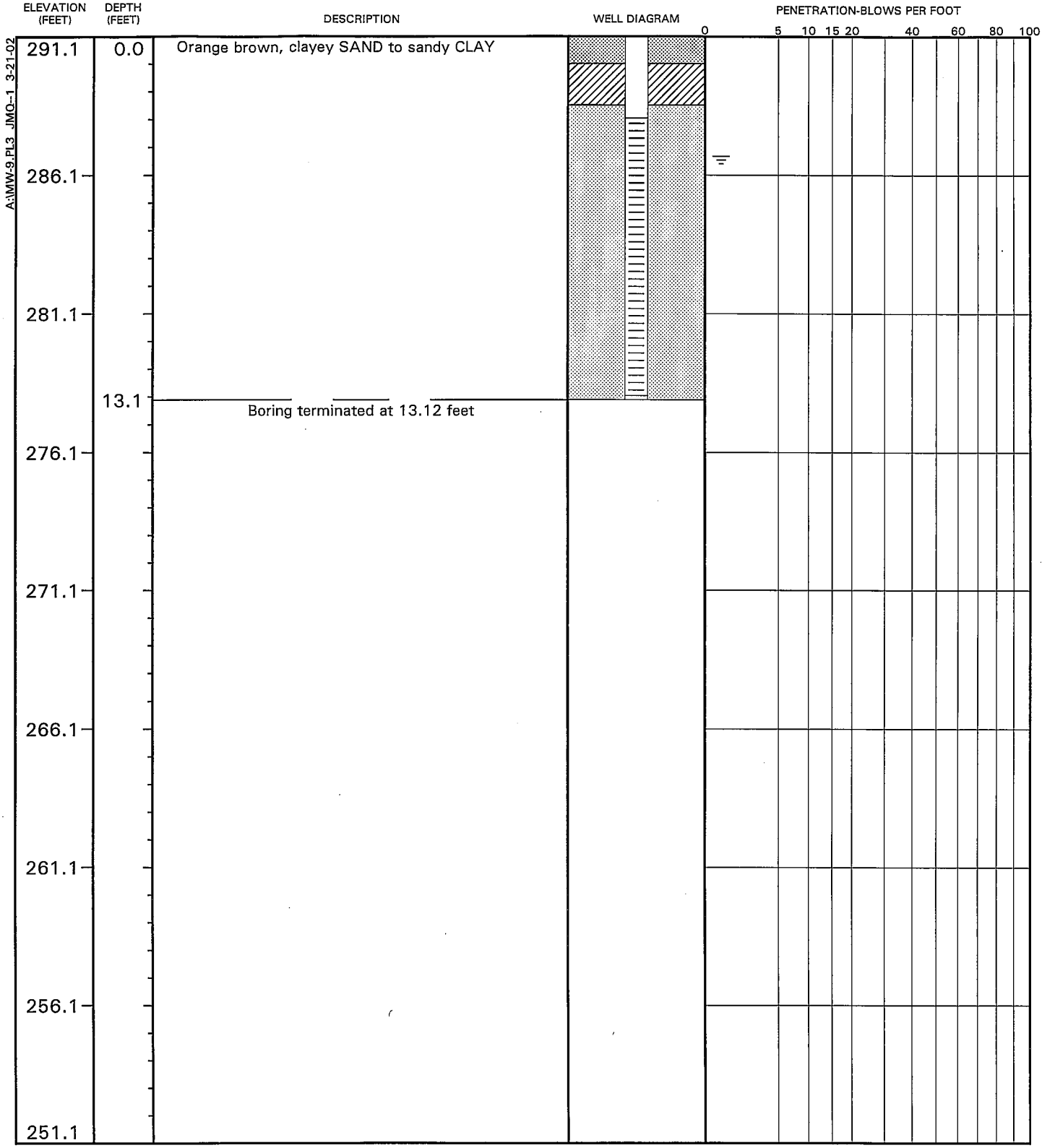
REMARKS:
1) Boring Advanced using direct-push techniques
2) ⩧ Water level on 3-6-02
3) Well constructed of 1-inch ID PVC
4) Soil description based on soil logged in other site borings.

DRILLED BY	LAW	BORING NUMBER	MW-8
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: 3.13
DATUM ELEVATION: 294.26



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-9
LOGGED BY	TMK	DATE STARTED	2/14/02
CHECKED BY	CK	DATE COMPLETED	2/14/02
		JOB NUMBER	12000-0-2129

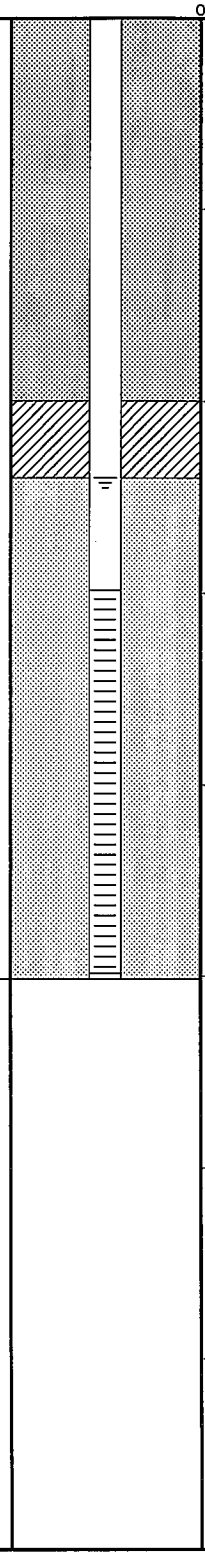
LAW
ENGINEERING AND ENVIRONMENTAL SE

TEST BORING RECORD

HEIGHT OF RISER: -0.14
DATUM ELEVATION: 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
276.2	25.1	Boring terminated at 25.09 feet



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-10
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: 299.86

A:\MW-11.PI3 JMO--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		

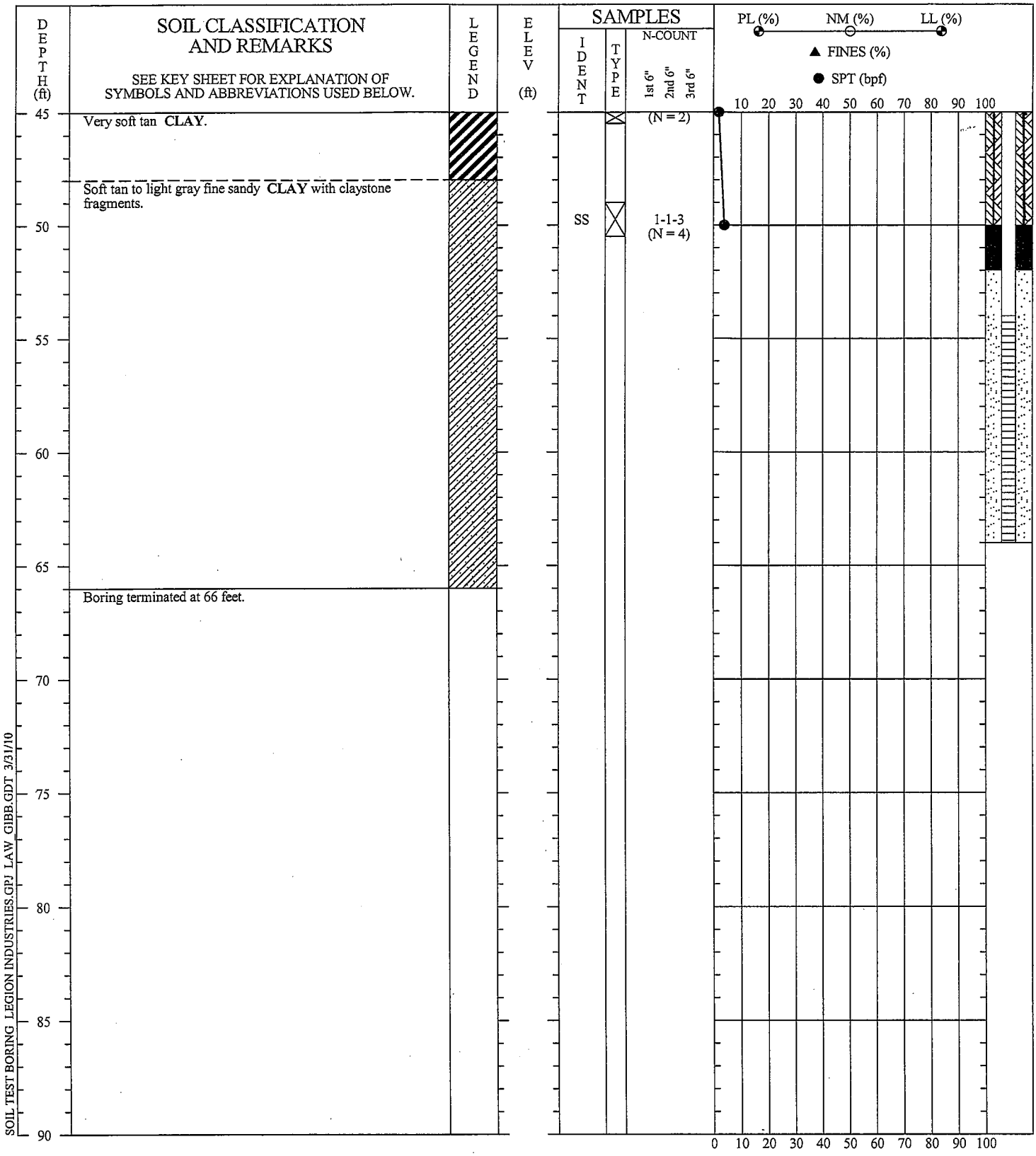
WELL DIAGRAM

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	BORING NUMBER	MW-11
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



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

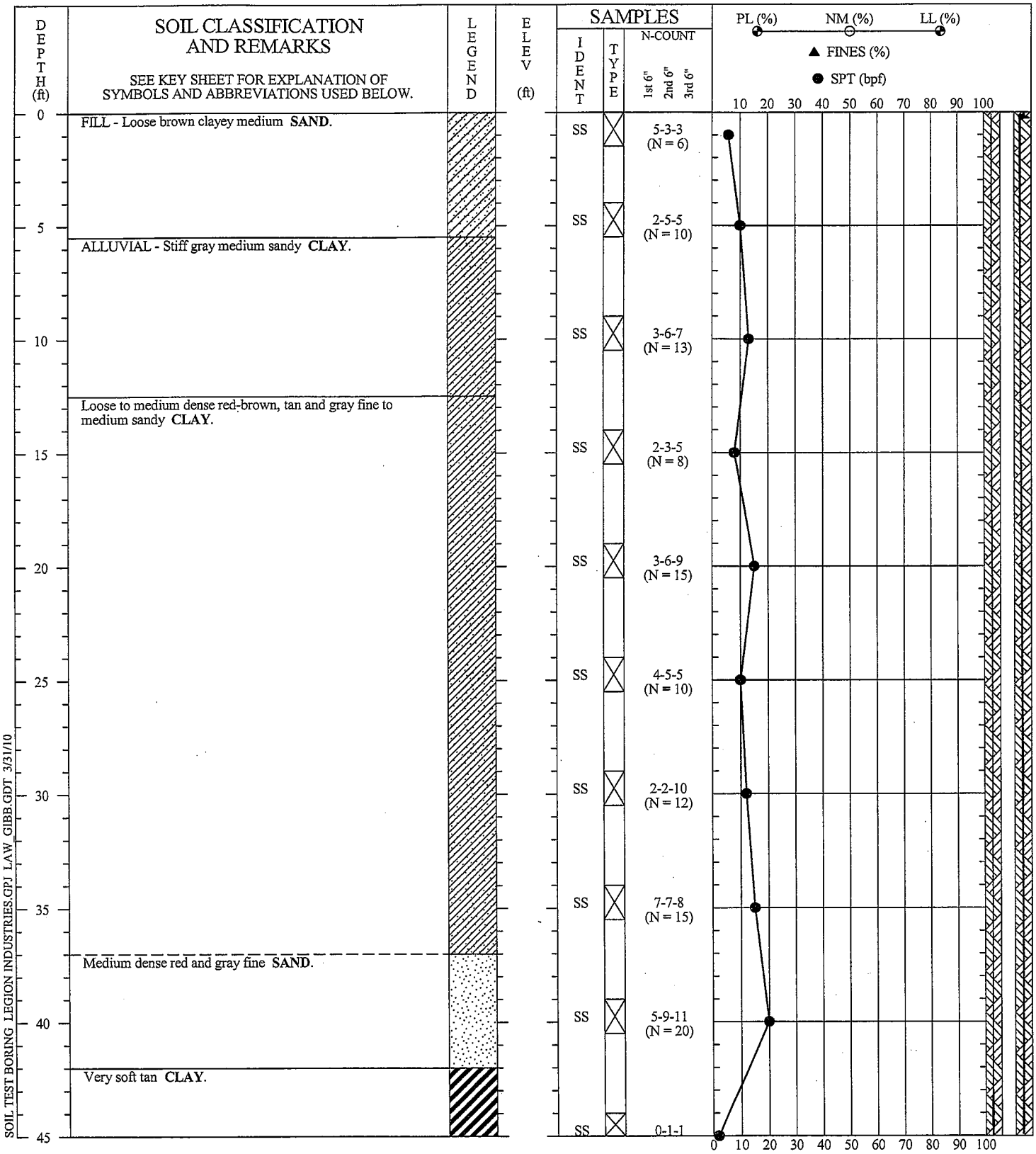
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger/Mud Rotary
HOLE DIA.:	8.25 inches
REMARKS:	Type III well installed at 64 feet. Outer casing set at 52 feet. Stabilized groundwater depth 26.38 feet bgs.

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



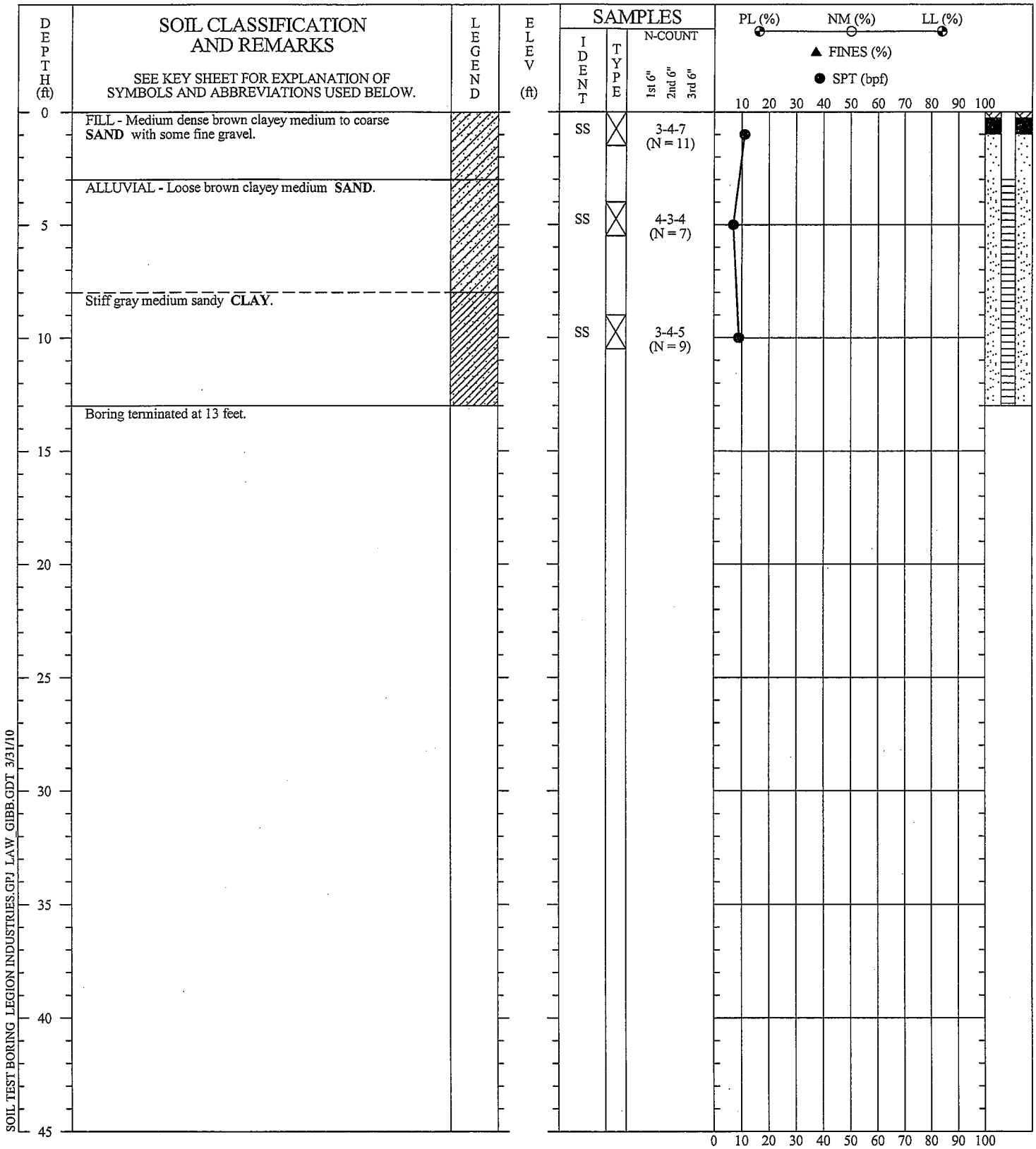
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger/Mud Rotary
HOLE DIA.:	8.25 inches
REMARKS:	Type III well installed at 64 feet. Outer casing set at 52 feet. Stabilized groundwater depth 26.38 feet bgs.

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

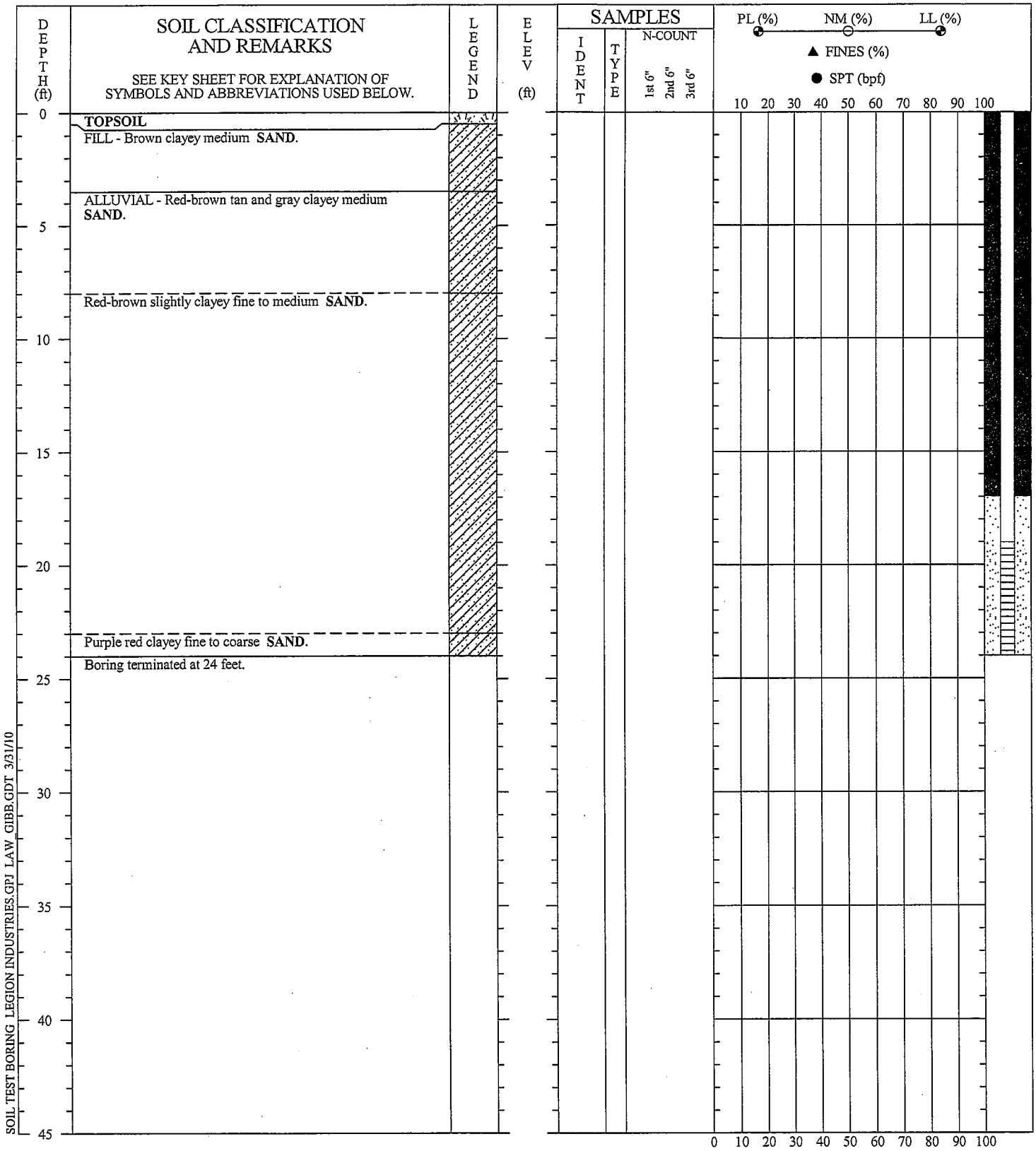
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8.25 inches
REMARKS:	Type II well installed. Stabilized groundwater depth 3.19 feet bgs.

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



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

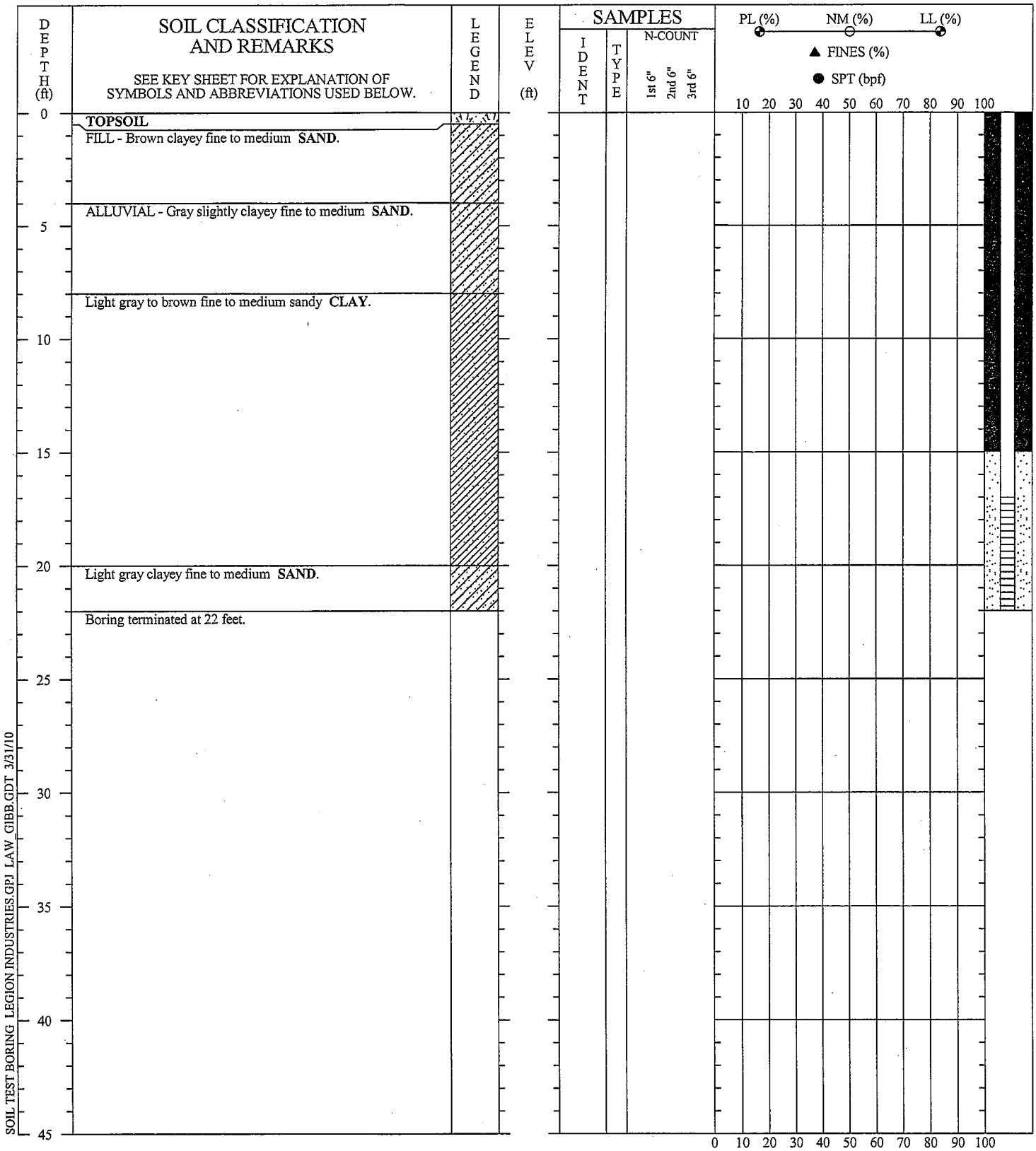
DRILLER:	Atlas GeoSampling
EQUIPMENT:	Geoprobe
METHOD:	Direct Push
HOLE DIA.:	2 inches
REMARKS:	1 inch piezometer installed. Stabilized groundwater depth 4.31 feet.

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

MACTEC



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

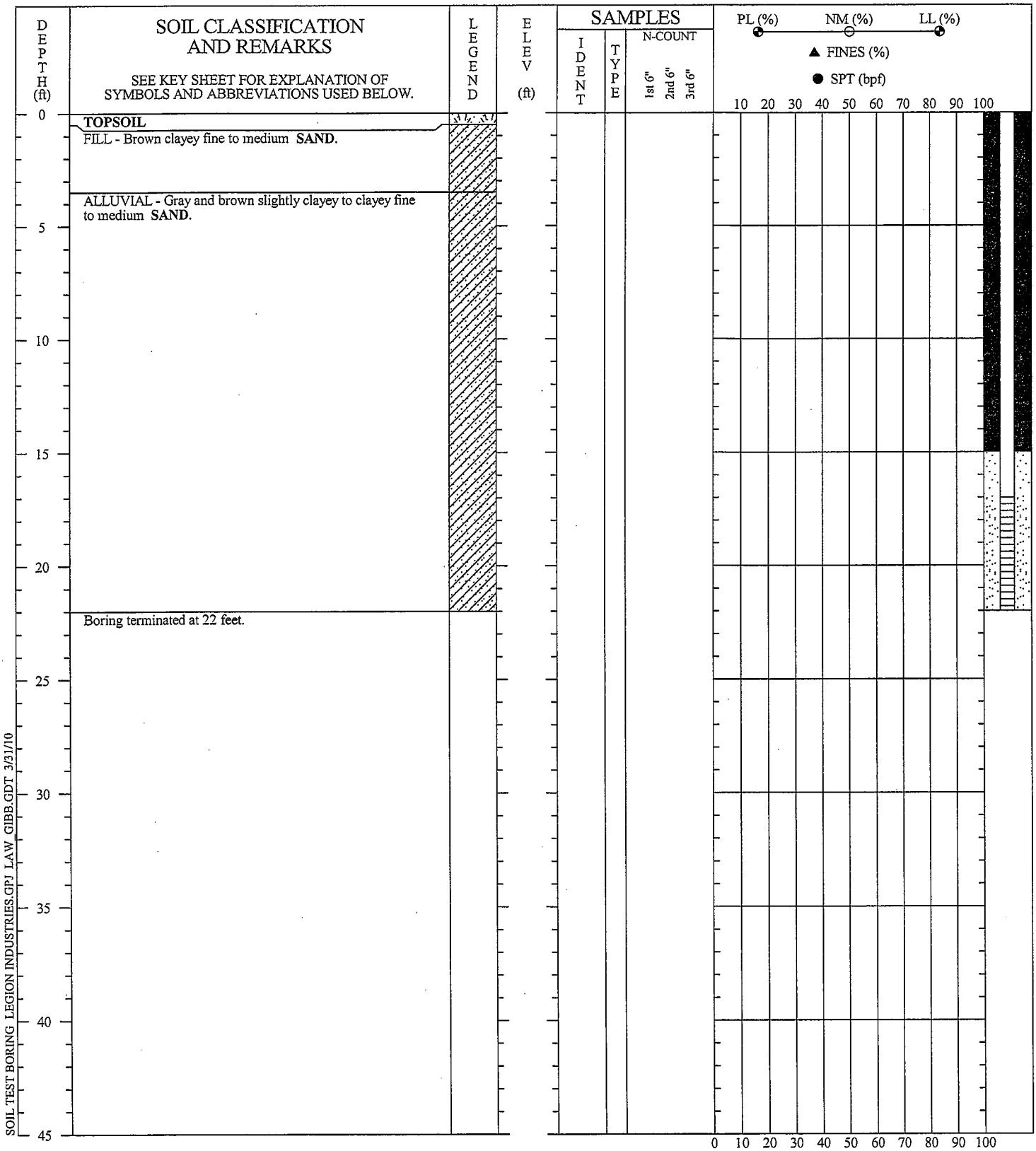
DRILLER:	Atlas GeoSampling
EQUIPMENT:	Geoprobe
METHOD:	Direct Push
HOLE DIA.:	2 inches
REMARKS:	1 inch piezometer installed. Stabilized groundwater depth 3.58 feet.

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



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

APPENDIX D

SUMMARY OF PROFESSIONAL ENGINEER'S SERVICES

Charles T. Ferry, P.E.

Summary of Hours and Services – Voluntary Remediation Plan

Legion Industries, Inc.

HSI Site No. 10614

AMEC Project No. 6121-09-0444

VRP Application Submittal to EPD dated 1/26/2012

7.5 hours between 12/21/11 and 1/17/12

Services included client consultation, review of existing data and preparation and review of submittal