MANAGEMENT PLAN

500 East Main Street Facility
500 East Main Street
Louisville, Kentucky

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1.0 INTRODUCTION

500 Associates purchased the former Vermont American manufacturing facility located at 500 East Main Street in Louisville, Kentucky for the purpose of developing the site for lease or sale. Location of the 500 East Main Street property is shown in Figure 1. Since the purchase in 1987, subsequent identification of contamination in site soils and groundwater has halted the development process. The Commonwealth of Kentucky, Department for Environmental Protection Superfund Branch (KDEP) has requested Vermont American (VA) and 500 Associates undertake site characterization and subsequent remediation to satisfy Kentucky Revised Statutes KRS 224.01-400, Environmental Emergencies.

The purpose of this Management Plan is to document existing environmental data relevant to site management, identify Constituents of Concern, the environmental fate of the constituents and the exposure pathways. Based on these data a plan has been proposed for the management of these constituents in accordance with Kentucky Revised Statutes KRS 224.01-400. The management activities proposed in this plan address the extent of contamination observed at the facility in accordance with KRS 224.01-400. The management activities proposed in this plan utilize U.S. Environmental Protection Agency (U.S.EPA) Region 9 Preliminary Remediation Goals (PRGs) for soils, except in the case of lead, for which Kentucky has asserted their own Action Levels. All groundwater impact will be evaluated relative to Maximum Contaminant Levels (MCLs) defined in the Safe Drinking Water Act.

2.0 BACKGROUND

The Facility is located at 500 East Main Street in Louisville Kentucky. A Site Plan is presented as Figure 2. Currently three buildings, the Jackson Street Building, the Bonded Warehouse and the East Shop, are located on the property. A factory building located in the east central portion of the courtyard and along the southern property boundary was demolished in 1990.

Prior to 1986, the property was used to produce saw blades and cutting tools. Operations included chrome and nickel/chrome plating, de-greasing and heat-treating. The plating operations included the use of chromium, copper, lead, nickel, and cyanide, while de-greasing operations utilized volatile organic compounds (VOC) including trichloroethene, tetrachloroethene and trichlorofluoromethane. A nickel chromium plating line was formerly housed in the Bonded Warehouse while three additional plating operations were located in the northern portion of the demolished building in the current courtyard area (Figure 2).

2.1 SITE GEOLOGY AND HYDROGEOLOGY

Topographic coverage of the 500 Associates property is provided by the New Albany and Jeffersonville, Indiana - Kentucky 7.5 minute quadrangle maps. The site is relatively flat with a ground surface elevation approximately 450 feet above the National Geodetic Vertical Datum of 1929 (NGVD).

The property is located in northern Louisville and lies approximately 2,000 feet south of the Ohio River (Figure 1). Based on the USGS Geologic Map of the area the site is underlain by alluvial deposits of glacial out-wash, sand, and gravel that accumulated in the pre-glacial river valley. These out-wash deposits are the principal aquifer for the Louisville area. Based on boring logs from site investigations, the alluvial aquifer is overlain with silty clays up to nine feet thick. A depth to bedrock ranging from 60 to 100 feet or more has been estimated at the site. Bedrock at the site is the Louisville Limestone of Middle Silurian age.

The depth to groundwater ranges from approximately 40 to 45 feet below the top of the well casing or 417 to 422 feet above NGVD of 1929. The direction of groundwater flow in the vicinity of the site is to the north-northwest. The pumping of local groundwater may also influence the direction of groundwater flow. The alluvial aquifer is recharged via two principal mechanisms; infiltration from the Ohio River and flow via secondary porosity from the limestone bedrock of the valley walls. During Ohio River high water events, gradient reversals have been documented where the temporary direction of ground water flow is to the southeast.

2.2 EXISTING ENVIRONMENTAL DATA

Since the purchase of the property by 500 Associates from Vermont American in 1987, a significant amount of environmental data has been developed from several site characterizations. Five potential areas of concern (AOC) were identified based on prior site operations, which were targeted by the investigations as summarized in Table 1 and Figure 2. In chronological order, a list of these investigations include the following:

1987 - Ro-Teck, Inc. conducted a review of hazardous equipment and hazardous waste disposal practices by VA at the facility.

1990 - ERC Environmental and Energy Services Company (ERCE) conducted a Level I Pre-Acquisition Site Assessment.

1990 - ERCE conducted a Level II Pre-Acquisition Site Assessment.

1990 - MSL Laboratory collected groundwater samples and a residue sample.

1991 - Environmental Science & Engineering, Inc. (ESE) conducted an elevation survey of the three groundwater monitoring wells at the property.

1991 - Law Engineering and Environmental Services, Inc. (LAW) conducted a two-phase investigation for the purpose of assessing the presence of VOCs in soil and groundwater.

1995 - Kentucky Natural Resources and Environmental Protection Cabinet, Department for Environmental Protection, Division of Waste Management (KDEP), completed a Preliminary Assessment (PA) of the site.

1996 - KDEP collected groundwater samples and gauged the three monitoring wells.

1996 - KDEP completed a Site Investigation (SI) of the site.

May 1996 – *Sampling and Analysis Plan,* Global Environmental Solutions, Inc. defined the additional site characterization activity.

1997 - KPED conducted a targeted soil sampling event and split samples with Commonwealth Technology, which was acting on behalf of Vermont American.

1997 - KPED conducted a groundwater sampling event and split samples with Vermont American's laboratory, Commonwealth Technology.

January 1999 - *Site Characterization Report, 500 Associates Property, Louisville, Kentucky* by Dames and Moore included a summary of the existing environmental investigations of the site.

July 1999 - *Site Investigation Report, Former Vermont American Facility, 500 East Main Street, Louisville, Kentucky* by Global Environmental Solutions, Inc. documented the additional site characterization data.

September 1999 - *Review of the Site Investigation Report for the Former Vermont American Facility,* Louisville, Kentucky Identification TB-792 is a summary document concerning the site by the Risk Assessment Branch of the Cabinet.

November 1999 - *Draft Management Plan, 500 Associates Property,* Louisville, Kentucky is a draft management plan for the site by Dames & Moore.

July 2000 – Final Site Investigation Report, Former Vermont American Facility, 500 East Main Street, Louisville Kentucky, by Global Environmental Solutions, Inc. documents the results of the sampling and analysis of the site.

Additional documents concerning the adjacent properties to the north include the following:

October 1996 - *Management Plan, former Jackson Street MGP Site, 220 North Jackson Street, Louisville, Kentucky,* Site #20065, by Environmental Technology, Inc.

July 1998 - *Louisville Slugger Field Management Plan, Louisville, Kentucky,* by Environmental Technology, Inc.

June 2001 – *Quarterly Monitoring Report, Slugger Field – March 2001,* by Environmental Technology.

March 2002 – *March 2002 Quarterly Monitoring Report, Slugger Field,* by Environmental Technology.

The sampling and analysis conducted on site in the identified AOCs consisted of 39 borings and analysis of 71 samples for different combinations of up to 13 metals, VOCs, total cyanide, semi volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and pesticides. Summaries of this sampling by area are provided in Tables 2 through 6. Tables 2 through 6 also summarize whether the compounds of concern were detected over soil screening levels. In these prior assessments, the detections were screened against the Human Health Screening Levels (HHSLs) defined in the sunset regulation 401 KAR 100 and associated guidance. These criteria were not adopted by KDEP and do not apply to the proposed work but are included on Table 7 for comparison purposes.

As indicated in Tables 2 through 6, the Bonded Warehouse and the combined Circular Saw, Plating Area #2 and Plating Area #3 are the only two areas with identified detections of hexavalent chromium and lead over the old screening criteria.

For the purposes of this Management Plan, new screening criteria are used to evaluate soil cleanup goals and the extent of groundwater impact. Current KDEP policy references the federal MCLs for groundwater and the U.S. EPA Region 9 PRGs for soil, with the exception of lead for which Kentucky adheres to their own Action Level. When initially screening soil impact, KDEP requires

use of residential PRGs and their residential lead action level. However, the closure of the site is expected to require commitment to land use controls including restrictions against residential use. Accordingly, non-residential PRGs are presented on Table 7 along with the groundwater MCLs as the current criteria.

3.0 CONSTITUENTS OF CONCERN

Constituents of concern (COC) detected at the 500 East Main Street property are discussed in the following sections:

3.1 SOIL

During site characterization, hexavalent chromium, lead and nickel were detected in site soils above their respective HHSL of 30 mg/kg, 20 mg/kg and 1500 mg/kg. Potential constituents of concern (COCs), for the site were agreed upon in the March 2, 1999 mediation with KDEP. As such it was agreed hexavalent chromium and lead were the only identified COCs for soil on site. The occurrence of both metals is presented below.

3.1.1 Hexavalent Chromium

Bonded Warehouse

Six samples from six borings contained total hexavalent chromium (hex Cr) concentrations above the screening criteria of 64 mg/kg. These concentrations range from 66 mg/kg (EMP-8) to 570 mg/kg (EMP-9). The soil samples collected from boring BW-5 identified hex Cr concentrations of 216/210 mg/kg in the 3.0 to 4.0 foot interval and 62.4 mg/kg in the sample collected from the 7.9 to 8.9 ft interval as shown in Figure 3.

Sample BW-5 duplicate showed a total chromium concentration of 271 mg/kg, which is over the toxic characteristic leaching procedure (TCLP) threshold value of 100 mg/kg. The threshold value is the minimum concentration required to obtain a positive TCLP result based on the formula for calculating the TCLP concentrations. TCLP chromium analysis of this sample identified a concentration of 6.61 mg/l, which is over the regulatory level of 5.0 mg/l. To evaluate whether the positive TCLP chromium analysis was due to solid chromium particles passing the standard TCLP filter size of between 0.6 to 0.8 microns and the standard filter size for dissolved constituents of 0.045 microns the TCLP extract was re-analyzed after being run through a 0.045 micron filter. A re-analyzed chromium concentration of 4.2 mg/l confirms the positive TCLP result was caused by solids ranging in size between 0.045 to 0.6/0.8 microns and was not the result of dissolved chromium being leached from the soil.

Circular Saw Plating Area #2/Plating Area #3

One soil sample collected from the Circular Saw Plater #2 Area identified hex Cr at a concentration above the screening criteria of 64 mg/kg as shown in Figure 5. The soil sample collected from the 3.0 to 4.0 foot interval in boring CSP-5 had a hex Cr concentration of 96.0 mg/kg. One soil sample collected from the 0 to 4.0 foot interval in boring CSP-4 had a total chromium concentration of 11,000 mg/kg, which is above the total chromium screening criteria of 450 mg/kg.

As documented in the July 26, 2000 report titled *"Final Site Investigation Report, Former Vermont American Facility"*, sample CSP-7 6.5 to 7.5 foot interval showed a total chromium

concentration of 170 mg/kg, which is over the TCLP threshold value of 100 mg/kg. TCLP chromium analysis of this sample identified a concentration of 0.65 mg/l, which is below the TCLP regulatory level.

3.1.2 Lead

Bonded Warehouse

No samples collected in the Bonded Warehouse contained concentrations of total lead (Pb) above the screening criteria of 400 mg/kg as shown in Figure 4. Total lead concentrations of analyzed samples range from 6.1 mg/kg (BW-5) to 120 mg/kg (EMP-10).

Circular Saw Plating Area #2/Plating Area #3

One sample contained a concentration of total lead (Pb) above the screening criteria of 400 mg/kg as shown in Figure 6. The split soil samples collected from the 0.0 to 4.0 foot interval in boring P2-2 had total lead concentrations of 260 mg/kg and 420.0 mg/kg. Total lead concentrations of the remaining soil samples collected in the Circular Saw Plating Area #2/Plating Area #3 range from 6.7 mg/kg (CSP-6) to 270 mg/kg (CSP-4) as shown in Figure 6.

3.2 GROUNDWATER

Three ground water monitoring wells (W-1, W-2, W-3) were installed on site in 1990 in the upper most aquifer to total depths of 50, 55 and 55 feet bgs, respectively (Figure 2). The aquifer consists of sands and gravel with measured depth to water ranging from 42 to 45 feet bgs. The monitoring wells have been sampled five times since installation including October 1990, November 1990, June 1996, June 1997 and May 1999.

The City of Louisville installed a monitoring well (MW-4) directly across the street from the 500 East Main Street site as part of the Louisville Slugger Field groundwater monitoring well network (Figure 9). The total depth of the well is 43 feet bgs and the typical depth to groundwater is approximately 41 feet bgs. Groundwater chemistry data for the well was available from the September 2001, December 2001 and March 2002 sampling events.

3.2.1 Volatile Organic Compounds

Four volatile organic compounds including 1,2-dichloroethene (ND to 0.021 mg/l) tetrachloroethene (ND to 0.034 mg/l), trichloroethene (0.062 to 0.548 mg/l) and 1,1,1-trichloroethane (ND to 0.140 mg/l) have been identified at the site as shown in Table 8. Tetrachloroethene (PCE) and trichloroethene (TCE) have been detected above their MCL of .005 mg/l and are the only volatile organic constituents of concern identified in groundwater. Over the sampling history of the Louisville Slugger Field monitoring well MW-4, no concentrations of VOCs have been detected.

3.2.2 Metals

Five metals including total arsenic (0.002 to 0.060 mg/l), total beryllium (ND to 0.02 mg/l), total cadmium (ND to 0.029 mg/l), total lead (ND to 0.046 mg/l) and total manganese (0.906 to 20.6 mg/l) have been identified at the site above the HHSL screening concentrations used during site assessment. The site assessment historical HHSL screening levels for these metals were .000038 mg/l (cancer end point), 0.000016 mg/l, 0.018 mg/l, 0.004 mg/l and 0.18 mg/l respectively. Arsenic, beryllium and manganese were not considered COCs by KDEP. Of these metals only total lead has repeatedly been detected above the historical HHSL of .004 mg/l and was the only inorganic COC identified in groundwater. A HHSL was not available for total chromium and total chromium was not identified as a COC. A summary of groundwater sampling results for total cadmium, total chromium, total nickel and total lead is presented in Table 9.

4.0 ENVIRONMENTAL FATE OF CONSTITUENTS OF CONCERN

The constituents of concern at the 500 East Main Street site are comprised of hexavalent chromium and lead in soils and tetrachloroethene and trichloroethene in groundwater. A description of the fate of these constituents is presented in the following paragraphs.

4.1 HEXAVALENT CHROMIUM

Hexavalent chromium was identified above the screening levels in site soils associated with the Bonded Warehouse Nickel/Chrome and the Courtyard Plating Area #2. Hexavalent chromium above the screening levels included concentrations of 66/280 mg/kg, 96 mg/kg, 216/210 mg/kg and 570/140 mg/kg. TCLP extracts from two samples identified one sample in the Bonded Warehouse from boring B-5 (3.0 to 4.0 foot interval) with an extract concentration of 6.61 mg/l, which is over the 5.0 mg/l TCLP regulatory limit for chromium.

Toxic effects associated with chromium compounds are attributed to the more soluble, hexavalent form. Trivalent chromium is an essential nutrient. Once absorbed, the hexavalent chromium is likely to be transformed into the trivalent state. Over time hexavalent chromium would be transformed into trivalent chromium through reactions with organic material, ferrous iron, and sulfide.

4.2 LEAD

Total lead was identified above the screening level in one sample collected from the Circular Saw Plating Area #2/Plating Area #3 as discussed in Section 3.1.2. The detected concentration was 420 mg/kg.

The concentration of lead identified on site is below local naturally occurring lead levels associated with the New Albany Shale of 750 mg/kg to 1000 mg/kg. These naturally occurring concentrations are similar to the Region 9 Industrial PRG of 750 mg/kg.

As documented in the Louisville Slugger Field Management Plan, the U.S. E.P.A. has reported that most lead is strongly retained in soil and very little is transported to surface or groundwater. Lead is immobilized by ion exchange with hydrous oxides or clays, or by chelating with humic or fulvic acids in the soil. Although lead is soluble in certain compounds, lead in solution has a high affinity for soil particles and shows little tendency to migrate from the source. Lead salts in solution tend to precipitate out of solution and tend to be adsorbed on soil particles. Lead in its pure form is nearly insoluble and non-volatile.

4.3 VOLATILE ORGANIC COMPOUNDS

Tetrachloroethene and/or trichloroethene have been detected in the three on-site groundwater monitoring wells in each of the five sampling events over the last nine years. To date the data from MW-4 across the street to the north confirms these constituents have not migrated off-site in the shallow groundwater. This lack of detection may reflect the fact that the 500 East Main Street site is not active and the potential for release ended 16 years ago when operations ceased.

5.0 EXPOSURE PATHWAYS

5.1 SOIL

Exposure to hexavalent chromium and lead can, in general, occur through inhalation of dust, ingestion of soils, migration to and subsequent ingestion of surface water or groundwater, or dermal contact with soil, surface water or groundwater. Based on existing site conditions the most likely potential exposure pathways for soil on site include inhalation, ingestion by construction workers, or dermal contact during possible construction activities. Surface water for the site is currently managed via the city storm drainage system associated with area roads thus eliminating this exposure pathway.

5.2 GROUNDWATER

The Louisville Slugger Field site has been successfully developed directly north of the 500 East Main Street Property as shown in Figure 1. This property is located directly down gradient of the 500 East Main Street site. The property included the former Louisville Scrap Material and the former Jackson Street Manufactured Gas Plant sites. Over a ten-year period these sites have been characterized and site management plans prepared to address identified constituents of concern. Constituents of concern identified on the Louisville Scrap Material site included arsenic, lead, benzene, polynuclear aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCB) in soils and arsenic, lead, and benzene in groundwater. Constituents of concern identified on the former Jackson Street Manufactured Gas Plant site included PAH constituents and benzene in both soil and groundwater.

Development of these properties into the minor league baseball stadium led the Louisville Waterfront Development Corporation to combine the Jackson Street Site Management Plan with the Louisville Scrap Material Management Plan. The combined management plan, titled "*Louisville Slugger Field Management Plan*" dated July 1998 was approved by the Cabinet on August 12, 1998. The approved management plan, included hot spot soil removal, capping the remaining impacted soil, groundwater remediation, groundwater monitoring and institutional controls in the form of deed restrictions. Construction of the stadium was completed in the spring of 2000.

The groundwater exposure pathway for hexavalent chromium, lead, tetrachloroethylene and trichloroethene has effectively been eliminated at the 500 East Main Street site. Groundwater withdrawals will be prohibited from this site in the future and a similar restriction is in force on the Louisville Slugger Field site to the north. Any potential plume from this site would significantly attenuate as it would theoretically migrate to the north under the Louisville Slugger field site, the interstate system (the I-65, I-64 and I-71 junction) and the Louisville Waterfront property and finally discharge into the Ohio River. All of these properties are controlled by either City or State government and as such should not be available for groundwater development. This long-term governmental control of down-gradient property in the path of the groundwater migration effectively eliminates a potential groundwater exposure pathway.

6.0 MANAGEMENT PLAN

The proposed management is designed to address the extent of contamination observed at the facility. A summary of the management activities includes supplemental soil sampling, soil removal, groundwater monitoring well installation, groundwater sampling and analyses and institutional controls. The management strategy is presented in the following paragraphs. On-site field procedures are presented in Appendix A.

6.1 STRATEGY

The strategy applied in this management plan is based on the protection of human health and the environment. This management plan is being submitted under Kentucky Revised Statutes 224.01-400, Environmental Emergencies. For the purposes of this Management Plan, new screening criteria are used to evaluate soil cleanup goals and the extent of groundwater impact. Current KDEP policy references the federal MCLs for groundwater and the U.S. EPA Region 9 PRGs for soil, with the exception of lead for which Kentucky adheres to their own Action Levels. When initially screening soil impact, KDEP requires use of residential PRGs and their residential lead action level. However, the closure of the site is expected to require commitment to land use controls including restrictions against residential use. Accordingly, non-residential PRGs are presented on Table 7 along with the groundwater MCLs as the current criteria.

6.2 SOIL

Soil removal is targeted in two areas of the site including the Bonded Warehouse and the Circular Saw Plating Area/Plating Area #3. Supplemental soil sampling and analysis will be performed prior to soil removal. Discussions of the supplemental soil sampling and soil removal are presented in the following paragraphs.

6.2.1 Supplemental Soil Sampling

Supplemental soil sampling and analysis will be conducted in the Bonded Warehouse and the East Shop. In the Bonded Warehouse the supplemental soil sampling will be located adjacent to the former electroplating wastewater junction box, which was used to collect untreated electroplating wastewater (BW-6). A tentative location for this soil boring is shown in Figure 2. A skid rig is proposed for this soil boring which is targeted to be extended eight-feet below the floor surface. Soil samples will be collected at 2.0 foot intervals and will be screened for volatiles utilizing a flame ionization detector (FID) to the total depth explored. Soil samples for analysis will be collected from the 2.0 to 4.0 and 6.0 to 8.0 foot intervals below floor surface (bfs). Analyses for these soil samples will include total and hexavalent chromium and total lead.

In the East Shop the supplemental soil sampling will be located adjacent to the former pit located in the north end of the building (ES-4). A tentative location for this soil boring is shown in Figure 2. A skid rig is proposed for this soil boring which is targeted to be extended eight-feet below the floor surface. Soil samples will be collected at 2.0 foot intervals and will be screened for volatiles utilizing a flame ionization detector (FID) to the total depth explored. Soil samples

for analysis will be collected from the 2.0 to 4.0 and 6.0 to 8.0 foot intervals bfs. Analyses for these soil samples will include total and hexavalent chromium and total lead.

6.2.2 Soil Removal - Bonded Warehouse

Hexavalent chromium and total lead levels will be managed through soil removal to below the screening criteria on Table 7. Based on existing data, remediation in the Bonded Warehouse-Ni/Cr Plating Area will include soil removal in the area of borings EMP-8, EMP-9 and BW-5 as shown in Figure 7. Unless not feasible based on the close proximity of the facilities' structural wall, the soils containing hexavalent chromium above the PRG, will be removed to a targeted depth of 6 feet below the floor surface. Based on our current understanding it is anticipated that approximately 50 cubic yards of soil will be removed by a licensed contractor.

The soils targeted for disposal will be analyzed for chromium characteristic waste utilizing the TCLP. Soils that pass TCLP characteristic analyses will be disposed as a special waste in a secure landfill. Soil that fails TCLP analyses will be manifested offsite as a hazardous waste utilizing the applicable waste code(s).

After the excavation has been completed, confirmatory samples will be collected from the excavation sidewalls and floor. A total of eight confirmation samples will be collected from the former plating area excavation, two each from the north, south and excavation floor and one each from the east and west walls. The samples with be analyzed for total and hexavalent chromium. Confirmation samples will be collected from the 0 to .5 foot depth interval. Procedures utilized for confirmation sample collection and proposed sample locations are presented in Appendix A.

The concrete floor will be replaced after receipt of confirmation analytical results; effectively capping the remaining soil. If confirmation sampling and analysis indicate the PRGs have been obtained, a no further action letter will be issued by KDEP.

Residual soil concentrations will require a deed restriction to be recorded for the property, which will require non-residential land use and that the concrete floor be maintained to prevent exposure to the existing soils. Prior to any construction activities, construction supervisors and workers will be advised of the contaminants and potential contaminants in soils at the site. A Site Health and Safety Plan consistent with Occupational Safety and Health Administration requirements (29 Code of Federal Regulations 1910.120) will be required before construction activities can begin.

6.2.3 Soil Removal - Circular Saw Plating Area /Plating Area #3

Hexavalent chromium and total lead levels will be managed through soil removal to below the screening criteria on Table 7. Based on existing data, remediation in the Circular Saw Plating Area/Plating Area #3 will include soil removal in the area of borings CSP-4 (based on a total chromium concentration of 11,000 mg/kg), CSP-5 (hexavalent Cr of 96 mg/kg), and PS2-2 (total lead 420 mg/kg) as shown in Figure 8. The targeted depth of removal will be 5 feet below ground surface (bgs). Based on our current understanding it is anticipated that approximately 75 cubic yards of soil will be removed by a licensed contractor.

The soils targeted for disposal will be analyzed for lead and chromium characteristic waste utilizing the TCLP. Soils that pass TCLP characteristic analyses will be disposed as a special waste in a secure landfill. Soil that fails TCLP analyses will be manifested offsite as a hazardous waste utilizing the applicable waste code(s).

After the excavation is completed, confirmatory samples will be collected from both excavation sidewalls and floor. A total of eight confirmation samples will be collected from the former Plating Area #2 excavation, two each from the east, west and the excavation floor and one each from the north and south walls. The confirmation samples with be analyzed for total and hexavalent chromium and total lead. A total of five confirmation samples will be collected from the former Circular Saw Plating Area excavation, one from each of the four sidewalls and one from the excavation floor. The confirmation samples will be analyzed for total and hexavalent chromium. The sidewall samples will be collected from the vertical midpoint of the sidewall while all the confirmation samples will be collected from the 0 to 0.5 foot depth interval. Procedures utilized for confirmation sample collection and proposed sample locations are presented in Appendix A. If confirmation sampling and analysis indicate the PRGs have been obtained, a no further action letter will be issued by KDEP.

The courtyard area will be restored to grade with structural fill, paved with asphalt after receipt of confirmation analytical results; effectively capping the remaining soil.

Residual soil concentrations will require a deed restriction to be recorded for the property, which will require non-residential land use and that the asphalt pavement be maintained to prevent exposure to the existing soils in the courtyard area and that building floors be maintained in the Bonded Warehouse. Prior to any construction activities, construction supervisors and workers will be advised of the contaminants and potential contaminants in soils at the site. A Site Health and Safety Plan consistent with Occupational Safety and Health Administration requirements (29 Code of Federal Regulations 1910.120) will be required before construction activities can begin.

6.3 GROUNDWATER

A groundwater monitoring well (MW-4D) will be installed across Main Street from the 500 East Main Street property in the vicinity of the shallow Louisville Slugger Field monitoring well MW-4. A tentative location for this well is shown in Figure 10. A ten-foot well screen will be located 60 to 70 feet bgs.

6.4 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater sampling and analysis will be performed on the 500 East Main Street monitoring well system. This sampling and analysis will include wells W-1, W-2, W-3 on the 500 East Main Street site, and MW-4 and MW-4D on the Louisville Slugger Field site. The groundwater sample from MW-4 will be obtained assuming permission can be obtained from the City of Louisville. Groundwater samples will be analyzed for total and hexavalent chromium, total lead and VOCs.

Should results of this groundwater sampling and analysis be consistent with previous sampling events in the on-site wells and concentrations detected in monitoring wells MW-4 and MW4D are below the site groundwater PRGs, a no further action letter will be issued by KDEP. If concentrations are identified above site PRGs in MW-4 and/or MW-4D the need for a groundwater monitoring program will be evaluated and if warranted proposed to KDEP.

6.5 LAND USE

Under the proposed management plan, deed restrictions recorded in Jefferson County, Kentucky would prohibit private or public groundwater wells on site except for monitoring wells registered with the Kentucky Division of Water.

Deed restrictions will be put in place to maintain the pavement and building over the non-attainment area and the site will be restricted to non-residential land use.

6.6 SUMMARY

In summary, soils impacted above the PRG will be removed from the site unless technically not feasible. Remaining soils will be managed with appropriate deed restrictions to avoid human exposure to contaminants.

Appropriate groundwater management at the site will be based on the results of the groundwater sampling and analysis. Should results of the groundwater sampling and analysis be consistent with previous sampling events in the on-site wells and concentrations detected in monitoring wells MW-4 and MW4D are below the site groundwater PRGs, a no further action letter will be issued by KDEP. If concentrations are identified above site PRGs in MW-4 and/or MW-4D the need for a groundwater monitoring program will be evaluated and if warranted proposed to KDEP.

As previously discussed the groundwater exposure pathway for the site has effectively been eliminated. There are no existing or foreseeable groundwater users in the vicinity of the site as the down-gradient properties are owned and controlled by either City or State government.

In summary, this Management Plan provides a remedy, which is in the public interest and satisfies the intent of KRS 224.01-400 where the release is managed in a manner that controls and minimizes potential harmful effects of the release and protects human health, safety and the environment.

7.0 SCHEDULE

Implementation of this Management Plan will begin within four weeks of approval by KDEP. The additional assessment activities including soil sampling (BW-6 and ES-4) and monitoring well installation and groundwater sampling and analysis will be conducted within two weeks of receipt of an access agreement with the City of Louisville. It is anticipated these activities will require six weeks concluding with a brief letter report summarizing results of the assessment. Modification to this Management Plan will be proposed if warranted, based on the sampling results.

A final schedule for soil remediation activities will be submitted to KDEP upon completion of the additional assessment. This schedule will include bid package preparation and contractor selection, remediation implementation and oversight and reporting.

Tables

TABLE 1: AREA OF CONCERN SUMMARY

Area of Concern	Former Manufacturing Activity
Bonded Warehouse	Ni/Cr plating operation
Circular Saw Plating Area #2/ Plating Area #3	three plating operations
East Shop and Former AST Area	former AST location
Jackson Street Building	former degreasing pit
Courtyard Area and Background	former degreasing pit

TABLE 2: BONDED WAREHOUSE HISTORICAL SAMPLING AND ANALYSIS

Consultant	Number of Borings	Number of Samples	Sample Interval feet bgs	Analysis	Detections Over Screening Levels
ERCE	**2** (W-2,W-3)	**2**	3.5 to 10.5 C	13 metals, VOCs total CN	beryllium
Law Soil Gas	**2** (SP-9,SP-10)	**6**	4, 8, 12	VOCs	NA
KDEP	**5** (EMP6,EMP7, EMP8,EMP9 EMP10)	**5**		7 metals, VOCs	hex Cr
GESI	**5** (BW-1,BW-2, BW-3,BW-4 BW-5)	**10**	2 - 4, 6 - 8	4 metals, VOCs	hex Cr
ERCE Pit	NA	1 (P-1)	NA	13 metals, VOCs SVOCs, PCBs, Pesticides	NA
Totals	**14**	**23**			

Notes:
C = composite sample
VOCs = volatile organic compounds
total CN = total cyanide
hex Cr = hexavalent chromium
SVOCs = semi volatile organic compunds
PCBs = polychlorinated biphenyls
NA = not applicable

TABLE 3: CIRCULAR SAW, PLATING AREAS #2 AND #3 HISTORICAL SAMPLING AND ANALYSIS

Consultant	Number of Borings	Number of Samples	Sample Interval feet bgs	Analysis	Detections Over Screening Levels
ERCE	**1** (B-3)	**1**	3.0 to 10.5 C	13 metals, VOCs total CN	None
Law Soil Gas	**1** (SP-2)	**2**	2, 4	VOCs	NA
KDEP	**4** (CSP1,CSP3, CSP4, P2-2)	**4**		7 metals, VOCs	hex Cr, lead
GESI	**7** (CP3-1,CP3-2, CSP5, CSP6, CSP7, CSP8, ES-1	**14**	2 - 4, 6 - 8	4 metals, VOCs	hex Cr, lead
Totals	**13**	**21**			

Notes:
C = composite sample
VOCs = volatile organic compounds
total CN = total cyanide
hex Cr = hexavalent chromium
NA = not applicable

TABLE 4: EAST SHOP AND FORMER AST AREA HISTORICAL SAMPLING AND ANALYSIS

Consultant	Number of Borings	Number of Samples	Sample Interval feet bgs	Analysis	Detections Over Screening Levels
ERCE	**1** (B-1))	**1**	3.0 to 10.5 C	13 metals, VOCs total CN	None
Law Soil Gas	**1** (SP-8)	**4**	4, 8, 12, 14	VOCs	NA
Law	**1** (TB-2)	**2**	20 - 21.5 40 - 41.5	VOCs	None
GESI	**3** (ES-2,ES-3, FAST-1)	**6**	3 - 4, 7 - 8 6 -7, FAST	4 metals, VOCs	None
ERCE Pit	NA	2 (P-2, P-3)	NA	13 metals, VOCs SVOCs, PCBs, Pesticides	NA
Totals	**6**	**13**			

Notes:
C = composite sample
VOCs = volatile organic compounds
total CN = total cyanide
SVOCs = semi volatile organic compunds
PCBs = polychlorinated biphenyls
NA = not applicable

TABLE 5: JACKSON STREET BUILDING HISTORICAL SAMPLING AND ANALYSIS

Consultant	Number of Borings	Number of Samples	Sample Interval feet bgs	Analysis	Detections Over Screening Level
Law Soil Gas	**1** (SP-7)	**6**	4, 6, 8, 10, 12, 16	VOCs	NA
KDEP	**1** (DG-5)	**1**		VOCs	None
GESI	**2** (JSB-1,JSB-2)	**4**	3 - 4, 6 - 7	VOCs	None
ERCE Pit	NA	2 (P-2, B-6)	NA	13 metals, VOCs SVOCs, PCBs, Pesticides	NA
Totals	**4**	**11**			

Notes:
VOCs = volatile organic compounds
total CN = total cyanide
SVOCs = semi volatile organic compunds
PCBs = polychlorinated biphenyls
NA = not applicable

TABLE 6: COURTYARD AREA AND BACKGROUND HISTORICAL SAMPLING AND ANALYSIS

Consultant	Number of Borings	Number of Samples	Sample Interval feet bgs	Analysis	Detections Over Screening Levels
Courtyard Area					
ERCE	**3** (B-2,B-4,B-5)	**3**	3.0 to 10.5 C	13 metals, VOCs total CN	beryllium
Law Soil Gas	**5** (SP-1,SP-3, SP-4,SP-5, SP-6)	**11**	2,4,6,8,12,16	VOCs	NA
Totals	**8**	**14**			
Background					
ERCE	**1** (W-1)	**1**	3.0 to 10.5 C	13 metals, VOCs	NA
Law	**1** (TB-1)	**2**	15 - 16.6 40 - 41.5	VOCs	None
Totals	**2**	**3**			

Notes:
C = composite sample
VOCs = volatile organic compounds
total CN = total cyanide
NA = not applicable

TABLE 7: SITE PRELIMINARY REMEDIATION GOALS

Contaminant	Former Site Characterization Goals (HHSLs)		Region 9 Industrial Preliminary Remediation Goals (PRGs)	Maximum Contaminant Level (MCL)
	Soil	Water	Soil	Groundwater
	mg/kg	mg/L	mg/kg	mg/L
total chromium	na	na	450	0.1
hexavalent chromium	30	0.180	64	0.1
lead	20	0.004	400*	0.015
nickel, soluable salts	1500	0.730	20,000	0.1
TCE	7.1	0.016	0.11	0.005
PCE	7	0.011	3.4	0.005

Notes:

mg/kg = milligram per kilogram
mg/L = milli gram per liter
na = not available
TCE = trichloroethene
PCE = tetrachloroethene

* = Industrial PRG of 400 mg/kg based upon KDEP's Voluntary Environmental Remediation Program (VERP)

TABLE 8: GROUNDWATER ANALYTICAL RESULTS SUMMARY - VOLATILE ORGANIC COMPOUNDS

	MCL	W-1					W-2					W-3				
Sample Date		**10-90**	**11-90**	**6-96**	**6-97**	**5-99**	**10-90**	**11-90**	**6-96**	**6-97**	**5-99**	**10-90**	**11-90**	**6-96**	**6-97**	**5-99**
1,2 di mg/l	0.07/0.1*	ND	ND	NA	NA	ND	ND	ND	NA	NA	0.021**	0.010	ND	NA	NA	ND
Perc mg/l	0.005	**0.010**	NA	ND	**0.007**	**0.004**	**0.032**	NA	**0.023**	**0.021**	**0.023**	**0.034**	**0.028**	ND	ND	**0.008**
Tce mg/l	0.005	**0.081**	**0.219**	**0.548**	**0.248**	**0.062**	**0.343**	**0.333**	**0.240**	**0.281**	**0.165**	**0.538**	**0.780**	**0.132**	**0.100**	**0.165**
1,1,1-tri mg/l	0.2	0.119	ND	0.140	0.056	0.013	0.033	ND	0.025	0.023	0.009	0.092	0.100	0.039	0.029	0.022

Note: All results are reported in parts per million (ppm)
VOC constituents reported only if detected in at least one sample
Constituents above MCLs are in bold
ND - Not Detected
* - MCLs are for cis and trans1,2-dichloroethene
** - Result is for cis-1,2-dichloroethene
MCL - Maximum Contaminant Level defined in the Safe Drinking Water Act

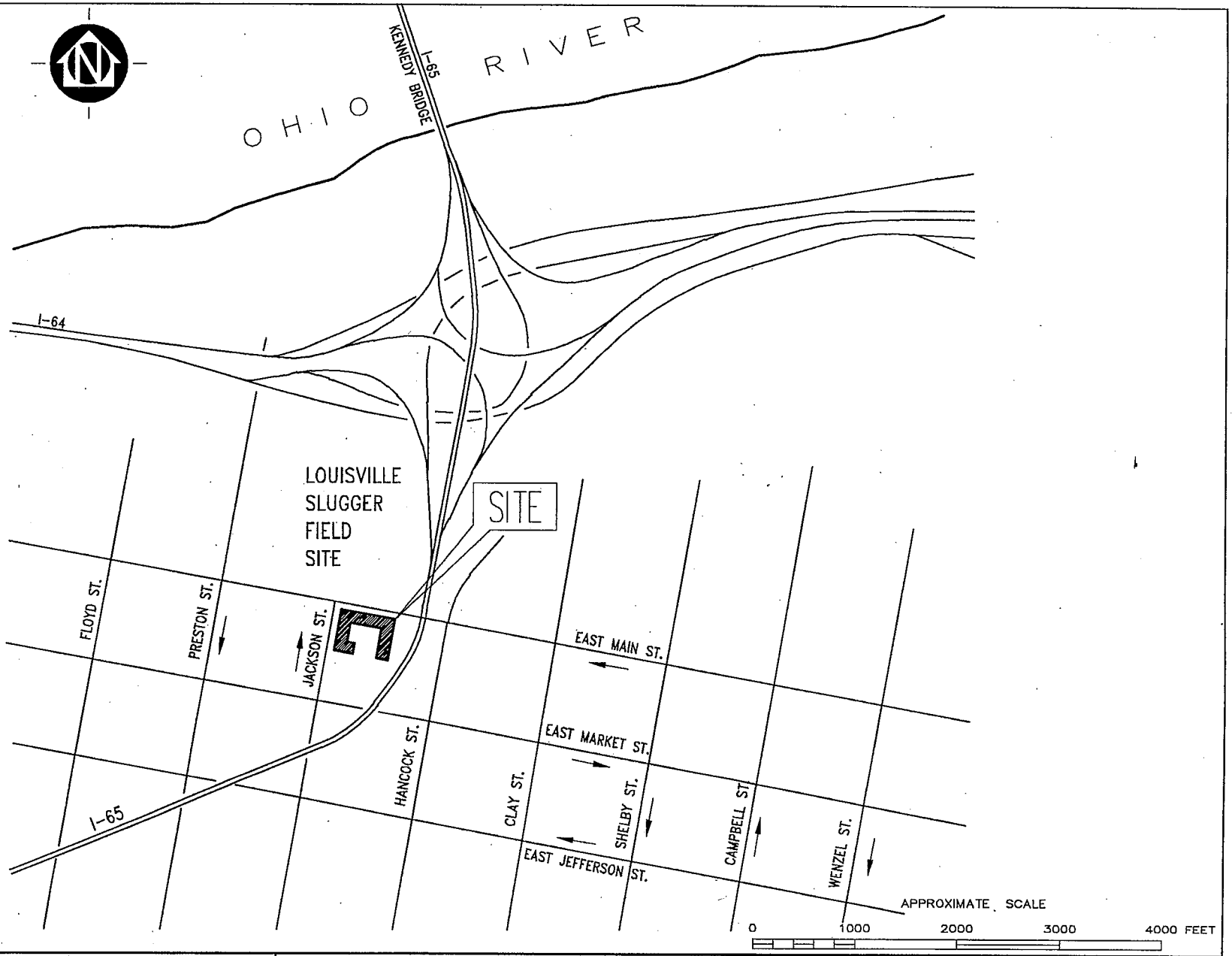
1,2 di - 1,2-dichloroethene - total
Perc - tetrachloroethene
Tce - trichloroethene
1,1,1-tri - 1,1,1-trichloroethane

TABLE 9: GROUNDWATER ANALYTICAL RESULTS SUMMARY - METALS

	MCL	W-1					W-2					W-3				
Sample Date		**10-90**	**11-90**	**6-96**	**6-97**	**5-99**	**10-90**	**11-90**	**6-96**	**6-97**	**5-99**	**10-90**	**11-90**	**6-96**	**6-97**	**5-99**
Total Cd mg/l	0.005	0.004	NA	ND	ND	ND	0.003	NA	ND	ND	ND	0.001	NA	**0.029**	ND	0.002
Total Cr mg/l	0.1	0.03	NA	0.005	0.030	0.008	0.07	NA	**0.744**	**0.390**	**0.119**	**0.12**	NA	**1.420**	**1.300**	**0.978**
Total Ni mg/l	NA	0.10	NA	NA	0.140	0.035	0.08	NA	NA	0.030	0.013	0.16	NA	NA	0.050	0.033
Total Pb mg/l	0.015	0.006	NA	0.009	**0.046**	0.010	ND	NA	**0.018**	0.011	0.004	ND	NA	**0.044**	**0.018**	0.009

Note: All results are reported in parts per million (ppm).
MCL- Maximum Contaminant Level Defined in the Safe Drinking Water Act.
Constituents above MCLs are in bold.
ND - Not Detected
NA - Not Available

Figures

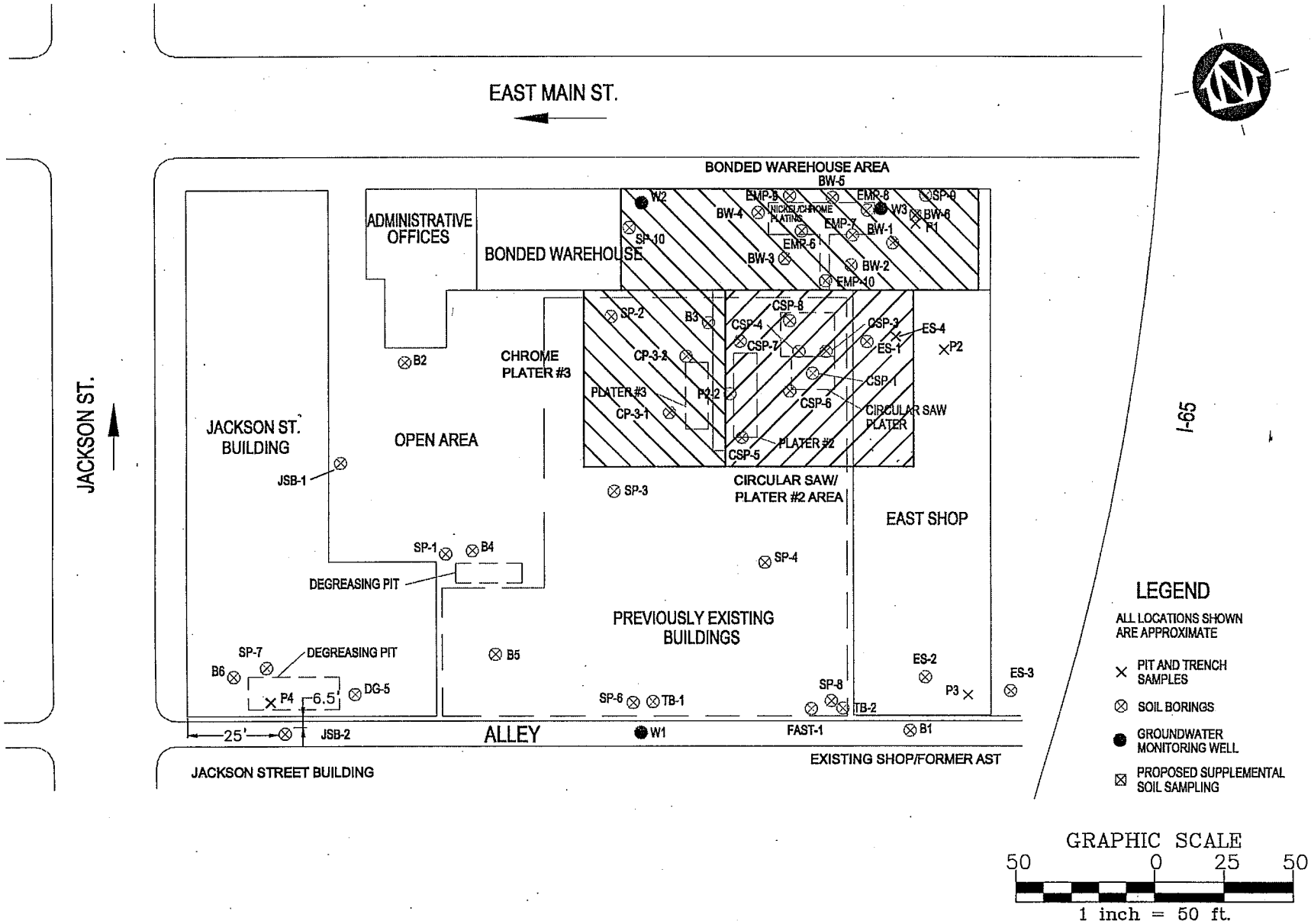


500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
1815 Brownsboro Road, Suite 200
Louisville, Kentucky 40206

SITE LOCATION PLAN

FIG. 1

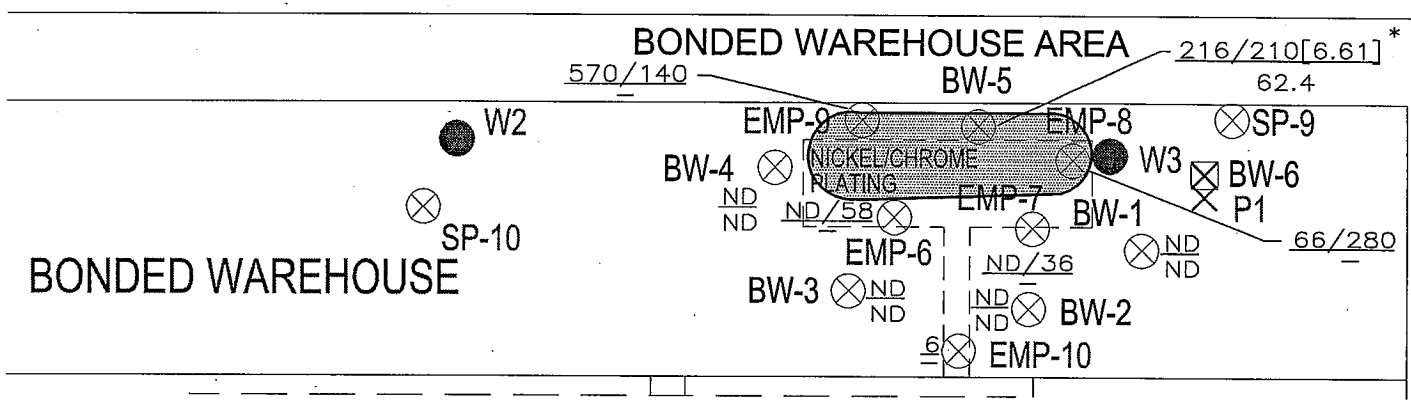


500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
1815 Brownsboro Road, Suite 200
Louisville, Kentucky 40206

SITE PLAN WITH SAMPLING LOCATIONS

FIG. 2



LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

× PIT AND TRENCH SAMPLES

⊗ SOIL BORINGS

● GROUNDWATER MONITORING WELL

PRG PRELIMINARY REMEDIATION GOAL

⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

HEXAVALENT CHROMIUM CONCENTRATION mg/kg

570/140 — UPPER SAMPLE/SPLIT 0–2 FT. or 2–4 FT.

LOWER SAMPLE 6–8 FT.

[6.61] TCLP CHROMIUM mg/l

* MODIFIED TCLP CHROMIUM 4.2 mg/l

Region 9 Industrial PRG = 64 mg/kg

Total Chromium Industrial PRG = 450 mg/kg

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

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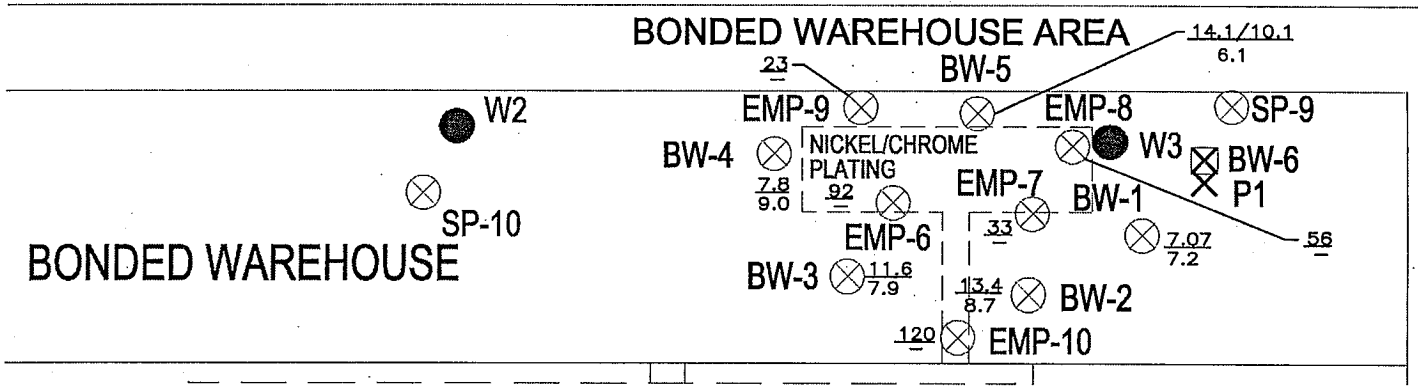
BONDED WAREHOUSE- Ni/Cr PLATING AREA- HEXAVALENT CHROMIUM

FIG. 3



LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

× PIT AND TRENCH SAMPLES

⊗ SOIL BORINGS

● GROUNDWATER MONITORING WELL

PRG PRELIMINARY REMEDIATION GOAL

⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

TOTAL LEAD CONCENTRATION mg/kg

14.1/10.1 — UPPER SAMPLE/SPLIT 2–4 FT. / LOWER SAMPLE 6–8 FT.

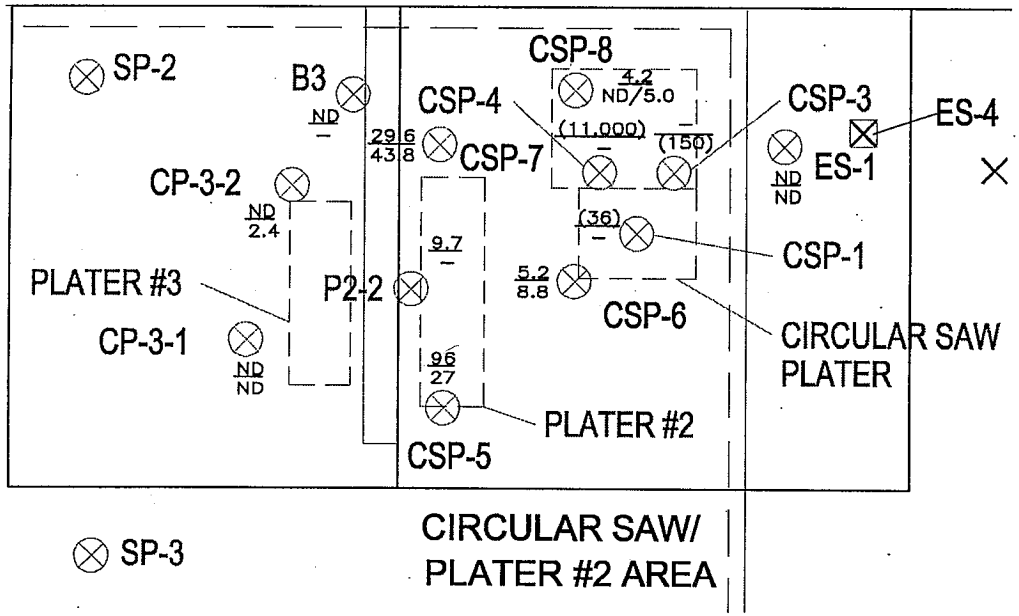
KDEP Industrial VERP PRG = 400 mg/kg

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

500 ASSOCIATES 500 EAST MAIN STREET LOUISVILLE, KENTUCKY	Tetra Tech EM Inc. 1815 Brownsboro Road, Suite 200 Louisville, Kentucky 40206	BONDED WAREHOUSE- Ni/Cr PLATING AREA- TOTAL LEAD FIG. 4



HEXAVALENT CHROMIUM CONCENTRATION mg/kg

30/20 — UPPER SAMPLE/SPLIT 0–4 FT.

— LOWER SAMPLE 6–8 FT.

( ) WHERE HEXAVALENT CHROMIUM ANALYSIS NOT AVAILABLE TOTAL Cr PRESENTED IN (mg/kg)

Region 9 Industrial PRG = 64 mg/kg

Total Chromium Industrial PRG = 450 mg/kg

LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

× PIT AND TRENCH SAMPLES

⊗ SOIL BORINGS

PRG PRELIMINARY REMEDIATION GOAL

⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
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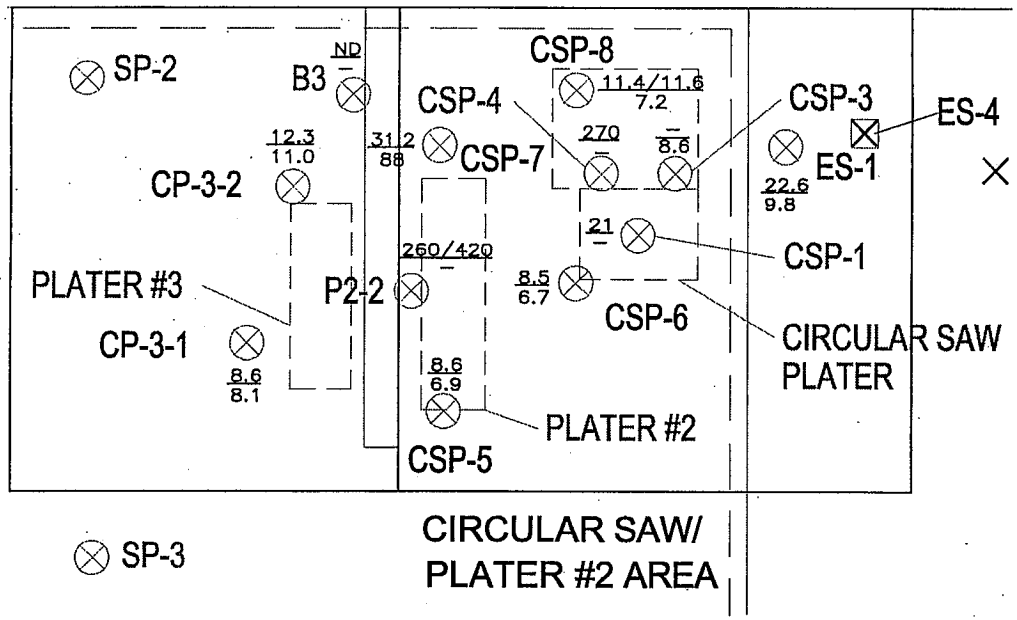
Louisville, Kentucky 40206

CIRCULAR SAW PLATING AREA/
PLATING AREA #3-
HEXAVALENT CHROMIUM

FIG. 5



TOTAL LEAD
CONCENTRATION mg/kg

11.4/11.6 — UPPER SAMPLE/SPLIT 0–4 FT.
7.2 — LOWER SAMPLE 6–8 FT.

KDEP Industrial VERP PRG = 400 mg/kg

LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

× PIT AND TRENCH SAMPLES

⊗ SOIL BORINGS

PRG PRELIMINARY REMEDIATION GOAL

⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

GRAPHIC SCALE

20 0 10 20

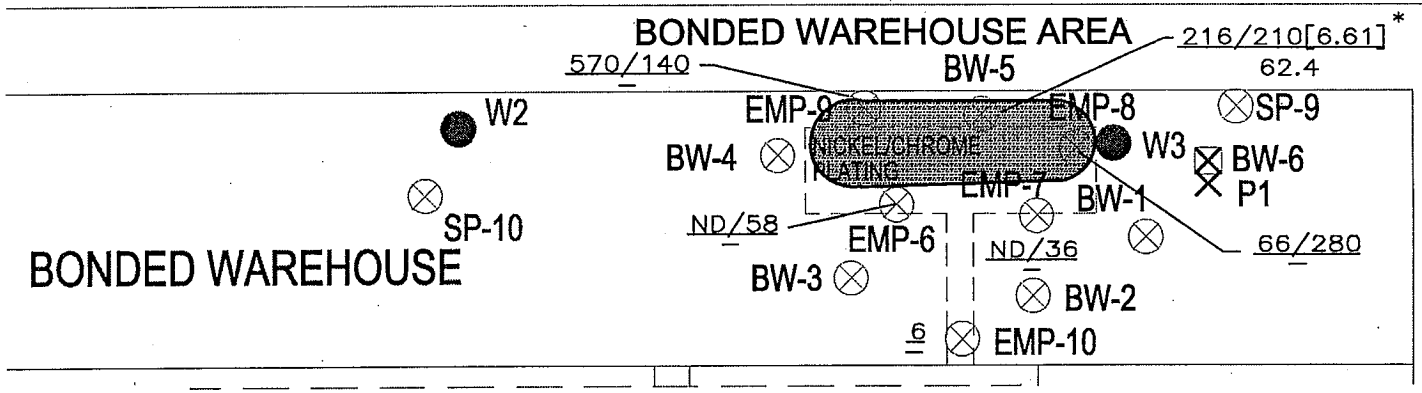
1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
1815 Brownsboro Road, Suite 200
Louisville, Kentucky 40206

CIRCULAR SAW PLATING AREA/
PLATING AREA #3-
TOTAL LEAD

FIG. 6



LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

- × PIT AND TRENCH SAMPLES
- ⊗ SOIL BORINGS
- ● GROUNDWATER MONITORING WELL

PRG PRELIMINARY REMEDIATION GOAL

- PROPOSED SOIL REMEDIATION AREA
- ⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

ND/58 HEX CHROMIUM — HEXAVALENT CHROMIUM CONCENTRATIONS OVER RESPECTIVE PRG, mg/kg

HEXAVALENT CHROMIUM REGION 9 Idustrial PRG = 64 mg/kg
TOTAL CHROMIUM REGION 9 Industrial PRG = 450 mg/kg

570/140 — UPPER SAMPLE/SPLIT 0–2 FT. or 2–4 FT.; LOWER SAMPLE 6–8 FT.

[6.61] TCLP CHROMIUM mg/l

* MODIFIED TCLP CHROMIUM 4.2 mg/l

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
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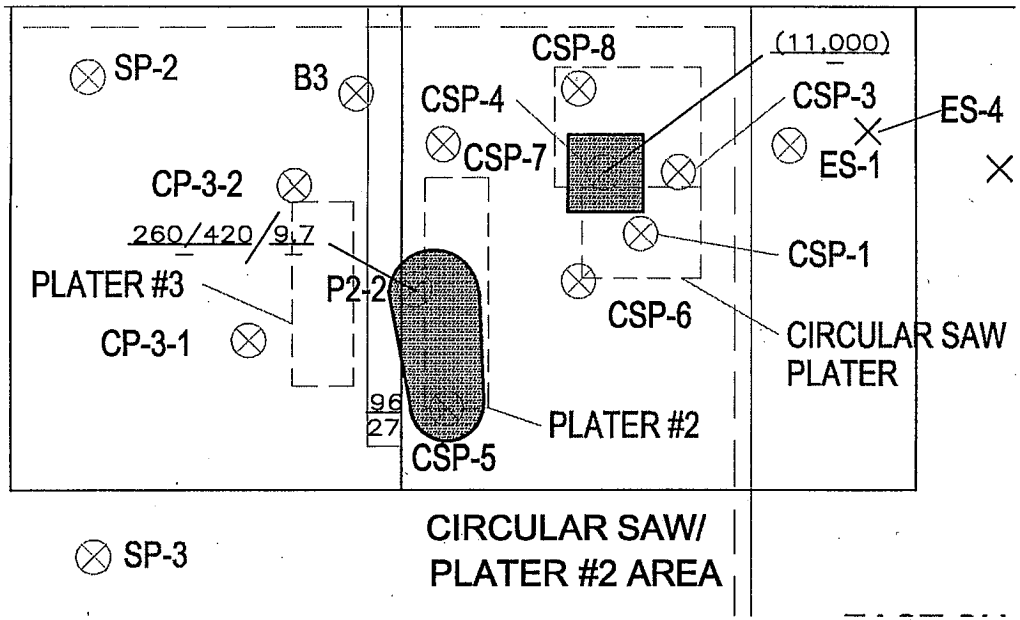
Louisville, Kentucky 40206

BONDED WAREHOUSE- Ni/Cr PLATING AREA- PROPOSED SOIL REMEDIATION

FIG. 7



LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

× PIT AND TRENCH SAMPLES

⊗ SOIL BORINGS

PROPOSED SOIL REMEDIATION AREA

⊠ PROPOSED SUPPLEMENTAL SOIL SAMPLING

30/20 — UPPER SAMPLE/SPLIT 0–4 FT.
— LOWER SAMPLE 6–8 FT.

( ) WHERE HEXAVALENT CHROMIUM ANALYSIS NOT AVAILABLE TOTAL Cr PRESENTED IN ( )

TOTAL 31.2 / 29.6 HEX
LEAD 88 / 43.8 CHROMIUM

HEXAVALENT CHROMIUM AND TOTAL LEAD CONCENTRATIONS OVER RESPECTIVE PRG, mg/kg

HEXAVALENT CHROMIUM REGION 9 Industrial PRG = 64 mg/kg
TOTAL CHROMIUM REGION 9 Industrial PRG = 450 mg/kg
KDEP Industrial VERP PRG = 400 mg/kg

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
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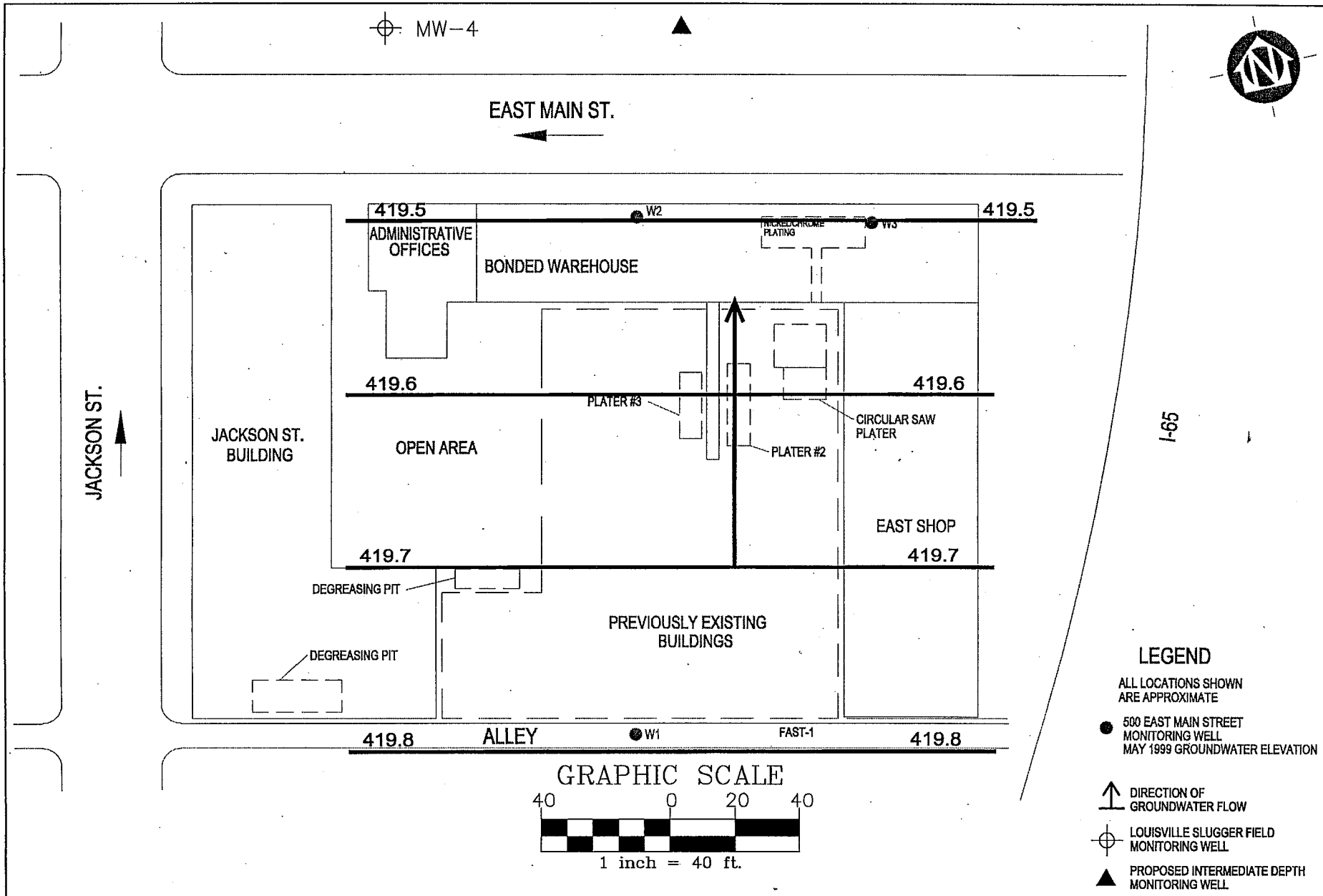
Louisville, Kentucky 40206

CIRCULAR SAW PLATING AREA/
PLATING AREA #3-
PROPOSED SOIL REMEDIATION

FIG. 8



500 ASSOCIATES
500 EAST MAIN STREET
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GROUNDWATER POTENTIOMETRIC SURFACE AND PROPOSED MONITORING WELL LOCATIONS

FIG. 9

Appendix A

Appendix A – On Site Field Procedures

The following on site procedures will be utilized when activities are being performed at the 500 East Main Street site.

Health and Safety Plan

A health and safety plan will be prepared; it will be based on site-specific hazards and work procedures. The health and safety plan will include a review of the constituents of concern, provisions for monitoring the breathing zone, work procedures, hazard assessments, and emergency procedures. The plan will be developed in accordance with Occupational Safety and Health Administration requirements (29 Code of Federal Regulations 1910.120) and will be reviewed and signed by all Tetra Tech personnel present at the site for the purpose of environmental investigation activities. The Tetra Tech EM Inc. health and safety plan will be shared with subcontractors utilized on site, however each contractor is responsible for their own safety and compliance with applicable health and safety regulations.

Site Management

The proposed open excavation areas are located in secured areas on site, either inside the building or within the courtyard. Upon completion of daily field activities, the site will be secured and the electronic security system activated. Where appropriate, safety fencing will be installed around the open excavations and equipment before leaving the work site. Signage ("Open Excavation – Authorized Personnel Only") will be posted on the perimeter of the safety fencing. All waste containers will be properly secured and labeled prior to leaving the site. The work site will be kept free of trash and debris. To prevent storm water infiltration while awaiting analytical results in the courtyard area, plastic sheeting will be draped in the open excavation and storm water controls will be installed around the excavation to minimize run-in.

Confirmation Soil Sampling

After the excavations are completed, confirmatory samples will be collected from the excavation sidewalls at the proposed locations identified on Figures A-1 and A-2. The sampling points will be located at the vertical midpoint of the sidewall. The confirmatory samples will be collected using the procedures outlined in the following paragraphs and will be submitted to a subcontract analytical laboratory. The confirmatory samples will be analyzed for the following metals by area using the identified EPA SW-846 Method:

Summary of Confirmatory Sampling

Sampling Area	**Constituents of Concern**		
	Total Cr	**Hex Cr**	**Total Pb**
Bonded Warehouse			
• Ni-Cr Plating Area	8	8	-
Courtyard			
• Plating Area #2	8	8	8
• Circular Saw Plating Area	5	5	-
Total Number of Samples	21	21	8
Industrial PRG, mg/kg	**450**	**64**	**400**

The excavation activities will be deemed complete if the metal concentrations do not exceed the corresponding industrial PRG. However, if the sample analytical results indicate the presence of a metal at a concentration exceeding the PRG, excavation actions will continue or an alternative course of action will be proposed to KDEP. Additional

confirmatory samples will be collected upon completion of additional excavation. If excavation efforts become prohibitive, KDEP will be contacted to discuss alternative remedial options.

Confirmatory Sampling Procedures

It is anticipated that stainless steel hand scoops or trowels will be used to collect the required samples using utilizing the following procedure:

- The sample location will be chosen at the vertical midpoint of the sidewall.
- A decontaminated trowel will be used to remove several inches of material to expose a fresh sidewall surface.
- The trowel will be decontaminated using the procedure for sample contacting equipment identified in the Equipment Decontamination Section of Appendix A prior to sample collection.
- Soil samples will be placed directly into the appropriate sample containers.
- Personnel will wear new, disposable nitrile gloves during sample transfer operations.
- Soil samples will be preserved in accordance with the appropriate analytical method.
- Immediately after filling, sample containers will be sealed, labeled, and placed in iced sample coolers.
- At the end of the sampling day, samples will be repacked into freshly iced sample coolers and shipped under chain-of-custody control to the applicable subcontract laboratory.

Quality Control Samples

Trip blanks will be used to determine if sample handling and shipping procedures have exposed the samples to potential contamination sources. Trip blanks will be prepared and provided by the contract laboratory prior to the sampling event and will be packaged for shipment with the other sample containers for laboratory analysis. Trip blanks will be provided for each shipment of samples collected and will not be opened by field personnel. Trip blanks will be analyzed for the constituents of concern.

Equipment blanks will be collected as a check for cross-contamination between samples due to incomplete decontamination procedures. Equipment blanks will be prepared by rinsing field-cleaned sample contacting equipment with organic, analyte-free water and collecting the rinse water in a sample container. One equipment blank will be prepared to

verify the adequacy of decontamination procedures for approximately every 20 samples collected for analysis. Equipment blanks will be analyzed for the constituents of concern.

Field blanks will be collected to evaluate the potential for contamination of a sample by site contaminants from a source not associated with the sample collected by adding organic, analyte-free water to a clean sample container. Field blanks will be collected in dusty environments and/or from areas where volatile organic contamination is present in the atmosphere and originating from a source other than the source being sampled. Approximately one such sample will be analyzed for every 20 samples collected for analysis. Field blanks will be analyzed for the constituents of concern.

Chain of Custody Procedures

All samples collected during the confirmatory sampling activities will be managed using chain-of-custody control to maintain sample security. A chain of custody containing the sample identification, number of containers, date and time sampled, preservatives used, analysis required, and relinquished or received information will be enclosed in each sample cooler shipped to the applicable subcontract laboratory. Sample coolers will be sealed with packing tape and custody seals (signed and dated) prior to shipment.

Equipment Decontamination and Waste Management

Equipment Decontamination

Sample contacting equipment, such as hand trowels, will be decontaminated in the field using the following procedure:

1. Clean with tap water and laboratory detergent using a brush if necessary to remove particulate matter and surface film.
2. Rinse thoroughly with tap water.
3. Rinse thoroughly with deionized water.

4. Rinse thoroughly with solvent.
5. Rinse thoroughly with organic, analyte-free water, and allow to air dry.

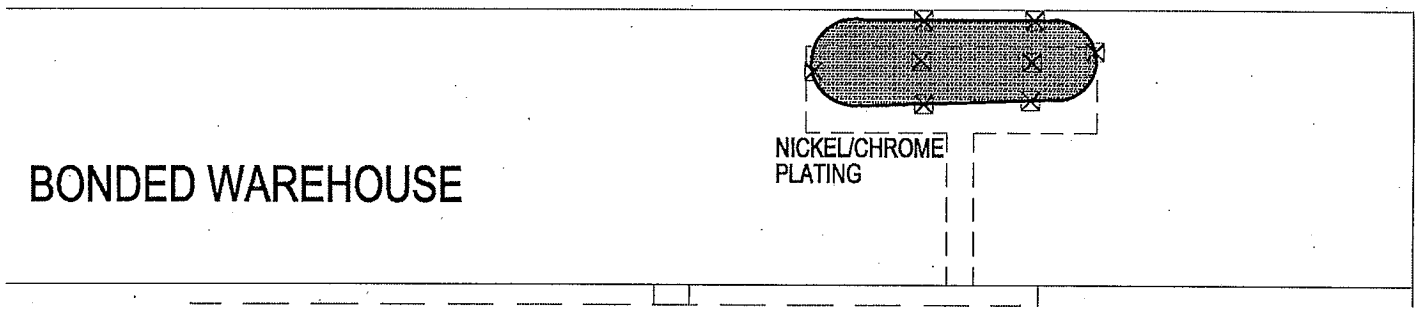
Decontamination procedures for non-sample contacting equipment (e.g. excavator bucket, hand tools, non-disposable personal protective equipment, etc.) will be decontaminated using either of the following procedures:

- Clean with tap water and laboratory detergent using a brush if necessary to remove particulate matter and surface film followed by a tap water rinse.
- High pressure/hot water wash.

Decontamination fluids will be managed as discussed in the following paragraph. Equipment will be cleaned prior to mobilization and again following excavation activities before demobilization. Decontamination fluids will be containerized.

Waste Management

Prior to soil removal activities, waste profiling and pre-approval will be obtained from the disposal facility. The excavated waste material will be direct loaded and transported to the disposal facility, which eliminates costs associated with roll-off containers. Drums containing decontamination fluids will be stored onsite pending waste profiling and approval for disposal. Upon receipt of waste approval, the decontamination wastes will be transported to an appropriate disposal facility.



HEXAVALENT CHROMIUM REGION 9 Industrial PRG = 64 mg/kg
TOTAL CHROMIUM REGION 9 Industrial PRG = 450 mg/kg
TOTAL LEAD KDEP Industrial VERP PRG = 400 mg/kg

LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE.

PRG PRELIMINARY REMEDIATION GOAL

PROPOSED SOIL REMEDIATION AREA

⊠ PROPOSED CONFIRMATION SAMPLE LOCATION

GRAPHIC SCALE

20 0 10 20

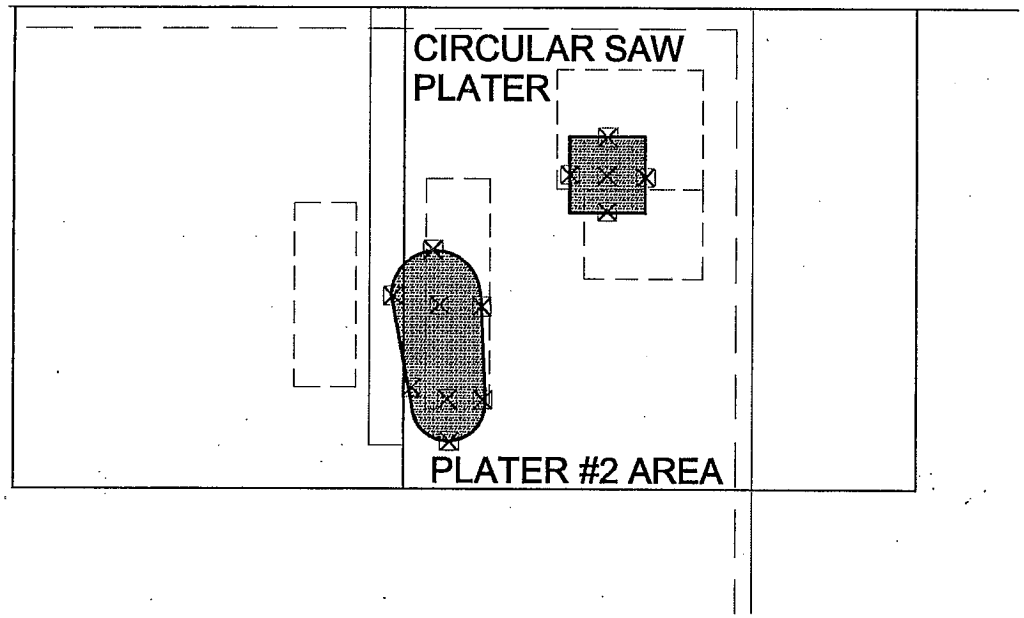
1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
1815 Brownsboro Road, Suite 200
Louisville, Kentucky 40206

BONDED WAREHOUSE- Ni/Cr PLATING AREA- PROPOSED CONFIRMATION SAMPLING LOCATIONS

A–1



HEXAVALENT CHROMIUM REGION 9 Industrial PRG = 64 mg/kg
TOTAL CHROMIUM REGION 9 Industrial PRG = 450 mg/kg
TOTAL LEAD KDEP Industrial VERP PRG = 400 mg/kg

LEGEND

ALL LOCATIONS SHOWN ARE APPROXIMATE

PRG PRELIMINARY REMEDIATION GOAL

⊠ PROPOSED CONFIRMATION SAMPLE LOCATION

GRAPHIC SCALE

20 0 10 20

1 inch = 20 ft.

500 ASSOCIATES
500 EAST MAIN STREET
LOUISVILLE, KENTUCKY

Tetra Tech EM Inc.
1815 Brownsboro Road, Suite 200
Louisville, Kentucky 40206

CIRCULAR SAW PLATING AREA/
PLATING AREA #2
PROPOSED CONFIRMATION SAMPLING
LOCATIONS

A–2