SITE RE-ASSESSMENT REPORT

Chicago Heights Blvd VOC Plume Site
St. Louis County, Missouri
MOSFN0703551

December 19, 2001

Missouri Department of Natural Resources
Air and Land Protection Division
Hazardous Waste Program

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DATE:	**December 19, 2001**
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SITE:	**Chicago Heights Blvd VOC Plume** **St. Louis County, Missouri**
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1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Missouri Department of Natural Resources (the department), through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), conducted a Site Re-assessment (SR) at the Chicago Heights Boulevard VOC Plume site. The Chicago Heights Boulevard VOC Plume site is the location of a groundwater plume of volatile organic compounds (VOCs).

The purpose of the SR was to collect additional information concerning conditions at the site to assess the threat posed to human health. In March 2000 a Combined Preliminary Assessment/Site Inspection (PA/SI) was completed for the site. Although the groundwater is not known to be used for household purposes, most basements in the site area have sump pumps which collect water that has drained from around the outside of the house and/or has seeped into the basements through cracks in the foundations. At the time of the PA/SI, drought conditions prevailed and the water table was lower than normal, preventing adequate in-door air and sump water sampling in residential basements. The SR was initiated to determine if residents in the path of the plume are being exposed to VOC vapors entering their basements. The scope of the SR investigation included reviewing file information, sampling environmental media, obtaining a Health Consultation on the sampling data and collecting non-sampling information. The SR was initiated on February 21, 2001 and included a public meeting on April 23, 2001 and a sampling event on April 24, 2001.

2.0 SITE DESCRIPTION

2.1 Location

The Chicago Heights Blvd VOC Plume site is located in an area between Meeks Boulevard and Chicago Heights Boulevard in an unincorporated segment of St. Louis County, Missouri near Overland. The site is located in the Southeast Quarter (SE 1/4) of the Northeast Quarter (NE 1/4) of Section 31, Township 46 North, Range 6 East in St. Louis County (See Figure 1 in Appendix A) (Reference 3). The geographic coordinates for the site are 38°41'5" N latitude and

-90°22'48" W longitude, calculated from the northeast corner of the intersection of Chicago Heights Boulevard and Elmridge Place. To reach the site from the junction of U.S. Highway 170 and Page Avenue in Overland, travel west on Page Avenue to Dielman, south on Dielman to Meeks Boulevard, west on Meeks Boulevard to Elmridge Place, and south on Elmridge Place to Chicago Heights Boulevard (Reference 4, p. 1).

The consistent pattern of climate in St. Louis County is cold winters and long, hot summers. The average temperature in winter is 33° Fahrenheit (F) with an average daily minimum temperature of 24° F. In summer, the average temperature is 77° F with an average daily maximum temperature of 87° F. The prevailing wind is from the south with an average speed of 9 miles per hour. The long-term average annual precipitation is approximately 35 to 36 inches. The 2-year, 24-hour rainfall for the area is approximately 2.51 inches (Reference 4, p. 2).

2.2 Site Description (Reference 4, p. 2)
The Chicago Heights Boulevard VOC Plume lies beneath a residential neighborhood that consists of both single family and multi-family dwellings. The surface of the site is relatively flat on the south and east, but gently sloping upward toward the northwest. Approximately 35 individual homes and 12 apartment buildings are located in the area of the groundwater plume. Residential yards are mostly grass-covered.

Many of the residences have basements with sump pumps. External pipes drain water from beneath the basement floor and from around the foundation walls to reduce the water pressure that causes leakage into the basements. The water drains into the sumps inside the basements and then is pumped out of the sumps. The water leaving the sumps is disposed of in either of two ways. Some systems pump the water out through a drainpipe that goes some distance from the house and empties into a gravel-filled pit in the subsurface, where it percolates back into the ground. Other systems pump the water out through a drainpipe that empties into the street at the curb, where the water eventually reaches the storm sewer (Reference 8).

The site area is approximately 15 acres in size. It is generally bounded on the north by Meeks Boulevard, on the east by Werremeyer Place, on the south by a railroad right-of-way, which lies south of Chicago Heights Boulevard, and on the west by a chain-link fence separating the neighborhood from an adjacent business and an open field. The neighborhood lies within a heavily urbanized area, surrounded by various industrial and commercial businesses. A large building is under construction north and northeast of the site, north of Meeks Boulevard. A metals fabrication facility is situated on the north side of Meeks Boulevard, north and northwest of the site. A group of rental storage units also lies northwest of the site. West of the site lies a taxi service and an open field. The south side of the site is adjacent to railroad tracks and commercial buildings facing Dielman Rock Island Drive, north of the River Des Peres. Additional residences and a neighborhood park lie east of the site area. Figure 2 in Appendix A is a site sketch. Photos of the site area can be found in Appendix E.

2.3 Site History and Previous Investigations

Chlorinated solvents were first discovered in the groundwater beneath the Chicago Heights Boulevard neighborhood in the summer of 1998, during an environmental investigation that was conducted for a nearby hazardous waste site. After additional sampling during the summer of 1999 failed to establish a clear migration route, the Chicago Heights Boulevard VOC Plume site was referred to the department's Hazardous Waste Program (HWP)/Superfund Section's Site Evaluation Unit (SEU) for further evaluation. Although the groundwater in the site area is not used as a drinking water source, there was concern that downgradient residences with basements could be subject to vapors from the groundwater that enters the basements or from vapor migration through walls (Reference 4, p. 2-3).

Two hazardous waste sites are known to exist in the immediate vicinity of the Chicago Heights Boulevard VOC Plume site: The PerkinElmer (formerly EG&G/Missouri Metals Shaping Company) site located north and northwest of the site at 9970 Page Boulevard in Overland, Missouri, and the All American Life Insurance Company site located south of the site at 9479 - 9495 Dielman Rock Island Drive in Olivette, Missouri. In addition, area residents have reported that at one time there was an old dump at the south end of Elmridge Place, near the River Des Peres and that an un-named company dumped material in this area (Reference 4, p. 3).

2.3.1 All American Life Insurance Company (Reference 4, p. 3-4)

The All American Life Insurance Company site is located south of the Chicago Heights Boulevard VOC Plume site, at 9479-9495 Dielman Rock Island Drive in Olivette, Missouri (see Figure 2 in Appendix A). The site is 1.75 acres in size and contains one single-story multi-tenant office/warehouse building that was constructed in 1985. Historically, the area was occupied by residences until it was cleared for commercial development in the 1960s. Apparently some type of small scale dumping occurred on the property in the mid-1960s.

Groundwater sampling conducted at this site in May 1996, following a Phase I Environmental Assessment, found petroleum related compounds and chlorinated VOCs present including 117 parts per billion (ppb or ug/L) trichloroetheylene(TCE) and 38.1 ppb tetrachloroetheylene (PCE). The All American Life Insurance Company entered the department's Hazardous Substance Environmental Remediation Program in October 1996 for the remediation of contaminants under the review and oversight of the department. This program is more commonly known as the Voluntary Cleanup Program (VCP). Numerous site characterization investigations were conducted at the site by Environmental Solutions. One of the conclusions in the Phase II Environmental Site Assessment report, dated March 18, 1997, was that the groundwater flow was southward, and that the PCE and TCE contamination was found only in the groundwater, not in the soil, and appeared to be migrating to the site. Petroleum related compounds and lead contamination in the soil and groundwater were also found at the site during these investigations. VCP personnel agreed with Environmental Solutions' conclusion that groundwater and soil data showed that the PCE, TCE, and cis-1,2-dichloroethylene (cis-1,2-DCE) contaminants in the groundwater were originating off-site at an upgradient source. However, investigation and

remediation efforts continued in an effort to address the other contamination on the site. The All American Life Insurance Company officially withdrew from the VCP in June 1999 without completing cleanup.

2.3.2 PerkinElmer (formerly EG&G/Missouri Metals Shaping Company) (EPA No. MOD006283808) (Reference 4, p. 4-5)
The PerkinElmer (former EG&G/Missouri Metals Shaping Company) site is a metals fabrication facility located north of the Chicago Heights Boulevard VOC Plume site, at 9970 Page Boulevard in Overland. The facility has been in operation since 1957 under various ownership manufacturing aircraft component parts. The site is approximately 3.5 acres in size. Metals and organics contamination was identified in the soil at the site during a Site Inspection in 1988. VOCs were first detected in the groundwater at the site during a property transfer audit at the time EG&G acquired the property in 1988. Comprehensive groundwater sampling conducted for EG&G by Groundwater Technology, Inc. in January 1991 reported TCE present at concentrations up to 32 parts per million (ppm or mg/L), PCE at concentrations up to 30 ppm, and total VOCs at concentrations up to 210 ppm in the groundwater beneath the site. The department proposed the site for the *Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri* in September 1991. EG&G appealed the proposal and subsequently negotiated a Consent Agreement between EG&G and the department for cleanup of the site. The Consent Agreement was finalized in 1994. Various remedial investigations and activities have taken place at the site since 1991; however, until 1998, off-site contamination had not been evaluated.

In January 1998 the department expressed concerns over the VOC contaminant levels and the potential for off-site migration. Since the groundwater in the area is not being used for drinking water, the primary concern was the possibility of contaminated groundwater causing vapor migration into nearby homes downgradient of the site. On behalf of EG&G, Burns and McDonnell Waste Consultants, Inc. (BMWCI) conducted off-site soil gas sampling in August 1998 and detected chlorinated solvents in the soil and groundwater downgradient of the EG&G facility, in the northern edge of the residential area. During that investigation the department collected groundwater samples from two of the probe holes and found chlorinated solvents in one of the samples at concentrations as high as 25 ppm TCE. In November 1998, BMWCI collected indoor air samples in the basements of four residences in the downgradient neighborhood. No VOCs were detected in any of the air samples. However, TCE was detected at an estimated 4.0 ppb in one water sample that was collected from a sump in one of the residences.

During July and August 1999, BMWCI conducted an Additional Off-Site Investigation to locate and transect the groundwater plume between the EG&G site and the southern boundary of the residential area. This investigation included both subsurface soil and groundwater sampling in the residential area that is now the Chicago Heights Blvd VOC Plume site. None of the soil samples from the soil borings contained the VOCs of concern. Piezometric data indicated that

the groundwater gradient is generally to the southeast from the EG&G site and across the residential area. Groundwater samples from four temporary piezometers located in the southern portion of the residential area contained TCE and PCE; however, the water samples from seven piezometers located farther north toward the EG&G site were non-detect for the EG&G site-related contaminants. Figures 1 through 5 in Appendix B show the piezometer locations and sample results. Tables 1 and 2 in Appendix B present piezometer data. BMWCI's Additional Off-Site Investigation Report submitted to EG&G concluded that the contaminants present in the southern portion of the residential area had not migrated from the EG&G site, but probably came from a separate source.

2.3.3 Combined Preliminary Assessment/Site Inspection (Reference 4)
On March 28, 2000 the department's HWP completed a Combined PA/SI report for the Chicago Heights Boulevard VOC Plume site. PA/SI sampling was designed to determine the location and the probable source of the VOC plume. Temporary monitoring wells were installed in 26 locations throughout the site. Total depths ranged from 17.0 feet to 29.2 feet. Water sample collection was complicated by drought conditions and several of the wells could not be sampled. PA/SI sampling documented the presence of a high concentration of TCE and PCE in wells on the north and low concentrations in wells on the south and in several wells in-between. Highest concentrations were 1,140 ppb TCE and 716 ppb PCE in wells adjacent to Meeks Boulevard on the north side of the site. A hydrogeologic review of the analytical data from the PA/SI sampling and previous investigations concluded that groundwater contamination from the EG&G site seems to be migrating in a relatively tight pattern off-site into the northern residential area, and that a significant preferential subsurface pathway exists that is influencing that migration. The hydrogeologic review also concluded that it was possible, although highly unlikely, that the contaminants in the southwest corner of the residential area could have originated from a source other than the EG&G site. Figure 1 in Appendix C shows temporary well locations and sample results. Tables 1 through 3in Appendix C present temporary well information, sample listing/descriptions and analytical results.

Groundwater Pathway
The threat to human health from drinking water appeared minimal; therefore, no drinking water wells were sampled during the PA/SI investigation. Although the perched groundwater in the surficial soils at the site is known to contain VOCs, the water is not used as a source of drinking water. The area's population relies on drinking water supplied by the St. Louis County Water Company, which obtains all its water from surface water intakes on the Missouri and the Meramec Rivers. Any private drinking water wells that may still be in use within four miles of the site appear to draw water from the Mississippian aquifer. There could be some recharge from the contaminated perched water to the Pennsylvanian aquifer; however, recharge from the Pennsylvanian aquifer to the Mississippian aquifer below is not expected. Thirty wells are on record within four miles of the site; however, it is unlikely that many of them are still in use. The nearest downgradient drinking water well on record is located approximately 1.7 miles south of the site.

Although the threat to human health from drinking water was minimal, the residences with basements in the path of the VOC plume are subject to a potential threat from vapors from the contaminated water that enters the basements or from vapor migration through walls. Air and water sampling within basements was recommended for homes in the path of the plume, where VOC concentrations were at levels of concern.

Surface Water Pathway
The threat to human health and the environment from run-off to surface water was minimal. The site consists of a contaminated groundwater plume that is migrating from off-site. The contaminants are not known to be present in the shallow surface soils. Although seepage of contaminated groundwater may discharge into the intermittent River des Peres south of the site, the probable point of entry to surface water is more than two miles downstream from the site.

Soil Exposure and Air Pathway
The risk from soil exposure and airborne soil particles at the site appeared negligible. There is no known source of contamination in the surface soils to which residents and the nearby population could be exposed. There is a potential threat to some residents from inhaling VOC vapors within residences, as discussed in the Groundwater Pathway section.

The PA/SI report concluded that no further investigation of the source of the plume was necessary; however, additional sampling of in-door air in residential basements was warranted. At the time of the PA/SI sampling event, drought conditions had caused basements to be dry and no water was present in basement sumps. The PA/SI report recommended that sampling take place during a time when wetter conditions prevail.

2.3.4 PerkinElmer Phase II Off-Site Monitoring Well Installation (Reference 5)
On February 26 through March 2, 2001, BMWCI oversaw the installation of four bedrock monitoring wells within the residential area, and collected water samples from those wells and from two previously installed monitoring wells. The well installation and sampling activities were conducted to determine the extent of contamination present in the shallow bedrock unit downgradient from the PerkinElmer site. Monitoring Well 19 (GMW-19) and GMW-20 had been installed in August 2000 and were completed within the siltstone unit located just below the overburden at the site, at a depth of approximately 34 feet. The four additional monitoring wells, GMW-21 through GMW-24, were completed at a similar depth. Groundwater samples were collected from all six wells on March 2, 2001. On March 6, 2001 water level measurements were taken from all six wells to determine the overall groundwater flow direction. Groundwater analytical results showed TCE present in all monitoring wells. PCE was present in all but one of the wells and cis-1,2-DCE was present in four of the wells. Well locations and TCE and PCE concentrations are illustrated in Figure 1 of Appendix D. Piezometric surface elevations indicated the general direction of groundwater flow for the aquifer within the siltstone unit is northwest to southeast. The overlying silty-clay formation has the same general groundwater flow direction (see Figures 2 and 3 in Appendix D).

3.0 SUMMARY OF ADDITIONAL WORK (Reference 6)

On April 24, 2001, as part of the SR, department personnel collected sump water and indoor air samples from residences in the northern part of the neighborhood, where VOC concentrations in the groundwater were known to be the highest and where access to sample could be obtained. Access to sample was not gained for the house closest to the PerkinElmer site. That house is located south of Meeks Boulevard and east of Elmridge Place, at the intersection of Meeks Blvd and Elmridge Pl.

3.1 Sump water sampling

Water samples were collected from the basement sumps of five residences. Sample locations are indicated on Figure 2 in Appendix A.

All water samples were submitted for volatile organics analysis. Instructions were relayed to analytical personnel that if a sample's total analyte results were 80% of twenty times the Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit, TCLP analysis would be performed on that sample. Analytical results can be found in Table 1 in Appendix A.

Sample analyses showed five VOCs present, three of which are related to the known VOC plume. TCE was present in Sample #0119859, from a residence at the northern edge of the site, at 1,140 ppb TCE and 1.14 ppm TCLP TCE. That sample also contained 73.2 ppb cis-1, 2-DCE and 1.5 ppb PCE. Sample #0119861, from a residence located just south of the previous sample, contained 66.5 ppb TCE and 83.7 ppb cis-1,2-DCE. Samples from two other homes, #'s 0119862, 0119863 and 0119864, contained PCE at concentrations of 3.7 ppb, 2.3 ppb and 2.1 ppb respectively. Two VOCs unrelated to the known plume were also detected in the sump water samples. Sample #0119863 contained 1.0 ppb 1-chlorobutane and Sample #0119860 contained 25.5 ppb chloroform.

3.2 Indoor Air Sampling

Evacuated 6-liter summa canisters equipped with 8-hour flow controllers were placed in the basements of five homes. Three of these homes had basement sumps that contained water, which was also sampled. The other two homes had no sumps. Sample locations are indicated on Figure 2 in Appendix A.

All air samples were submitted for total organics analysis. Analytical results can be found in Table 2 in Appendix A. Of the five VOCs detected in the sump water, only two were detected in the basement air samples, TCE and cis-1,2-DCE. Sample #0119865, collected from the residence at the northern edge of the site, contained 12 ppb TCE. Sample #0119867, collected from the residence just south of the previous sample, contained 12 ppb TCE and 8.6 ppb cis-1,2-DCE. In addition to the VOCs related to sump water contaminants, seventeen other VOCs were detected in the air samples, as shown in Table 2.

3.3 Sampling Conclusions

SR sampling documented the presence of three compounds related to the known VOC plume in residential sump water. TCE and cis-1,2-DCE were detected at high concentrations in the basement sump water of two residences at the northern edge of the site. Low concentrations of PCE were also present in one of those residences and in two additional residences. SR sampling also documented the presence of TCE and cis-1,2-DCE in the basement air in the same two residences that have those compounds present in the sump water. Other VOCs were also detected in the air samples but they do not appear to be related to the groundwater contamination.

3.4 Missouri Department of Health Review of Sampling Results

The department's HWP requested that the Missouri Department of Health (DOH) review the sampling data to determine if exposure to the contamination could result in adverse health effects (Reference 7). The Health Consultation report compared the water sample results to EPA's Maximum Contaminant Levels (MCLs) for drinking water. MCLs are regulatory standards for public drinking water and can be used as a screening tool when considering analytical results for water samples. The levels of TCE and cis-1,2-DCE found in samples from two of the homes exceed MCLs for these compounds (5 ppb and 70 ppb, respectively); however, the report states that since the water was from basement sumps, it is unreasonable to assume anyone would be drinking it (Reference 7, p. 2).

The Health Consultation report compared the air sample results to Environmental Media Evaluation Guides (EMEGs) for Chronic Exposure in Air. EMEGs were developed by the Agency for Toxic Substances and Disease Registry (ATSDR) and are evaluation guides that are specific to an environmental medium (air, water, soil), below which adverse health effects are unlikely. The TCE levels found in the air samples were determined to be below the EMEG for TCE in air and are therefore unlikely to cause adverse health effects. Since the ATSDR has not developed an EMEG for DCE in air, a Reference dose was used as a screening tool for that compound. A Reference dose is the daily dose of a chemical found in a specific medium (e.g., air, water, soil) below which levels are unlikely to cause adverse health effects. The calculated dose for DCE in the basement air was several orders of magnitude below the Reference dose; therefore, adverse health effects are not likely to occur from exposures to the DCE-contaminated basement air. None of the other VOCs detected in basement air samples were found to be above an EMEG or a Reference dose, and therefore are not at levels of health concern. Many of these other compounds detected in the basement air are constituents of common household and yard items such as gasoline, paints and paint thinners and other solvents (Reference 7, p. 2).

The report classified the Chicago Heights Blvd VOC Plume site as a No Apparent Public Health Hazard. This conclusion was based on the following: contaminants found in the sump water and basement air were not at levels expected to cause adverse health effects; finding and eliminating the sources of the non-site-related contaminants in the air may reduce exposures; and further

sampling may be necessary to determine if samples collected during the SR are representative of year-round conditions.

4.0 SUMMARY

The Chicago Heights Boulevard VOC Plume site is a groundwater plume of VOCs located beneath a residential neighborhood in an unincorporated segment of St. Louis County, near Overland, Missouri. The neighborhood is approximately 15 acres in size and consists of approximately 35 individual homes and 12 apartment buildings that lie within a heavily urbanized area, surrounded by various industrial and commercial businesses. Many of the residential foundations in the neighborhood are often in contact with perched water and have a basement sump, into which outside water is drained and pumped away. Chlorinated solvents were first discovered in the groundwater beneath the neighborhood in the summer of 1998, during an environmental investigation that was conducted for a nearby hazardous waste site. After additional sampling in 1999 failed to establish a clear migration route, the neighborhood was referred to the department's SEU for further evaluation. Although the groundwater in the area is not used as a drinking water source, there was concern that downgradient residences with basements could be subject to vapors from the groundwater that enters the basement sumps or from vapor migration through walls.

Two hazardous waste sites are known to exist in the immediate vicinity of the Chicago Heights Boulevard VOC Plume site: the All American Life Insurance Company located south of the site, and PerkinElmer (formerly EG&G/Missouri Metals Shaping Company) located north and northwest of the site. The All American Life Insurance Company was the location of small scale dumping during the mid-1960's. Remedial investigations and actions within the department's VCP took place between October 1996 and June 1999. Petroleum compounds and lead were found in the soil and groundwater. VOCs were also found in the groundwater; however, it was determined that the PCE, TCE, and cis-1,2-DCE were originating off-site from an upgradient source.

The PerkinElmer site is a metals fabrication facility that has been manufacturing aircraft component parts since 1957. VOCs were first documented in the soil and groundwater at the facility in 1988. In September 1991, the department proposed the site for the *Registry of Confirmed Abandoned or Uncontrolled hazardous Waste Disposal Sites in Missouri*. EG&G appealed and negotiated a *Registry* consent agreement that was finalized in 1994. Various remedial investigations and activities have taken place since 1991; however, it was not until 1998 that chlorinated solvents were first documented in soil and groundwater downgradient of the EG&G facility, in the northern edge of the residential area. Two different contractors for EG&G conducted several off-site investigations in the residential area during 1998 and 1999. During those investigations, VOCs were documented in the groundwater south of the EG&G site. A low level of TCE was detected in a water sample from the basement sump of one residence; however, no VOCs were found in air samples from four residential basements and the

VOC plume was not defined. The groundwater gradient was determined to be to the southeast from the EG&G facility and across the residential area. One report concluded that VOC contaminants in the southern portion of the residential area did not migrate from the EG&G site, but probably came from a separate source.

In 1999 and 2000, HWP/SEU conducted a Combined PA/SI for the Chicago Heights Boulevard VOC Plume site to determine the location and the probable source of the VOC plume and the threat to human health and the environment. Temporary monitoring wells were installed throughout the site. PA/SI sampling documented VOCs as high as 1,140 ppb TCE and 716 ppb PCE in wells at the northern edge of the site and much lower concentrations in wells farther south. A hydrogeologic review of the sampling data concluded that groundwater contamination from the EG&G (now PerkinElmer) site was migrating in a relatively tight pattern off-site into the northern residential area, and that a significant preferential subsurface pathway exists. The PA/SI found minimal threat to human health and the environment from the groundwater and surface water pathways. Also, the risk from exposure to soil and to airborne soil particles at the site was negligible. However, there was a potential threat to residents from vapors from contaminated water entering basement sumps and vapor migration through basement walls. In-door air sampling was recommended for homes in the path of the plume where VOC concentrations were at levels of concern.

An SR to conduct the additional sampling was initiated on February 21, 2001. SR sampling documented three compounds related to the known VOC plume in basement sump water samples and two of those compounds in basement air samples. TCE and cis-1,2-DCE were detected at high concentrations in the basement sump water of two residences at the northern edge of the site. Highest concentrations were 1,140 ppb TCE (1.14 ppm TCLP TCE) and 83.7 ppb cis-1,2-DCE. Low concentrations of PCE were also present in one of those residences and in two additional residences. SR sampling also documented the presence of TCE and cis-1,2-DCE in the basement air in the same two residences that have those compounds present in the sump water. Concentrations were 12 ppb TCE and 8.6 ppb cis-1,2-DCE. Other VOCs also detected in the basement air samples do not appear to be related to the groundwater contamination.

The DOH prepared a Health Consultation report based on the sampling data. That report concluded that the contaminants detected in the sump water and/or basement air that are believed to be attributable to the Chicago Heights Boulevard VOC Plume site are not at levels expected to cause adverse health effects. Although the levels of TCE and cis-1,2-DCE found in the sump water exceed their MCLs, it is unreasonable to assume anyone would be drinking sump water. The non-site-related VOC contaminants that were also detected in basement air are constituents of common household and yard items such as gasoline, paints and paint thinners and other solvents. They are also not at levels that are expected to cause adverse health effects.

5.0 CONCLUSIONS AND RECOMMENDATIONS

VOCs related to groundwater contamination are present in the sump water and in the indoor air in the basements of residences at the Chicago Heights Blvd VOC Plume site. The DOH has determined that the current levels of VOCs found in the air samples are not expected to cause adverse health effects. Based on current site conditions and available information, further CERCLA actions are not recommended at this time. However, the responsible party for the adjacent PerkinElmer site should make efforts to halt the continuing migration of VOCs from that site into the residential area. The PerkinElmer site is currently conducting remedial design for cleanup action pursuant to a *Registry* Consent Agreement with the department. During PerkinElmer's remedial activities, sump water and indoor air should be sampled in the residence at the intersection of Meeks Boulevard and Elmridge Place, where access was not gained during the SR. Since site conditions can change and concentrations may increase, continued monitoring of the indoor air is recommended at that residence and at the first two residences on the west side of Wishart Place, at the intersection of Meeks Boulevard and Wishart Place.

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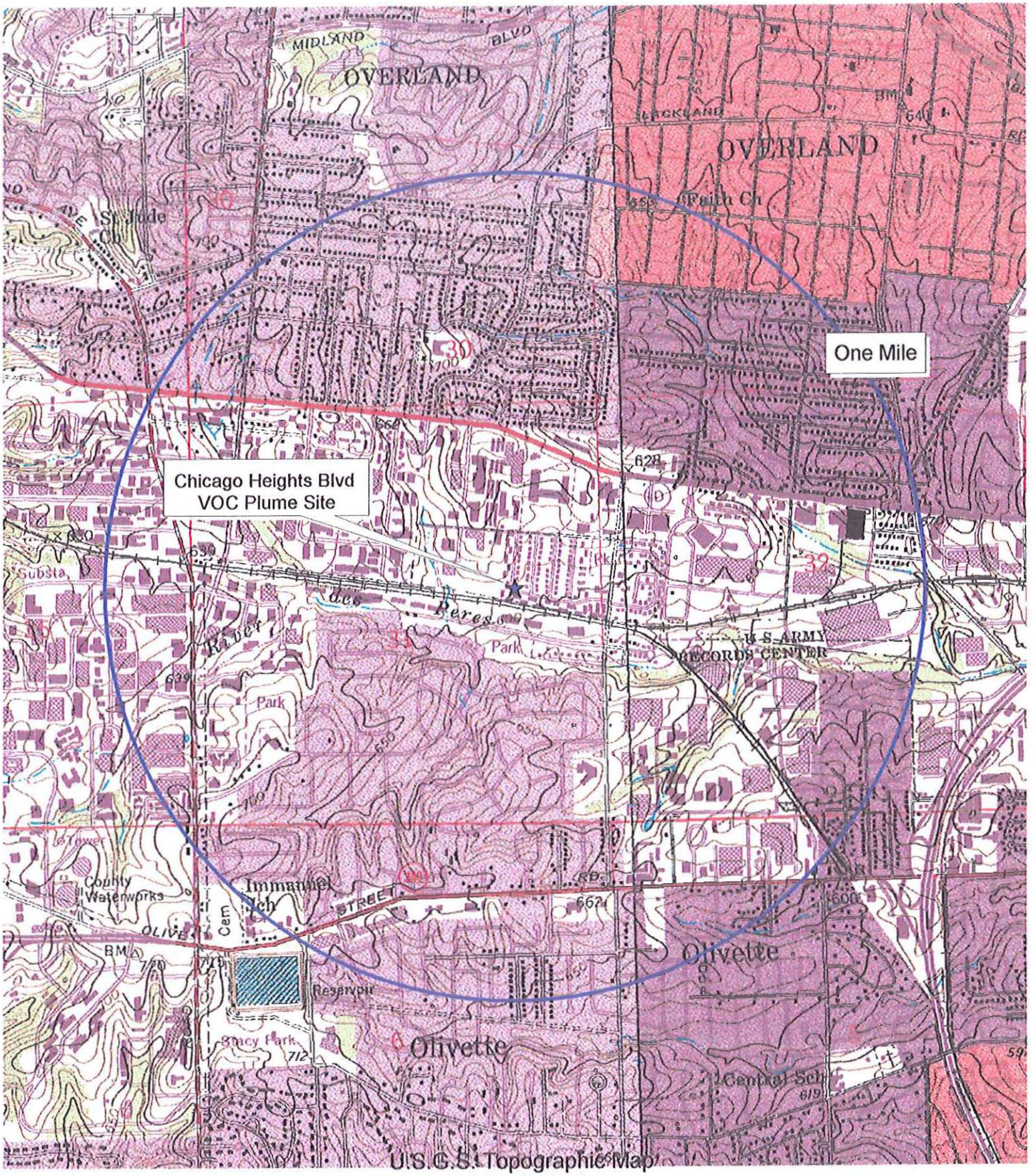
APPENDIX A

Figure 1. Site Location Map
Figure 2. Site Sketch / SR Sample Location Map
Figure 3. SR VOC Concentrations Map
Table 1. SR Sump Water Sample Results
Table 2. SR Indoor Air Sample Results

Figure 1
Site Location Map
Chicago Heights Blvd VOC Plume
St. Louis County, Missouri



U.S.G.S. Topographic Map
7.5 Minute Series
Creve Coeur and Clayton, Missouri □Quadrangles, 1993

Figure 2
Site Sketch / Sample Location Map
Chicago Heights Blvd VOC Plume SR
St. Louis County, Missouri
April 24, 2001

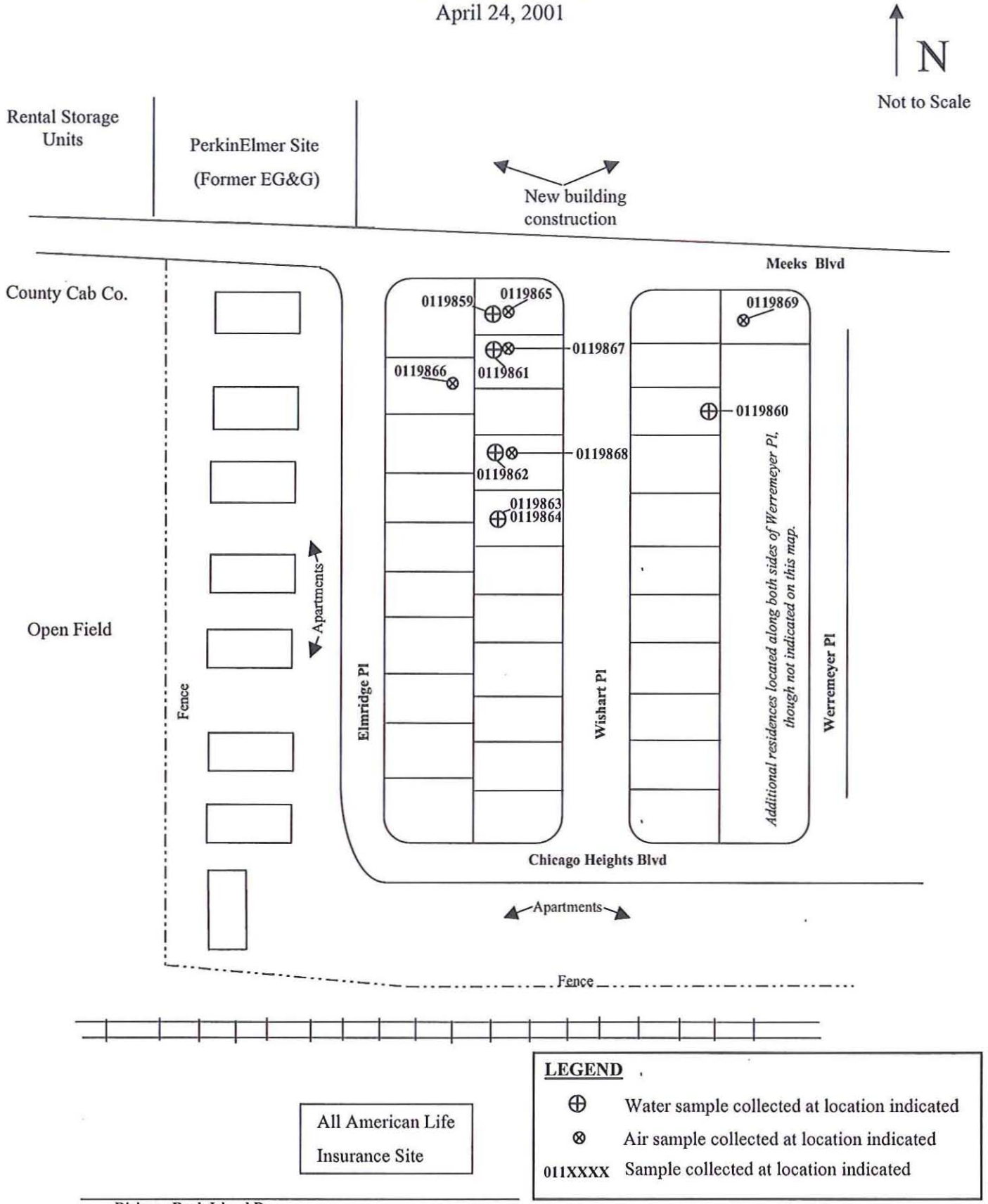


Figure 3
VOC Concentrations
Chicago Heights Blvd VOC Plume SR
St. Louis County, Missouri
April 24, 2001

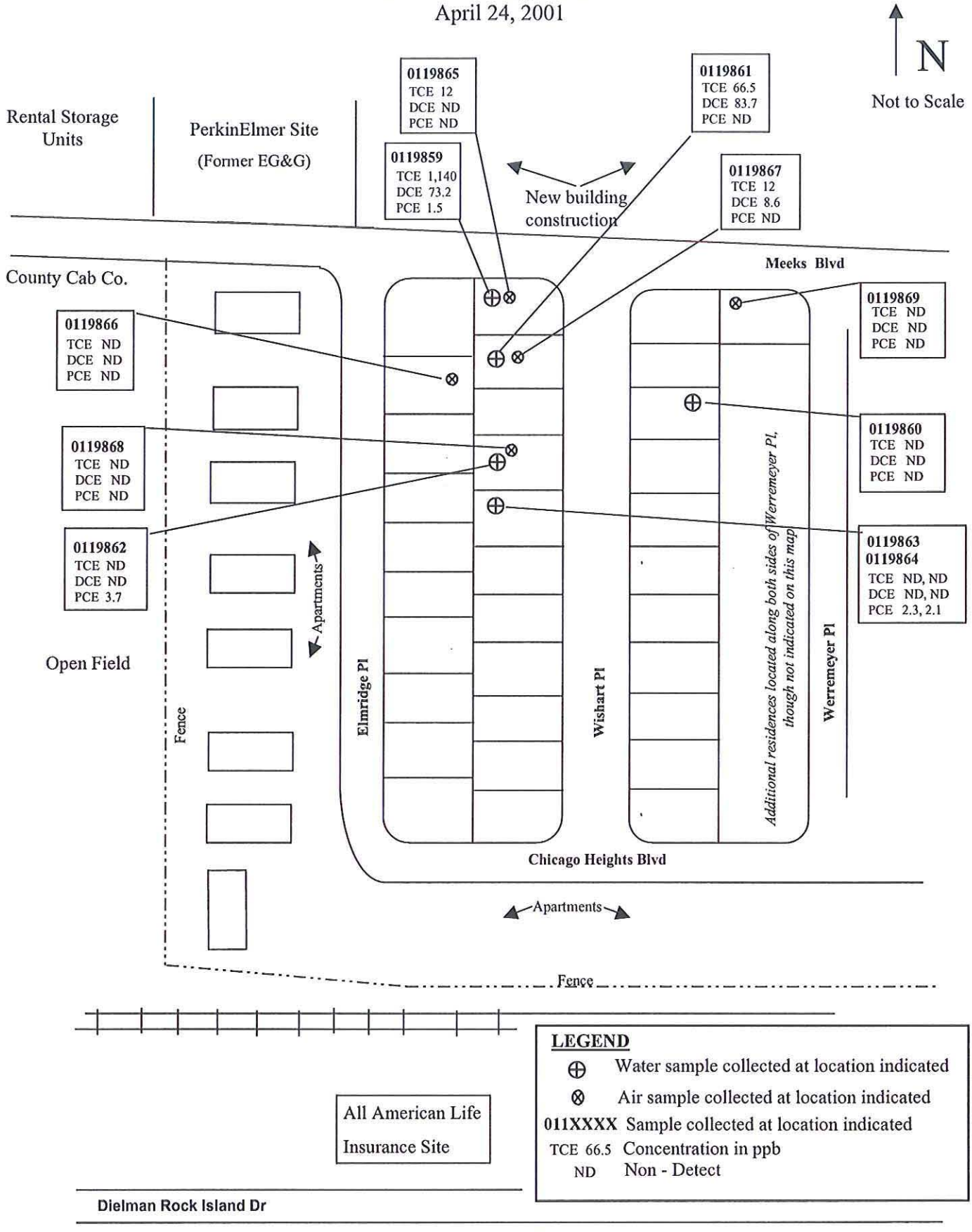


Table 1. Selected Analytical Results for Sump Water Samples
Chicago Heights Boulevard VOC Plume SR
April 24, 2001

Analyte	011 9859	011 9860	011 9861	011 9862	011 9863	011 9864	MCL
* Cis-1,2-Dichloroethene	**73.2**	<1.0	**83.7**	<1.0	<1.0	<1.0	70
Chloroform	<1.0	25.5	<1.0	<1.0	<1.0	<1.0	80
* Trichloroethene	**1,140**	<1.0	**66.5**	<1.0	<1.0	<1.0	5
* Trichloroethene (TCLP)	1.14 ppm	NA	NA	NA	NA	NA	NA
* Tetrachloroethene	1.5	<1.0	<1.0	3.7	2.3	2.1	5
1-Chlorobutane	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	2,400

- All values are in parts per billion (ppb or ug/L) unless otherwise indicated.
- * denotes analytes related to the known VOC plume.
- MCL = Maximum Contaminant Level; the MCL for drinking water is used as a basis for comparison, even though groundwater is not used for a drinking water supply at this site.
- NA = Not Analyzed, or when referring to benchmarks, Not Available.
- Bold values are those which exceed the MCL.

Table 2. Selected Analytical Results for In-door Air Samples
Chicago Heights Boulevard VOC Plume SR
April 24, 2001

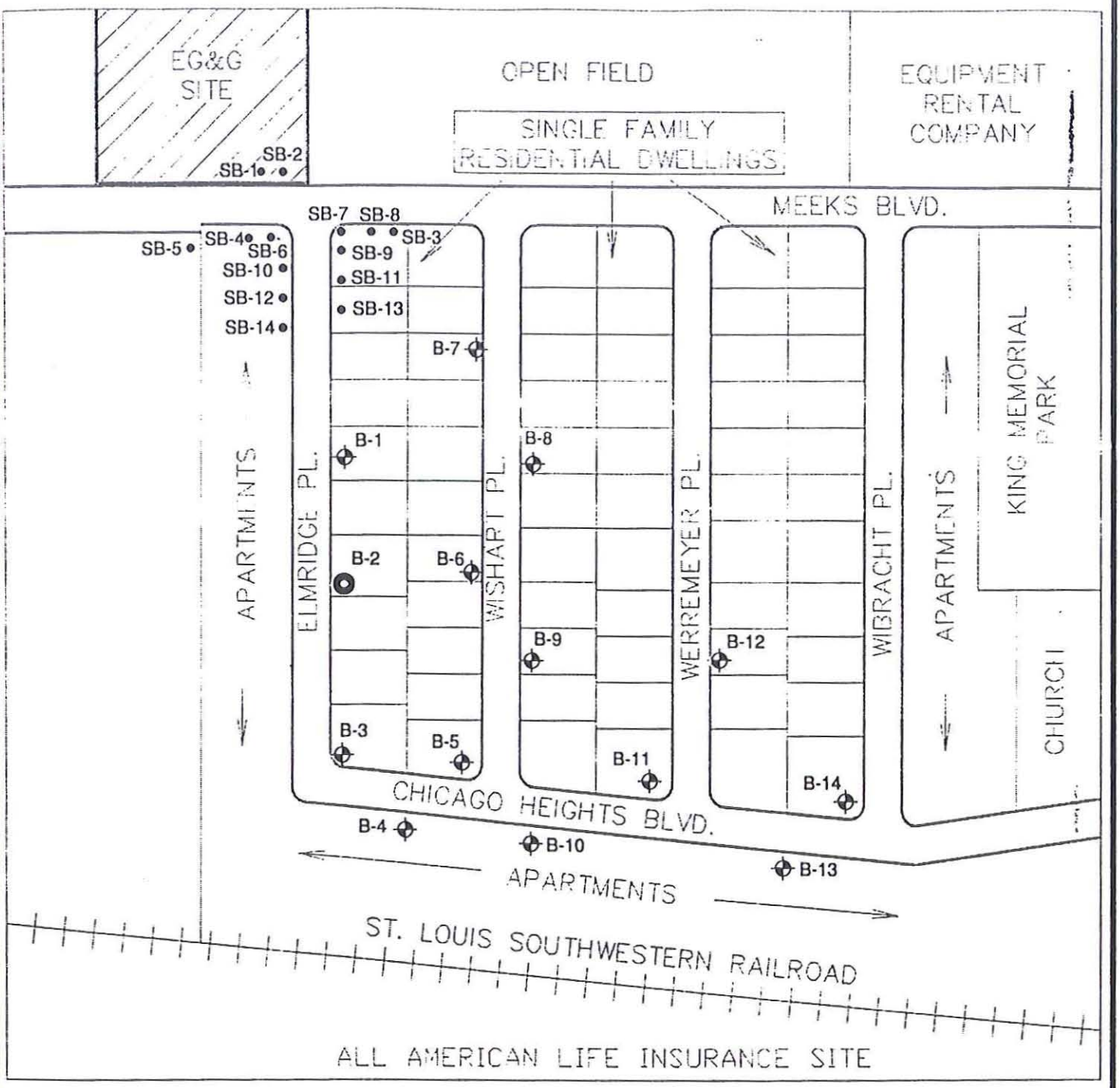
Analyte	0119865 ppb (v/ v)	0119866 ppb (v/ v)	011 9867 ppb (v/ v)	011 9868 ppb (v/ v)	011 9869 ppb (v/ v)	EMEG ppb
Trichlorofluoromethane	<1.5	<1.2	1.7	1.3	<1.2	NA
Acetone	8.1	<4.6	20	110	17	13,000
Methylene Chloride	<1.5	11	<1.2	<1.1	1.4	300
Hexane	<6.0	9.4	<4.6	9.2	<4.6	600
* Cis-1,2-Dichloroethene	<1.5	<1.2	8.6	<1.1	<1.2	NA
Benzene	2.4	2.6	<1.2	2.1	<1.2	50
Heptane	<6.0	<4.6	<4.6	5.0	<4.6	NA
* Trichloroethene	12	<1.2	12	<1.1	<1.2	100
Toluene	9.5	15	4.1	5.0	3.2	80
*Tetrachloroethene	<1.5	<1.2	<1.2	<1.1	<1.2	NA
Ethylbenzene	<1.5	2.3	<1.2	<1.1	<1.2	1,000
Total Xylenes (m, p, and o)	5.3	12.4	1.6	1.4	<1.2	100
1,2,4-Trimethylbenzene	<1.5	2.9	<1.2	<1.1	<1.2	NA
1,4-Dichlorobenzene	<1.5	<1.2	9.0	<1.1	<1.2	100
Isopropyl Alcohol	<6.0	89	35	380	<4.6	NA
Methyl Tertiary Butyl Ether	17	30	<4.6	<4.5	<4.6	700
Ethyl Acetate	<6.0	<4.6	16	5.5	<4.6	NA
Cyclohexane	<6.0	<4.6	<4.6	4.8	<4.6	NA
Ethanol	33	33	180	200	17	NA
4-Ethyltoluene	<6.0	2.7	<4.6	<4.5	<4.6	NA

- All values are in parts per billion (ppb) unless otherwise indicated.
- * denotes analytes related to the known VOC plume.
- EMEG = Environmental Media Evaluation Guide for Chronic Exposure in Air
- NA = Not Analyzed, or when referring to benchmarks, Not Available.
- Bold values are those which exceed the applicable benchmark.

APPENDIX B

PerkinElmer Site – Additional Off-Site Investigation, 1999

Figure 1. Piezometer Locations
Figure 2. Refusal Depth Contour Map
Figure 3. Groundwater Contour Map
Figure 4. TCE in Groundwater - August 1999
Figure 5. PCE in Groundwater - August 1999
Table 1. Summary of Depth to Refusal Data
Table 2. Summary of Water Level Data



LEGEND

B-1 — FINAL PIEZOMETER LOCATION

B-2 — FINAL BORING LOCATION (No Piezometer Installed)

SB-2 — PREVIOUS BORING LOCATION (August 1998)

NORTH

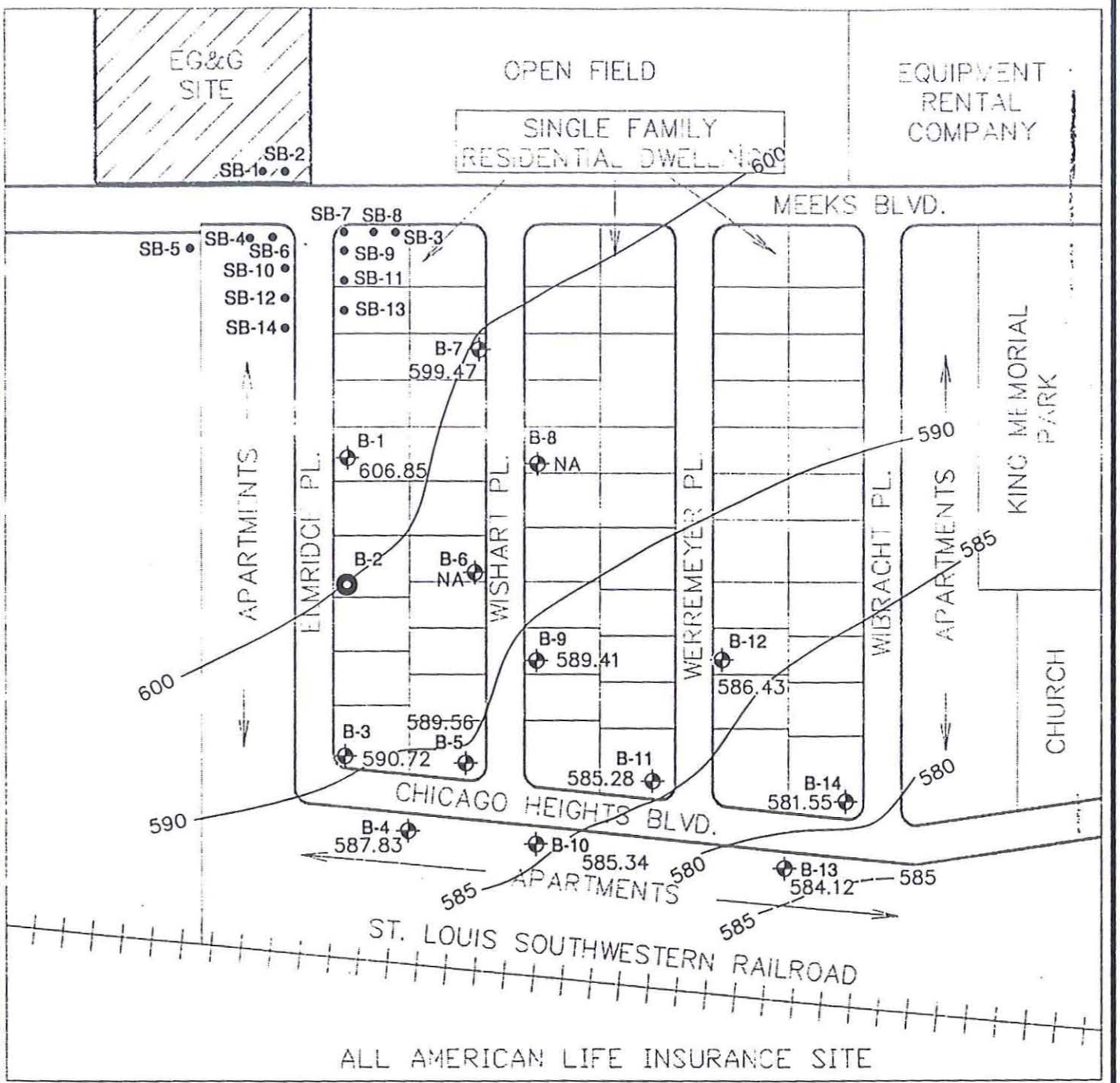
200 0 200 400

SCALE IN FEET

Burns & McDonnell Waste Consultants, Inc

Figure 1
ADDITIONAL OFF-SITE INVESTIGATION
EG&G MISSOURI METALS SITE
OVERLAND, MISSOURI

TITAN:91319\4006\CADD\EG&G.DWG



LEGEND

B-1 — FINAL PIEZOMETER LOCATION

606.85 — REFUSAL DEPTH ELEVATION (Feet Above Sea Level)

B-2 — FINAL BORING LOCATION (No Piezometer Installed)

SB-2 — PREVIOUS BORING LOCATION (August 1998)

600 — REFUSAL DEPTH CONTOUR

NORTH

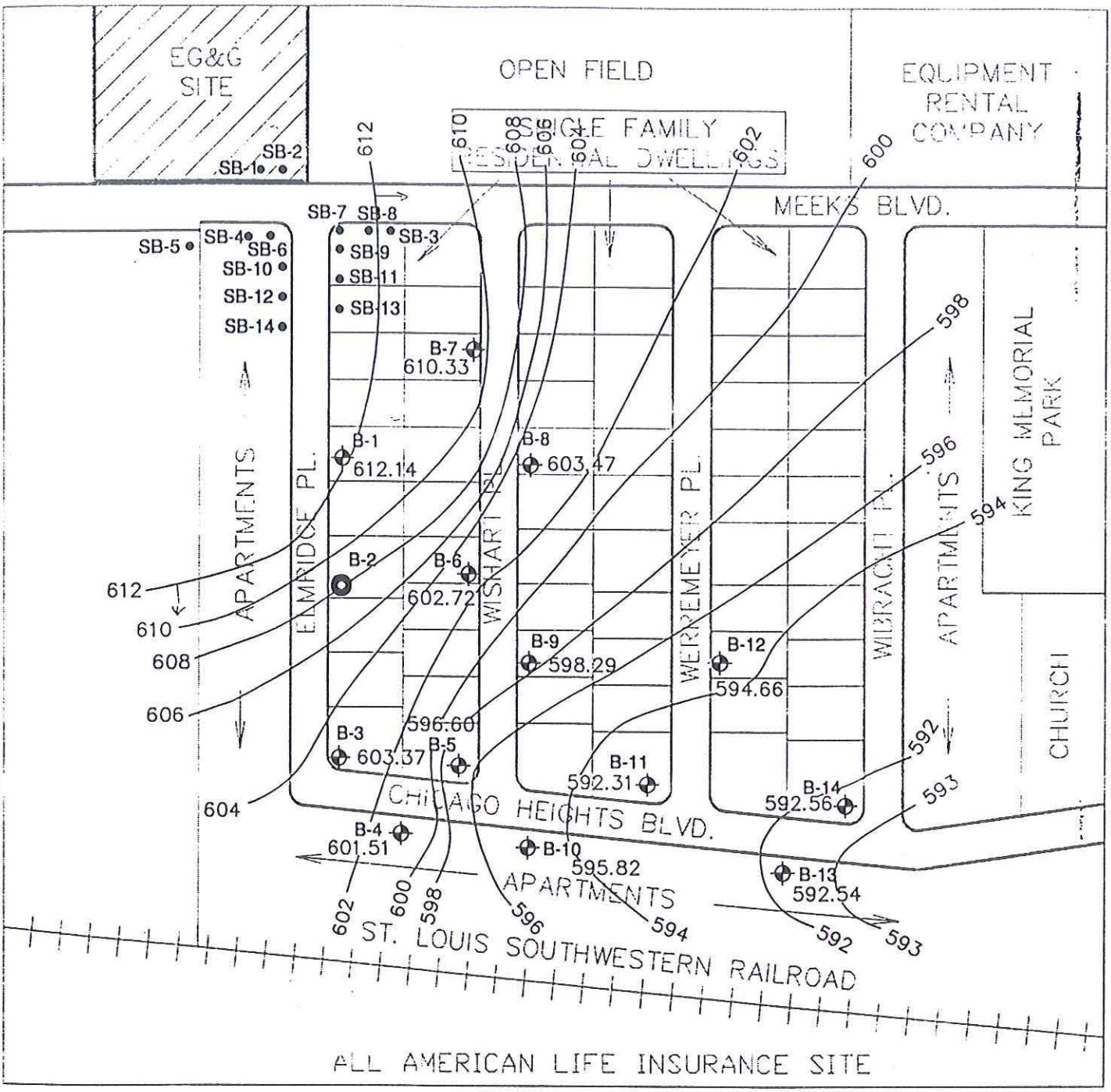
200 0 200 400

SCALE IN FEET

Burns & McDonnell Waste Consultants, Inc

Figure 2
REFUSAL DEPTH CONTOUR MAP
AUGUST 1999
EG&G MISSOURI METALS SITE
OVERLAND, MISSOURI

TITAN:913194006\CADD\EG&G.DWG



LEGEND

B-1 — FINAL PIEZOMETER LOCATION

612.14 — PIEZOMETRIC SURFACE ELEVATION (Feet Above Sea Level)

B-2 — FINAL BORING LOCATION (No Piezometer Installed)

SB-2 — PREVIOUS BORING LOCATION (August 1998)

612 — PIEZOMETRIC SURFACE CONTOUR

NORTH

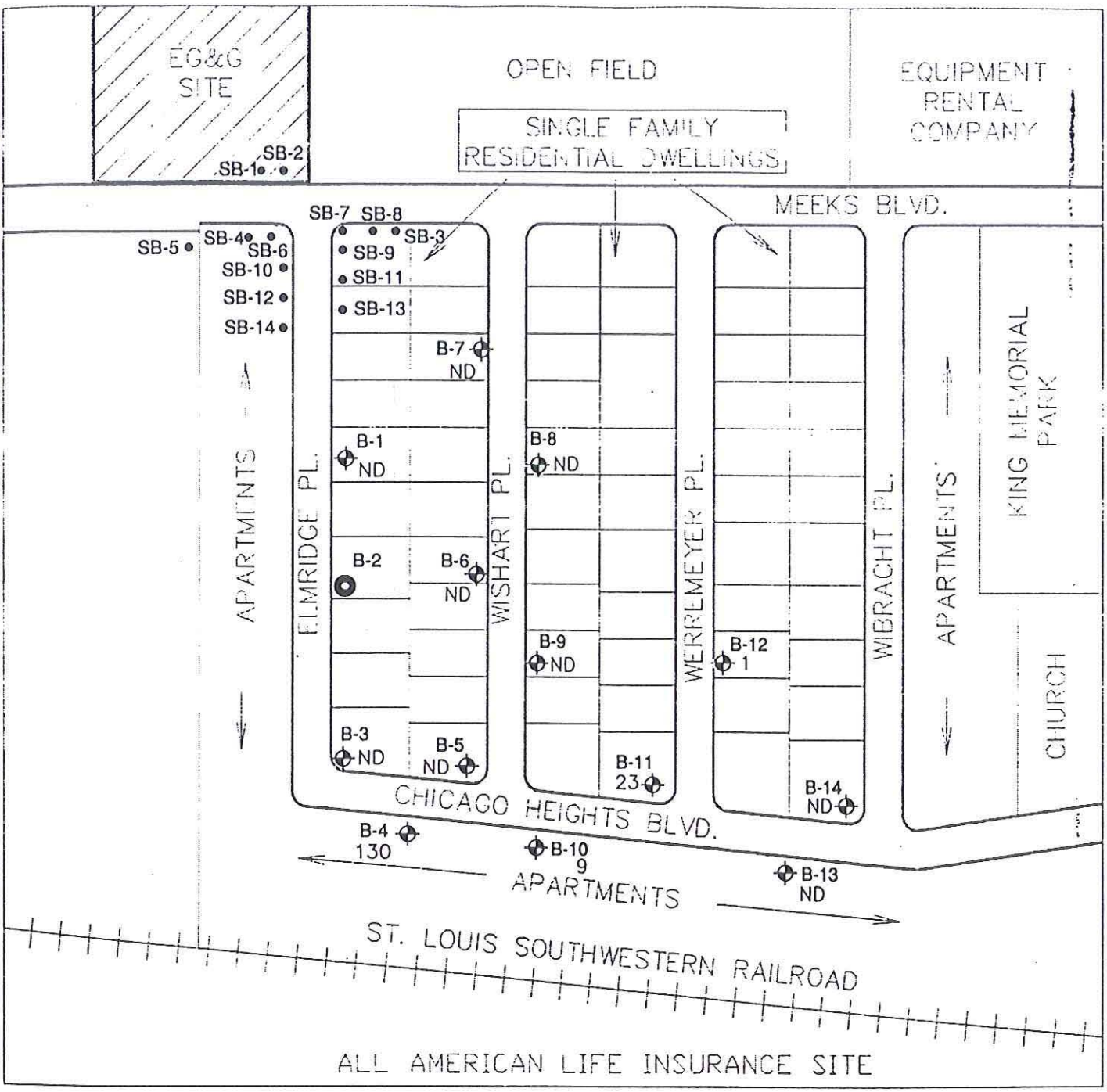
200 0 200 400

SCALE IN FEET

Burns & McDonnell Waste Consultants, Inc

Figure 3
GROUNDWATER CONTOUR MAP
AUGUST 1999
EG&G MISSOURI METALS SITE
OVERLAND, MISSOURI

TITAN:\91319\4006\CADD\EG&G.DWG



LEGEND

B-1	FINAL PIEZOMETER LOCATION
130	TCE IN GROUNDWATER CONCENTRATION (ug/L)
B-2	FINAL BORING LOCATION (No Piezometer Installed)
SB-2	PREVIOUS BORING LOCATION (August 1998)
ND	NOT DETECTED (Reporting Limit = 1 ug/L)

NORTH

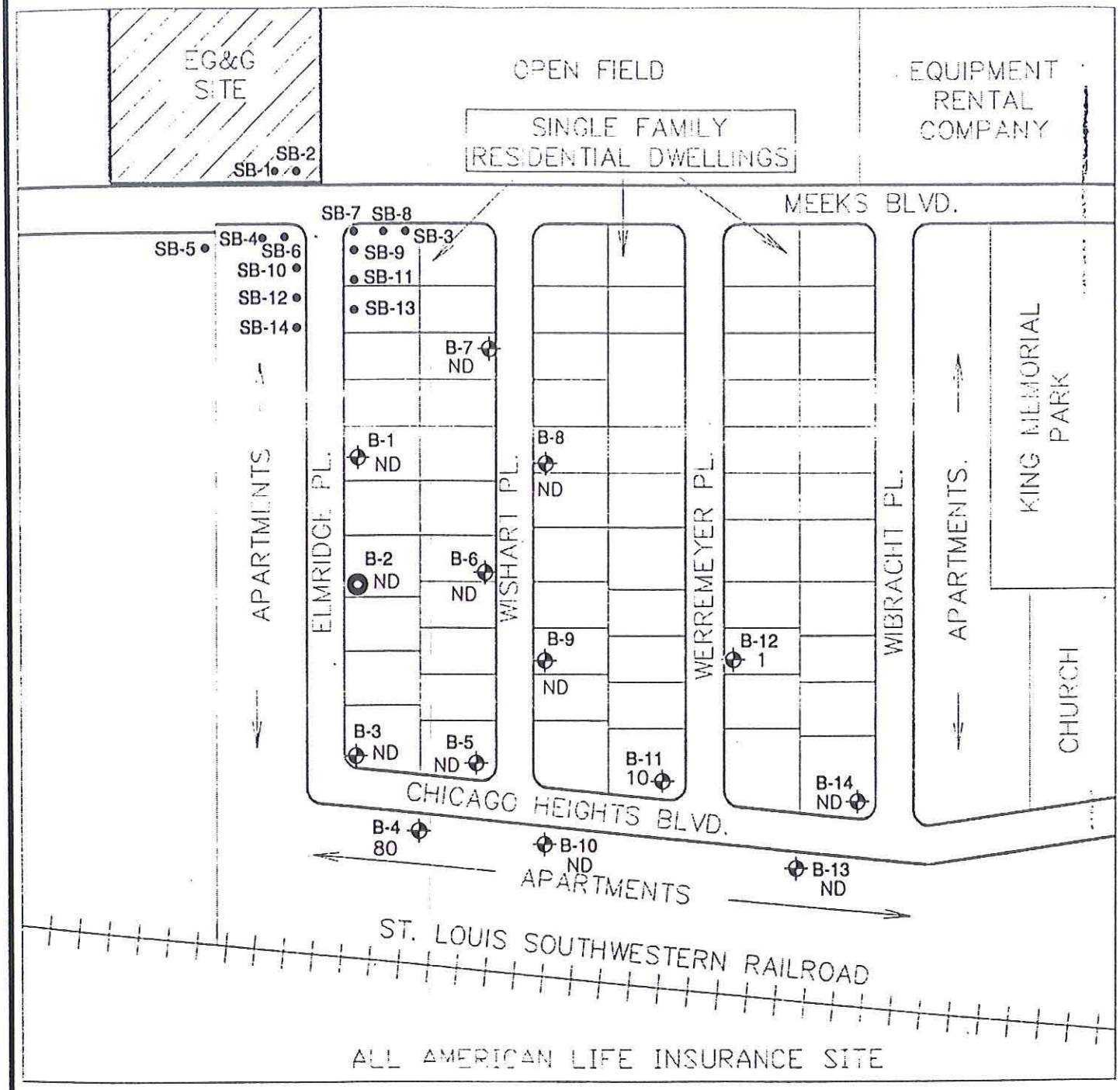
200 0 200 400

SCALE IN FEET

Burns & McDonnell Waste Consultants, Inc.

Figure 4
TCE IN GROUNDWATER
AUGUST 1999
EG&G MISSOURI METALS SITE
OVERLAND, MISSOURI

TITAN:191319\4006\CADD\EG&G.DWG



LEGEND

B-1	FINAL PIEZOMETER LOCATION
80	PCE IN GROUNDWATER CONCENTRATION (ug/L)
B-2	FINAL BORING LOCATION (No Piezometer Installed)
SB-2	PREVIOUS BORING LOCATION (August 1998)
ND	NOT DETECTED (Reporting Limit = 1 ug/L)

NORTH

200 0 200 400

SCALE IN FEET

Burns & McDonnell Waste Consultants, Inc

Figure 5
PCE IN GROUNDWATER
AUGUST 1999
EG&G MISSOURI METALS SITE
OVERLAND, MISSOURI

TITAN:91319\4006\CADD\EG&G.DWG

Table 1
Summary of Depth to Refusal Data
EG&G Missouri Metals Additonal Off-Site Investigation
August 1999

Temporary Piezometer	Date	(A) Casing Rim Elevation (feet)	Depth to Top of Screen (feet)	(B) Total Depth (feet)	(A)-(B) Casing Base Elevation (feet)	Refusal Depth Elevation* (feet)
B-1	8/13/99	624.88	2.5	18.25	606.63	606.85
B-3	8/13/99	611.37	2.1	20.87	590.50	590.72
B-4	8/13/99	608.83	1.5	21.22	587.61	587.83
B-5	8/13/99	607.59	4.5	18.25	589.34	589.56
B-6	8/13/99	610.22	2.0	NA	NA	NA
B-7	8/13/99	620.43	1.0	21.18	599.25	599.47
B-8	8/13/99	615.47	2.0	NA	NA	NA
B-9	8/13/99	607.34	2.0	18.15	589.19	589.41
B-10	8/13/99	606.37	3.5	21.25	585.12	585.34
B-11	8/13/99	603.31	2.0	18.25	585.06	585.28
B-12	8/13/99	605.78	1.5	19.57	586.21	586.43
B-13	8/13/99.	602.15	3.0	18.25	583.9	584.12
B-14	8/13/99	602.58	1.0	21.25	581.33	581.55

Notes
NA - Not Applicable - Refusal was not encountered during boring installation
* - Refusal surface elevation = Casing base elevation + 0.22 feet.
Stainless steel drive points attatched to base of casing are 0.22 feet in vertical length.

Table 2
Summary of Water Level Data
EG&G Missouri Metals Additonal Off-Site Investigation
August 1999

Temporary Piezometer	Date	(A) Casing Rim Elevation (feet)	Depth to Top of Screen (feet)	(B) Depth to Water (feet)	(A)-(B) Water Surface Elevation (feet)	Piezometric Surface Elevation (feet)
B-1	8/13/99	624.88	2.5	12.74	612.14	612.14
B-3	8/13/99	611.37	2.1	8.00	603.37	603.37
B-4	8/13/99	608.83	1.5	7 32	601.51	601.51
B-5	8/13/99	607.59	4.5	10.99	596.60	596.60
B-6	8/13/99	610.22	2.0	7.50	602.72	602.72
B-7	8/13/99	620.43	1.0	10.10	610.33	610.33
B-8	8/13/99	615.47	2.0	12.00	603.47	603.47
B-9	8/13/99	607.34	2.0	9.05	598.29	598.29
B-10	8/13/99	606.37	3.5	10.55	595.82	595.82
B-11	8/13/99	603.31	2.0	11.00	592.31	592.31
B-12	8/13/99	605.78	1.5	11.12	594.66	594.66
B-13	8/13/99	602.15	3.0	9.61	592.54	592.54
B-14	8/13/99	602.58	1.0	10.02	592.56	592.56

APPENDIX C

Combined PA/SI Investigation, December 1999

Figure 1. PA/SI Sample Location / Sampling Results Map
Table 1. Temporary Well Information
Table 2. Sample Listing / Descriptions
Table 3. Analytical Results for Groundwater Samples

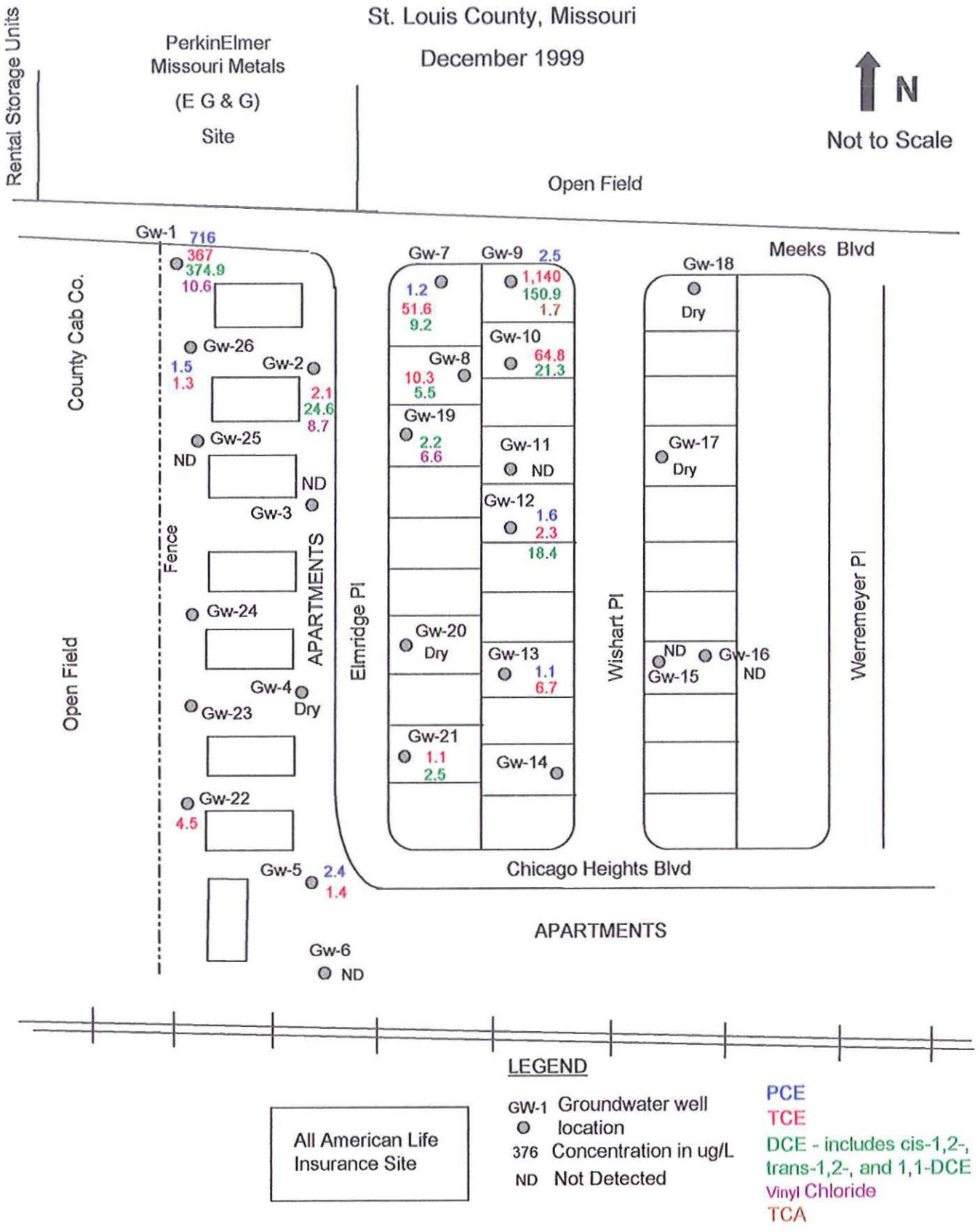
Figure 1

PA/SI Sampling Results

Chicago Heights Blvd VOC Plume Site

St. Louis County, Missouri

December 1999



LEGEND

GW-1 Groundwater well location

376 Concentration in ug/L

ND Not Detected

All American Life Insurance Site

PCE

TCE

DCE - includes cis-1,2-, trans-1,2-, and 1,1-DCE

Vinyl Chloride

TCA

Table 1
Temporary Well Information
Chicago Heights Blvd Voc Plume PA/SI
St. Louis County, Missouri
December 1999

Well Identity	Total Depth – ft (below ground surface)	Depth to Water – ft (below ground surface)	Water Column – ft
GW-01	27.5	25.0	2.5
GW-02	29.2	25.2	4.0
GW-03	25.0	16.2	8.8
GW-04	27.0	Dry	-
GW-05	26.0	16.0	10.0
GW-06	24.0	22.5	1.5
GW-07	25.0	15.0	10.0
GW-08	23.1	10.2	12.9
GW-09	19.5	9.81	9.69
GW-10	18.1	7.4	10.7
GW-11	23.1	8.25	14.85
GW-12	17.0	7.8	9.2
GW-13	20.8	8.0	12.8
GW-14	20.3	9.3	11.0
GW-15	22.2	15.15	7.05
GW-16	20.3	13.0	7.3
GW-17	19.0	Dry	-
GW-18	18.2	Dry	-
GW-19	24.4	8.2	16.2
GW-20	22.0	Dry	-
GW-21	20.7	13.0	6.3
GW-22	17.6	7.7	9.9
GW-23	20.6	16.0	4.6
GW-24	22.7	16.3	6.4
GW-25	17.1	13.4	3.7
GW-26	23.0	20.4	2.6

Table 2
Sample Listing / Descriptions
Chicago Heights Blvd VOC Plume PA/SI
St. Louis County, Missouri
December 1999

Sample #	Sample Media/Type	Location Collected/Description	Date/Time Collected
990049	QA/QC sample (trip blank)	Analyte-free water prepared at ESP laboratory.	11/28/99
997541	Water grab	Temporary well GW-02 located 6 ft west of the west edge of Elmridge Place and 9 ft south of the south edge of the first (northernmost) parking lot entrance. Sample was heavily turbid and medium brown.	11/29/99 @ 1355
997542	Water grab	Temporary well GW-01, located 125 ft west of the west edge of Elmridge Place and 12 ft south of the south edge of Meeks Blvd. Sample was moderately turbid and colorless.	11/30/99 @ 0740
997543	Water grab	Temporary well GW-07, located 30 ft south of the south edge of Meeks Blvd and 57 ft east of the east edge of Elmridge Place. Sample was heavily turbid and medium brown.	11/30/99 @ 0755
997544	QA/QC sample (duplicate)	Duplicate sample of 997543, entered onto chain-of-custody as "Blind duplicate". Same description as above.	11/30/99 @ 0755
997545	Water grab	Temporary well GW-05, located 12 ft west of the west edge of Elmridge Place and 10 ft south of the south edge of Chicago Heights Blvd. Sample was moderately turbid and light brown.	11/30/99 @ 0815
997546	Water grab	Temporary well GW-26, located 100 ft west of the west edge of Elmridge Place and 50 ft north of the north edge of the building representing 1447-51 Elmridge Place. Sample was clear and colorless.	12/1/99 @ 0826
997547	Water grab	Temporary well GW-19, located at the east edge of Elmridge Place, 10 ft south of the south edge of the driveway at 1476 Elmridge Place. Sample was slightly turbid and light brown.	12/1/99 @ 0845
997548	Water grab	Temporary well GW-03, located 6 ft west of the west edge of Elmridge Place and 6 ft north of the north edge of the second parking lot entrance. Sample was slightly turbid and light brown.	12/1/99 @ 0855
997549	Water grab	Temporary well GW-24, located 105 ft west of the west edge of Elmridge Place and 22 ft north of the building representing 1423-27 Elmridge Place. Sample was slightly turbid and light brown.	12/1/99 @ 0910
997550	QA/QC sample (duplicate)	Duplicate sample of 997549, entered onto chain-of-custody as "Blind duplicate". Same description as above.	12/1/99 @ 0910
997551	Water grab	Temporary well GW-21, located 22 ft west and 12 ft south of the southwest corner of the house at 1428 Elmridge Place. Sample was clear and colorless.	12/1/99 @ 0920
997552	Water grab	Temporary well GW-06, located 125 ft south of the south edge of Chicago Heights Blvd and 27 ft west of the west edge of Elmridge Place. Sample was clear and colorless.	12/1/99 @ 0925
997553	Water grab	Temporary well GW-14, located 12 ft south and 20 ft east of the northeast corner of the carport at 1415 Wishart Place (immediately south of the driveway). Sample was slightly turbid and light brown.	12/1/99 @ 0940
997554	Water grab	Temporary well GW-09, located 12 ft west and 7 ft north of the northwest corner of the house at 1487 Wishart Place. Sample was slightly turbid and light brown.	12/1/99 @ 0950

Table 2 (continued)
Sample Listing / Descriptions
Chicago Heights Blvd VOC Plume PA/SI
St. Louis County, Missouri
December 1999

Sample #	Sample Media/Type	Location Collected/Description	Date/Time Collected
997571	QA/QC sample (trip blank)	Analyte-free water prepared at ESP laboratory.	12/7/99
997572	Water grab	Temporary well GW-15, located 20 ft west of the northwest corner of the house at 1430 Wishart Place. Sample was clear and colorless.	12/7/99 @ 0950
997573	Water grab	Temporary well GW-16, located 25 ft east of the northeast corner of the house at 1430 Wishart Place. Sample was clear and colorless.	12/7/99 @ 1000
997574	Water grab	Temporary well GW-13, located 20 ft west and 14 ft south of the southwest corner of the house at 1431 Wishart Place. Sample was initially clear and colorless, but became moderately turbid and light brown during collection.	12/7/99 @ 1015
997575	Water grab	Temporary well GW-12, located 30 ft south and 25 ft west of the southwest corner of the house located at 1455 Wishart Place. Sample was clear and colorless.	12/7/99 @ 1035
997576	QA/QC sample (duplicate)	Duplicate sample of 997575, entered onto chain-of-custody as "Blind duplicate". Same description as above.	12/7/99 @ 1035
997577	Water grab	Temporary well GW-11, located 22 ft west and 7 ft north of the northwest corner of the house at 1463 Wishart Place. Sample was clear and colorless.	12/7/99 @ 1050
997578	Water grab	Temporary well GW-10, located 12 ft north and 1 ft east of the northwest corner of the house at 1479 Wishart Place. Sample was clear and colorless.	12/7/99 @ 1115
997579	Water grab	Temporary well GW-22, located 105 ft west of the west edge of Elmridge Place and 25 ft north of the north side of the building representing 1401-09 Elmridge Place. Sample was clear and colorless.	12/7/99 @ 1135
997580	Water grab	Temporary well GW-23, located 100 ft west of the west edge of Elmridge Place and 55 ft north of the north side of the building representing 1415-19 Elmridge Place. Sample was moderately turbid and light brown.	12/7/99 @ 1145
997581	Water grab	Temporary well GW-25, located 105 ft west of the west edge of Elmridge Place and 28 ft north of the north side of the building representing 1439-43 Elmridge Place. Sample was clear and colorless.	12/7/99 @ 1200
997582	Water grab	Temporary well GW-08, located approximately 25 ft east of the southeast corner of the house at 1484 Elmridge Place. Sample was clear and colorless.	12/7/99 @ 1210
997583	QA/QC sample (duplicate)	Duplicate sample of 997582, entered onto chain-of-custody as "Blind duplicate". Same description as above.	12/7/99 @ 1210

Table 3. Selected Analytical Results for Groundwater Samples
Chicago Heights Blvd VOC Plume PA/SI
November 29- December 1, 1999, December 7, 1999

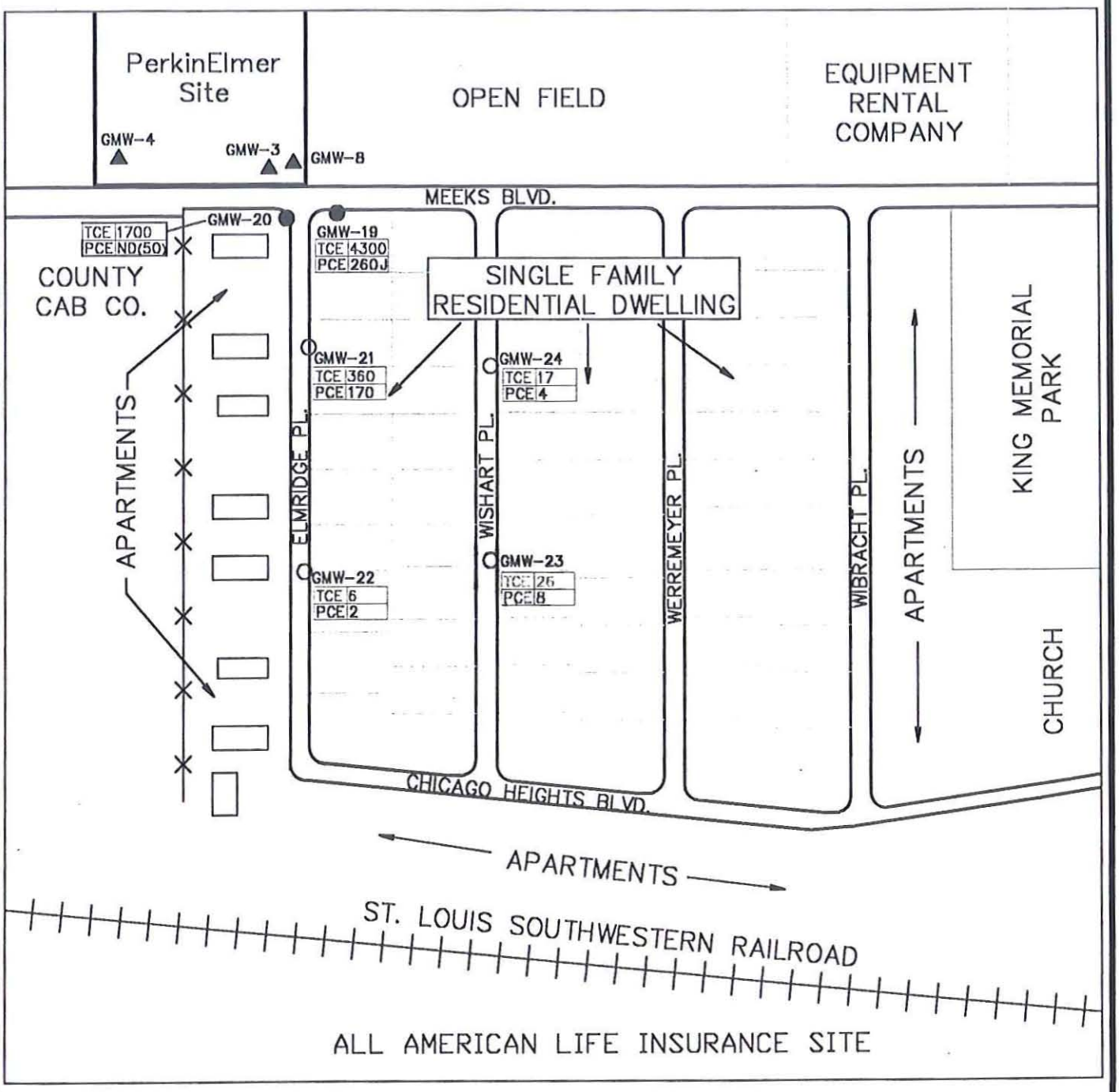
- All values are in parts per billion (ug/L or ppb) unless otherwise noted.
- Shaded values are those above detection limits.
- Bold values are those above the lowest SCDM health-based benchmarks for drinking water.
- SCDM health-based benchmarks for drinking water are included as a basis for comparison, even though the groundwater is not used for a drinking water supply at this site.

Sample # Well #	ANALYTE (And lowest SCDM Benchmark Values)						
	PCE (1.6)	TCE (5.0)	1, 1-DCE (0.14)	Cis-1, 2-DCE (70)	Trans-1, 2-DCE (100)	1, 1, 2-TCA (1.5)	Vinyl Chloride (0.04)
997541 GW-02	<1.0	2.1	<1.0	24.6	<1.0	<1.0	**8.7**
997542 GW-01	**716**	**367**	**1.6**	**369**	4.3	<1.0	**10.6**
997543 GW-7	1.2	**51.6**	<1.0	9.2	<1.0	<1.0	<2.0
997545 GW-05	**2.4**	1.4	<1.0	<1.0	<1.0	<1.0	<2.0
997546 GW-26	1.5	1.3	<1.0	<1.0	<1.0	<1.0	<2.0
997547 GW-19	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	**3.4**
997548 GW-03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997549 GW-24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997551 GW-21	<1.0	1.1	<1.0	2.4	<1.0	<1.0	<2.0
997552 GW-06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997553 GW-14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997554 GW-09	**2.5**	**1,140**	**1.9**	**149**	<1.0	**1.7**	<2.0
997572 GW-15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997573 GW-16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997574 GW-13	1.1	**6.7**	<1.0	<1.0	<1.0	<1.0	<2.0
997575 GW-12	**1.6**	2.3	<1.0	18.4	<1.0	<1.0	<2.0
997577 GW-11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997578 GW-10	<1.0	**64.8**	<1.0	21.3	<1.0	<1.0	<2.0
997579 GW-22	<1.0	4.5	<1.0	<1.0	<1.0	<1.0	<2.0
997580 GW-23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997581 GW-25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
997582 GW-08	<1.0	**10.3**	<1.0	5.5	<1.0	<1.0	<2.0

APPENDIX D

PerkinElmer Site – Monitoring Well Installation, March 2001

Figure 1. Monitoring Well Locations and VOC Concentrations
Figure 2. Piezometric Surface Elevation
Figure 3. Northwest to Southeast Cross Section



LEGEND

- ▲ Existing Shallow Monitoring Well
- ● Existing Deep Monitoring Well
- ○ New Deep Monitoring Well
- TCE 4300 / PCE 260 — Trichloroethene and Tetrachloroethene Concentration (ug/L)

NORTH

200 0 200 400

SCALE IN FEET

SR Figure 1, Appendix D
Chicago Heights Blvd VOC Plume
St. Louis County, Missouri

Burns & McDonnell

VOC CONCENTRATIONS IN GROUNDWATER
MARCH 2001
PerkinElmer
Missouri Metals Site
Overland, Missouri

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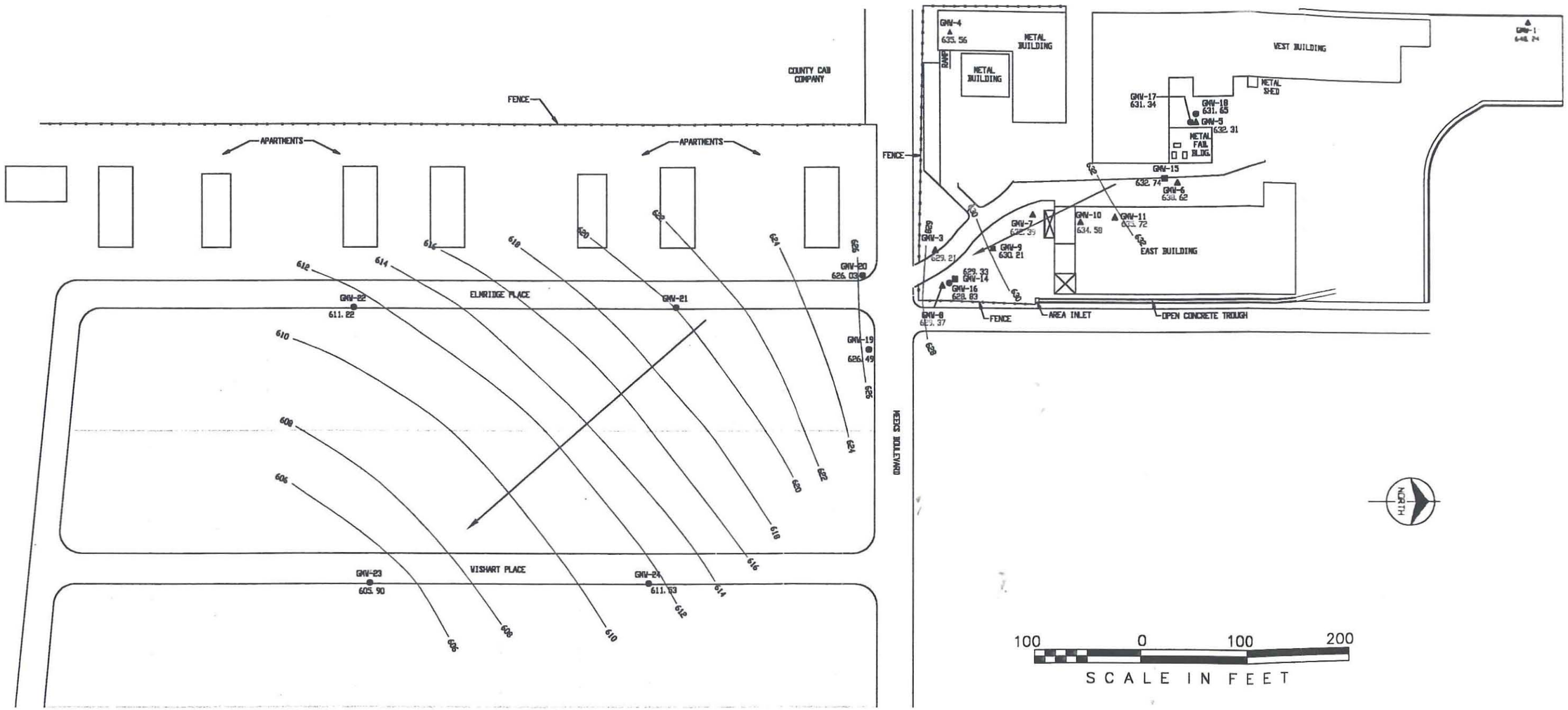


LEGEND

▲ 648.24 SHALLOW WELLS: SCREENED IN LOESS
PIEZOMETRIC SURFACE ELEVATION IN LOESS UNIT (FT)

■ INTERMEDIATE WELLS: SCREENED IN LOWER PORTION OF LOESS AND/OR UPPER PORTION OF SILTSTONE

● 626.49 DEEP WELLS: SCREENED IN DEEPER PORTION OF SILTSTONE
PIEZOMETRIC SURFACE ELEVATION IN SILTSTONE UNIT (FT)

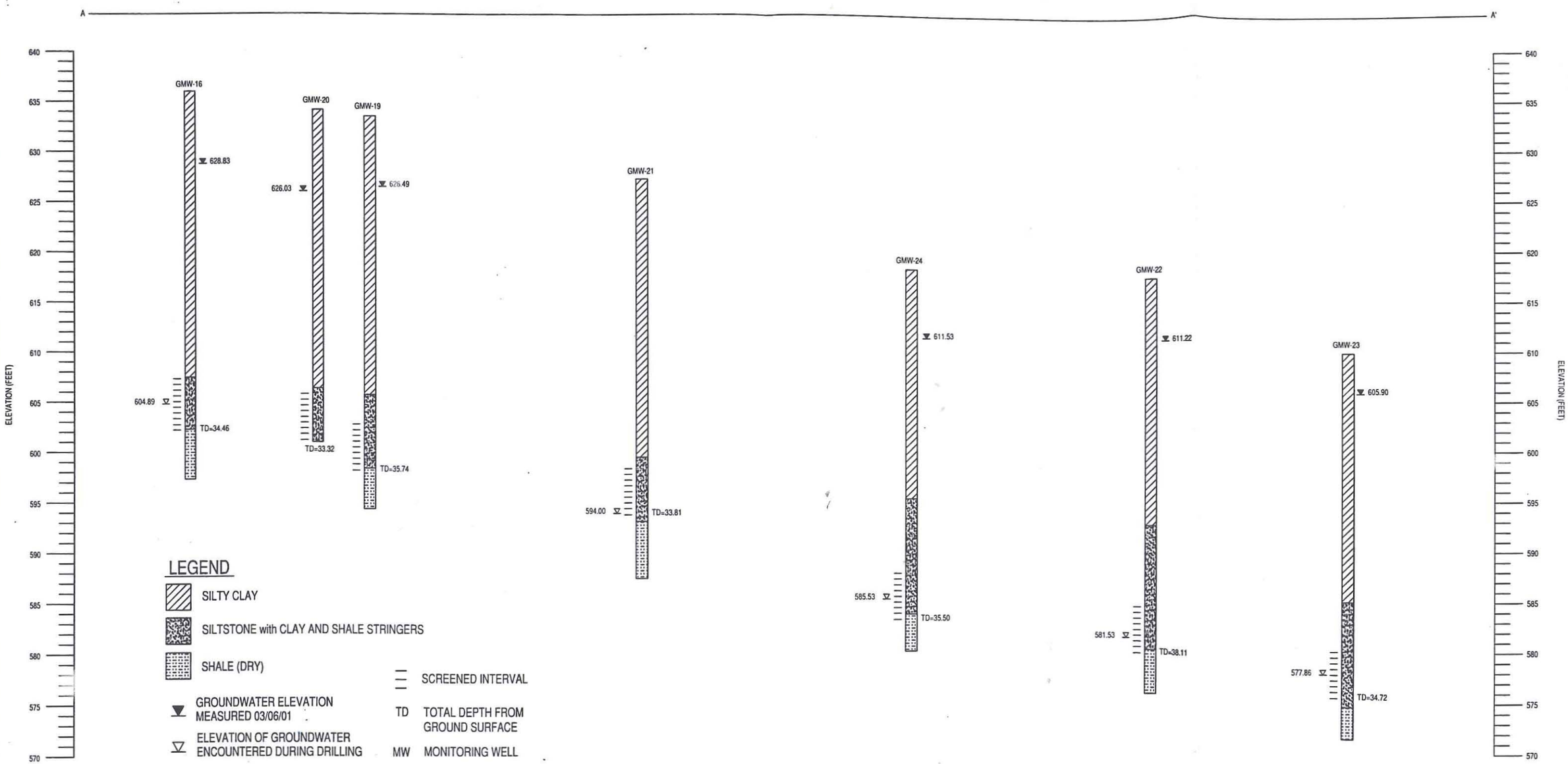
NOTE: GMW-18 IS SCREENED IN UPPER PORTION OF SILTSTONE BUT FILTER PACK EXTENDS TO LOWER PORTION OF LOESS

← GROUNDWATER FLOW DIRECTON

608 GROUNDWATER CONTOUR

Burns & McDonnell since 1898

Figure 2
PIEZOMETRIC SURFACE ELEVATION IN SILTSTONE UNIT
MARCH 2001
PerkinElmer
Missouri Metals Site
Overland, Missouri



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Burns & McDonnell
SINCE 1898

Figure 3
CROSS-SECTION A-A'
PerkinElmer
Missouri Metals Site
Overland, Missouri

APPENDIX E

Chicago Heights Blvd VOC Plume Site
Photographs 1 - 11

Photo 1. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on November 31, 1999 by Nancy Priddy, Superfund, DNR. View of site area taken from intersection of Chicago Heights Blvd and Elmridge Place, looking north, up Elmridge toward Meeks Boulevard.

Photo 2. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on November 31, 1999 by Nancy Priddy, Superfund, DNR. View of site area from intersection of Chicago Heights Boulevard and Elmridge Place, looking east along Chicago Heights Blvd.

Photo 3. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on November 31, 1999 by Nancy Priddy, Superfund, DNR. View of site area from Chicago Heights Boulevard, looking north, up Wishart Place.

Photo 4. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on November 31, 1999 by Nancy Priddy, Superfund, DNR. Taken from southwest corner of site, looking north along western border of residential area. Apartments are on right.

Photo 5. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. Northwest corner of site, looking south along western border. Fence is on right, obscured by vegetation.

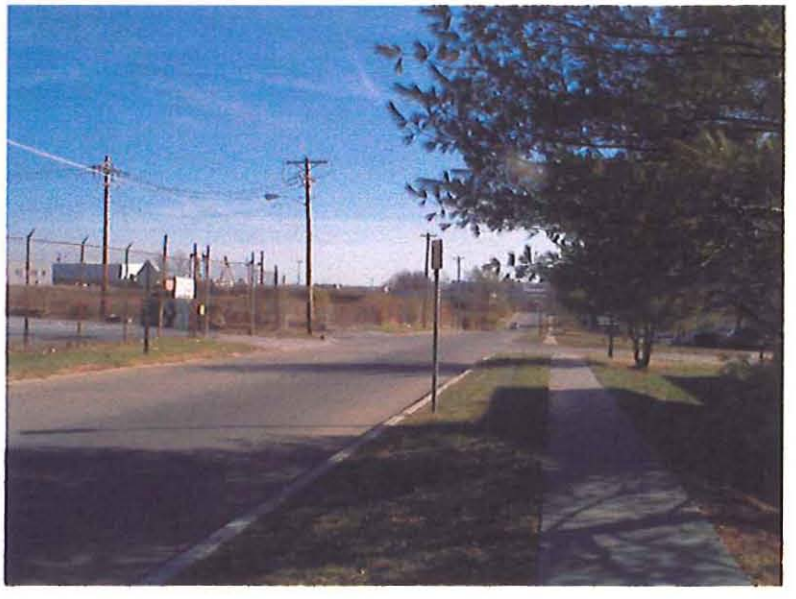

Photo 6. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. Meeks Boulevard along northern border of site. Taken from northwest looking east. Note change in Photo 11.

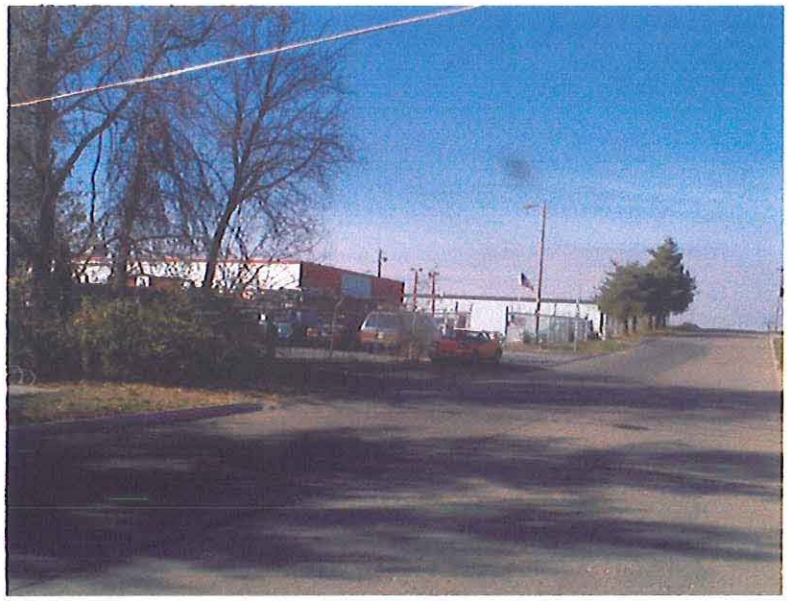

Photo 7. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. Adjacent commercial businesses west of northwest corner of site. Taken from north side of Meeks Boulevard looking southwest.

Photo 8. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. View of industry north of site. Taken from Elmridge Place looking north.

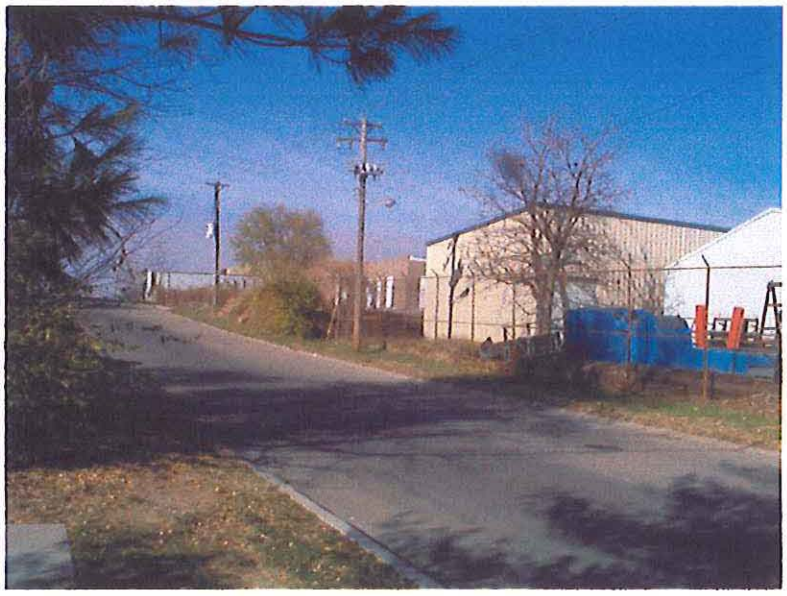

Photo 9. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. View of industry northwest of site. Taken from northwest corner of site looking northwest.

Photo 10. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on December 1, 1999 by Nancy Priddy, Superfund, DNR. Photo taken from south side of Meeks Boulevard looking south along fence line separating residential back yards between Elmridge Place and Wishart Place.

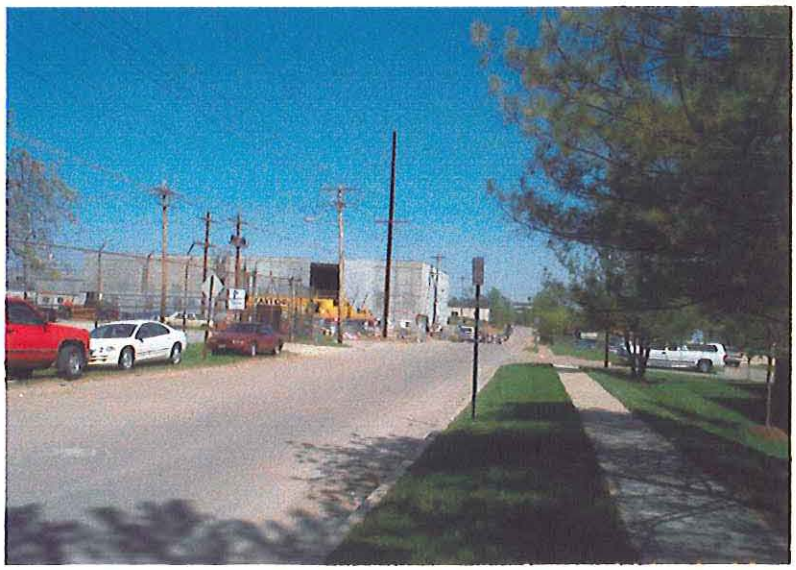

Photo 11. Chicago Heights Blvd VOC Plume site, St. Louis County, MO. Photo taken on April 24, 2001 by Nancy Priddy, Superfund, DNR. Meeks Boulevard along northern border of site. Taken from northwest looking east. Note change since date of Photo 6.