



December 8, 2017

Mr. Todd Davis
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U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

**Subject: Phase II Targeted Brownfields Assessment
Former Health Emergency HAZMAT Site, Kansas City, Missouri
U.S. EPA Region 7, START 4, Contract No. EP-S7-13-06, Task Order No. 0002.019.020
Task Monitor: Todd Davis, EPA Site Assessment Manager**

Dear Mr. Davis:

Tetra Tech, Inc. (Tetra Tech) is submitting the attached Phase II Targeted Brownfields Assessment (TBA) report regarding the Former Health Emergency HAZMAT Site property in Kansas City, Missouri. The Phase II TBA report describes investigations to confirm or eliminate recognized environmental conditions specified in the Phase I TBA report prepared by Tetra Tech in November 2016.

If you have any questions or comments, please contact the Project Manager at (816) 412-1957.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kirk Mammoliti'.

Kirk Mammoliti
START Project Manager

A handwritten signature in blue ink, appearing to read 'Ted Faile'.

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

PHASE II TARGETED BROWNFIELDS ASSESSMENT REPORT
FORMER HEALTH EMERGENCY HAZMAT SITE, KANSAS CITY, MISSOURI

Superfund Technical Assessment and Response Team (START) 4 Contract

Contract No. EP-S7-13-06, Task Order No. 0002.019.020

Prepared For:

U.S. Environmental Protection Agency
Region 7
11201 Renner Boulevard
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December 8, 2017

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EXECUTIVE SUMMARY

The Tetra Tech, Inc. (Tetra Tech) Region 7 Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a Phase II Targeted Brownfields Assessment (TBA) of the former Health Emergency HAZMAT Site (HEHS) at 8100 Ozark Road in Kansas City, Jackson County, Missouri (subject property). The City of Kansas City, Missouri (City) requested assessment assistance under the TBA program from EPA Region 7 for assessment prior to redevelopment of the former HEHS. START conducted this Phase II TBA in accordance with the *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*, ASTM International (ASTM) designation E1903-11, and otherwise in compliance with EPA's "All Appropriate Inquiries" Rule (AAI Rule) (40 *Code of Federal Regulations* [CFR] Part 312).

A Phase I TBA of the subject property by Tetra Tech in November 2016 identified historical usage of the subject property for temporary waste storage, and observations and data indicated unintentional releases of waste materials within the HEHS likely occurred in the past, indicating a recognized environmental condition (REC) to the subject property.

Purposes of this Phase II TBA were to determine if soils impacted through historical activities at the subject property still remain, or if all areas of contamination had been removed during previous removal excavations. During this investigation at the subject property, samples of surface and subsurface soil were collected for laboratory analysis. All sampling results were compared to EPA Regional Screening Levels (RSL), Missouri Risk-Based Corrective Action (MRBCA) lowest default target levels (LDTL), and MRBCA Risk-Based Target Levels (RBTL) for residential and industrial scenarios. Geotechnical soil samples were also collected to determine if fill material occurs throughout the subject property, and stability of the soil for future development. Findings and recommendations are as follows:

- All soil samples contained arsenic at concentrations above the EPA RSL for industrial soil, and the majority of samples contained arsenic at concentrations above the MRBCA Lowest Default Target Level (LDTL) for soil; however, arsenic concentrations in all samples were within the range of the county average. All soil samples contained lead at concentrations above the MRBCA LDTL for soil; however, the criterion is based on protection of domestic groundwater use pathway. Six soil samples were found to have concentrations of lead that exceeded the county average, but only three of those samples (at SB9, SS1, and SS4) were above the MRBCA residential RBTL of 260 milligrams per kilograms (mg/kg). A lead concentration in the sample from SS4 (870 mg/kg) was above the MRBCA non-residential RBTL of 660 mg/kg. No soil sample contained a concentration of another RCRA metal that exceeded an applicable screening level.

- Pesticide-related compounds 4,4-dichlorodiphenyldichloroethene (DDE), 4,4-dichlorodiphenyltrichloroethane (DDT), 4,4-dichlorodiphenyldichloroethane (DDD), dieldrin, and 2,4-dichlorophenoxyacetic acid (2,4-D) were detected in surface and subsurface soils at the site. However, none of those concentrations exceeded any EPA or MDNR-established benchmark.

Based on sampling during this Phase II TBA, soils at the site appear to have been affected by historical activities associated with the former HEHS facility. Particularly, lead was identified in surface and subsurface soils at concentrations exceeding EPA and MDNR-established benchmarks. Herbicide and pesticide-related compounds were identified in surface and subsurface soils at the site; however, none of those compounds were detected at concentrations that exceeded any EPA or MDNR-established benchmarks. If future development of the site is desired, additional sampling may be required to further delineate horizontal and vertical extents of lead in soil.

1.0 INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a Phase II Targeted Brownfields Assessment (TBA) of the former Health Emergency HAZMAT Site (HEHS) at 8100 Ozark Road in Kansas City, Missouri (site or subject property) (see Appendix A, Figure 1). The City of Kansas City, Missouri (City), requested assessment assistance under the TBA program from EPA Region 7 to assess the current environmental condition at the subject property prior to planned future development. The following sections address the background and site history, describe Phase II TBA activities, present and evaluate analytical results, discuss findings, and offer conclusions.

1.1 PURPOSES

Purposes of this Phase II TBA included determination whether soil impacted by historical activities at the subject property remained following excavation and removal, and to assess stability of the soil for future development. The subject property is currently vacant land except for some concrete slabs and roadways associated with previous development. The HEHS was used by the City until the 1990s and was demolished in 1998 (Environmental Advisors and Engineers, Inc. [EAE] 2012). During this Phase II TBA, sampling of soil occurred to confirm or eliminate recognized environmental conditions (REC) to the subject property (i.e. possible historical releases of contaminants) identified during a Phase I TBA of the subject property in November 2016, with additional geotechnical soil sampling to assess stability of the soil for future development.

1.2 SPECIAL TERMS AND CONDITIONS

No special terms or conditions were identified during the Phase II TBA.

2.0 BACKGROUND AND SITE HISTORY

This section briefly describes the site history as well as the physical setting, including geology, hydrogeology, and hydrology. It recounts the history of the site, describes land use on and adjacent to the site, and summarizes previous assessments of the site.

2.1 SITE LOCATION

The former HEHS includes 18.6 acres of land at 8100 Ozark Road on the north side of Ozark Road in Kansas City, Jackson County, Missouri (see Appendix A, Figures 1 and 2).

2.2 PHYSICAL SETTING

The subject property is depicted on the Independence, Missouri U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 1975) (see Appendix A, Figure 1). The subject property ranges from approximately 886 to 920 feet above mean sea level. The subject property appears gently sloping on the north and east portion of the site. Bedrock in this part of the Kansas City area dips approximately 6 feet per mile to the northwest. Area topography slopes north and northeast toward Round Grove Creek. Coordinates at the approximate center of the subject property are 39.042777 degrees north latitude and 94.494349 degrees west longitude.

2.2.1 Geologic Setting

Soils on the subject property consist of Knox-Urban Land complex and Knox silty clay loam. The typical soil profile of Knox-Urban Land complex is 0 to 6 inches silt loam, 6 to 46 inches silty clay loam, and 46 to 80 inches silt loam. The typical soil profile of Knox silty clay loam is 0 to 4 inches silt loam, 4 to 54 inches silty clay loam, and 54 to 60 inches silt loam (U.S. Department of Agriculture [USDA] 2016).

The upper bedrock formation in the vicinity of the subject property consists of the middle Kansas City Group, Missourian Series, Pennsylvania System (approximately 215 feet. Underlying the Kansas City Group are the shales of the Pleasanton Group. Underlying the Pleasanton Group are predominantly shales of the Marmaton and Cherokee Groups of the Desmoinesian Series (Missouri Department of Natural Resources [MDNR] 1997). Maximum thicknesses of these groups are as follows: Kansas City Group, 135 feet; Pleasanton Group, 150 feet; and Marmaton Group, 190 feet (Stohr, St. Ivany, and Williams, 1981).

2.2.2 Hydrogeology

Low permeability of the Pennsylvanian Bedrock beneath the site impedes groundwater movement both laterally and vertically. Due to this flow impediment, little opportunity exists for groundwater recharge and discharge (Burns & McDonnell Waste Consultants Inc. 1999). Water for the subject property is supplied by the Kansas City, Missouri (KCMO) Water Department, and is obtained from the Missouri River and groundwater sources near the river.

Mississippian and Pennsylvania formations form the bedrock aquifers in this region. These and older bedrock aquifers exhibit leaky artesian conditions; however, water table conditions exist near the border of the Ozark Plateaus. Water yields vary from 25 to a few hundred gallons per minute (gpm). Water quality is highest near the eastern border of the Osage Plains, and decreases toward the northwest, with increasing concentrations of chlorides, sodium, and other dissolved solids. Recharge is by regional water movement from the Ozark Plateaus and by limited infiltration of precipitation (Stohr, St. Ivany, and Williams 1981).

Water in numerous drainageways that dissect the bedrock in this area flows into Round Creek Grove. The subject property is on a hilltop that slopes downward to the north-northeast, and shallow groundwater likely perches seasonally at the top of bedrock. Transient water also may be encountered within fracture zones and along bedding planes, and frequently discharges at bedrock outcrops.

Environmental Data Resources, Inc. (EDR), a START subcontractor, identified two federal USGS water wells, two state wells, and 17 oil/gas wells within 1 mile of the subject property by searching state and USGS database listings. Static water levels in the wells were not provided, and EDR extracted no data on groundwater flow and velocity (EDR 2016). In the absence of site-specific data or other indicators, the direction of groundwater flow may be inferred from the regional topographic gradient. Therefore, shallow groundwater flow is inferred to the north in the direction of the topographic gradient and surface water flow.

2.2.3 Hydrology

The subject property is within the Lower Missouri-Crooked watershed (USGS Cataloging Unit 10300101) (EPA 2017a). Surface water on the subject property appears to follow surface topography and either infiltrates the ground or flows north toward Round Grove Creek (Tetra Tech 2016).

2.3 SITE HISTORY AND LAND USE

The subject property is currently vacant land except for some concrete slabs and roadways associated with previous development. The HEHS was used by the City until the 1990s and was demolished in 1998 (EAE 2012).

The former HEHS included 18.6 acres of land on the north side of Ozark Road. Prior to 1964, on-site buildings were used for livestock feeding operations associated with the Municipal Farm. From the mid-1960s to 1972, the HEHS location was used for administration purposes by the KCMO Health Department. From 1972 to 1980, as part of the Public Works Department, the HEHS blended and packaged rat bait for a federal rodenticide program. From 1983 to 1993, the HEHS location was used for temporary storage of waste chemicals such as rat poison, waste chemicals from school laboratories, and other unknown materials. In March 1998, the buildings of the HEHS and concrete pad were demolished (EAE 2012).

2.4 ADJACENT PROPERTY USE

The subject property is part of a lightly developed area with an adjoining residential neighborhood in Kansas City, Missouri. The subject property is bounded north by vacant wooded land and an animal shelter, with Raytown Road beyond; east by trees, with Ozark Road beyond; south by a National Guard facility and Ozark Road, with residential development beyond; west by vacant wooded land, with Eastern Avenue beyond; and northwest by a KCMO Police Heliport and woods. According to a review of historical documents, the area surrounding the subject property has been historically used for a variety of residential and municipal purposes (Tetra Tech 2016).

2.5 SUMMARY OF PREVIOUS ASSESSMENTS

Tetra Tech completed a Phase I TBA of the subject property in November 2016, and identified the following REC to the subject property (Tetra Tech 2016):

According to a previous Phase I ESA report regarding the HEHS (Tetra Tech EM Inc. 2011a), the subject property has been used for agricultural and office purposes. The HEHS was used in the past for temporary waste storage. Observations and data from the investigation indicated that unintentional releases of waste materials within the HEHS likely occurred in the past. A removal including soil excavation occurred at the HEHS site, and confirmation sampling was conducted after the removal to ensure that all contamination had been removed. However, the confirmation sampling did not occur on the entirety of the property; therefore, previous activities pose a REC to the subject property.

A Phase I Site Characterization report, Investigation Addendum Report and Remedial Action Plan, Closure Plan, and a Summary of Closure Corrective Action Sampling Results were prepared on behalf of the City by Burns & McDonnell Waste Consultants, Inc., regarding the HEHS. In the mid-1980s, the City Health Department began to use a small, rectangular, fenced-in area that included two structures to store household hazardous waste (HHW), school laboratory waste, and other hazardous wastes generated by City operations and hazmat cleanups. This site was not permitted to accept or store hazardous waste. In November 1993, the City received a Notice of Violation (NOV) from MDNR after an inspection had found numerous violations. The State sought an assessment of penalties for the City's non-compliance. The State and the City agreed to settle the matter by entering into a Consent Decree. A deed restriction has also been filed for the HEHS property. Since that time, the HEHS property has been sampled, all structures have been demolished, contaminated soil has been excavated, and the State has approved site closure (City 2008). However, the confirmation sampling did not occur on the entirety of the property; therefore, previous activities pose a REC to the subject property.

In May 2010, surface soil samples were collected at the City Municipal Correction Institution (MCI) and HEHS properties and field-screened for metals regulated by the Resource Conservation and Recovery Act (RCRA) by use of an x-ray fluorescence (XRF) analyzer. The Soil Chemistry Laboratory, Department of Agronomy, Kansas State University (KSU) conducted the sampling and analysis. KSU concluded that no significant concentrations had been identified inconsistent with future use as a community garden (KSU 2010), but recommended followup testing for possible pesticides such as dichlorodiphenyltrichloroethane (DDT) and dichlorodiphenyldichloroethene (DDE) (City 2010).

According to the Municipal Farm Redevelopment Site Analysis, the former Round Grove Creek Landfill is north of the subject property. The landfill encompasses approximately 32.7 acres and runs parallel to Raytown Road and Round Grove Creek. The City operated the landfill in 1971 and 1972. The landfill accepted approximately 70,000 tons of waste—primarily residential, construction, demolition, and hospital waste (City 2009). A soil cap was installed on the landfill after closure of it in 1972. According to the EPA Envirofacts Warehouse, the former landfill was referred to EPA's removal section. A determination of "no further remedial assessment required" occurred in 2001 according to the CERCLIS database (EPA 2011). The former landfill is crossgradient of the subject property and does not pose a REC to the subject property.

The Municipal Farm Redevelopment Site Analysis listed Potters Field Cemetery as an environmental issue. According to this document, the City buried paupers, tuberculosis victims, and murder victims in a

Potters Field just north of the National Guard Armory from around 1900 to 1940 (City 2009). This cemetery is crossgradient of the subject property and does not pose a REC to the subject property.

In March 2011, on behalf of the City, Tetra Tech conducted a Phase I ESA of the Municipal Garden Farm Community Garden project, which is included within the boundaries of the subject property (Tetra Tech EM Inc. 2011a). The following findings were identified (“subject property” refers to the location of the current-day municipal garden):

- The subject property was developed as an orchard according to a 1952 aerial photograph. Pesticides and/or chemical fertilizers are commonly used on orchards; therefore, the possibility that historical releases of hazardous materials or hazardous waste occurred on the subject property poses a REC to the subject property.
- The Men’s Reformatory and MCI are shown on the subject property in the aerial photographs and other historical documents. The Men’s Reformatory and MCI both housed a tank that contained a petroleum product, according to the fire insurance maps and the environmental database search. The Men’s Reformatory, MCI, and agricultural land on the subject property likely used pesticides and other chemicals during groundskeeping activities. Environmental samples were collected and analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO), TPH – diesel range organics (DRO), TPH – oil range organics (ORO), RCRA metals, pesticides, and herbicides. Concentrations of arsenic and polycyclic aromatic hydrocarbons (PAH) were detected. The detection of arsenic is attributed to background levels, and the PAH compounds are common in urban environments. Possibility of historical releases of petroleum products, hazardous materials, or hazardous waste from either the Men’s Reformatory or MCI does not pose a REC to the subject property.
- Review of city directories identified the following facilities neighboring the subject property: MCI, Women’s Reformatory, Malaria Research facility, Kansas City Municipal Farm, and the Kansas City Rat Control Laboratory. It is unclear whether the subject property was included in the Municipal Farm land. If the subject property was part of the Municipal Farm, what was applied to the land is unknown. Use of the subject property other than potential recreational/green space by MCI is unknown. MCI housed a tank that contained a petroleum product, according to the environmental database search. MCI, Women’s Reformatory, Malaria Research, Kansas City Rat Control Laboratory, and Kansas City Municipal Farm likely used pesticides and other chemicals during groundskeeping activities. Possibilities that historical releases of petroleum products, hazardous materials, or hazardous waste occurred, and that these migrated from adjacent facilities to the subject property, do not pose a REC to the subject property.
- Review of the Sanborn Fire Insurance Maps identified the following facilities neighboring the subject property: Men’s Reformatory, pig sties, a feed building, stable and garage, canning factory, dwellings, poultry houses, and a hot bed. The Men’s Reformatory structure did contain a 30-gallon tank of an oil-related substance enclosed in concrete. Pesticides and other chemicals likely were used during groundskeeping activities near the pig sties, feed building, stable and garage, and canning factory. Possibility of historical releases of petroleum products from the Men’s Reformatory tank and of hazardous materials or hazardous waste from the adjacent facilities

such as the Men's Reformatory or farm structures to the subject property does not pose a REC to the subject property.

- Based on interviews and historical documentation, the following were identified in close proximity to the subject property: HEHS and National Guard Armory. Because these facilities are crossgradient of the subject property, they do not pose a REC to the subject property.

In April 2011, Tetra Tech finalized the Limited Phase II ESA of the Municipal Garden Farm Community Garden project. No groundwater was encountered, but soil samples collected during the Phase II ESA were analyzed for VOCs, SVOCs, TPH-GRO, TPH-DRO, TPH-ORO, RCRA metals, and pesticides. Based on the limited sampling during the Phase II ESA near the proposed municipal garden, the soil did not appear to have been affected by historical activities within the area where the community garden was proposed or within adjacent properties (Tetra Tech 2011b).

EAE prepared an Area-Wide Brownfields Plan (AWBP) for the Municipal Farm properties to be used to facilitate sustainable reuse and development of the area. The AWBP conveys information about known and potential Brownfields concerns, prior assessment and cleanup activities, background environmental studies, and results of sampling in the area. Brownfields and areas of potential concern were highlighted in the AWBP. Both the former Men's Reformatory and MCI, which were on the subject property, were discussed in the AWBP. The AWBP outlined the history of each of the facilities as discussed in Section 2.3 above, and recommended a Phase I ESA of these areas as a preliminary investigation. Following the initial investigation, targeted screening or Phase II ESA sampling was recommended to confirm presence of contamination at unacceptable levels. Possibly present contaminants within these conceptual land use plan (CLUP) areas are primarily petroleum-related contaminants, herbicides, pesticides, rodenticides, lead, and hazardous waste chemicals based on former uses as a correctional institution, canning factory, agricultural use, and other Municipal Farm activities (EAE 2012).

3.0 PHASE II TARGETED BROWNFIELDS ASSESSMENT ACTIVITIES

The following sections describe the scope of the Phase II TBA and field exploration and methods. START team members Christina Engemann and Quan Do performed Geoprobe sampling June 14 and 15, 2017, and Geotechnology, Inc. (Geotechnology) conducted geotechnical sampling during September 5 through 7, 2017.

3.1 SCOPE OF THE ASSESSMENT

START field team members conducted environmental sampling to determine if soil impacted by historical activities at the subject property remained following excavation and removal, and performed geotechnical soil sampling to assist in delineating the extent of fill at the property and assessing stability of the soil for future development. Photographs were taken to document Phase II TBA field activities (see Appendix B). Phase II TBA activities were recorded in a site logbook (see Appendix C). Sampling accorded with a Quality Assurance Project Plan (QAPP) approved by EPA in May 2017 (Tetra Tech 2017).

3.1.1 Conceptual Site Model and Sampling Plan

The QAPP was consistent with *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*, ASTM International (ASTM) designation E1903-11 (ASTM 2011), and otherwise in compliance with EPA's "All Appropriate Inquiries" Rule (AAI Rule) (40 *Code of Federal Regulations* [CFR] Part 312). The sampling scheme involved biased/judgmental collection of soil and groundwater samples in accordance with *Guidance for Performing Site Inspections under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, Office of Solid Waste and Emergency Response (OSWER) Directive #9345.1-05, September 1992; and *Removal Program Representative Sampling Guidance, Volume 1: Soil*, OSWER Directive 9360.4-10, November 1991 (Tetra Tech 2017). Collection of soil samples was to identify contamination (if present) at the subject property, and geotechnical soil sampling was to aid in delineation of extent of fill at the subject property. Objectives were to characterize possible remaining impacts from historical releases to the environment and to assess stability of the soil prior to development.

START collected 24 soil samples at 14 locations (see Appendix A, Figure 3). Geotechnology collected nine soil samples at 17 boring locations (see Appendix A, Figure 4). Table 1 summarizes samples collected during the Phase II TBA and analyses performed. Sampling methods and activities are described in Section 3.2.

TABLE 1

**SUMMARY OF SAMPLES COLLECTED DURING PHASE II TBA ACTIVITIES
FORMER HEHS, KANSAS CITY, MISSOURI
JUNE 14 – 15, AND SEPTEMBER 5 – 7, 2017**

Sample Description	Sample Type	Total Number of Samples and Analyses
Soil from 10 on-site Geoprobe borings, and four hand trowel samples	Soil	24 samples – RCRA metals (including mercury), pesticides/herbicides, and warfarin; EPA Methods 6020A/7471B, 8081A, 8151, and 1694
Soil from 17 on-site geotechnical borings	Soil	9 samples – Moisture content, Atterberg limits, grain size, dry unit weight determinations, and unconfined compressive strength tests; ASTM D2216-10, D4318-05, and D2166M

Notes:

EPA U.S. Environmental Protection Agency
RCRA Resource Conservation and Recovery Act

3.1.2 Chemical Testing Plan

All soil samples collected from Geoprobe borings were submitted to ALS Environmental (ALS), a START-contracted laboratory, for analyses. The soil samples were analyzed for RCRA metals (including mercury), pesticides and herbicides, and warfarin. All samples were collected and analyzed according to standard operating procedures (SOP) and methods specified in the site-specific QAPP, which had been approved by EPA in May 2017. START selected a laboratory with analytical detection limits below applicable Missouri Risk-Based Corrective Action (MRBCA) default target levels (DTL) for all analytes. Appropriate containers and physical/chemical preservation techniques were employed during the field activities to help ensure acquisition of representative analytical results. Environmental samples were shipped to ALS on June 15, 2017; the soil samples were received by the laboratory on June 16, 2017.

All geotechnical soil samples were collected by and submitted to Geotechnology, a START-contracted laboratory, for analyses. The soil samples were analyzed for moisture content, Atterberg limits, grain size, dry unit weight determinations, and unconfined compressive strength tests. All samples were collected and analyzed according to SOPS and methods specified in the site-specific QAPP approved by EPA in May 2017. Geotechnical samples were transported by Geotechnology personnel to their laboratory at the end of each field day.

3.1.3 Deviation from the QAPP

A deviation from the QAPP and the rationale for it are as follows:

START did not collect a rinsate blank from the Geoprobe soil sampling equipment, as new disposable polyvinyl chloride (PVC) liners were used at each location.

3.2 FIELD EXPLORATION AND METHODS

Geoprobe field activities at the subject property occurred from June 14 through 15, 2017, and geotechnical field activities occurred from September 5 through 7, 2017. The sections below summarize sampling during the Phase II TBA.

3.2.1 Geoprobe Soil Sampling

Soil samples were collected at 10 boring locations (SB1, SB2, SB3, SB4, SB5, SB6, SB7, SB8, SB9, and SB10) to maximum depth of 8 feet below ground surface (bgs) (see Appendix A, Figure 3). The boreholes were advanced by use of a Geoprobe 4-foot-long Macro-Core sampler fitted with a disposable PVC liner. Soil samples were collected in accordance with Region 7 EPA SOP 4230.07: Geoprobe Operation. At each boring location, one sample was collected within the surface interval of 0 to 1 foot bgs, and one sample was collected from the remaining portion of the core. Soil from each sample interval was placed in a disposable aluminum pie pan for homogenization and then transferred to three 4-ounce (oz) jars for analyses of metals, pesticides and herbicides, and warfarin. Pertinent data, including exact sample locations (depths and Global Positioning System [GPS] coordinates), were recorded in the logbook (see Appendix C). All soil samples were stored in coolers maintained at or below 4 degrees Celsius (°C).

3.2.2 Surface Soil Sampling

Surface soil samples were collected at four locations (SS1, SS2, SS3, and SS4) on the subject property (see Appendix A, Figure 3). Surface soil samples were collected within the top 2 inches of soil by use of a hand trowel in accordance with Region 7 EPA SOP 4231.2012. Soil from this sample interval was placed in a disposable aluminum pie pan for homogenization and then transferred to three 4-ounce (oz) jars for analyses of metals, pesticides and herbicides, and warfarin. Pertinent data, including exact sample locations (depths and GPS coordinates), were recorded in the logbook (see Appendix C). All soil samples were stored in coolers maintained at or below 4 °C.

3.2.3 Geotechnical Soil Exploration and Sampling

The field exploration by Geotechnology consisted of advancing 17 borings, designated as borings B-1 through B-17 (see Appendix A, Figure 4). Each boring was drilled by use of a track-mounted Diedrich D-50 rotary drill rig equipped with 4-inch-diameter flight augers. Standard penetration tests (SPT) proceeded by use of an automatic hammer with measure efficiency. Split-spoon samples and Shelby tube samples were collected at various depths. An engineer or geologist from Geotechnology provided direction during field exploration, observed drilling and sampling, and prepared logs of the material encountered (Geotechnology 2017). All soil samples were transported to the Geotechnology laboratory by Geotechnology field personnel.

TABLE 2
SUMMARY OF GEOTECHNICAL SAMPLES COLLECTED
DURING PHASE II TBA ACTIVITIES
FORMER HEHS, KANSAS CITY, MISSOURI
SEPTEMBER 5 THROUGH 7, 2017

Geotechnical Boring Location	Boring Termination Below Ground Surface (bgs)	Depth to Groundwater
B-1 – Boys Grow	20 feet	17.5 feet bgs
B-2 – Boys Grow	20 feet	5.5 feet bgs
B-3 – Boys Grow	20 feet	5.5 feet bgs
B-4 – Boys Grow	20 feet	6 feet bgs
B-5 – The Hub	8 feet – Refusal	Not encountered
B-6 – The Hub	8.5 feet – Refusal	Not encountered
B-7 – The Hub	11.5 feet – Refusal	Not encountered
B-8 – The Hub	6 feet – Refusal	Not encountered
B-9 – The Hub	19.5 feet – Refusal	Not encountered
B-10 – The Hub	20 feet	Not encountered
B-11 – The Hub	6.5 feet – Refusal	Not encountered
B-12 – The Hub	16.5 feet – Refusal	Not encountered
B-13 – The Hub	19.25 feet – Refusal	13.5 feet bgs
B-14 – The Hub	7 feet – Refusal	Not encountered
B-15 – The Hub	19 feet – Refusal	Not encountered
B-16 – Community Gardens	10 feet – Refusal	Not encountered
B-17 – Community Gardens	19.25 feet – Refusal	17.5 feet bgs

4.0 PRESENTATION AND EVALUATION OF RESULTS

The following sections summarize analytical data from the environmental and geotechnical soil samples collected during the Phase II TBA. Environmental soil sample results from this TBA were compared to EPA Regional Screening Levels (RSL) for residential and industrial soils (EPA 2017b). Residential and industrial soil RSLs were based on the target cancer risk (TR) of 1E-06, with a target hazard quotient (THQ) of 0.1. The purpose of RSLs is to provide generic (i.e. non site-specific) screening values for initial evaluation of sites. These are developed according to risk assessment guidance from the EPA Superfund program. The values are considered protective for humans (including sensitive populations) over a lifetime. Generally, at sites where contaminant concentrations are below RSLs, no further action or study under Superfund is warranted. Environmental sample results from this TBA were also compared to MRBCA Lowest Default Target Levels (LDTL) and Risk-Based Target Levels (RBTL) (MDNR 2006). According to the geotechnical sample results, soils at the subject property are predominantly fine-grained silts and clays (Geotechnology 2017, see Attachment 1). Soil sample results from this TBA were therefore compared to MRBCA-specified values for Type 2 (silty) soils for residential and non-residential land uses (MDNR 2006). These values have been established to represent protective concentration thresholds for common environmental contaminants. Metals concentrations were also compared to mean background soil concentrations in Jackson County, Missouri (USGS 2016). Copies of complete environmental analytical data packages are in Appendix D.

4.1 ENVIRONMENTAL SOIL SAMPLES

Soil samples were analyzed for RCRA metals, herbicides, pesticides, and warfarin. Soil sample results are summarized in the following tables in Appendix E: Table E-1 compares the results for metals in soil to residential criteria; Table E-2 compares the results for metals in soil to industrial/non-residential criteria; Table E-3 compares the results for herbicides/pesticides to residential criteria; and Table E-4 compares the results for herbicides/pesticides to industrial/non-residential criteria. The soil data are presented in separate tables due to the uncertainty associated with future land use at the site. All surface and subsurface soil samples contained arsenic at concentrations above EPA RSLs for residential and industrial soils, and the MRBCA LDTL for soil, and all surface soil samples contained concentrations of arsenic above the MRBCA residential RBTL. However, arsenic concentrations in all soil samples were below the Jackson County average. All soil samples contained lead at concentrations above the MRBCA LDTL for soil; however, the criterion is based on protection of the domestic groundwater use pathway. Three surface soil samples (at SB9, SS1, and SS4) contained lead at concentrations above the MRBCA residential RBTL of

260 milligrams per kilograms (mg/kg), with lead concentration in the sample from SS4 (870 mg/kg) above the MRBCA non-residential RBTL of 660 mg/kg.

4,4-Dichlorodiphenyldichloroethene (DDE) was detected in surface soils samples from SB1, SB10, SS1, SS2, SS3, and SS4 at concentrations that ranged from 0.02 J to 1.2 mg/kg, and in a subsurface sample (SB1) at a concentration of 0.0064 J mg/kg. No detectable concentration of 4,4-DDE was found to exceed any EPA or MDNR screening levels. 4,4-Dichlorodiphenyltrichloroethane (DDT) was detected in nine of the 14 surface soil samples at concentrations that ranged from 0.0027 J to 0.86 mg/kg – all at concentrations below EPA and MDNR screening levels. 4,4-DDT was not detected in any subsurface soil samples. 4,4-Dichlorodiphenyldichloroethane (DDD) was detected in surface soil samples collected from SB10 and SS3 at concentrations of 0.03 J mg/kg and 0.1 J mg/kg, respectively. Neither of those detections exceeded any EPA or MDNR screening levels. 4,4-DDD was not found at any detectable concentration in subsurface soil samples. Dieldrin was detected in the surface soil samples from SB8 and SB10 at concentrations of 0.021 J mg/kg and 0.024 J mg/kg, respectively. Neither of those detections exceeded any EPA or MDNR screening levels. Dieldrin was not detected in any subsurface soil samples.

2,4-Dichlorophenoxyacetic acid (2,4-D) was detected in the subsurface sample from SB3 at 0.022 mg/kg, below any applicable screening levels.

No soil sample collected during the Phase II TBA was found to have a detectable concentration of warfarin.

4.2 GEOTECHNICAL SOIL SAMPLES

Fill material was identified in eight of the 17 borings drilled by Geotechnology. Thickness of fill materials ranged from 1.5 to 19.75 feet bgs at those eight locations. Notably, fill materials in borings B-6 and B-9 (each located at The Hub [see Appendix A, Figure 4]) were found to extend throughout the entire boring (to auger refusal). Detailed results from the geotechnical drilling and laboratory testing services are summarized and discussed in the report prepared by Geotechnology, included as Attachment 1.

5.0 DISCUSSION OF FINDINGS AND CONCLUSIONS

This section addresses the findings and conclusions of the Phase II TBA field activities.

5.1 RECOGNIZED ENVIRONMENTAL CONDITIONS

All surface and subsurface soil samples contained arsenic at concentrations above the EPA RSLs for residential and industrial soils, and above the MRBCA LDTL for soil; and all surface soil samples contained arsenic concentrations above the MRBCA residential RBTL. However, arsenic concentrations in all samples were below the county average. All soil samples contained lead at concentrations above the MRBCA LDTL for soil; however, the criterion is based on protection of the domestic groundwater use pathway. Three surface soil samples contained lead at concentrations above the MRBCA residential RBTL, with the lead concentration in the sample from SS4 above the MRBCA non-residential RBTL.

The herbicide 2,4-D and the pesticides 4,4-DDD, 4,4-DDE, 4,4-DDT, and Dieldrin were detected in surface and subsurface soil samples collected at the site; however, none of those concentrations exceeded any applicable EPA or MDNR screening levels.

5.2 AFFECTED MEDIA

Based on sampling during this Phase II TBA, soils at the site appear to have been affected by historical activities associated with the former HEHS facility. Particularly, lead was identified in surface and subsurface soils at concentrations exceeding EPA and MDNR-established benchmarks. Herbicide and pesticide-related compounds were identified in surface and subsurface soils at the site; however, none of those compounds were detected at concentrations that exceeded any EPA or MDNR-established benchmarks. If future development of the site is desired, additional sampling may be required to further delineate horizontal and vertical extents of lead in soil.

6.0 REFERENCES

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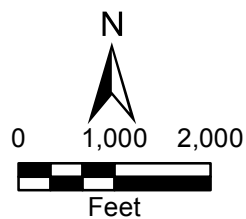
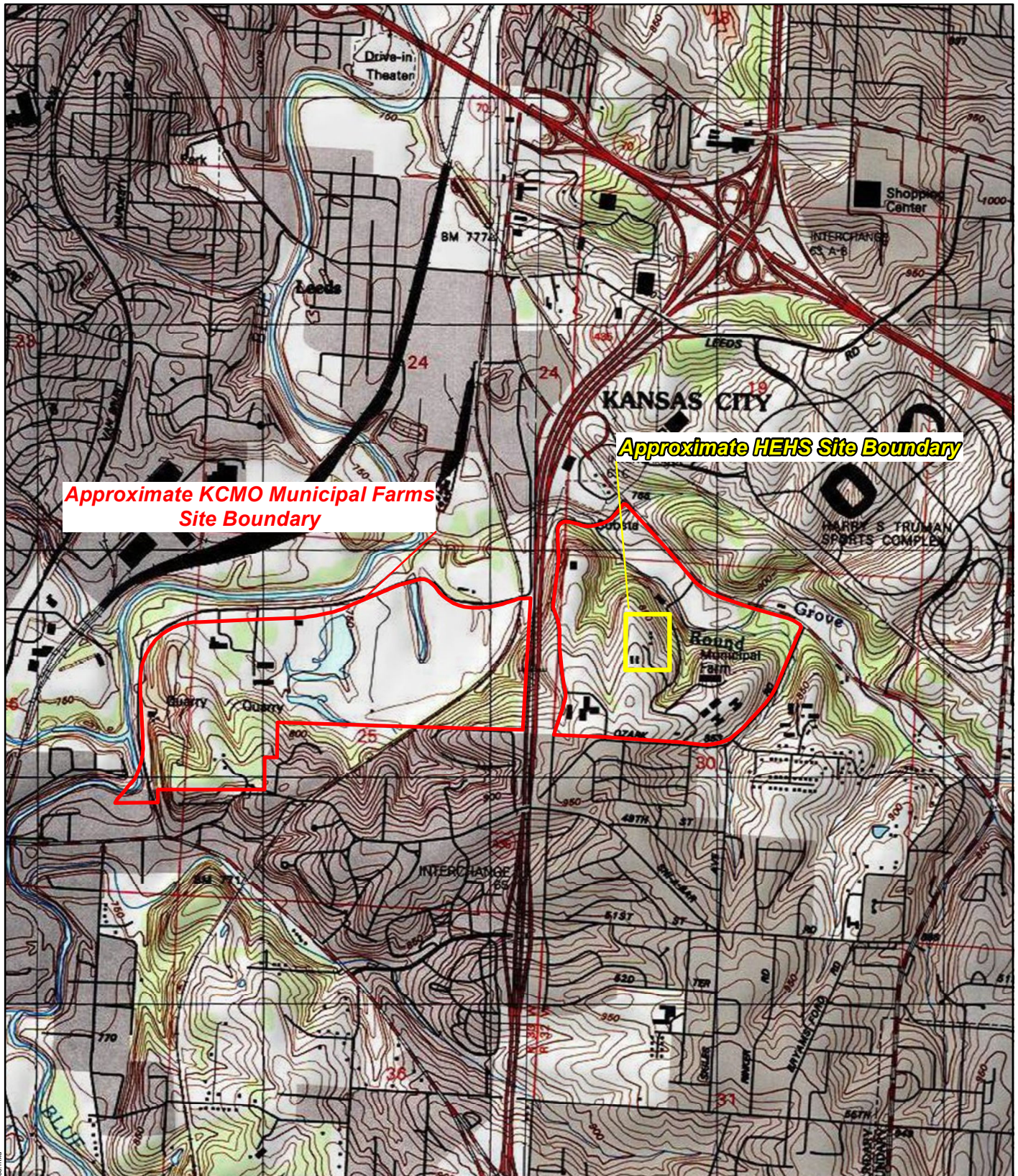
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APPENDIX A

FIGURES



KCMO Municipal Farms -
Former Health Emergency HAZMAT Site
Kansas City, Missouri

Figure 1
Site Location Map



Source: USGS Independence, MO 7.5 Minute Topo Quad, 1975;
USGS Kansas City, MO 7.5 Minute Topo Quad, 1975

Date: 12/5/2017

Drawn By: Kirk Mammoliti

Project No: X9025.14.0002.019.020

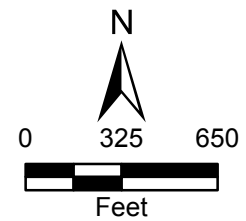
X:\G0025\01\02\019\020\Project\mxd\Phase1\Figure1_Site Loc.mxd



X:\GIS\05002019\02\Projects\Map\Phases\Figure2_Layout.mxd

- Legend
- Approximate site boundary
 - Conceptual reuse area
 - Former HEHS site boundary

Source: HSIP Gold, 2007; Kansas City, Missouri, City Manager and Council Briefing, Municipal Farm Area-wide Brownfield Sustainable Reuse Plan, Municipal Farm Concept Plan, 2015;
The source of this basemap image is Esri, used by EPA with Esri's permission.

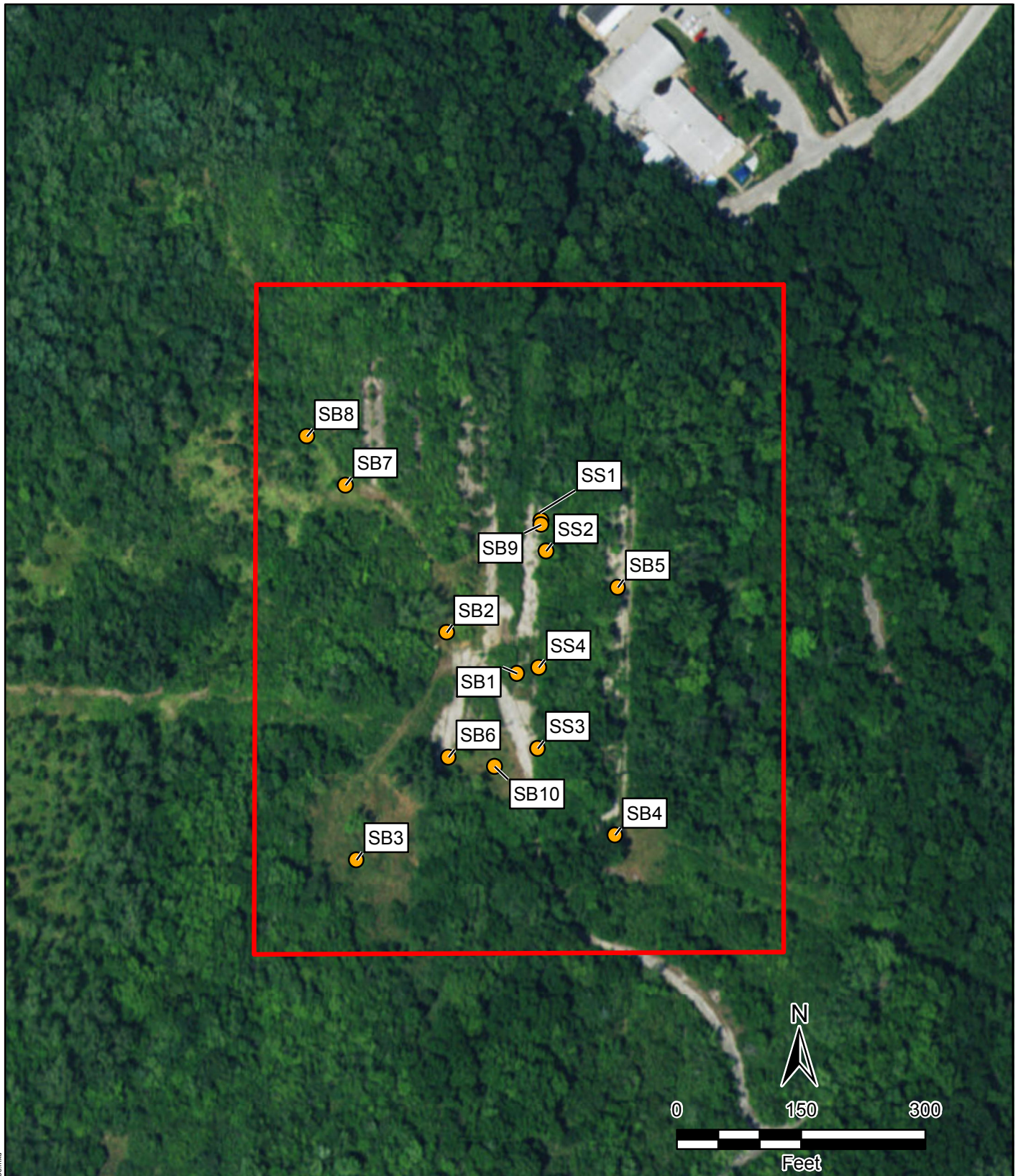


KCMO Municipal Farms -
Former Health Emergency HAZMAT Site
Kansas City, Missouri

Figure 2
Site Layout Map



Date: 12/5/2017 Drawn By: Kirk Mammoliti Project No: X9025.14.0002.019.020



Legend

- Soil sample location
- Approximate HEHS boundary

KCMO Municipal Farms -
Former Health Emergency HAZMAT Site
Kansas City, Missouri

Figure 3
Soil Sample Location Map



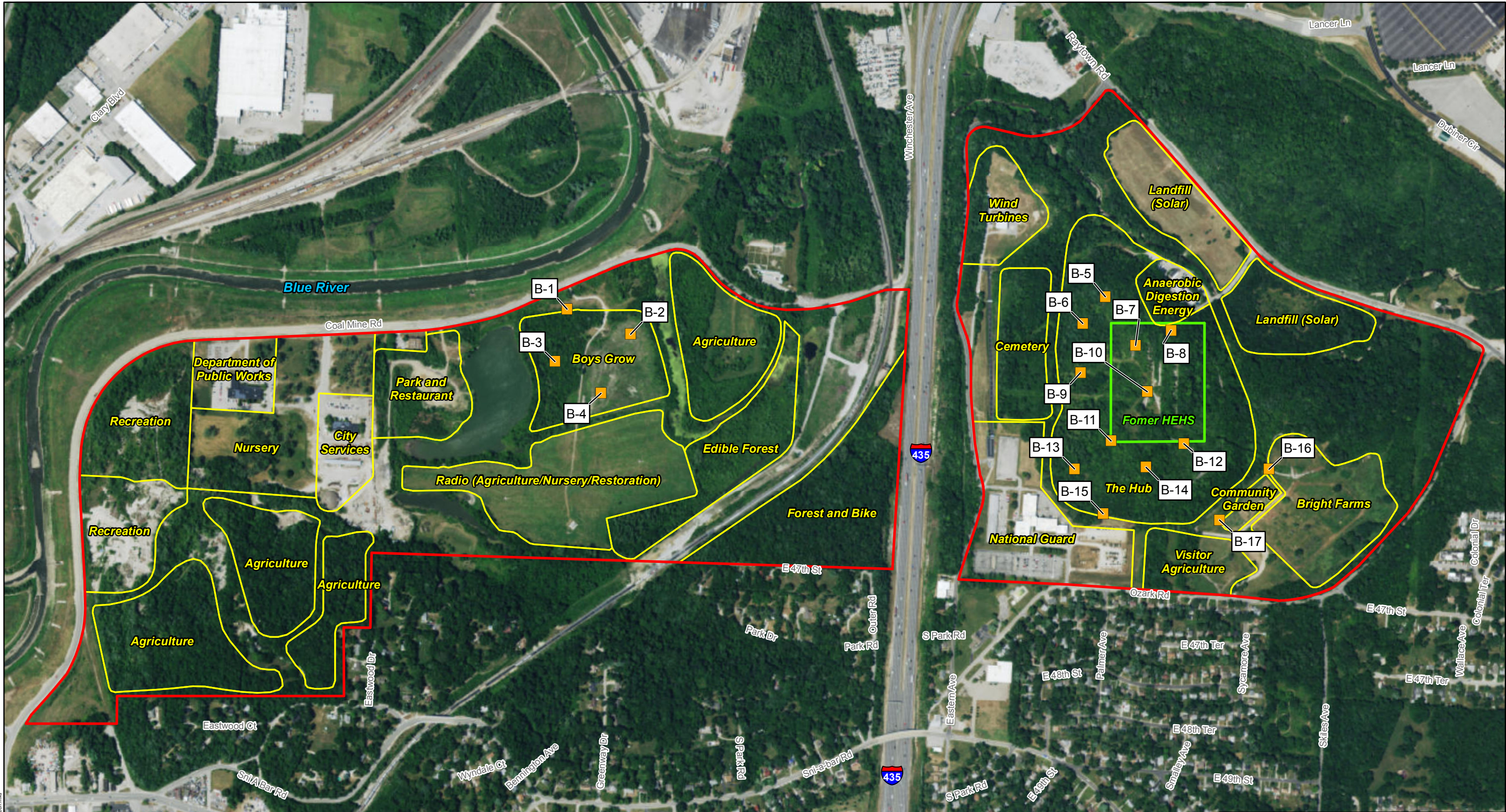
Source: HSIP Gold, 2007; USGS, The National Map: National Hydrography Dataset, 2016;
The source of this basemap image is Esri, used by EPA with Esri's permission.

Date: 12/5/2017

Drawn By: Kirk Mammoliti

Project No: X9025.14.0002.019.020

X:\G0025\00102\019\020\Project\mmap\Phase1\Figure3_SoilLoc.mxd



Legend

- Geotechnical boring location
- Approximate site boundary
- Conceptual reuse area
- Former HEHS site boundary

Source: HSIP Gold, 2007; Kansas City, Missouri, City Manager and Council Briefing, Municipal Farm Area-wide Brownfield Sustainable Reuse Plan, Municipal Farm Concept Plan, 2015;
The source of this basemap image is Esri, used by EPA with Esri's permission.

Figure 4
Geotechnical Soil Boring Locations

TETRA TECH

Date: 12/5/2017 Drawn By: Kirk Mammoliti Project No: X9025.14.0002.019.020

APPENDIX B

PHOTOGRAPHIC DOCUMENTATION

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: North	DESCRIPTION	This photograph shows the location of soil boring SB1.	1
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB1.	2
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: North	DESCRIPTION	This photograph shows the location of soil boring SB2.	3
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB2.	4
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: South	DESCRIPTION	This photograph shows the location of soil boring SB3.	5
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB3.	6
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: Southwest	DESCRIPTION	This photograph shows the location of soil boring SB4.	7
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB4.	8
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.027 DIRECTION: NA	DESCRIPTION	This photograph shows the location of soil boring SB5.	9
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB5.	10
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: South	DESCRIPTION	This photograph shows the location of soil boring SB6.	11
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB6.	12
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: North	DESCRIPTION	This photograph shows the location of soil boring SB7.	13
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB7.	14
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: West	DESCRIPTION	This photograph shows the location of soil boring SB8.	15
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB8.	16
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/14/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: North	DESCRIPTION	This photograph shows the location of soil boring SB9.	17
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA	DESCRIPTION	This photograph shows the soil profile of SB9.	18
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



<p>TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: South</p>	DESCRIPTION	This photograph shows the location of soil boring SB10.	19
	CLIENT	Environmental Protection Agency - Region 7	<p>DATE 06/15/2017</p>
	PHOTOGRAPHER	Christina Engemann	



<p>TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: NA</p>	DESCRIPTION	This photograph shows the soil profile of SB10.	20
	CLIENT	Environmental Protection Agency - Region 7	<p>DATE 06/15/2017</p>
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: West	DESCRIPTION	This photograph shows the location of surface soil sample SS1.	21
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: East	DESCRIPTION	This photograph shows the location of surface soil sample SS1.	22
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: West	DESCRIPTION	This photograph shows the location of surface soil sample SS2.	23
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: West	DESCRIPTION	This photograph shows the location of surface soil sample SS3.	24
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	

**Former Health Emergency HAZMAT Site
Phase II Targeted Brownfields Assessment
8100 Ozark Road, Kansas City, Missouri**



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: West	DESCRIPTION	This photograph shows the location of surface soil sample SS4.	25
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	



TETRA TECH PROJECT NO. X9025.0002.019.020 DIRECTION: Northeast	DESCRIPTION	This photograph shows the location of surface soil sample SS4.	26
	CLIENT	Environmental Protection Agency - Region 7	DATE 06/15/2017
	PHOTOGRAPHER	Christina Engemann	

APPENDIX C
SITE LOGBOOK

KS 1633



Rite in the Rain®

ALL-WEATHER

LEVEL

Nº 311FX

KCMO Municipal
Farms - Phase II

2

6/14/17 KC MO Municipal Farms HCHS
0900 STM Engemann begin prepping supplies
for field work

1000 STM Engemann and Do depart
office, get ice and drinks for the
field.

1035 Arrive on site
1045 Begin drilling SB-1. Photo 1
Location: 39.042662
-94.494145

1105 Collect SB1 (0-1').
Soil Profile for SB1: Photo 2
0-3" : brown silt

3"-8" : brown clay

1120 Collect SB1 (2-8') Photo 3
1125 Begin boring SB2
39.042794
-94.494447

Soil Profile for SB2: Photo 4
0-5" : Gravel/Fill

5"-8" : Brown clay gray mottling

1138 Collect SB2 (0-1').
1150 Collect SB2 (1-18').
1200 Begin boring SB3: Photo 5
39.042038, -94.494814

3

6/14/17 cont'd KC MO Municipal Farms HCHS
Soil Profile SB3: Photo 6

0-6' : Brown clay

1219 Collect SB3 (6-1').

1235 Collect SB3 (1-6'). Note, refusal
at 6' bgs.

1245 Begin drilling SB4: Photo 7

39.042131, -94.493717

Soil Profile: Photo 8

0-0.5' : Brown clay

0.5-2' : Dark Brown clay

2-3' : Gravel - fill

3-3.5' ~~3.5-4'~~ : Dark Brown clay, red mottling

3.5'-4' : Dark Gray clay

4-4.5' : Dark Gray, red mottling clay

4.5'-5' : Dark Gray, brown, red mottling

5'-6' : Dark Gray w/ light brown + red mottling

6'-7' : Dark Gray w/ light gray mottling

7'-8' : Light Gray clay

1305 Collect SB4 (0-1').

1320 Collect SB4 (1-8').

1330 Begin Drilling SB5: Photo 9

39.042953, -94.493722

Refusal at 4' bgs.

Soil Profile: Photo 10

Rite in the Rain.

6/14/17 cont'd KCMS Municipal Farms HEMS

D-2' : Gravel

2" - 1' : Red clay, light and orange mottling

1' - 3' : Light red/orange clay

3' - 4' : Moisture, Red clay

1415 Begin drilling SB6 : Photo 11

39.042381, -94.494429

Soil Profile : Photo 12

0 - 6.5' : Brown clay

6.5' - 8' : Tan clay

1437 Collect SB6 (0-1)

1444 Collect SB6 (1-8)

1450 Begin drilling SB7 : Photo 13

39.043276, -94.494886

Soil Profile : Photo 14

0 - 8' : Brown clay

1510 Collect SB7 (0-1)

1520 Collect SB7 (1-8)

1530 Begin drilling SB8 : Photo 15

39.043435, -94.495054

Soil Profile : Photo 16, 17

0 - 5' : Brown / Gray mottled clay

5 - 8' : Brown clay

Whole cores had red color on outside, appears to be brick color. Chunks of

6/14/17 cont'd KCMS Municipal Farms HEMS

brick at top of core

1540 Collect SB8 (0-1)

1550 Collect SB8 (1-8)

1605 Depart site for office. Will

return tomorrow with a chainsaw

to access the last two locations.

1630 Arrive at TT office. End of the

field day.

6/14/17

6/15/17 KCMO Municipal Farms HENS

0830 Arrive at TT office and reload
Supplies for additional sampling.
0900 Depart the office for the site.
0930 STM's Engmann and Do arrive at
the site. H^{ns} to discuss tree
cleaning and ticks. Begin clearing
vegetation for vehicle access to
sample locations.

0957 Collect SS1 in the trench
along the concrete slab. Photo 18.
Collected 0-2". Approximately
located at area of previously
identified contamination
39.043173, -94.494053
Photo 19.

1013 Begin bring SB9. Photo 20.
39.043155, -94.494053

1017 Collect SS2 east of the
concrete wall and trench in
the wooded area. 0-6" bgs. Photo 21
39.043069, -94.494029

1033 Collect SS3 SE of the corner of
the concrete slab in the wooded area.
39.042414, -94.494050, Photo 22

6/15/17

1045 Begin bring SB10. Photo 23
39.042352, -94.494234

1046 Soil Profile for SB9. Photo 24

0-1': Gray/Brown Clay interspersed
with gravel - potentially fill.

1-8': Brown clay.

1051 Collect SB9 (0-1').

1057 Collect SB9 (1-8').

1106 Soil Profile for SB10. Photo 25.

0-6": Brown clay

6"-3': Gravel

3'-8': Tan clay w/ orange light
brown mottling.

1111 Collect SB10 (0-6')

1117 Collect SB10 (1-8')

1128 Collect SS4 in the trench along the
concrete, on the south side of the
slab from 0-2". Photo 26.

39.042083, -94.494052

Pack up Supplies and return to
TT office. Pick up ice in the
way for sample prep.

1230 ~~11:17~~ office, prep samples
and paperwork for shipment

Rite in the Rain.

6/15/17 Kono HCHS
 1600 ship samples to ALS. Clean
 up supplies. End of Day.

OK
 6/15/17

8/30/17 KCMO HEHS

0830 STM Sawyer at Community Gardens to meet City of KC personnel to begin cleaning the paths for the Bad holes (geotechnical).

0847 C of KC on site. Show them a few locations to start.

1030 STM Engemann on site with

Sapling to relieve Sawyer.

1205 Hydraulic hose breaks on dozer. Will have to wait for mechanic to fix machine.

1230 Lunch

1300 Back on site to wait mechanic.

1430 Pick up key to Community Gardens gate from their main office.

1515 STM Engemann back at TT office to notify group of progress.

1535 Call from C of KC, dozer hose fixed, will resume in the morning. End of Day

OK 8/30/17

8/31/17 KCMO HEHS

0830 STM Engemann on site and meets C of KC personnel.

Wait for mechanic to bring hydraulic fuel.

1000 Begin cleaning vegetation again.

1230 C of KC takes lunch break.

Engemann finds next spot to begin cleaning.

1255 Engemann meets Matt McQuigg with Geotechnical to show him the progress of the cleaning, therefore the paths are suitable for his rig. Flay all stakes at boring locations with white flagging.

1330 Geotechnical brings rig to site in prep for drilling next week.

1345 C of KC back on site.

Engemann shows them where cleaning should start the next day.

1405 C of KC departs site for the day.

Rite in the Rain

8/31/17

KC Mo HCHS

1445 GeoTechnolog departs site.
 1500 Engemann departs site for
 TT office.

1530 At TT office, bring START
 vehicle for maintenance.

1600 Back at TT office. End of
 Day.

~~U/D~~
 8/31/17

9/1/17 KC Mo HCHS

0830 STM Engemann meets CoF KC
 at site. Continue clearing
 paths at "The Hub" location.

1045 Crew finishes clearing at "The Hub"
 location, moves equipment back to
 Community Gardens and goes back
 to their office to get the truck to
 move the dozer back to the Boys
 Crew location. Engemann contacts
 Joshua Anderson with Boys Crew
 to meet and unlock the gate to
 access.

1200 STM Packed in site to remove
 Engemann. Engemann goes over all
 procedures, locations, and health & safety
 potential issues with Packed.

1230 Anderson on site to unlock the
 gate. Engemann departs site.

1315 CoF KC on site, at Boys Crew location.

1430 Clearing complete. Depart site.

9/1/17

9/5/17 KCMO HEALS

0800 STM Sawyer on site to meet
Geotechnical. Remains tailgate H+S
meeting. Crew to begin soil
community garden locations.

0817 Begin advancing geotechnical boring
B-14. According to Geotechnical geology,
the suitability for construction looks
promising. Refusal at ~19' bgs.

Sample taken from 3-5' bgs.
Crew not using hollow stem augers,
as the soil materials are too hard
to penetrate. To avoid shallow

refusal, flight augers will be used
for this site instead. Photos 1, 2, 3
1951 Begin boring B-16. Refusal at ~19.5 bgs.
Clay to rock. Photo 4. Core from 6-8 bgs.

1055 Begin boring B-12. Photo 5.
Refusal at ~16.5' bgs. Core collected
from 3-5' bgs.

1201 Begin drilling B-14. Photos 6-7.
Refusal at ~6.5' bgs. No sample

1238 Begin drilling B-15. Photo 8.
Collect core from 3-5' bgs.
Refusal at ~18' 4" bgs.

9/5/17 cont'd KCMO HEALS

1345 Begin boring B-13. Photo 9-10.
Refusal at ~19.25'. Core collected
from 6-8' bgs.

1516 Begin boring B-11. Photo 11.

No core collected. Refusal at
1543 Move rig toward B-9 location,
where we will start tomorrow.

1600 Depart site for office.

1630 End of Day.

UFG
9/5/17

9/6/17 Kono HENS

0730 STM Sawyer arrives on site to meet
Curtis and set up.
0830 Begin boring B-9. Core collected
from 13-15' bgs. Tube empty, almost
potentially still in fill. Water
observed in hole. Photos 12, 13.
STM Engstrom on site to relieve
Sawyer.

At 15 bgs, still observing sticks &
fill materials.

A slight odor in the water was
observed, emitting off of the soil
cores. Depth to water was 6' bgs.
Ended boring at 20' bgs.

0930 Begin boring B-10. Photo 14.
Slabby Tube Core taken from 3-5' bgs.
Refusal at 10' bgs. 20' bgs.

1028 Begin boring B-7. Photo 15.
Slabby Tube Core taken from 6-8' bgs.
Refusal at 11.5' bgs.

1114 Begin boring B-6. Photo 16.
Refusal at 8.5' bgs.

1150 Begin boring B-5. Photo 17.
Core/Slabby Tube from 3-5' bgs.

9/6/17 continued Kono HENS

1215 Refusal at 8' bgs. Appears to be
weathered limestone / bedrock.

Note: Refusal at B-6 may have been
due to fill. Fill material may be
the solid 8.5' bgs. Gravel still observed.

1258 Begin boring B-8. Photo 18.

Refusal at 6.5' bgs. No tube taken

1430 Move in to Bays Crown area to

set up for tomorrow.

1530 Depart site for office.

1600 End of day.

9/6/17

Kono HGS

9/7/17

0730 Meet Geotechnology on site at the Bay, Grow area. JJ

0740 Tailgate HGS meeting. Discuss dinner, Chigyes, & snakes.

0753 Begin boring B-1. Photo 19.

Slurry tube collected from 3-5' bgs.
Water encountered at ~17.5' bgs.

Core complete at 20' bgs.

0911 Begin boring B-3. Photo 20.

Water encountered at ~5.5' bgs.

Core complete at 20' bgs. No tube

collected as fill material was

observed down to at least 12' bgs.

1045 Begin boring B-4. Photo 21.

Water encountered at ~6' bgs.

Slurry tube collected from 6-8' bgs.

1151 Begin boring B-2. Photo 22.

Water encountered at ~5.5' bgs.

Slurry tube/core collected from 8-10' bgs.

Core complete at 20' bgs.

1300 Load up equipment for departure.

1330 Depart site and return keys

to Community Center office.

1415 TT office, end of day.

CAG

9/7/17

Rite in the Rain

APPENDIX D

CHAIN-OF-CUSTODY RECORDS, FIELD SHEETS, AND ANALYTICAL RESULTS

Tetra Tech, Inc.
DATA VALIDATION REPORT
LEVEL II

Site: KCMO Municipal Farm

Laboratory: ALS Environmental, Inc. (Holland, Michigan, and Waterloo, Ontario)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date 7-8 August 2017

Sample Delivery Group (SDG): 17061002

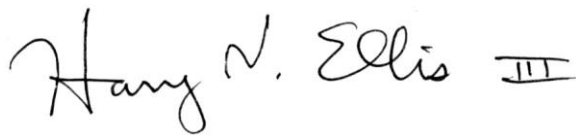
Sample Numbers: SB1 (0-1), SB1 (1-8), SB2 (0-1), SB2 (1-8), SB3 (0-1), SB3 (1-6), SB4 (0-1), SB4 (1-8), SB5 (0-1), SB5 (1-4), SB6 (0-1), SB6 (1-8), SB7 (0-1), SB7 (1-8), SB8 (0-1), SB8 (1-8), SB9 (0-1), SB9 (1-8), SB10 (0-1), SB10 (1-8), SS1, SS2, SS3, and SS4

Matrix / Number of Samples: 24 Soil Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", January 2017, and "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", January 2017). In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above-referenced documents were assessed, and any qualifications made to the data accorded with those documents.



8 August 2017

Certified by Harry Ellis, Chemist

Date

DATA VALIDATION QUALIFIERS

- U** — The analyte was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. Presence or absence of the analyte cannot be verified.

DATA ASSESSMENT

Sample delivery group (SDG) 17061002 included twenty-four (24) environmental soil samples and no (0) QC samples. Samples were analyzed for pesticides via EPA Method 8082A, herbicides via EPA Method 8151, metals via EPA Methods 6020A and 7471B, and warfarin via EPA Method 1694. The following summarizes the data validation that was performed.

PESTICIDE ANALYSIS

I. Holding Time and Chain of Custody (COC) Requirements

The samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

There were no irregularities in the MS/MSD analyses performed on sample SB1 (1-8). Results could not be determined from the MS/MSD analyses performed on sample SS1 due to its very high organic content. No qualifications were applied.

III. Blanks

There were no analytes in the laboratory (method) blanks. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

All percent recoveries from the LCS analyses were within established control limits. No qualifications were applied.

V. Surrogates

All surrogate recoveries were within established control limits. No qualifications were applied.

VI. Comments

Some detected results were below the sample reporting limits, which correspond to the lowest calibration standard. ALS correctly flagged these extrapolations “J” to indicate that they are estimated. Ten samples were analyzed at dilutions (5-, 10-, or 50-fold) to minimize matrix interference, to bring high analyte concentrations within calibration range, or for both purposes. These dilutions raised detection and reporting limits, so nondetected results are not comparable among all samples. In addition, sample SB10 (0-1) was re-analyzed at a 10-fold dilution (for a total 50-fold dilution) to bring the high concentration results for two analytes within calibration range. This succeeded, so no qualifications were applied.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications applied. All data are usable as reported for their intended purposes.

HERBICIDE ANALYSIS

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days from extraction to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Both MS/MSD analyses yielded acceptable results. No qualifications were applied.

III. Blanks

The laboratory (method) blanks yielded no herbicides. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

All percent recoveries for the LCS analyses were within established control limits. No qualifications were applied.

V. Surrogates

All percent recoveries for the surrogates were within control limits. No data were qualified.

VI. Comments

Only one herbicide (2,4-D) was detected in one sample ((SB3 (1-6))).

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications applied. All data are usable as reported for their intended purposes.

WARFARIN ANALYSIS

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days from extraction to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS and laboratory duplicate analyses were performed and yielded acceptable results. No qualifications were applied.

III. Blanks

The laboratory (method) blank contained no detectable warfarin. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

Percent recoveries for the LCS analyses were within established control limits. No data were qualified.

V. Surrogates

Surrogates are not used in this analysis.

VI. Comments

Warfarin was not detected in any of the samples.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications. All data are usable as reported for their intended purposes.

METALS ANALYSIS

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 6 months (28 days for mercury) from sample collection to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

In the MS/MSD analyses performed on sample SB1 (1-8), recoveries of barium could not be determined because the unspiked concentration was much more than the spike. No qualifications were applied for this data gap. However, barium yielded a very high (54 percent) relative percent difference, apparently due to sample heterogeneity. In addition, chromium yielded recoveries of 175 and 167 percent, above control limits of 75 to 125 percent, apparently due to sample heterogeneity. Therefore the concentrations of barium and chromium in sample SB1 (1-8) were qualified as estimated and flagged "J". The other set of metals MS/MSD analyses was performed on a sample from another site. No qualifications were applied for the observed irregularities in the results.

III. Blanks

The laboratory (method) blanks contained very low concentrations of chromium and lead. Soil concentrations were much higher, so no qualifications were applied.

IV. Laboratory Control Sample (LCS)

Percent recoveries for the LCS analyses were within established control limits. No data were qualified.

V. Comments

Some detected results (especially for cadmium and silver) were above the sample detection limit but below the sample quantitation limit. The laboratory correctly flagged these results "J" to indicate that they are estimated. In addition, all samples were analyzed at a 4-fold dilution for Method 6020A metals to minimize matrix interference. And sample SS4 was re-analyzed at a further 10-fold dilution for lead due to its high concentration. No further qualifications were applied.

VI. Overall Assessment of Data

Overall data quality is acceptable, with few additional qualifications. All data are usable as qualified for their intended purposes.



07-Jul-2017

Christina Engemann
Tetra Tech
415 Oak Street
Kansas City, MO 64106

Re: **KCMO Municipal Farm Site**

Work Order: **17061002**

Dear Christina,

ALS Environmental received 24 samples on 16-Jun-2017 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 87.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Joseph Ribar".

Electronically approved by: Joseph Ribar

Joseph Ribar
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Work Order: 17061002

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17061002-01	SB1 (0-1)	Soil		6/14/2017 11:05	6/16/2017 10:30	<input type="checkbox"/>
17061002-02	SB1 (1-8)	Soil		6/14/2017 11:20	6/16/2017 10:30	<input type="checkbox"/>
17061002-03	SB2 (0-1)	Soil		6/14/2017 11:38	6/16/2017 10:30	<input type="checkbox"/>
17061002-04	SB2 (1-8)	Soil		6/14/2017 11:50	6/16/2017 10:30	<input type="checkbox"/>
17061002-05	SB3 (0-1)	Soil		6/14/2017 12:19	6/16/2017 10:30	<input type="checkbox"/>
17061002-06	SB3 (1-6)	Soil		6/14/2017 12:35	6/16/2017 10:30	<input type="checkbox"/>
17061002-07	SB4 (0-1)	Soil		6/14/2017 13:05	6/16/2017 10:30	<input type="checkbox"/>
17061002-08	SB4 (1-8)	Soil		6/14/2017 13:20	6/16/2017 10:30	<input type="checkbox"/>
17061002-09	SB5 (0-1)	Soil		6/14/2017 13:45	6/16/2017 10:30	<input type="checkbox"/>
17061002-10	SB5 (1-4)	Soil		6/14/2017 13:51	6/16/2017 10:30	<input type="checkbox"/>
17061002-11	SB6 (0-1)	Soil		6/14/2017 14:37	6/16/2017 10:30	<input type="checkbox"/>
17061002-12	SB6 (1-8)	Soil		6/14/2017 14:44	6/16/2017 10:30	<input type="checkbox"/>
17061002-13	SB7 (0-1)	Soil		6/14/2017 15:10	6/16/2017 10:30	<input type="checkbox"/>
17061002-14	SB7 (1-8)	Soil		6/14/2017 15:20	6/16/2017 10:30	<input type="checkbox"/>
17061002-15	SB8 (0-1)	Soil		6/14/2017 15:40	6/16/2017 10:30	<input type="checkbox"/>
17061002-16	SB8 (1-8)	Soil		6/14/2017 15:50	6/16/2017 10:30	<input type="checkbox"/>
17061002-17	SB9 (0-1)	Soil		6/15/2017 10:51	6/16/2017 10:30	<input type="checkbox"/>
17061002-18	SB9 (1-8)	Soil		6/15/2017 10:57	6/16/2017 10:30	<input type="checkbox"/>
17061002-19	SB10 (0-1)	Soil		6/15/2017 11:11	6/16/2017 10:30	<input type="checkbox"/>
17061002-20	SB10 (1-8)	Soil		6/15/2017 11:17	6/16/2017 10:30	<input type="checkbox"/>
17061002-21	SS1	Soil		6/15/2017 09:57	6/16/2017 10:30	<input type="checkbox"/>
17061002-22	SS2	Soil		6/15/2017 10:17	6/16/2017 10:30	<input type="checkbox"/>
17061002-23	SS3	Soil		6/15/2017 10:33	6/16/2017 10:30	<input type="checkbox"/>
17061002-24	SS4	Soil		6/15/2017 11:28	6/16/2017 10:30	<input type="checkbox"/>

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Work Order: 17061002

Case Narrative

Samples for the above noted Work Order were received on 06/16/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

Samples for Warfarin analysis were subcontracted to ALS Waterloo.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics:

No other deviations or anomalies were noted.

Extractable Organics:

Batch 103546, Method 8081, Sample 17061002-21A MS: The matrix spike recoveries are unavailable due to dilution below the calibration range.

No other deviations or anomalies were noted.

Metals:

Batch 103359, Method 6020, Sample 17061002-02AMS: The MS recovery was outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte: Ba

Batch 103359, Method 6020, Sample 17061002-02AMS: The MS recovery was above the upper control limit. The corresponding result in the parent sample may be biased high for this analyte: Cr

Batch 103359, Method 6020, Sample 17061002-02AMSD: The RPD between the MS and MSD was outside the control limit. The corresponding result in the parent sample should be considered estimated for this analyte: Ba

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Work Order: 17061002

Case Narrative

No other deviations or anomalies were noted.

Wet Chemistry:

No other deviations or anomalies were noted.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB1 (0-1)
Collection Date: 6/14/2017 11:05 AM

Work Order: 17061002
Lab ID: 17061002-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 13:56
2,4,5-TP (Silvex)	U		0.34	5.7	µg/Kg-dry	1	6/21/2017 13:56
2,4-D	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 13:56
Surr: DCAA	59.2			10-150	%REC	1	6/21/2017 13:56
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 16:48
4,4'-DDE	31		2.3	12	µg/Kg-dry	1	6/21/2017 16:48
4,4'-DDT	8.2	J	1.9	12	µg/Kg-dry	1	6/21/2017 16:48
Aldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:48
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:48
alpha-Chlordane	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:48
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:48
Chlordane, Technical	U		12	29	µg/Kg-dry	1	6/21/2017 16:48
delta-BHC	U		6.1	12	µg/Kg-dry	1	6/21/2017 16:48
Dieldrin	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:48
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 16:48
Endosulfan II	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:48
Endosulfan sulfate	U		2.4	12	µg/Kg-dry	1	6/21/2017 16:48
Endrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 16:48
Endrin aldehyde	U		2.0	12	µg/Kg-dry	1	6/21/2017 16:48
Endrin ketone	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:48
gamma-BHC (Lindane)	U		2.8	12	µg/Kg-dry	1	6/21/2017 16:48
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 16:48
Heptachlor	U		3.3	12	µg/Kg-dry	1	6/21/2017 16:48
Heptachlor epoxide	U		2.1	12	µg/Kg-dry	1	6/21/2017 16:48
Methoxychlor	U		2.0	12	µg/Kg-dry	1	6/21/2017 16:48
Toxaphene	U		13	70	µg/Kg-dry	1	6/21/2017 16:48
Surr: Decachlorobiphenyl	60.0			50-150	%REC	1	6/21/2017 16:48
Surr: Tetrachloro-m-xylene	73.2			50-150	%REC	1	6/21/2017 16:48
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.055		0.0028	0.017	mg/Kg-dry	1	6/20/2017 17:11
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	12		0.26	1.8	mg/Kg-dry	4	6/17/2017 21:49
Barium	200		0.25	1.8	mg/Kg-dry	4	6/17/2017 21:49
Cadmium	0.13	J	0.014	0.71	mg/Kg-dry	4	6/17/2017 21:49
Chromium	19		0.085	1.8	mg/Kg-dry	4	6/17/2017 21:49
Lead	36		0.028	1.8	mg/Kg-dry	4	6/17/2017 21:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB1 (0-1)
Collection Date: 6/14/2017 11:05 AM

Work Order: 17061002
Lab ID: 17061002-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.8		0.53	1.8	mg/Kg-dry	4	6/17/2017 21:49
Silver	0.12	J	0.014	1.8	mg/Kg-dry	4	6/17/2017 21:49
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	16		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB1 (1-8)
Collection Date: 6/14/2017 11:20 AM

Work Order: 17061002
Lab ID: 17061002-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 14:13
2,4,5-TP (Silvex)	U		0.36	5.9	µg/Kg-dry	1	6/21/2017 14:13
2,4-D	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 14:13
Surr: DCAA	65.4			10-150	%REC	1	6/21/2017 14:13
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.7	12	µg/Kg-dry	1	6/21/2017 16:08
4,4'-DDE	6.4	J	2.3	12	µg/Kg-dry	1	6/21/2017 16:08
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 16:08
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 16:08
alpha-BHC	U		2.4	12	µg/Kg-dry	1	6/21/2017 16:08
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:08
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:08
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 16:08
delta-BHC	U		6.3	12	µg/Kg-dry	1	6/21/2017 16:08
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:08
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 16:08
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:08
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 16:08
Endrin	U		2.5	12	µg/Kg-dry	1	6/21/2017 16:08
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 16:08
Endrin ketone	U		2.3	12	µg/Kg-dry	1	6/21/2017 16:08
gamma-BHC (Lindane)	U		2.9	12	µg/Kg-dry	1	6/21/2017 16:08
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 16:08
Heptachlor	U		3.4	12	µg/Kg-dry	1	6/21/2017 16:08
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 16:08
Methoxychlor	U		2.1	12	µg/Kg-dry	1	6/21/2017 16:08
Toxaphene	U		13	73	µg/Kg-dry	1	6/21/2017 16:08
Surr: Decachlorobiphenyl	68.9			50-150	%REC	1	6/21/2017 16:08
Surr: Tetrachloro-m-xylene	82.6			50-150	%REC	1	6/21/2017 16:08
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.041		0.0035	0.021	mg/Kg-dry	1	6/20/2017 17:14
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	7.8		0.27	1.9	mg/Kg-dry	4	6/17/2017 21:56
Barium	120		0.26	1.9	mg/Kg-dry	4	6/17/2017 21:56
Cadmium	U		0.015	0.74	mg/Kg-dry	4	6/17/2017 21:56
Chromium	18		0.089	1.9	mg/Kg-dry	4	6/17/2017 21:56
Lead	13		0.030	1.9	mg/Kg-dry	4	6/17/2017 21:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SB1 (1-8)

Collection Date: 6/14/2017 11:20 AM

Work Order: 17061002

Lab ID: 17061002-02

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.9		0.56	1.9	mg/Kg-dry	4	6/17/2017 21:56
Silver	0.064	J	0.015	1.9	mg/Kg-dry	4	6/17/2017 21:56
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	18		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB2 (0-1)
Collection Date: 6/14/2017 11:38 AM

Work Order: 17061002
Lab ID: 17061002-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 14:29
2,4,5-TP (Silvex)	U		0.35	5.9	µg/Kg-dry	1	6/21/2017 14:29
2,4-D	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 14:29
Surr: DCAA	53.4			10-150	%REC	1	6/21/2017 14:29
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 17:01
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:01
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 17:01
Aldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:01
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:01
alpha-Chlordane	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:01
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:01
Chlordane, Technical	U		12	29	µg/Kg-dry	1	6/21/2017 17:01
delta-BHC	U		6.1	12	µg/Kg-dry	1	6/21/2017 17:01
Dieldrin	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:01
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 17:01
Endosulfan II	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:01
Endosulfan sulfate	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:01
Endrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:01
Endrin aldehyde	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:01
Endrin ketone	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:01
gamma-BHC (Lindane)	U		2.8	12	µg/Kg-dry	1	6/21/2017 17:01
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 17:01
Heptachlor	U		3.3	12	µg/Kg-dry	1	6/21/2017 17:01
Heptachlor epoxide	U		2.1	12	µg/Kg-dry	1	6/21/2017 17:01
Methoxychlor	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:01
Toxaphene	U		13	70	µg/Kg-dry	1	6/21/2017 17:01
Surr: Decachlorobiphenyl	71.4			50-150	%REC	1	6/21/2017 17:01
Surr: Tetrachloro-m-xylene	85.7			50-150	%REC	1	6/21/2017 17:01
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.025		0.0033	0.020	mg/Kg-dry	1	6/20/2017 17:16
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	13		0.29	2.0	mg/Kg-dry	4	6/18/2017 00:12
Barium	160		0.28	2.0	mg/Kg-dry	4	6/18/2017 00:12
Cadmium	U		0.016	0.79	mg/Kg-dry	4	6/18/2017 00:12
Chromium	21		0.095	2.0	mg/Kg-dry	4	6/18/2017 00:12
Lead	19		0.032	2.0	mg/Kg-dry	4	6/18/2017 00:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB2 (0-1)
Collection Date: 6/14/2017 11:38 AM

Work Order: 17061002
Lab ID: 17061002-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.6		0.59	2.0	mg/Kg-dry	4	6/18/2017 00:12
Silver	0.11	J	0.016	2.0	mg/Kg-dry	4	6/18/2017 00:12
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	16		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB2 (1-8)
Collection Date: 6/14/2017 11:50 AM

Work Order: 17061002
Lab ID: 17061002-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 14:46
2,4,5-TP (Silvex)	U		0.37	6.1	µg/Kg-dry	1	6/21/2017 14:46
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 14:46
Surr: DCAA	52.0			10-150	%REC	1	6/21/2017 14:46
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 17:14
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:14
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 17:14
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:14
alpha-BHC	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:14
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:14
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:14
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 17:14
delta-BHC	U		6.3	12	µg/Kg-dry	1	6/21/2017 17:14
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:14
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 17:14
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:14
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 17:14
Endrin	U		2.5	12	µg/Kg-dry	1	6/21/2017 17:14
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 17:14
Endrin ketone	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:14
gamma-BHC (Lindane)	U		2.9	12	µg/Kg-dry	1	6/21/2017 17:14
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 17:14
Heptachlor	U		3.4	12	µg/Kg-dry	1	6/21/2017 17:14
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:14
Methoxychlor	U		2.1	12	µg/Kg-dry	1	6/21/2017 17:14
Toxaphene	U		13	73	µg/Kg-dry	1	6/21/2017 17:14
Surr: Decachlorobiphenyl	76.4			50-150	%REC	1	6/21/2017 17:14
Surr: Tetrachloro-m-xylene	86.1			50-150	%REC	1	6/21/2017 17:14
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.038		0.0029	0.017	mg/Kg-dry	1	6/20/2017 17:19
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	8.9		0.28	1.9	mg/Kg-dry	4	6/18/2017 00:18
Barium	170		0.27	1.9	mg/Kg-dry	4	6/18/2017 00:18
Cadmium	U		0.015	0.77	mg/Kg-dry	4	6/18/2017 00:18
Chromium	20		0.092	1.9	mg/Kg-dry	4	6/18/2017 00:18
Lead	13		0.031	1.9	mg/Kg-dry	4	6/18/2017 00:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SB2 (1-8)

Collection Date: 6/14/2017 11:50 AM

Work Order: 17061002

Lab ID: 17061002-04

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.2		0.58	1.9	mg/Kg-dry	4	6/18/2017 00:18
Silver	0.067	J	0.015	1.9	mg/Kg-dry	4	6/18/2017 00:18
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	19		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB3 (0-1)
Collection Date: 6/14/2017 12:19 PM

Work Order: 17061002
Lab ID: 17061002-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	5.8	µg/Kg-dry	1	6/21/2017 15:36
2,4,5-TP (Silvex)	U		0.35	5.8	µg/Kg-dry	1	6/21/2017 15:36
2,4-D	U		0.27	5.8	µg/Kg-dry	1	6/21/2017 15:36
Surr: DCAA	53.8			10-150	%REC	1	6/21/2017 15:36
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 17:28
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:28
4,4'-DDT	5.5	J	1.9	12	µg/Kg-dry	1	6/21/2017 17:28
Aldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:28
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:28
alpha-Chlordane	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
Chlordane, Technical	U		12	29	µg/Kg-dry	1	6/21/2017 17:28
delta-BHC	U		6.1	12	µg/Kg-dry	1	6/21/2017 17:28
Dieldrin	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 17:28
Endosulfan II	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
Endosulfan sulfate	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:28
Endrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:28
Endrin aldehyde	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:28
Endrin ketone	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
gamma-BHC (Lindane)	U		2.8	12	µg/Kg-dry	1	6/21/2017 17:28
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 17:28
Heptachlor	U		3.3	12	µg/Kg-dry	1	6/21/2017 17:28
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:28
Methoxychlor	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:28
Toxaphene	U		13	71	µg/Kg-dry	1	6/21/2017 17:28
Surr: Decachlorobiphenyl	69.4			50-150	%REC	1	6/21/2017 17:28
Surr: Tetrachloro-m-xylene	81.8			50-150	%REC	1	6/21/2017 17:28
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.048		0.0031	0.019	mg/Kg-dry	1	6/20/2017 17:21
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	9.7		0.26	1.8	mg/Kg-dry	4	6/18/2017 00:51
Barium	240		0.25	1.8	mg/Kg-dry	4	6/18/2017 00:51
Cadmium	0.11	J	0.014	0.70	mg/Kg-dry	4	6/18/2017 00:51
Chromium	19		0.084	1.8	mg/Kg-dry	4	6/18/2017 00:51
Lead	24		0.028	1.8	mg/Kg-dry	4	6/18/2017 00:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB3 (0-1)
Collection Date: 6/14/2017 12:19 PM

Work Order: 17061002
Lab ID: 17061002-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.1		0.53	1.8	mg/Kg-dry	4	6/18/2017 00:51
Silver	0.098	J	0.014	1.8	mg/Kg-dry	4	6/18/2017 00:51
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	16		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB3 (1-6)
Collection Date: 6/14/2017 12:35 PM

Work Order: 17061002
Lab ID: 17061002-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 15:53
2,4,5-TP (Silvex)	U		0.36	6.1	µg/Kg-dry	1	6/21/2017 15:53
2,4-D	22		0.28	6.1	µg/Kg-dry	1	6/21/2017 15:53
Surr: DCAA	48.2			10-150	%REC	1	6/21/2017 15:53
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.7	12	µg/Kg-dry	1	6/21/2017 17:41
4,4'-DDE	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:41
4,4'-DDT	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:41
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:41
alpha-BHC	U		2.4	12	µg/Kg-dry	1	6/21/2017 17:41
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:41
beta-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:41
Chlordane, Technical	U		12	31	µg/Kg-dry	1	6/21/2017 17:41
delta-BHC	U		6.4	12	µg/Kg-dry	1	6/21/2017 17:41
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:41
Endosulfan I	U		2.0	12	µg/Kg-dry	1	6/21/2017 17:41
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:41
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 17:41
Endrin	U		2.5	12	µg/Kg-dry	1	6/21/2017 17:41
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 17:41
Endrin ketone	U		2.3	12	µg/Kg-dry	1	6/21/2017 17:41
gamma-BHC (Lindane)	U		2.9	12	µg/Kg-dry	1	6/21/2017 17:41
gamma-Chlordane	U		2.8	12	µg/Kg-dry	1	6/21/2017 17:41
Heptachlor	U		3.5	12	µg/Kg-dry	1	6/21/2017 17:41
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 17:41
Methoxychlor	U		2.1	12	µg/Kg-dry	1	6/21/2017 17:41
Toxaphene	U		13	74	µg/Kg-dry	1	6/21/2017 17:41
Surr: Decachlorobiphenyl	73.3			50-150	%REC	1	6/21/2017 17:41
Surr: Tetrachloro-m-xylene	82.6			50-150	%REC	1	6/21/2017 17:41
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.034		0.0030	0.018	mg/Kg-dry	1	6/20/2017 17:24
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	12		0.29	2.0	mg/Kg-dry	4	6/18/2017 02:41
Barium	440		0.28	2.0	mg/Kg-dry	4	6/18/2017 02:41
Cadmium	0.059	J	0.016	0.79	mg/Kg-dry	4	6/18/2017 02:41
Chromium	29		0.095	2.0	mg/Kg-dry	4	6/18/2017 02:41
Lead	17		0.032	2.0	mg/Kg-dry	4	6/18/2017 02:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB3 (1-6)
Collection Date: 6/14/2017 12:35 PM

Work Order: 17061002
Lab ID: 17061002-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	4.6		0.59	2.0	mg/Kg-dry	4	6/18/2017 02:41
Silver	0.18	J	0.016	2.0	mg/Kg-dry	4	6/18/2017 02:41
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	19		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB4 (0-1)
Collection Date: 6/14/2017 01:05 PM

Work Order: 17061002
Lab ID: 17061002-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 16:09
2,4,5-TP (Silvex)	U		0.34	5.7	µg/Kg-dry	1	6/21/2017 16:09
2,4-D	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 16:09
Surr: DCAA	59.8			10-150	%REC	1	6/21/2017 16:09
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		24	110	µg/Kg-dry	10	6/21/2017 22:06
4,4'-DDE	U		21	110	µg/Kg-dry	10	6/21/2017 22:06
4,4'-DDT	U		17	110	µg/Kg-dry	10	6/21/2017 22:06
Aldrin	U		22	110	µg/Kg-dry	10	6/21/2017 22:06
alpha-BHC	U		21	110	µg/Kg-dry	10	6/21/2017 22:06
alpha-Chlordane	U		21	110	µg/Kg-dry	10	6/21/2017 22:06
beta-BHC	U		20	110	µg/Kg-dry	10	6/21/2017 22:06
Chlordane, Technical	U		110	270	µg/Kg-dry	10	6/21/2017 22:06
delta-BHC	U		57	110	µg/Kg-dry	10	6/21/2017 22:06
Dieldrin	U		21	110	µg/Kg-dry	10	6/21/2017 22:06
Endosulfan I	U		18	110	µg/Kg-dry	10	6/21/2017 22:06
Endosulfan II	U		21	110	µg/Kg-dry	10	6/21/2017 22:06
Endosulfan sulfate	U		23	110	µg/Kg-dry	10	6/21/2017 22:06
Endrin	U		22	110	µg/Kg-dry	10	6/21/2017 22:06
Endrin aldehyde	U		19	110	µg/Kg-dry	10	6/21/2017 22:06
Endrin ketone	U		20	110	µg/Kg-dry	10	6/21/2017 22:06
gamma-BHC (Lindane)	U		26	110	µg/Kg-dry	10	6/21/2017 22:06
gamma-Chlordane	U		25	110	µg/Kg-dry	10	6/21/2017 22:06
Heptachlor	U		31	110	µg/Kg-dry	10	6/21/2017 22:06
Heptachlor epoxide	U		20	110	µg/Kg-dry	10	6/21/2017 22:06
Methoxychlor	U		19	110	µg/Kg-dry	10	6/21/2017 22:06
Toxaphene	U		120	650	µg/Kg-dry	10	6/21/2017 22:06
Surr: Decachlorobiphenyl	86.2			50-150	%REC	10	6/21/2017 22:06
Surr: Tetrachloro-m-xylene	88.7			50-150	%REC	10	6/21/2017 22:06
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.022		0.0033	0.020	mg/Kg-dry	1	6/20/2017 17:26
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	7.9		0.25	1.7	mg/Kg-dry	4	6/18/2017 02:48
Barium	180		0.24	1.7	mg/Kg-dry	4	6/18/2017 02:48
Cadmium	U		0.014	0.68	mg/Kg-dry	4	6/18/2017 02:48
Chromium	20		0.082	1.7	mg/Kg-dry	4	6/18/2017 02:48
Lead	23		0.027	1.7	mg/Kg-dry	4	6/18/2017 02:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB4 (0-1)
Collection Date: 6/14/2017 01:05 PM

Work Order: 17061002
Lab ID: 17061002-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.8		0.51	1.7	mg/Kg-dry	4	6/18/2017 02:48
Silver	0.070	J	0.014	1.7	mg/Kg-dry	4	6/18/2017 02:48
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	12		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB4 (1-8)
Collection Date: 6/14/2017 01:20 PM

Work Order: 17061002
Lab ID: 17061002-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.31	6.7	µg/Kg-dry	1	6/21/2017 16:26
2,4,5-TP (Silvex)	U		0.40	6.7	µg/Kg-dry	1	6/21/2017 16:26
2,4-D	U		0.31	6.7	µg/Kg-dry	1	6/21/2017 16:26
Surr: DCAA	57.0			10-150	%REC	1	6/21/2017 16:26
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		3.0	14	µg/Kg-dry	1	6/21/2017 17:54
4,4'-DDE	U		2.6	14	µg/Kg-dry	1	6/21/2017 17:54
4,4'-DDT	U		2.2	14	µg/Kg-dry	1	6/21/2017 17:54
Aldrin	U		2.7	14	µg/Kg-dry	1	6/21/2017 17:54
alpha-BHC	U		2.7	14	µg/Kg-dry	1	6/21/2017 17:54
alpha-Chlordane	U		2.6	14	µg/Kg-dry	1	6/21/2017 17:54
beta-BHC	U		2.5	14	µg/Kg-dry	1	6/21/2017 17:54
Chlordane, Technical	U		13	34	µg/Kg-dry	1	6/21/2017 17:54
delta-BHC	U		7.1	14	µg/Kg-dry	1	6/21/2017 17:54
Dieldrin	U		2.6	14	µg/Kg-dry	1	6/21/2017 17:54
Endosulfan I	U		2.2	14	µg/Kg-dry	1	6/21/2017 17:54
Endosulfan II	U		2.6	14	µg/Kg-dry	1	6/21/2017 17:54
Endosulfan sulfate	U		2.8	14	µg/Kg-dry	1	6/21/2017 17:54
Endrin	U		2.8	14	µg/Kg-dry	1	6/21/2017 17:54
Endrin aldehyde	U		2.4	14	µg/Kg-dry	1	6/21/2017 17:54
Endrin ketone	U		2.6	14	µg/Kg-dry	1	6/21/2017 17:54
gamma-BHC (Lindane)	U		3.3	14	µg/Kg-dry	1	6/21/2017 17:54
gamma-Chlordane	U		3.1	14	µg/Kg-dry	1	6/21/2017 17:54
Heptachlor	U		3.8	14	µg/Kg-dry	1	6/21/2017 17:54
Heptachlor epoxide	U		2.5	14	µg/Kg-dry	1	6/21/2017 17:54
Methoxychlor	U		2.3	14	µg/Kg-dry	1	6/21/2017 17:54
Toxaphene	U		15	82	µg/Kg-dry	1	6/21/2017 17:54
Surr: Decachlorobiphenyl	58.4			50-150	%REC	1	6/21/2017 17:54
Surr: Tetrachloro-m-xylene	94.2			50-150	%REC	1	6/21/2017 17:54
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.055		0.0034	0.021	mg/Kg-dry	1	6/20/2017 17:29
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	13		0.31	2.1	mg/Kg-dry	4	6/18/2017 02:54
Barium	240		0.29	2.1	mg/Kg-dry	4	6/18/2017 02:54
Cadmium	0.027	J	0.017	0.84	mg/Kg-dry	4	6/18/2017 02:54
Chromium	29		0.10	2.1	mg/Kg-dry	4	6/18/2017 02:54
Lead	28		0.034	2.1	mg/Kg-dry	4	6/18/2017 02:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SB4 (1-8)

Collection Date: 6/14/2017 01:20 PM

Work Order: 17061002

Lab ID: 17061002-08

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.9		0.63	2.1	mg/Kg-dry	4	6/18/2017 02:54
Silver	0.062	J	0.017	2.1	mg/Kg-dry	4	6/18/2017 02:54
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	27		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB5 (0-1)
Collection Date: 6/14/2017 01:45 PM

Work Order: 17061002
Lab ID: 17061002-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.33	7.2	µg/Kg-dry	1	6/21/2017 16:42
2,4,5-TP (Silvex)	U		0.43	7.2	µg/Kg-dry	1	6/21/2017 16:42
2,4-D	U		0.33	7.2	µg/Kg-dry	1	6/21/2017 16:42
Surr: DCAA	53.6			10-150	%REC	1	6/21/2017 16:42
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		3.2	15	µg/Kg-dry	1	6/21/2017 18:07
4,4'-DDE	U		2.8	15	µg/Kg-dry	1	6/21/2017 18:07
4,4'-DDT	U		2.3	15	µg/Kg-dry	1	6/21/2017 18:07
Aldrin	U		2.9	15	µg/Kg-dry	1	6/21/2017 18:07
alpha-BHC	U		2.8	15	µg/Kg-dry	1	6/21/2017 18:07
alpha-Chlordane	U		2.8	15	µg/Kg-dry	1	6/21/2017 18:07
beta-BHC	U		2.7	15	µg/Kg-dry	1	6/21/2017 18:07
Chlordane, Technical	U		14	36	µg/Kg-dry	1	6/21/2017 18:07
delta-BHC	U		7.6	15	µg/Kg-dry	1	6/21/2017 18:07
Dieldrin	U		2.8	15	µg/Kg-dry	1	6/21/2017 18:07
Endosulfan I	U		2.3	15	µg/Kg-dry	1	6/21/2017 18:07
Endosulfan II	U		2.8	15	µg/Kg-dry	1	6/21/2017 18:07
Endosulfan sulfate	U		3.0	15	µg/Kg-dry	1	6/21/2017 18:07
Endrin	U		3.0	15	µg/Kg-dry	1	6/21/2017 18:07
Endrin aldehyde	U		2.5	15	µg/Kg-dry	1	6/21/2017 18:07
Endrin ketone	U		2.7	15	µg/Kg-dry	1	6/21/2017 18:07
gamma-BHC (Lindane)	U		3.5	15	µg/Kg-dry	1	6/21/2017 18:07
gamma-Chlordane	U		3.3	15	µg/Kg-dry	1	6/21/2017 18:07
Heptachlor	U		4.1	15	µg/Kg-dry	1	6/21/2017 18:07
Heptachlor epoxide	U		2.7	15	µg/Kg-dry	1	6/21/2017 18:07
Methoxychlor	U		2.5	15	µg/Kg-dry	1	6/21/2017 18:07
Toxaphene	U		16	88	µg/Kg-dry	1	6/21/2017 18:07
Surr: Decachlorobiphenyl	70.9			50-150	%REC	1	6/21/2017 18:07
Surr: Tetrachloro-m-xylene	91.9			50-150	%REC	1	6/21/2017 18:07
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.057		0.0036	0.022	mg/Kg-dry	1	6/20/2017 17:39
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	12		0.32	2.1	mg/Kg-dry	4	6/18/2017 03:01
Barium	580		0.30	2.1	mg/Kg-dry	4	6/18/2017 03:01
Cadmium	0.82	J	0.017	0.86	mg/Kg-dry	4	6/18/2017 03:01
Chromium	41		0.10	2.1	mg/Kg-dry	4	6/18/2017 03:01
Lead	39		0.034	2.1	mg/Kg-dry	4	6/18/2017 03:01

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB5 (0-1)
Collection Date: 6/14/2017 01:45 PM

Work Order: 17061002
Lab ID: 17061002-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.3		0.64	2.1	mg/Kg-dry	4	6/18/2017 03:01
Silver	0.042	J	0.017	2.1	mg/Kg-dry	4	6/18/2017 03:01
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	32		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB5 (1-4)
Collection Date: 6/14/2017 01:51 PM

Work Order: 17061002
Lab ID: 17061002-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.31	6.7	µg/Kg-dry	1	6/21/2017 16:59
2,4,5-TP (Silvex)	U		0.40	6.7	µg/Kg-dry	1	6/21/2017 16:59
2,4-D	U		0.31	6.7	µg/Kg-dry	1	6/21/2017 16:59
Surr: DCAA	46.6			10-150	%REC	1	6/21/2017 16:59
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		3.0	14	µg/Kg-dry	1	6/21/2017 19:00
4,4'-DDE	U		2.6	14	µg/Kg-dry	1	6/21/2017 19:00
4,4'-DDT	U		2.2	14	µg/Kg-dry	1	6/21/2017 19:00
Aldrin	U		2.7	14	µg/Kg-dry	1	6/21/2017 19:00
alpha-BHC	U		2.6	14	µg/Kg-dry	1	6/21/2017 19:00
alpha-Chlordane	U		2.6	14	µg/Kg-dry	1	6/21/2017 19:00
beta-BHC	U		2.5	14	µg/Kg-dry	1	6/21/2017 19:00
Chlordane, Technical	U		13	34	µg/Kg-dry	1	6/21/2017 19:00
delta-BHC	U		7.0	14	µg/Kg-dry	1	6/21/2017 19:00
Dieldrin	U		2.6	14	µg/Kg-dry	1	6/21/2017 19:00
Endosulfan I	U		2.2	14	µg/Kg-dry	1	6/21/2017 19:00
Endosulfan II	U		2.6	14	µg/Kg-dry	1	6/21/2017 19:00
Endosulfan sulfate	U		2.8	14	µg/Kg-dry	1	6/21/2017 19:00
Endrin	U		2.8	14	µg/Kg-dry	1	6/21/2017 19:00
Endrin aldehyde	U		2.3	14	µg/Kg-dry	1	6/21/2017 19:00
Endrin ketone	U		2.5	14	µg/Kg-dry	1	6/21/2017 19:00
gamma-BHC (Lindane)	U		3.3	14	µg/Kg-dry	1	6/21/2017 19:00
gamma-Chlordane	U		3.1	14	µg/Kg-dry	1	6/21/2017 19:00
Heptachlor	U		3.8	14	µg/Kg-dry	1	6/21/2017 19:00
Heptachlor epoxide	U		2.5	14	µg/Kg-dry	1	6/21/2017 19:00
Methoxychlor	U		2.3	14	µg/Kg-dry	1	6/21/2017 19:00
Toxaphene	U		15	81	µg/Kg-dry	1	6/21/2017 19:00
Surr: Decachlorobiphenyl	54.1			50-150	%REC	1	6/21/2017 19:00
Surr: Tetrachloro-m-xylene	84.3			50-150	%REC	1	6/21/2017 19:00
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.035		0.0037	0.023	mg/Kg-dry	1	6/20/2017 17:42
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	8.9		0.32	2.2	mg/Kg-dry	4	6/18/2017 03:07
Barium	250		0.30	2.2	mg/Kg-dry	4	6/18/2017 03:07
Cadmium	3.3		0.017	0.87	mg/Kg-dry	4	6/18/2017 03:07
Chromium	33		0.10	2.2	mg/Kg-dry	4	6/18/2017 03:07
Lead	23		0.035	2.2	mg/Kg-dry	4	6/18/2017 03:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB5 (1-4)
Collection Date: 6/14/2017 01:51 PM

Work Order: 17061002
Lab ID: 17061002-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	4.5		0.65	2.2	mg/Kg-dry	4	6/18/2017 03:07
Silver	0.082	J	0.017	2.2	mg/Kg-dry	4	6/18/2017 03:07
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	27		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB6 (0-1)
Collection Date: 6/14/2017 02:37 PM

Work Order: 17061002
Lab ID: 17061002-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 13:39
2,4,5-TP (Silvex)	U		0.35	5.9	µg/Kg-dry	1	6/21/2017 13:39
2,4-D	U		0.27	5.9	µg/Kg-dry	1	6/21/2017 13:39
Surr: DCAA	55.8			10-150	%REC	1	6/21/2017 13:39
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.5	11	µg/Kg-dry	1	6/21/2017 19:14
4,4'-DDE	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
4,4'-DDT	2.7	J	1.8	11	µg/Kg-dry	1	6/21/2017 19:14
Aldrin	U		2.3	11	µg/Kg-dry	1	6/21/2017 19:14
alpha-BHC	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
alpha-Chlordane	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
beta-BHC	U		2.1	11	µg/Kg-dry	1	6/21/2017 19:14
Chlordane, Technical	U		11	29	µg/Kg-dry	1	6/21/2017 19:14
delta-BHC	U		5.9	11	µg/Kg-dry	1	6/21/2017 19:14
Dieldrin	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
Endosulfan I	U		1.8	11	µg/Kg-dry	1	6/21/2017 19:14
Endosulfan II	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
Endosulfan sulfate	U		2.4	11	µg/Kg-dry	1	6/21/2017 19:14
Endrin	U		2.4	11	µg/Kg-dry	1	6/21/2017 19:14
Endrin aldehyde	U		2.0	11	µg/Kg-dry	1	6/21/2017 19:14
Endrin ketone	U		2.2	11	µg/Kg-dry	1	6/21/2017 19:14
gamma-BHC (Lindane)	U		2.7	11	µg/Kg-dry	1	6/21/2017 19:14
gamma-Chlordane	U		2.6	11	µg/Kg-dry	1	6/21/2017 19:14
Heptachlor	U		3.2	11	µg/Kg-dry	1	6/21/2017 19:14
Heptachlor epoxide	U		2.1	11	µg/Kg-dry	1	6/21/2017 19:14
Methoxychlor	U		2.0	11	µg/Kg-dry	1	6/21/2017 19:14
Toxaphene	U		12	69	µg/Kg-dry	1	6/21/2017 19:14
Surr: Decachlorobiphenyl	72.6			50-150	%REC	1	6/21/2017 19:14
Surr: Tetrachloro-m-xylene	84.7			50-150	%REC	1	6/21/2017 19:14
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.034		0.0031	0.019	mg/Kg-dry	1	6/20/2017 17:44
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	10		0.28	1.9	mg/Kg-dry	4	6/18/2017 03:14
Barium	260		0.26	1.9	mg/Kg-dry	4	6/18/2017 03:14
Cadmium	U		0.015	0.76	mg/Kg-dry	4	6/18/2017 03:14
Chromium	19		0.091	1.9	mg/Kg-dry	4	6/18/2017 03:14
Lead	16		0.030	1.9	mg/Kg-dry	4	6/18/2017 03:14

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB6 (0-1)
Collection Date: 6/14/2017 02:37 PM

Work Order: 17061002
Lab ID: 17061002-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.7		0.57	1.9	mg/Kg-dry	4	6/18/2017 03:14
Silver	0.065	J	0.015	1.9	mg/Kg-dry	4	6/18/2017 03:14
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	15		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB6 (1-8)
Collection Date: 6/14/2017 02:44 PM

Work Order: 17061002
Lab ID: 17061002-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.0	µg/Kg-dry	1	6/21/2017 17:16
2,4,5-TP (Silvex)	U		0.36	6.0	µg/Kg-dry	1	6/21/2017 17:16
2,4-D	U		0.28	6.0	µg/Kg-dry	1	6/21/2017 17:16
Surr: DCAA	44.6			10-150	%REC	1	6/21/2017 17:16
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 19:27
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:27
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:27
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 19:27
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:27
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:27
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:27
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 19:27
delta-BHC	U		6.2	12	µg/Kg-dry	1	6/21/2017 19:27
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:27
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:27
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:27
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 19:27
Endrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 19:27
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 19:27
Endrin ketone	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:27
gamma-BHC (Lindane)	U		2.8	12	µg/Kg-dry	1	6/21/2017 19:27
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 19:27
Heptachlor	U		3.3	12	µg/Kg-dry	1	6/21/2017 19:27
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:27
Methoxychlor	U		2.0	12	µg/Kg-dry	1	6/21/2017 19:27
Toxaphene	U		13	71	µg/Kg-dry	1	6/21/2017 19:27
Surr: Decachlorobiphenyl	76.0			50-150	%REC	1	6/21/2017 19:27
Surr: Tetrachloro-m-xylene	85.7			50-150	%REC	1	6/21/2017 19:27
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/20/17		Analyst: JJB
Mercury	0.033		0.0037	0.022	mg/Kg-dry	1	6/20/2017 17:52
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	11		0.28	1.9	mg/Kg-dry	4	6/18/2017 03:20
Barium	260		0.26	1.9	mg/Kg-dry	4	6/18/2017 03:20
Cadmium	U		0.015	0.75	mg/Kg-dry	4	6/18/2017 03:20
Chromium	26		0.090	1.9	mg/Kg-dry	4	6/18/2017 03:20
Lead	14		0.030	1.9	mg/Kg-dry	4	6/18/2017 03:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB6 (1-8)
Collection Date: 6/14/2017 02:44 PM

Work Order: 17061002
Lab ID: 17061002-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.4		0.56	1.9	mg/Kg-dry	4	6/18/2017 03:20
Silver	0.062	J	0.015	1.9	mg/Kg-dry	4	6/18/2017 03:20
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	18		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB7 (0-1)
Collection Date: 6/14/2017 03:10 PM

Work Order: 17061002
Lab ID: 17061002-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 17:32
2,4,5-TP (Silvex)	U		0.36	6.1	µg/Kg-dry	1	6/21/2017 17:32
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 17:32
Surr: DCAA	46.2			10-150	%REC	1	6/21/2017 17:32
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		13	60	µg/Kg-dry	5	6/21/2017 20:20
4,4'-DDE	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
4,4'-DDT	U		9.5	60	µg/Kg-dry	5	6/21/2017 20:20
Aldrin	U		12	60	µg/Kg-dry	5	6/21/2017 20:20
alpha-BHC	U		12	60	µg/Kg-dry	5	6/21/2017 20:20
alpha-Chlordane	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
beta-BHC	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
Chlordane, Technical	U		59	150	µg/Kg-dry	5	6/21/2017 20:20
delta-BHC	U		31	60	µg/Kg-dry	5	6/21/2017 20:20
Dieldrin	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
Endosulfan I	U		9.6	60	µg/Kg-dry	5	6/21/2017 20:20
Endosulfan II	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
Endosulfan sulfate	U		12	60	µg/Kg-dry	5	6/21/2017 20:20
Endrin	U		12	60	µg/Kg-dry	5	6/21/2017 20:20
Endrin aldehyde	U		10	60	µg/Kg-dry	5	6/21/2017 20:20
Endrin ketone	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
gamma-BHC (Lindane)	U		14	60	µg/Kg-dry	5	6/21/2017 20:20
gamma-Chlordane	U		13	60	µg/Kg-dry	5	6/21/2017 20:20
Heptachlor	U		17	60	µg/Kg-dry	5	6/21/2017 20:20
Heptachlor epoxide	U		11	60	µg/Kg-dry	5	6/21/2017 20:20
Methoxychlor	U		10	60	µg/Kg-dry	5	6/21/2017 20:20
Toxaphene	U		64	360	µg/Kg-dry	5	6/21/2017 20:20
Surr: Decachlorobiphenyl	78.5			50-150	%REC	5	6/21/2017 20:20
Surr: Tetrachloro-m-xylene	85.7			50-150	%REC	5	6/21/2017 20:20
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.042		0.0026	0.016	mg/Kg-dry	1	6/21/2017 14:14
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	12		0.29	1.9	mg/Kg-dry	4	6/18/2017 03:26
Barium	330		0.27	1.9	mg/Kg-dry	4	6/18/2017 03:26
Cadmium	U		0.016	0.78	mg/Kg-dry	4	6/18/2017 03:26
Chromium	18		0.093	1.9	mg/Kg-dry	4	6/18/2017 03:26
Lead	20		0.031	1.9	mg/Kg-dry	4	6/18/2017 03:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB7 (0-1)
Collection Date: 6/14/2017 03:10 PM

Work Order: 17061002
Lab ID: 17061002-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	4.0		0.58	1.9	mg/Kg-dry	4	6/18/2017 03:26
Silver	0.057	J	0.016	1.9	mg/Kg-dry	4	6/18/2017 03:26
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	18		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB7 (1-8)
Collection Date: 6/14/2017 03:20 PM

Work Order: 17061002
Lab ID: 17061002-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 17:49
2,4,5-TP (Silvex)	U		0.37	6.1	µg/Kg-dry	1	6/21/2017 17:49
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 17:49
Surr: DCAA	48.2			10-150	%REC	1	6/21/2017 17:49
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 19:40
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:40
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 19:40
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:40
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 19:40
delta-BHC	U		6.2	12	µg/Kg-dry	1	6/21/2017 19:40
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:40
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 19:40
Endrin	U		2.5	12	µg/Kg-dry	1	6/21/2017 19:40
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 19:40
Endrin ketone	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:40
gamma-BHC (Lindane)	U		2.9	12	µg/Kg-dry	1	6/21/2017 19:40
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 19:40
Heptachlor	U		3.4	12	µg/Kg-dry	1	6/21/2017 19:40
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:40
Methoxychlor	U		2.1	12	µg/Kg-dry	1	6/21/2017 19:40
Toxaphene	U		13	72	µg/Kg-dry	1	6/21/2017 19:40
Surr: Decachlorobiphenyl	80.3			50-150	%REC	1	6/21/2017 19:40
Surr: Tetrachloro-m-xylene	92.8			50-150	%REC	1	6/21/2017 19:40
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.028		0.0028	0.017	mg/Kg-dry	1	6/21/2017 14:16
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	7.2		0.26	1.8	mg/Kg-dry	4	6/18/2017 03:33
Barium	150		0.25	1.8	mg/Kg-dry	4	6/18/2017 03:33
Cadmium	U		0.014	0.71	mg/Kg-dry	4	6/18/2017 03:33
Chromium	18		0.086	1.8	mg/Kg-dry	4	6/18/2017 03:33
Lead	14		0.029	1.8	mg/Kg-dry	4	6/18/2017 03:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SB7 (1-8)

Collection Date: 6/14/2017 03:20 PM

Work Order: 17061002

Lab ID: 17061002-14

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.2		0.54	1.8	mg/Kg-dry	4	6/18/2017 03:33
Silver	0.049	J	0.014	1.8	mg/Kg-dry	4	6/18/2017 03:33
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	19		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB8 (0-1)
Collection Date: 6/14/2017 03:40 PM

Work Order: 17061002
Lab ID: 17061002-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	5.8	µg/Kg-dry	1	6/21/2017 18:05
2,4,5-TP (Silvex)	U		0.35	5.8	µg/Kg-dry	1	6/21/2017 18:05
2,4-D	U		0.27	5.8	µg/Kg-dry	1	6/21/2017 18:05
Surr: DCAA	55.0			10-150	%REC	1	6/21/2017 18:05
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		24	110	µg/Kg-dry	10	6/21/2017 22:20
4,4'-DDE	U		21	110	µg/Kg-dry	10	6/21/2017 22:20
4,4'-DDT	U		18	110	µg/Kg-dry	10	6/21/2017 22:20
Aldrin	U		22	110	µg/Kg-dry	10	6/21/2017 22:20
alpha-BHC	U		22	110	µg/Kg-dry	10	6/21/2017 22:20
alpha-Chlordane	U		21	110	µg/Kg-dry	10	6/21/2017 22:20
beta-BHC	U		20	110	µg/Kg-dry	10	6/21/2017 22:20
Chlordane, Technical	U		110	280	µg/Kg-dry	10	6/21/2017 22:20
delta-BHC	U		57	110	µg/Kg-dry	10	6/21/2017 22:20
Dieldrin	21	J	21	110	µg/Kg-dry	10	6/21/2017 22:20
Endosulfan I	U		18	110	µg/Kg-dry	10	6/21/2017 22:20
Endosulfan II	U		21	110	µg/Kg-dry	10	6/21/2017 22:20
Endosulfan sulfate	U		23	110	µg/Kg-dry	10	6/21/2017 22:20
Endrin	U		23	110	µg/Kg-dry	10	6/21/2017 22:20
Endrin aldehyde	U		19	110	µg/Kg-dry	10	6/21/2017 22:20
Endrin ketone	U		21	110	µg/Kg-dry	10	6/21/2017 22:20
gamma-BHC (Lindane)	U		27	110	µg/Kg-dry	10	6/21/2017 22:20
gamma-Chlordane	U		25	110	µg/Kg-dry	10	6/21/2017 22:20
Heptachlor	U		31	110	µg/Kg-dry	10	6/21/2017 22:20
Heptachlor epoxide	U		20	110	µg/Kg-dry	10	6/21/2017 22:20
Methoxychlor	U		19	110	µg/Kg-dry	10	6/21/2017 22:20
Toxaphene	U		120	660	µg/Kg-dry	10	6/21/2017 22:20
Surr: Decachlorobiphenyl	86.7			50-150	%REC	10	6/21/2017 22:20
Surr: Tetrachloro-m-xylene	97.2			50-150	%REC	10	6/21/2017 22:20
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.047		0.0030	0.018	mg/Kg-dry	1	6/21/2017 14:24
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	8.6		0.26	1.7	mg/Kg-dry	4	6/18/2017 03:39
Barium	200		0.24	1.7	mg/Kg-dry	4	6/18/2017 03:39
Cadmium	0.064	J	0.014	0.69	mg/Kg-dry	4	6/18/2017 03:39
Chromium	17		0.083	1.7	mg/Kg-dry	4	6/18/2017 03:39
Lead	19		0.028	1.7	mg/Kg-dry	4	6/18/2017 03:39

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB8 (0-1)
Collection Date: 6/14/2017 03:40 PM

Work Order: 17061002
Lab ID: 17061002-15
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.0		0.52	1.7	mg/Kg-dry	4	6/18/2017 03:39
Silver	0.056	J	0.014	1.7	mg/Kg-dry	4	6/18/2017 03:39
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	14		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB8 (1-8)
Collection Date: 6/14/2017 03:50 PM

Work Order: 17061002
Lab ID: 17061002-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 18:55
2,4,5-TP (Silvex)	U		0.36	6.1	µg/Kg-dry	1	6/21/2017 18:55
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 18:55
Surr: DCAA	53.0			10-150	%REC	1	6/21/2017 18:55
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.6	12	µg/Kg-dry	1	6/21/2017 19:53
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:53
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:53
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 19:53
alpha-BHC	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:53
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:53
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:53
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 19:53
delta-BHC	U		6.2	12	µg/Kg-dry	1	6/21/2017 19:53
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:53
Endosulfan I	U		1.9	12	µg/Kg-dry	1	6/21/2017 19:53
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 19:53
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 19:53
Endrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 19:53
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 19:53
Endrin ketone	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:53
gamma-BHC (Lindane)	U		2.8	12	µg/Kg-dry	1	6/21/2017 19:53
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 19:53
Heptachlor	U		3.3	12	µg/Kg-dry	1	6/21/2017 19:53
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 19:53
Methoxychlor	U		2.0	12	µg/Kg-dry	1	6/21/2017 19:53
Toxaphene	U		13	71	µg/Kg-dry	1	6/21/2017 19:53
Surr: Decachlorobiphenyl	75.6			50-150	%REC	1	6/21/2017 19:53
Surr: Tetrachloro-m-xylene	88.1			50-150	%REC	1	6/21/2017 19:53
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.010	J	0.0032	0.019	mg/Kg-dry	1	6/21/2017 14:27
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	8.8		0.25	1.7	mg/Kg-dry	4	6/18/2017 04:05
Barium	150		0.24	1.7	mg/Kg-dry	4	6/18/2017 04:05
Cadmium	U		0.014	0.69	mg/Kg-dry	4	6/18/2017 04:05
Chromium	17		0.082	1.7	mg/Kg-dry	4	6/18/2017 04:05
Lead	15		0.027	1.7	mg/Kg-dry	4	6/18/2017 04:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB8 (1-8)
Collection Date: 6/14/2017 03:50 PM

Work Order: 17061002
Lab ID: 17061002-16
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.9		0.51	1.7	mg/Kg-dry	4	6/18/2017 04:05
Silver	0.036	J	0.014	1.7	mg/Kg-dry	4	6/18/2017 04:05
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	18		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB9 (0-1)
Collection Date: 6/15/2017 10:51 AM

Work Order: 17061002
Lab ID: 17061002-17
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.26	5.6	µg/Kg-dry	1	6/21/2017 19:12
2,4,5-TP (Silvex)	U		0.33	5.6	µg/Kg-dry	1	6/21/2017 19:12
2,4-D	U		0.26	5.6	µg/Kg-dry	1	6/21/2017 19:12
Surr: DCAA	63.2			10-150	%REC	1	6/21/2017 19:12
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		12	55	µg/Kg-dry	5	6/21/2017 20:33
4,4'-DDE	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
4,4'-DDT	11	J	8.8	55	µg/Kg-dry	5	6/21/2017 20:33
Aldrin	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
alpha-BHC	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
alpha-Chlordane	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
beta-BHC	U		10	55	µg/Kg-dry	5	6/21/2017 20:33
Chlordane, Technical	U		55	140	µg/Kg-dry	5	6/21/2017 20:33
delta-BHC	U		29	55	µg/Kg-dry	5	6/21/2017 20:33
Dieldrin	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
Endosulfan I	U		8.9	55	µg/Kg-dry	5	6/21/2017 20:33
Endosulfan II	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
Endosulfan sulfate	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
Endrin	U		11	55	µg/Kg-dry	5	6/21/2017 20:33
Endrin aldehyde	U		9.6	55	µg/Kg-dry	5	6/21/2017 20:33
Endrin ketone	U		10	55	µg/Kg-dry	5	6/21/2017 20:33
gamma-BHC (Lindane)	U		13	55	µg/Kg-dry	5	6/21/2017 20:33
gamma-Chlordane	U		13	55	µg/Kg-dry	5	6/21/2017 20:33
Heptachlor	U		16	55	µg/Kg-dry	5	6/21/2017 20:33
Heptachlor epoxide	U		10	55	µg/Kg-dry	5	6/21/2017 20:33
Methoxychlor	U		9.5	55	µg/Kg-dry	5	6/21/2017 20:33
Toxaphene	U		60	330	µg/Kg-dry	5	6/21/2017 20:33
Surr: Decachlorobiphenyl	76.4			50-150	%REC	5	6/21/2017 20:33
Surr: Tetrachloro-m-xylene	79.6			50-150	%REC	5	6/21/2017 20:33
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.22		0.0029	0.018	mg/Kg-dry	1	6/21/2017 14:29
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	8.3		0.26	1.8	mg/Kg-dry	4	6/18/2017 04:12
Barium	280		0.25	1.8	mg/Kg-dry	4	6/18/2017 04:12
Cadmium	0.58	J	0.014	0.71	mg/Kg-dry	4	6/18/2017 04:12
Chromium	16		0.086	1.8	mg/Kg-dry	4	6/18/2017 04:12
Lead	580		0.029	1.8	mg/Kg-dry	4	6/18/2017 04:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SB9 (0-1)

Collection Date: 6/15/2017 10:51 AM

Work Order: 17061002

Lab ID: 17061002-17

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.8		0.54	1.8	mg/Kg-dry	4	6/18/2017 04:12
Silver	0.091	J	0.014	1.8	mg/Kg-dry	4	6/18/2017 04:12
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	12		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB9 (1-8)
Collection Date: 6/15/2017 10:57 AM

Work Order: 17061002
Lab ID: 17061002-18
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.29	6.2	µg/Kg-dry	1	6/21/2017 19:28
2,4,5-TP (Silvex)	U		0.37	6.2	µg/Kg-dry	1	6/21/2017 19:28
2,4-D	U		0.29	6.2	µg/Kg-dry	1	6/21/2017 19:28
Surr: DCAA	45.4			10-150	%REC	1	6/21/2017 19:28
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		14	62	µg/Kg-dry	5	6/21/2017 21:00
4,4'-DDE	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
4,4'-DDT	U		9.9	62	µg/Kg-dry	5	6/21/2017 21:00
Aldrin	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
alpha-BHC	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
alpha-Chlordane	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
beta-BHC	U		11	62	µg/Kg-dry	5	6/21/2017 21:00
Chlordane, Technical	U		62	160	µg/Kg-dry	5	6/21/2017 21:00
delta-BHC	U		32	62	µg/Kg-dry	5	6/21/2017 21:00
Dieldrin	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
Endosulfan I	U		10	62	µg/Kg-dry	5	6/21/2017 21:00
Endosulfan II	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
Endosulfan sulfate	U		13	62	µg/Kg-dry	5	6/21/2017 21:00
Endrin	U		13	62	µg/Kg-dry	5	6/21/2017 21:00
Endrin aldehyde	U		11	62	µg/Kg-dry	5	6/21/2017 21:00
Endrin ketone	U		12	62	µg/Kg-dry	5	6/21/2017 21:00
gamma-BHC (Lindane)	U		15	62	µg/Kg-dry	5	6/21/2017 21:00
gamma-Chlordane	U		14	62	µg/Kg-dry	5	6/21/2017 21:00
Heptachlor	U		17	62	µg/Kg-dry	5	6/21/2017 21:00
Heptachlor epoxide	U		11	62	µg/Kg-dry	5	6/21/2017 21:00
Methoxychlor	U		11	62	µg/Kg-dry	5	6/21/2017 21:00
Toxaphene	U		67	370	µg/Kg-dry	5	6/21/2017 21:00
Surr: Decachlorobiphenyl	74.9			50-150	%REC	5	6/21/2017 21:00
Surr: Tetrachloro-m-xylene	85.0			50-150	%REC	5	6/21/2017 21:00
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.051		0.0028	0.017	mg/Kg-dry	1	6/21/2017 14:40
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	11		0.28	1.9	mg/Kg-dry	4	6/18/2017 04:18
Barium	200		0.27	1.9	mg/Kg-dry	4	6/18/2017 04:18
Cadmium	U		0.015	0.76	mg/Kg-dry	4	6/18/2017 04:18
Chromium	20		0.091	1.9	mg/Kg-dry	4	6/18/2017 04:18
Lead	58		0.030	1.9	mg/Kg-dry	4	6/18/2017 04:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 07-Jul-17**Client:** Tetra Tech**Project:** KCMO Municipal Farm Site**Sample ID:** SB9 (1-8)**Collection Date:** 6/15/2017 10:57 AM**Work Order:** 17061002**Lab ID:** 17061002-18**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.1		0.57	1.9	mg/Kg-dry	4	6/18/2017 04:18
Silver	0.046	J	0.015	1.9	mg/Kg-dry	4	6/18/2017 04:18
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	20		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB10 (0-1)
Collection Date: 6/15/2017 11:11 AM

Work Order: 17061002
Lab ID: 17061002-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.26	5.6	µg/Kg-dry	1	6/21/2017 19:45
2,4,5-TP (Silvex)	U		0.34	5.6	µg/Kg-dry	1	6/21/2017 19:45
2,4-D	U		0.26	5.6	µg/Kg-dry	1	6/21/2017 19:45
Surr: DCAA	57.0			10-150	%REC	1	6/21/2017 19:45
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	30	J	13	58	µg/Kg-dry	5	6/21/2017 21:13
4,4'-DDE	1,200		110	580	µg/Kg-dry	50	6/22/2017 18:23
4,4'-DDT	860		93	580	µg/Kg-dry	50	6/22/2017 18:23
Aldrin	U		12	58	µg/Kg-dry	5	6/21/2017 21:13
alpha-BHC	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
alpha-Chlordane	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
beta-BHC	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
Chlordane, Technical	U		58	150	µg/Kg-dry	5	6/21/2017 21:13
delta-BHC	U		30	58	µg/Kg-dry	5	6/21/2017 21:13
Dieldrin	24	J	11	58	µg/Kg-dry	5	6/21/2017 21:13
Endosulfan I	U		9.4	58	µg/Kg-dry	5	6/21/2017 21:13
Endosulfan II	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
Endosulfan sulfate	U		12	58	µg/Kg-dry	5	6/21/2017 21:13
Endrin	U		12	58	µg/Kg-dry	5	6/21/2017 21:13
Endrin aldehyde	U		10	58	µg/Kg-dry	5	6/21/2017 21:13
Endrin ketone	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
gamma-BHC (Lindane)	U		14	58	µg/Kg-dry	5	6/21/2017 21:13
gamma-Chlordane	U		13	58	µg/Kg-dry	5	6/21/2017 21:13
Heptachlor	U		16	58	µg/Kg-dry	5	6/21/2017 21:13
Heptachlor epoxide	U		11	58	µg/Kg-dry	5	6/21/2017 21:13
Methoxychlor	U		10	58	µg/Kg-dry	5	6/21/2017 21:13
Toxaphene	U		63	350	µg/Kg-dry	5	6/21/2017 21:13
Surr: Decachlorobiphenyl	69.3			50-150	%REC	5	6/21/2017 21:13
Surr: Decachlorobiphenyl	87.3			50-150	%REC	50	6/22/2017 18:23
Surr: Tetrachloro-m-xylene	85.4			50-150	%REC	5	6/21/2017 21:13
Surr: Tetrachloro-m-xylene	92.6			50-150	%REC	50	6/22/2017 18:23
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.048		0.0032	0.019	mg/Kg-dry	1	6/21/2017 14:42
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	9.7		0.26	1.7	mg/Kg-dry	4	6/18/2017 04:25
Barium	260		0.24	1.7	mg/Kg-dry	4	6/18/2017 04:25
Cadmium	0.31	J	0.014	0.70	mg/Kg-dry	4	6/18/2017 04:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB10 (0-1)
Collection Date: 6/15/2017 11:11 AM

Work Order: 17061002
Lab ID: 17061002-19
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Chromium	22		0.084	1.7	mg/Kg-dry	4	6/18/2017 04:25
Lead	52		0.028	1.7	mg/Kg-dry	4	6/18/2017 04:25
Selenium	3.3		0.52	1.7	mg/Kg-dry	4	6/18/2017 04:25
Silver	0.089	J	0.014	1.7	mg/Kg-dry	4	6/18/2017 04:25
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	15		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB10 (1-8)
Collection Date: 6/15/2017 11:17 AM

Work Order: 17061002
Lab ID: 17061002-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/19/17		Analyst: KYM
2,4,5-T	U		0.27	6.0	µg/Kg-dry	1	6/21/2017 20:01
2,4,5-TP (Silvex)	U		0.36	6.0	µg/Kg-dry	1	6/21/2017 20:01
2,4-D	U		0.27	6.0	µg/Kg-dry	1	6/21/2017 20:01
Surr: DCAA	45.2			10-150	%REC	1	6/21/2017 20:01
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/20/17		Analyst: EB
4,4'-DDD	U		2.7	12	µg/Kg-dry	1	6/21/2017 20:07
4,4'-DDE	U		2.3	12	µg/Kg-dry	1	6/21/2017 20:07
4,4'-DDT	U		1.9	12	µg/Kg-dry	1	6/21/2017 20:07
Aldrin	U		2.4	12	µg/Kg-dry	1	6/21/2017 20:07
alpha-BHC	U		2.4	12	µg/Kg-dry	1	6/21/2017 20:07
alpha-Chlordane	U		2.3	12	µg/Kg-dry	1	6/21/2017 20:07
beta-BHC	U		2.2	12	µg/Kg-dry	1	6/21/2017 20:07
Chlordane, Technical	U		12	30	µg/Kg-dry	1	6/21/2017 20:07
delta-BHC	U		6.3	12	µg/Kg-dry	1	6/21/2017 20:07
Dieldrin	U		2.3	12	µg/Kg-dry	1	6/21/2017 20:07
Endosulfan I	U		2.0	12	µg/Kg-dry	1	6/21/2017 20:07
Endosulfan II	U		2.3	12	µg/Kg-dry	1	6/21/2017 20:07
Endosulfan sulfate	U		2.5	12	µg/Kg-dry	1	6/21/2017 20:07
Endrin	U		2.5	12	µg/Kg-dry	1	6/21/2017 20:07
Endrin aldehyde	U		2.1	12	µg/Kg-dry	1	6/21/2017 20:07
Endrin ketone	U		2.3	12	µg/Kg-dry	1	6/21/2017 20:07
gamma-BHC (Lindane)	U		2.9	12	µg/Kg-dry	1	6/21/2017 20:07
gamma-Chlordane	U		2.7	12	µg/Kg-dry	1	6/21/2017 20:07
Heptachlor	U		3.4	12	µg/Kg-dry	1	6/21/2017 20:07
Heptachlor epoxide	U		2.2	12	µg/Kg-dry	1	6/21/2017 20:07
Methoxychlor	U		2.1	12	µg/Kg-dry	1	6/21/2017 20:07
Toxaphene	U		13	73	µg/Kg-dry	1	6/21/2017 20:07
Surr: Decachlorobiphenyl	70.8			50-150	%REC	1	6/21/2017 20:07
Surr: Tetrachloro-m-xylene	86.9			50-150	%REC	1	6/21/2017 20:07
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.042		0.0034	0.020	mg/Kg-dry	1	6/21/2017 14:45
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	13		0.27	1.8	mg/Kg-dry	4	6/18/2017 04:31
Barium	160		0.25	1.8	mg/Kg-dry	4	6/18/2017 04:31
Cadmium	0.25	J	0.014	0.72	mg/Kg-dry	4	6/18/2017 04:31
Chromium	30		0.086	1.8	mg/Kg-dry	4	6/18/2017 04:31
Lead	16		0.029	1.8	mg/Kg-dry	4	6/18/2017 04:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SB10 (1-8)
Collection Date: 6/15/2017 11:17 AM

Work Order: 17061002
Lab ID: 17061002-20
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.3		0.54	1.8	mg/Kg-dry	4	6/18/2017 04:31
Silver	0.041	J	0.014	1.8	mg/Kg-dry	4	6/18/2017 04:31
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	19		0.025	0.050	% of sample	1	6/22/2017 14:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS1
Collection Date: 6/15/2017 09:57 AM

Work Order: 17061002
Lab ID: 17061002-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/21/17		Analyst: KYM
2,4,5-T	U		0.32	7.0	µg/Kg-dry	1	6/21/2017 21:24
2,4,5-TP (Silvex)	U		0.42	7.0	µg/Kg-dry	1	6/21/2017 21:24
2,4-D	U		0.32	7.0	µg/Kg-dry	1	6/21/2017 21:24
Surr: DCAA	52.2			10-150	%REC	1	6/21/2017 21:24
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/21/17		Analyst: EB
4,4'-DDD	U		150	690	µg/Kg-dry	50	6/22/2017 22:08
4,4'-DDE	180	J	130	690	µg/Kg-dry	50	6/22/2017 22:08
4,4'-DDT	180	J	110	690	µg/Kg-dry	50	6/22/2017 22:08
Aldrin	U		140	690	µg/Kg-dry	50	6/22/2017 22:08
alpha-BHC	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
alpha-Chlordane	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
beta-BHC	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
Chlordane, Technical	U		680	1,700	µg/Kg-dry	50	6/22/2017 22:08
delta-BHC	U		360	690	µg/Kg-dry	50	6/22/2017 22:08
Dieldrin	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
Endosulfan I	U		110	690	µg/Kg-dry	50	6/22/2017 22:08
Endosulfan II	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
Endosulfan sulfate	U		140	690	µg/Kg-dry	50	6/22/2017 22:08
Endrin	U		140	690	µg/Kg-dry	50	6/22/2017 22:08
Endrin aldehyde	U		120	690	µg/Kg-dry	50	6/22/2017 22:08
Endrin ketone	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
gamma-BHC (Lindane)	U		170	690	µg/Kg-dry	50	6/22/2017 22:08
gamma-Chlordane	U		160	690	µg/Kg-dry	50	6/22/2017 22:08
Heptachlor	U		190	690	µg/Kg-dry	50	6/22/2017 22:08
Heptachlor epoxide	U		130	690	µg/Kg-dry	50	6/22/2017 22:08
Methoxychlor	U		120	690	µg/Kg-dry	50	6/22/2017 22:08
Toxaphene	U		740	4,100	µg/Kg-dry	50	6/22/2017 22:08
Surr: Decachlorobiphenyl	129			50-150	%REC	50	6/22/2017 22:08
Surr: Tetrachloro-m-xylene	83.3			50-150	%REC	50	6/22/2017 22:08
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.082		0.0039	0.024	mg/Kg-dry	1	6/21/2017 14:47
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	4.0		0.31	2.1	mg/Kg-dry	4	6/18/2017 04:50
Barium	160		0.29	2.1	mg/Kg-dry	4	6/18/2017 04:50
Cadmium	8.0		0.017	0.83	mg/Kg-dry	4	6/18/2017 04:50
Chromium	15		0.10	2.1	mg/Kg-dry	4	6/18/2017 04:50
Lead	470		0.033	2.1	mg/Kg-dry	4	6/18/2017 04:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS1
Collection Date: 6/15/2017 09:57 AM

Work Order: 17061002
Lab ID: 17061002-21
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	1.8	J	0.63	2.1	mg/Kg-dry	4	6/18/2017 04:50
Silver	0.13	J	0.017	2.1	mg/Kg-dry	4	6/18/2017 04:50
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	28		0.025	0.050	% of sample	1	6/22/2017 16:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS2
Collection Date: 6/15/2017 10:17 AM

Work Order: 17061002
Lab ID: 17061002-22
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/21/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 22:14
2,4,5-TP (Silvex)	U		0.37	6.1	µg/Kg-dry	1	6/21/2017 22:14
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 22:14
Surr: DCAA	70.8			10-150	%REC	1	6/21/2017 22:14
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/21/17		Analyst: EB
4,4'-DDD	U		14	63	µg/Kg-dry	5	6/22/2017 22:48
4,4'-DDE	20	J	12	63	µg/Kg-dry	5	6/22/2017 22:48
4,4'-DDT	16	J	10	63	µg/Kg-dry	5	6/22/2017 22:48
Aldrin	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
alpha-BHC	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
alpha-Chlordane	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
beta-BHC	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
Chlordane, Technical	U		62	160	µg/Kg-dry	5	6/22/2017 22:48
delta-BHC	U		33	63	µg/Kg-dry	5	6/22/2017 22:48
Dieldrin	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
Endosulfan I	U		10	63	µg/Kg-dry	5	6/22/2017 22:48
Endosulfan II	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
Endosulfan sulfate	U		13	63	µg/Kg-dry	5	6/22/2017 22:48
Endrin	U		13	63	µg/Kg-dry	5	6/22/2017 22:48
Endrin aldehyde	U		11	63	µg/Kg-dry	5	6/22/2017 22:48
Endrin ketone	U		12	63	µg/Kg-dry	5	6/22/2017 22:48
gamma-BHC (Lindane)	U		15	63	µg/Kg-dry	5	6/22/2017 22:48
gamma-Chlordane	U		14	63	µg/Kg-dry	5	6/22/2017 22:48
Heptachlor	U		18	63	µg/Kg-dry	5	6/22/2017 22:48
Heptachlor epoxide	U		11	63	µg/Kg-dry	5	6/22/2017 22:48
Methoxychlor	U		11	63	µg/Kg-dry	5	6/22/2017 22:48
Toxaphene	U		68	380	µg/Kg-dry	5	6/22/2017 22:48
Surr: Decachlorobiphenyl	63.3			50-150	%REC	5	6/22/2017 22:48
Surr: Tetrachloro-m-xylene	81.7			50-150	%REC	5	6/22/2017 22:48
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.068		0.0032	0.019	mg/Kg-dry	1	6/21/2017 14:50
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	12		0.27	1.8	mg/Kg-dry	4	6/18/2017 04:57
Barium	210		0.26	1.8	mg/Kg-dry	4	6/18/2017 04:57
Cadmium	0.23	J	0.015	0.73	mg/Kg-dry	4	6/18/2017 04:57
Chromium	20		0.088	1.8	mg/Kg-dry	4	6/18/2017 04:57
Lead	30		0.029	1.8	mg/Kg-dry	4	6/18/2017 04:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech

Project: KCMO Municipal Farm Site

Sample ID: SS2

Collection Date: 6/15/2017 10:17 AM

Work Order: 17061002

Lab ID: 17061002-22

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.3		0.55	1.8	mg/Kg-dry	4	6/18/2017 04:57
Silver	0.053	J	0.015	1.8	mg/Kg-dry	4	6/18/2017 04:57
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	21		0.025	0.050	% of sample	1	6/22/2017 16:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS3
Collection Date: 6/15/2017 10:33 AM

Work Order: 17061002
Lab ID: 17061002-23
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/21/17		Analyst: KYM
2,4,5-T	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 22:31
2,4,5-TP (Silvex)	U		0.37	6.1	µg/Kg-dry	1	6/21/2017 22:31
2,4-D	U		0.28	6.1	µg/Kg-dry	1	6/21/2017 22:31
Surr: DCAA	71.4			10-150	%REC	1	6/21/2017 22:31
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/21/17		Analyst: EB
4,4'-DDD	100	J	26	120	µg/Kg-dry	10	6/22/2017 23:01
4,4'-DDE	160		23	120	µg/Kg-dry	10	6/22/2017 23:01
4,4'-DDT	200		19	120	µg/Kg-dry	10	6/22/2017 23:01
Aldrin	U		24	120	µg/Kg-dry	10	6/22/2017 23:01
alpha-BHC	U		23	120	µg/Kg-dry	10	6/22/2017 23:01
alpha-Chlordane	U		22	120	µg/Kg-dry	10	6/22/2017 23:01
beta-BHC	U		22	120	µg/Kg-dry	10	6/22/2017 23:01
Chlordane, Technical	U		120	300	µg/Kg-dry	10	6/22/2017 23:01
delta-BHC	U		61	120	µg/Kg-dry	10	6/22/2017 23:01
Dieldrin	U		23	120	µg/Kg-dry	10	6/22/2017 23:01
Endosulfan I	U		19	120	µg/Kg-dry	10	6/22/2017 23:01
Endosulfan II	U		22	120	µg/Kg-dry	10	6/22/2017 23:01
Endosulfan sulfate	U		24	120	µg/Kg-dry	10	6/22/2017 23:01
Endrin	U		24	120	µg/Kg-dry	10	6/22/2017 23:01
Endrin aldehyde	U		20	120	µg/Kg-dry	10	6/22/2017 23:01
Endrin ketone	U		22	120	µg/Kg-dry	10	6/22/2017 23:01
gamma-BHC (Lindane)	U		28	120	µg/Kg-dry	10	6/22/2017 23:01
gamma-Chlordane	U		27	120	µg/Kg-dry	10	6/22/2017 23:01
Heptachlor	U		33	120	µg/Kg-dry	10	6/22/2017 23:01
Heptachlor epoxide	U		22	120	µg/Kg-dry	10	6/22/2017 23:01
Methoxychlor	U		20	120	µg/Kg-dry	10	6/22/2017 23:01
Toxaphene	U		130	710	µg/Kg-dry	10	6/22/2017 23:01
Surr: Decachlorobiphenyl	68.3			50-150	%REC	10	6/22/2017 23:01
Surr: Tetrachloro-m-xylene	79.9			50-150	%REC	10	6/22/2017 23:01
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.093		0.0027	0.016	mg/Kg-dry	1	6/21/2017 14:52
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	9.7		0.28	1.9	mg/Kg-dry	4	6/18/2017 05:03
Barium	150		0.27	1.9	mg/Kg-dry	4	6/18/2017 05:03
Cadmium	1.1		0.015	0.76	mg/Kg-dry	4	6/18/2017 05:03
Chromium	17		0.091	1.9	mg/Kg-dry	4	6/18/2017 05:03
Lead	49		0.030	1.9	mg/Kg-dry	4	6/18/2017 05:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS3
Collection Date: 6/15/2017 10:33 AM

Work Order: 17061002
Lab ID: 17061002-23
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	3.0		0.57	1.9	mg/Kg-dry	4	6/18/2017 05:03
Silver	0.16	J	0.015	1.9	mg/Kg-dry	4	6/18/2017 05:03
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	18		0.025	0.050	% of sample	1	6/22/2017 16:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS4
Collection Date: 6/15/2017 11:28 AM

Work Order: 17061002
Lab ID: 17061002-24
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
HERBICIDES							
			Method: SW8151		Prep: SW8151M / 6/21/17		Analyst: KYM
2,4,5-T	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 22:47
2,4,5-TP (Silvex)	U		0.34	5.7	µg/Kg-dry	1	6/21/2017 22:47
2,4-D	U		0.26	5.7	µg/Kg-dry	1	6/21/2017 22:47
Surr: DCAA	59.4			10-150	%REC	1	6/21/2017 22:47
PESTICIDES							
			Method: SW8081A		Prep: SW3546 / 6/21/17		Analyst: EB
4,4'-DDD	U		120	570	µg/Kg-dry	50	6/22/2017 23:15
4,4'-DDE	420	J	110	570	µg/Kg-dry	50	6/22/2017 23:15
4,4'-DDT	440	J	90	570	µg/Kg-dry	50	6/22/2017 23:15
Aldrin	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
alpha-BHC	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
alpha-Chlordane	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
beta-BHC	U		100	570	µg/Kg-dry	50	6/22/2017 23:15
Chlordane, Technical	U		560	1,400	µg/Kg-dry	50	6/22/2017 23:15
delta-BHC	U		290	570	µg/Kg-dry	50	6/22/2017 23:15
Dieldrin	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
Endosulfan I	U		91	570	µg/Kg-dry	50	6/22/2017 23:15
Endosulfan II	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
Endosulfan sulfate	U		120	570	µg/Kg-dry	50	6/22/2017 23:15
Endrin	U		120	570	µg/Kg-dry	50	6/22/2017 23:15
Endrin aldehyde	U		98	570	µg/Kg-dry	50	6/22/2017 23:15
Endrin ketone	U		110	570	µg/Kg-dry	50	6/22/2017 23:15
gamma-BHC (Lindane)	U		140	570	µg/Kg-dry	50	6/22/2017 23:15
gamma-Chlordane	U		130	570	µg/Kg-dry	50	6/22/2017 23:15
Heptachlor	U		160	570	µg/Kg-dry	50	6/22/2017 23:15
Heptachlor epoxide	U		100	570	µg/Kg-dry	50	6/22/2017 23:15
Methoxychlor	U		97	570	µg/Kg-dry	50	6/22/2017 23:15
Toxaphene	U		610	3,400	µg/Kg-dry	50	6/22/2017 23:15
Surr: Decachlorobiphenyl	104			50-150	%REC	50	6/22/2017 23:15
Surr: Tetrachloro-m-xylene	58.1			50-150	%REC	50	6/22/2017 23:15
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 6/21/17		Analyst: JJB
Mercury	0.80		0.017	0.10	mg/Kg-dry	5	6/21/2017 16:59
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 6/17/17		Analyst: JF
Arsenic	5.0		0.25	1.7	mg/Kg-dry	4	6/18/2017 05:29
Barium	430		0.23	1.7	mg/Kg-dry	4	6/18/2017 05:29
Cadmium	2.4		0.013	0.67	mg/Kg-dry	4	6/18/2017 05:29
Chromium	23		0.080	1.7	mg/Kg-dry	4	6/18/2017 05:29
Lead	870		0.27	17	mg/Kg-dry	40	6/20/2017 00:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Jul-17

Client: Tetra Tech
Project: KCMO Municipal Farm Site
Sample ID: SS4
Collection Date: 6/15/2017 11:28 AM

Work Order: 17061002
Lab ID: 17061002-24
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Selenium	2.5		0.50	1.7	mg/Kg-dry	4	6/18/2017 05:29
Silver	0.24	J	0.013	1.7	mg/Kg-dry	4	6/18/2017 05:29
MOISTURE			Method: SW3550C				Analyst: SBR
Moisture	13		0.025	0.050	% of sample	1	6/22/2017 16:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Tetra Tech
Project: KCMO Municipal Farm Site
WorkOrder: 17061002

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry as noted	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103347** Instrument ID **GC7** Method: **SW8151**

MBLK				Sample ID: HBLKS1-103347-103347				Units: µg/Kg			Analysis Date: 6/21/2017 12:17 PM		
Client ID:			Run ID: GC7_170621A			SeqNo: 4496221			Prep Date: 6/19/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
2,4,5-T	U	5.0											
2,4,5-TP (Silvex)	U	5.0											
2,4-D	U	5.0											
Surr: DCAA	31.7	0	50	0	63.4	10-150	0						

LCS				Sample ID: HLCSS1-103347-103347				Units: µg/Kg		Analysis Date: 6/21/2017 01:23 PM	
Client ID:			Run ID: GC7_170621A			SeqNo: 4496224		Prep Date: 6/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
2,4,5-T	13.4	5.0	50	0	26.8	10-150	0				
2,4,5-TP (Silvex)	19	5.0	50	0	38	10-150	0				
2,4-D	16.1	5.0	50	0	32.2	10-130	0				
Surr: DCAA	34.9	0	50	0	69.8	10-150	0				

MS				Sample ID: 17061002-11A MS				Units: µg/Kg		Analysis Date: 6/21/2017 12:50 PM	
Client ID: SB6 (0-1)			Run ID: GC7_170621A			SeqNo: 4496222		Prep Date: 6/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
2,4,5-T	13.71	4.9	48.6	0	28.2	10-150	0				
2,4,5-TP (Silvex)	16.82	4.9	48.6	0	34.6	10-150	0				
2,4-D	10.4	4.9	48.6	0	21.4	10-130	0				
Surr: DCAA	36.74	0	48.6	0	75.6	10-150	0				

MSD				Sample ID: 17061002-11A MSD				Units: µg/Kg		Analysis Date: 6/21/2017 01:06 PM	
Client ID: SB6 (0-1)			Run ID: GC7_170621A			SeqNo: 4496223		Prep Date: 6/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
2,4,5-T	12.89	5.0	49.56	0	26	10-150	13.71	6.16	50		
2,4,5-TP (Silvex)	15.46	5.0	49.56	0	31.2	10-150	16.82	8.38	50		
2,4-D	11.6	5.0	49.56	0	23.4	10-130	10.4	10.9	50		
Surr: DCAA	34.79	0	49.56	0	70.2	10-150	36.74	5.45	50		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: 103347 Instrument ID GC7 Method: SW8151

The following samples were analyzed in this batch:

17061002-01A	17061002-02A	17061002-03A
17061002-04A	17061002-05A	17061002-06A
17061002-07A	17061002-08A	17061002-09A
17061002-10A	17061002-11A	17061002-12A
17061002-13A	17061002-14A	17061002-15A
17061002-16A	17061002-17A	17061002-18A
17061002-19A	17061002-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103373** Instrument ID **GC12** Method: **SW8081A**

MBLK		Sample ID: PBLKS1-103373-103373				Units: µg/Kg		Analysis Date: 6/21/2017 01:56 PM		
Client ID:		Run ID: GC12_170621A				SeqNo: 4495624		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4,4'-DDD	U	10								
4,4'-DDE	U	10								
4,4'-DDT	U	10								
Aldrin	U	10								
alpha-BHC	U	10								
alpha-Chlordane	U	10								
beta-BHC	U	10								
Chlordane, Technical	U	25								
delta-BHC	U	10								
Dieldrin	U	10								
Endosulfan I	U	10								
Endosulfan II	U	10								
Endosulfan sulfate	U	10								
Endrin	U	10								
Endrin aldehyde	U	10								
Endrin ketone	U	10								
gamma-BHC (Lindane)	U	10								
gamma-Chlordane	U	10								
Heptachlor	U	10								
Heptachlor epoxide	U	10								
Methoxychlor	U	10								
Toxaphene	U	60								
Surr: Decachlorobiphenyl	28.31	0	33.3	0	85	50-150	0			
Surr: Tetrachloro-m-xylene	30	0	33.3	0	90.1	50-150	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103373** Instrument ID **GC12** Method: **SW8081A**

LCS		Sample ID: PLCSS1-103373-103373				Units: µg/Kg		Analysis Date: 6/21/2017 02:09 PM		
Client ID:		Run ID: GC12_170621A				SeqNo: 4495625		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4,4'-DDD	37.62	10	33.33	0	113	50-150	0			
4,4'-DDE	37.94	10	33.33	0	114	50-150	0			
4,4'-DDT	38.76	10	33.33	0	116	50-150	0			
Aldrin	37.64	10	33.33	0	113	50-150	0			
alpha-BHC	38.48	10	33.33	0	115	50-150	0			
alpha-Chlordane	36.9	10	33.33	0	111	50-150	0			
beta-BHC	35.01	10	33.33	0	105	50-150	0			
delta-BHC	37.62	10	33.33	0	113	50-150	0			
Dieldrin	37.16	10	33.33	0	111	50-150	0			
Endosulfan I	36.92	10	33.33	0	111	50-150	0			
Endosulfan II	36.39	10	33.33	0	109	50-150	0			
Endosulfan sulfate	34.92	10	33.33	0	105	50-150	0			
Endrin	40.62	10	33.33	0	122	50-150	0			
Endrin aldehyde	32.49	10	33.33	0	97.5	50-150	0			
Endrin ketone	33.48	10	33.33	0	100	50-150	0			
gamma-BHC (Lindane)	37.88	10	33.33	0	114	50-150	0			
gamma-Chlordane	37.45	10	33.33	0	112	50-150	0			
Heptachlor	37.39	10	33.33	0	112	50-150	0			
Heptachlor epoxide	36.86	10	33.33	0	111	50-150	0			
Methoxychlor	34.43	10	33.33	0	103	50-150	0			
Surr: Decachlorobiphenyl	27.57	0	33.3	0	82.8	50-150	0			
Surr: Tetrachloro-m-xylene	28.37	0	33.3	0	85.2	50-150	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103373** Instrument ID **GC12** Method: **SW8081A**

MS				Sample ID: 17061002-02A MS			Units: µg/Kg		Analysis Date: 6/21/2017 04:21 PM		
Client ID: SB1 (1-8)			Run ID: GC12_170621A			SeqNo: 4495819		Prep Date: 6/20/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
4,4´-DDD	37.59	9.9	32.98	0.1731	113	50-150		0			
4,4´-DDE	39.43	9.9	32.98	5.21	104	50-150		0			
4,4´-DDT	37.24	9.9	32.98	1.332	109	50-150		0			
Aldrin	37.31	9.9	32.98	0	113	50-150		0			
alpha-BHC	38.63	9.9	32.98	0	117	50-150		0			
alpha-Chlordane	36.53	9.9	32.98	0	111	50-150		0			
beta-BHC	34.82	9.9	32.98	0	106	50-150		0			
delta-BHC	37.92	9.9	32.98	0	115	50-150		0			
Dieldrin	37.13	9.9	32.98	0	113	50-150		0			
Endosulfan I	36.59	9.9	32.98	0	111	50-150		0			
Endosulfan II	36.51	9.9	32.98	0	111	50-150		0			
Endosulfan sulfate	35.62	9.9	32.98	0	108	50-150		0			
Endrin	40.05	9.9	32.98	0	121	50-150		0			
Endrin aldehyde	32.78	9.9	32.98	0	99.4	50-150		0			
Endrin ketone	33.69	9.9	32.98	0	102	50-150		0			
gamma-BHC (Lindane)	37.91	9.9	32.98	0	115	50-150		0			
gamma-Chlordane	37.1	9.9	32.98	0	113	50-150		0			
Heptachlor	34.43	9.9	32.98	0	104	50-150		0			
Heptachlor epoxide	36.6	9.9	32.98	0	111	50-150		0			
Methoxychlor	32.94	9.9	32.98	0	99.9	50-150		0			
Surr: Decachlorobiphenyl	25.59	0	32.95	0	77.7	50-150		0			
Surr: Tetrachloro-m-xylene	28.85	0	32.95	0	87.6	50-150		0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: 103373 Instrument ID GC12 Method: SW8081A

MSD				Sample ID: 17061002-02A MSD			Units: µg/Kg		Analysis Date: 6/21/2017 04:35 PM		
Client ID: SB1 (1-8)			Run ID: GC12_170621A			SeqNo: 4495820		Prep Date: 6/20/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
4,4´-DDD	38.57	9.8	32.78	0.1731	117	50-150	37.59	2.55	35		
4,4´-DDE	47.5	9.8	32.78	5.21	129	50-150	39.43	18.6	35		
4,4´-DDT	42.15	9.8	32.78	1.332	125	50-150	37.24	12.4	35		
Aldrin	37.64	9.8	32.78	0	115	50-150	37.31	0.867	35		
alpha-BHC	39.07	9.8	32.78	0	119	50-150	38.63	1.13	35		
alpha-Chlordane	36.78	9.8	32.78	0	112	50-150	36.53	0.671	35		
beta-BHC	34.97	9.8	32.78	0	107	50-150	34.82	0.433	35		
delta-BHC	38.16	9.8	32.78	0	116	50-150	37.92	0.646	35		
Dieldrin	37.77	9.8	32.78	0	115	50-150	37.13	1.72	35		
Endosulfan I	36.95	9.8	32.78	0	113	50-150	36.59	0.98	35		
Endosulfan II	37.44	9.8	32.78	0	114	50-150	36.51	2.51	35		
Endosulfan sulfate	36.21	9.8	32.78	0	110	50-150	35.62	1.67	35		
Endrin	41.63	9.8	32.78	0	127	50-150	40.05	3.88	35		
Endrin aldehyde	33.55	9.8	32.78	0	102	50-150	32.78	2.34	35		
Endrin ketone	34.09	9.8	32.78	0	104	50-150	33.69	1.19	35		
gamma-BHC (Lindane)	38.43	9.8	32.78	0	117	50-150	37.91	1.37	35		
gamma-Chlordane	37.29	9.8	32.78	0	114	50-150	37.1	0.502	35		
Heptachlor	35.59	9.8	32.78	0	109	50-150	34.43	3.29	35		
Heptachlor epoxide	37.17	9.8	32.78	0	113	50-150	36.6	1.55	35		
Methoxychlor	34.8	9.8	32.78	0	106	50-150	32.94	5.49	35		
Surr: Decachlorobiphenyl	23.26	0	32.75	0	71	50-150	25.59	9.54	35		
Surr: Tetrachloro-m-xylene	28.6	0	32.75	0	87.3	50-150	28.85	0.856	35		

The following samples were analyzed in this batch:

17061002-01A	17061002-02A	17061002-03A
17061002-04A	17061002-05A	17061002-06A
17061002-07A	17061002-08A	17061002-09A
17061002-10A	17061002-11A	17061002-12A
17061002-13A	17061002-14A	17061002-15A
17061002-16A	17061002-17A	17061002-18A
17061002-19A	17061002-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103487** Instrument ID **GC7** Method: **SW8151**

MBLK		Sample ID: HBLKS1-103487-103487				Units: µg/Kg		Analysis Date: 6/21/2017 08:18 PM		
Client ID:		Run ID: GC7_170621A				SeqNo: 4496248		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4,5-T	U	5.0								
2,4,5-TP (Silvex)	U	5.0								
2,4-D	U	5.0								
Surr: DCAA	31.3	0	50	0	62.6	10-150	0			

LCS		Sample ID: HLCSS1-103487-103487				Units: µg/Kg		Analysis Date: 6/21/2017 08:34 PM		
Client ID:		Run ID: GC7_170621A				SeqNo: 4496249		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4,5-T	13.1	5.0	50	0	26.2	10-150	0			
2,4,5-TP (Silvex)	18.5	5.0	50	0	37	10-150	0			
2,4-D	15.1	5.0	50	0	30.2	10-130	0			
Surr: DCAA	34.1	0	50	0	68.2	10-150	0			

MS		Sample ID: 17061002-21A MS				Units: µg/Kg		Analysis Date: 6/21/2017 08:51 PM		
Client ID: SS1		Run ID: GC7_170621A				SeqNo: 4496250		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4,5-T	8.376	5.0	49.86	0	16.8	10-150	0			
2,4,5-TP (Silvex)	10.97	5.0	49.86	0	22	10-150	0			
2,4-D	8.974	5.0	49.86	0	18	10-130	0			
Surr: DCAA	24.33	0	49.86	0	48.8	10-150	0			

MSD		Sample ID: 17061002-21A MSD				Units: µg/Kg		Analysis Date: 6/21/2017 09:08 PM		
Client ID: SS1		Run ID: GC7_170621A				SeqNo: 4496251		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4,5-T	6.232	4.9	49.46	0	12.6	10-150	8.376	29.3	50	
2,4,5-TP (Silvex)	11.18	4.9	49.46	0	22.6	10-150	10.97	1.9	50	
2,4-D	8.31	4.9	49.46	0	16.8	10-130	8.974	7.69	50	
Surr: DCAA	28.19	0	49.46	0	57	10-150	24.33	14.7	50	

The following samples were analyzed in this batch:

17061002-21A	17061002-22A	17061002-23A
17061002-24A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103546** Instrument ID **GC12** Method: **SW8081A**

MBLK		Sample ID: PBLKS1-103546-103546				Units: µg/Kg		Analysis Date: 6/22/2017 04:50 PM		
Client ID:		Run ID: GC12_170621B				SeqNo: 4499655		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4,4'-DDD	U	10								
4,4'-DDE	U	10								
4,4'-DDT	U	10								
Aldrin	U	10								
alpha-BHC	U	10								
alpha-Chlordane	U	10								
beta-BHC	U	10								
Chlordane, Technical	U	25								
delta-BHC	U	10								
Dieldrin	U	10								
Endosulfan I	U	10								
Endosulfan II	U	10								
Endosulfan sulfate	U	10								
Endrin	U	10								
Endrin aldehyde	U	10								
Endrin ketone	U	10								
gamma-BHC (Lindane)	U	10								
gamma-Chlordane	U	10								
Heptachlor	U	10								
Heptachlor epoxide	U	10								
Methoxychlor	U	10								
Toxaphene	U	60								
Surr: Decachlorobiphenyl	29	0	33.3	0	87.1	50-150	0			
Surr: Tetrachloro-m-xylene	29.9	0	33.3	0	89.8	50-150	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103546** Instrument ID **GC12** Method: **SW8081A**

LCS		Sample ID: PLCSS1-103546-103546				Units: µg/Kg		Analysis Date: 6/22/2017 05:03 PM		
Client ID:		Run ID: GC12_170621B				SeqNo: 4499656		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4,4'-DDD	38.76	10	33.33	0	116	50-150	0			
4,4'-DDE	38.34	10	33.33	0	115	50-150	0			
4,4'-DDT	39.53	10	33.33	0	119	50-150	0			
Aldrin	37.87	10	33.33	0	114	50-150	0			
alpha-BHC	38.44	10	33.33	0	115	50-150	0			
alpha-Chlordane	37.19	10	33.33	0	112	50-150	0			
beta-BHC	35.29	10	33.33	0	106	50-150	0			
delta-BHC	37.04	10	33.33	0	111	50-150	0			
Dieldrin	37.58	10	33.33	0	113	50-150	0			
Endosulfan I	37.06	10	33.33	0	111	50-150	0			
Endosulfan II	36.66	10	33.33	0	110	50-150	0			
Endosulfan sulfate	35.16	10	33.33	0	105	50-150	0			
Endrin	38.5	10	33.33	0	116	50-150	0			
Endrin aldehyde	34.16	10	33.33	0	103	50-150	0			
Endrin ketone	34.89	10	33.33	0	105	50-150	0			
gamma-BHC (Lindane)	37.96	10	33.33	0	114	50-150	0			
gamma-Chlordane	37.75	10	33.33	0	113	50-150	0			
Heptachlor	37.01	10	33.33	0	111	50-150	0			
Heptachlor epoxide	37.08	10	33.33	0	111	50-150	0			
Methoxychlor	35.81	10	33.33	0	107	50-150	0			
Surr: Decachlorobiphenyl	28.34	0	33.3	0	85.1	50-150	0			
Surr: Tetrachloro-m-xylene	29.19	0	33.3	0	87.7	50-150	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: 103546 Instrument ID GC12 Method: SW8081A

MS				Sample ID: 17061002-21A MS			Units: µg/Kg		Analysis Date: 6/22/2017 10:22 PM	
Client ID: SS1				Run ID: GC12_170621B			SeqNo: 4499659		Prep Date: 6/21/2017	
									DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4,4'-DDD	U	490	32.86	5.778	-17.6	50-150	0			S
4,4'-DDE	135.4	490	32.86	126.5	27.2	50-150	0			JS
4,4'-DDT	128.7	490	32.86	131.7	-8.87	50-150	0			JSO
Aldrin	U	490	32.86	0	0	50-150	0			S
alpha-BHC	U	490	32.86	0	0	50-150	0			S
alpha-Chlordane	U	490	32.86	0	0	50-150	0			S
beta-BHC	U	490	32.86	0	0	50-150	0			S
delta-BHC	U	490	32.86	0	0	50-150	0			S
Dieldrin	U	490	32.86	0	0	50-150	0			S
Endosulfan I	U	490	32.86	0	0	50-150	0			S
Endosulfan II	U	490	32.86	0	0	50-150	0			S
Endosulfan sulfate	U	490	32.86	0	0	50-150	0			S
Endrin	U	490	32.86	0	0	50-150	0			S
Endrin aldehyde	U	490	32.86	0	0	50-150	0			S
Endrin ketone	U	490	32.86	0	0	50-150	0			S
gamma-BHC (Lindane)	U	490	32.86	0	0	50-150	0			S
gamma-Chlordane	U	490	32.86	0	0	50-150	0			S
Heptachlor	U	490	32.86	0	0	50-150	0			S
Heptachlor epoxide	U	490	32.86	0	0	50-150	0			S
Methoxychlor	U	490	32.86	0	0	50-150	0			S
Surr: Decachlorobiphenyl	38.12	0	32.83	0	116	50-150	0			
Surr: Tetrachloro-m-xylene	25.63	0	32.83	0	78.1	50-150	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: 103546 Instrument ID GC12 Method: SW8081A

MSD				Sample ID: 17061002-21A MSD			Units: µg/Kg		Analysis Date: 6/22/2017 10:35 PM		
Client ID: SS1				Run ID: GC12_170621B			SeqNo: 4499660		Prep Date: 6/21/2017		DF: 50
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
4,4´-DDD	U	490	32.95	5.778	-17.5	50-150	30.24	0	35	S	
4,4´-DDE	115.8	490	32.95	126.5	-32.3	50-150	135.4	0	35	JS	
4,4´-DDT	112.6	490	32.95	131.7	-57.8	50-150	128.7	0	35	JS	
Aldrin	U	490	32.95	0	0	50-150	26.37	0	35	S	
alpha-BHC	U	490	32.95	0	0	50-150	23.09	0	35	S	
alpha-Chlordane	U	490	32.95	0	0	50-150	31.71	0	35	S	
beta-BHC	U	490	32.95	0	0	50-150	27.85	0	35	S	
delta-BHC	U	490	32.95	0	0	50-150	21.12	0	35	S	
Dieldrin	U	490	32.95	0	0	50-150	27.11	0	35	S	
Endosulfan I	U	490	32.95	0	0	50-150	29.41	0	35	S	
Endosulfan II	U	490	32.95	0	0	50-150	26.05	0	35	S	
Endosulfan sulfate	U	490	32.95	0	0	50-150	27.85	0	35	S	
Endrin	U	490	32.95	0	0	50-150	29.41	0	35	S	
Endrin aldehyde	U	490	32.95	0	0	50-150	22.27	0	35	S	
Endrin ketone	U	490	32.95	0	0	50-150	27.11	0	35	S	
gamma-BHC (Lindane)	U	490	32.95	0	0	50-150	32.04	0	35	S	
gamma-Chlordane	U	490	32.95	0	0	50-150	31.47	0	35	S	
Heptachlor	U	490	32.95	0	0	50-150	29.58	0	35	S	
Heptachlor epoxide	U	490	32.95	0	0	50-150	28.92	0	35	S	
Methoxychlor	U	490	32.95	0	0	50-150	31.14	0	35	S	
Surr: Decachlorobiphenyl	31.39	0	32.92	0	95.3	50-150	38.12	19.4	35		
Surr: Tetrachloro-m-xylene	24.55	0	32.92	0	74.6	50-150	25.63	4.32	35		

The following samples were analyzed in this batch:

17061002-21A	17061002-22A	17061002-23A
17061002-24A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103452** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-103452-103452				Units: mg/Kg		Analysis Date: 6/20/2017 05:06 PM		
Client ID:		Run ID: HG1_170620A				SeqNo: 4491003		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-103452-103452				Units: mg/Kg		Analysis Date: 6/20/2017 05:08 PM		
Client ID:		Run ID: HG1_170620A				SeqNo: 4491004		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1792 0.020 0.1665 0 108 80-120 0

MS		Sample ID: 17061002-11AMS				Units: mg/Kg		Analysis Date: 6/20/2017 05:47 PM		
Client ID: SB6 (0-1)		Run ID: HG1_170620A				SeqNo: 4491019		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.179 0.017 0.1419 0.02917 106 75-125 0

MSD		Sample ID: 17061002-11AMSD				Units: mg/Kg		Analysis Date: 6/20/2017 05:49 PM		
Client ID: SB6 (0-1)		Run ID: HG1_170620A				SeqNo: 4491020		Prep Date: 6/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1835 0.017 0.1399 0.02917 110 75-125 0.179 2.48 35

The following samples were analyzed in this batch:

17061002-01A	17061002-02A	17061002-03A
17061002-04A	17061002-05A	17061002-06A
17061002-07A	17061002-08A	17061002-09A
17061002-10A	17061002-11A	17061002-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103524** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-103524-103524				Units: mg/Kg		Analysis Date: 6/21/2017 02:09 PM		
Client ID:		Run ID: HG1_170621A				SeqNo: 4493652		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-103524-103524				Units: mg/Kg		Analysis Date: 6/21/2017 02:11 PM		
Client ID:		Run ID: HG1_170621A				SeqNo: 4493653		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1792 0.020 0.1665 0 108 80-120 0

MS		Sample ID: 17061002-14AMS				Units: mg/Kg		Analysis Date: 6/21/2017 02:19 PM		
Client ID: SB7 (1-8)		Run ID: HG1_170621A				SeqNo: 4493656		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1477 0.014 0.1195 0.02289 104 75-125 0

MSD		Sample ID: 17061002-14AMSD				Units: mg/Kg		Analysis Date: 6/21/2017 02:22 PM		
Client ID: SB7 (1-8)		Run ID: HG1_170621A				SeqNo: 4493657		Prep Date: 6/21/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1437 0.014 0.1186 0.02289 102 75-125 0.1477 2.76 35

The following samples were analyzed in this batch:

17061002-13A	17061002-14A	17061002-15A
17061002-16A	17061002-17A	17061002-18A
17061002-19A	17061002-20A	17061002-21A
17061002-22A	17061002-23A	17061002-24A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103359** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: MBLK-103359-103359				Units: mg/Kg		Analysis Date: 6/17/2017 09:37 PM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486858		Prep Date: 6/17/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	0.01778	0.25								J
Lead	0.0059	0.25								J
Selenium	U	0.25								
Silver	U	0.25								

LCS		Sample ID: LCS-103359-103359				Units: mg/Kg		Analysis Date: 6/17/2017 09:43 PM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486859		Prep Date: 6/17/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.21	0.25	5	0	84.2	80-120	0			
Barium	4.74	0.25	5	0	94.8	80-120	0			
Cadmium	4.576	0.10	5	0	91.5	80-120	0			
Chromium	4.574	0.25	5	0	91.5	80-120	0			
Lead	4.888	0.25	5	0	97.8	80-120	0			
Selenium	4.142	0.25	5	0	82.8	80-120	0			
Silver	4.85	0.25	5	0	97	80-120	0			

MS		Sample ID: 17061002-02AMS				Units: mg/Kg		Analysis Date: 6/17/2017 11:59 PM		
Client ID: SB1 (1-8)		Run ID: ICPMS1_170617A				SeqNo: 4486879		Prep Date: 6/17/2017		DF: 4
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.06	1.5	7.496	6.387	89	75-125	0			
Barium	107.1	1.5	7.496	95.34	157	75-125	0			SO
Cadmium	6.735	0.60	7.496	0.00807	89.7	75-125	0			
Chromium	27.96	1.5	7.496	14.86	175	75-125	0			S
Lead	16.48	1.5	7.496	10.77	76.2	75-125	0			
Selenium	8.804	1.5	7.496	2.33	86.4	75-125	0			
Silver	6.996	1.5	7.496	0.05231	92.6	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103359** Instrument ID **ICPMS1** Method: **SW6020A**

MSD				Sample ID: 17061002-02AMSD			Units: mg/Kg		Analysis Date: 6/18/2017 12:05 AM		
Client ID: SB1 (1-8)			Run ID: ICPMS1_170617A			SeqNo: 4486880		Prep Date: 6/17/2017		DF: 4	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	14.57	1.5	7.519	6.387	109	75-125	13.06	11	20		
Barium	186	1.5	7.519	95.34	1210	75-125	107.1	53.9	20	SRO	
Cadmium	7.047	0.60	7.519	0.00807	93.6	75-125	6.735	4.53	20		
Chromium	27.43	1.5	7.519	14.86	167	75-125	27.96	1.92	20	S	
Lead	19.21	1.5	7.519	10.77	112	75-125	16.48	15.3	20		
Selenium	9.817	1.5	7.519	2.33	99.6	75-125	8.804	10.9	20		
Silver	7.248	1.5	7.519	0.05231	95.7	75-125	6.996	3.55	20		

The following samples were analyzed in this batch:

17061002-01A	17061002-02A	17061002-03A
17061002-04A	17061002-05A	17061002-06A
17061002-07A	17061002-08A	17061002-09A
17061002-10A	17061002-11A	17061002-12A
17061002-13A	17061002-14A	17061002-15A
17061002-16A	17061002-17A	17061002-18A
17061002-19A	17061002-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103360** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: MBLK-103360-103360				Units: mg/Kg		Analysis Date: 6/18/2017 04:38 AM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486919		Prep Date: 6/17/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	U	0.25								
Lead	0.01182	0.25								J
Selenium	U	0.25								
Silver	U	0.25								

LCS		Sample ID: LCS-103360-103360				Units: mg/Kg		Analysis Date: 6/18/2017 04:44 AM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486920		Prep Date: 6/17/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.554	0.25	5	0	91.1	80-120	0			
Barium	5.03	0.25	5	0	101	80-120	0			
Cadmium	4.62	0.10	5	0	92.4	80-120	0			
Chromium	4.874	0.25	5	0	97.5	80-120	0			
Lead	5.065	0.25	5	0	101	80-120	0			
Selenium	4.054	0.25	5	0	81.1	80-120	0			
Silver	4.887	0.25	5	0	97.7	80-120	0			

MS		Sample ID: 17061045-03BMS				Units: mg/Kg		Analysis Date: 6/18/2017 06:01 AM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486932		Prep Date: 6/17/2017		DF: 4
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.07	1.5	7.299	2.873	98.6	75-125	0			
Barium	31.56	1.5	7.299	18.96	173	75-125	0			S
Cadmium	7.568	0.58	7.299	0.09665	102	75-125	0			
Chromium	15	1.5	7.299	6.484	117	75-125	0			
Lead	11.71	1.5	7.299	4.335	101	75-125	0			
Selenium	8.178	1.5	7.299	0.9324	99.3	75-125	0			
Silver	7.536	1.5	7.299	0.00405	103	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **103360** Instrument ID **ICPMS1** Method: **SW6020A**

MSD		Sample ID: 17061045-03BMSD				Units: mg/Kg		Analysis Date: 6/18/2017 06:08 AM		
Client ID:		Run ID: ICPMS1_170617A				SeqNo: 4486933		Prep Date: 6/17/2017		DF: 4
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.05	1.5	7.257	2.873	98.8	75-125	10.07	0.235	20	
Barium	27.43	1.5	7.257	18.96	117	75-125	31.56	14	20	
Cadmium	7.475	0.58	7.257	0.09665	102	75-125	7.568	1.24	20	
Chromium	14.27	1.5	7.257	6.484	107	75-125	15	5	20	
Lead	11.57	1.5	7.257	4.335	99.7	75-125	11.71	1.18	20	
Selenium	8.122	1.5	7.257	0.9324	99.1	75-125	8.178	0.689	20	
Silver	7.475	1.5	7.257	0.00405	103	75-125	7.536	0.815	20	

The following samples were analyzed in this batch:

17061002-21A	17061002-22A	17061002-23A
17061002-24A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
 Work Order: 17061002
 Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **R214479** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R214479				Units: % of sample		Analysis Date: 6/22/2017 02:22 PM		
Client ID:		Run ID: MOIST_170622B				SeqNo: 4496599		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R214479				Units: % of sample		Analysis Date: 6/22/2017 02:22 PM		
Client ID:		Run ID: MOIST_170622B				SeqNo: 4496598		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17061002-02A DUP				Units: % of sample		Analysis Date: 6/22/2017 02:22 PM		
Client ID: SB1 (1-8)		Run ID: MOIST_170622B				SeqNo: 4496578		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 18.43 0.050 0 0 0 0-0 18.29 0.763 5

DUP		Sample ID: 17061002-14A DUP				Units: % of sample		Analysis Date: 6/22/2017 02:22 PM		
Client ID: SB7 (1-8)		Run ID: MOIST_170622B				SeqNo: 4496591		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 19.1 0.050 0 0 0 0-0 19.03 0.367 5

The following samples were analyzed in this batch:

17061002-01A	17061002-02A	17061002-03A
17061002-04A	17061002-05A	17061002-06A
17061002-07A	17061002-08A	17061002-09A
17061002-10A	17061002-11A	17061002-12A
17061002-13A	17061002-14A	17061002-15A
17061002-16A	17061002-17A	17061002-18A
17061002-19A	17061002-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 17061002
Project: KCMO Municipal Farm Site

QC BATCH REPORT

Batch ID: **R214482** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R214482				Units: % of sample		Analysis Date: 6/22/2017 04:32 PM		
Client ID:		Run ID: MOIST_170622C				SeqNo: 4496655		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R214482				Units: % of sample		Analysis Date: 6/22/2017 04:32 PM		
Client ID:		Run ID: MOIST_170622C				SeqNo: 4496654		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17061002-23A DUP				Units: % of sample		Analysis Date: 6/22/2017 04:32 PM		
Client ID: SS3		Run ID: MOIST_170622C				SeqNo: 4496635		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 18.77 0.050 0 0 0 0-0 18.27 2.7 5

DUP		Sample ID: 1706822-01A DUP				Units: % of sample		Analysis Date: 6/22/2017 04:32 PM		
Client ID:		Run ID: MOIST_170622C				SeqNo: 4496653		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 21.8 0.050 0 0 0 0-0 21.74 0.276 5

The following samples were analyzed in this batch:

17061002-21A	17061002-22A	17061002-23A
17061002-24A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



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Page 1 of 3

COC ID: 45327

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+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager: _____ ALS Work Order #: <u>17061002</u>															
Parameter/Method Request for Analysis																			
Purchase Order		Project Name	KCMO Municipal Farm Site	A	RCRA 8 Metals														
Work Order		Project Number		B	Moisture														
Company Name	Tetra Tech	Bill To Company	Tetra Tech	C	Warfarin (8321 subcontract to ALS Waterloo)														
Send Report To	Christina Engemann	Invoice Attn	Emily Fisher	D	Herbicides														
Address	415 Oak Street	Address	415 Oak Street	E	Pesticides														
City/State/Zip	Kansas City, MO 64106	City/State/Zip	Kansas City, MO 64106	F															
Phone	(816) 412-1755	Phone	(816) 412-1755	G															
Fax	(816) 410-1748	Fax	(816) 410-1748	H															
e-Mail Address	christina.engemann@tetratech.com	e-Mail Address		I															
				J															
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	SB1 (0-1)	6/14/17	1105	Soil	NA	3	X	X	X	X	X								
2	SB1 (1-8)		1120			3													
3	SB2 (0-1)		1138			3													
4	SB2 (1-8)		1150			3													
5	SB3 (0-1)		1219			3													
6	SB3 (1-8)		1235			3													
7	SB4 (0-1)		1305			3													
8	SB4 (1-8)		1320			3													
9	SB5 (0-1)		1345			3													
10	SB5 (1-4)		1351			3													
Sampler(s) Please Print & Sign		Shipment Method		Turnaround Time in Business Days (BD)				Other				Results Due Date:							
Christina Engemann		FedEx		<input type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD				Standard											
Relinquished by:		Date:	Time:	Received by:		Notes:													
Christina Engemann		6/15/17	1600	FedEx															
Relinquished by:		Date:	Time:	Received by (Laboratory):															
FedEx		6/16/17	1030																
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):															
Kel		6/16/17	1245																
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																			



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+1 304 356 3168

York, PA
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ALS Project Manager:

ALS Work Order #: 17061002

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order		Project Name	KCMO Municipal Farm Site	A	RCRA 8 Metals											
Work Order		Project Number		B	Moisture											
Company Name	Tetra Tech	Bill To Company	Tetra Tech	C	Warfarin (8321 subcontract to ALS Waterloo)											
Send Report To	Christina Engemann	Invoice Attn	Emily Fisher	D	Herbicides											
Address	415 Oak Street	Address	415 Oak Street	E	Pesticides											
				F												
City/State/Zip	Kansas City, MO 64106	City/State/Zip	Kansas City, MO 64106	G												
Phone	(816) 412-1755	Phone	(816) 412-1755	H												
Fax	(816) 410-1748	Fax	(816) 410-1748	I												
e-Mail Address	<u>christina.engemann@tetra-tech.com</u>	e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	SB 6 (0-1)	6/14/17	1437	Soil	NA	2	X	X	X	X	X						
12	SB 6 (1-8)		1444			2											
13	SB 7 (0-1)		1510			2											
14	SB 7 (1-8)		1520			2											
15	SB 8 (0-1)		1540			2											
16	SB 8 (1-8)		1550			2											
17	SB 9 (0-1)	6/15/17	1051			2											
18	SB 9 (1-8)		1057			2											
19	SB 10 (0-1)		1111			2											
20	SB 10 (1-8)		1117			2											

Sampler(s) Please Print & Sign <u>Christina Engemann</u>		Shipment Method <u>FedEx</u>		Turnaround Time in Business Days (BD) <input type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD				Other: <u>Standard</u>		Results Due Date:	
Relinquished by: <u>Christina Engemann</u>		Date: <u>6/15/17</u>	Time: <u>1600</u>	Received by: <u>FedEx</u>		Notes:					
Relinquished by: <u>FedEx</u>		Date: <u>6/16/17</u>	Time: <u>1030</u>	Received by (Laboratory):		Cooler ID		Cooler Temp		QC Package: (Check One Box Below)	
Logged by (Laboratory): <u>KE</u>		Date: <u>6/16/17</u>	Time: <u>1245</u>	Checked by (Laboratory):						<input type="checkbox"/> Level II Std QC <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other _____	
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035											

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Salt Lake City, UT
+1 801 266 7700


South Charleston, WV
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York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager: _____ ALS Work Order #: <u>17061007</u>															
Parameter/Method Request for Analysis																			
Purchase Order		Project Name	KCMO Municipal Farm Site	A	RCRA 8 Metals														
Work Order		Project Number		B	Moisture														
Company Name	Tetra Tech	Bill To Company	Tetra Tech	C	Warfarin (8321 subcontract to ALS Waterloo)														
Send Report To	Christina Engemann	Invoice Attn	Emily Fisher	D	Herbicides														
Address	415 Oak Street	Address	415 Oak Street	E	Pesticides														
City/State/Zip	Kansas City, MO 64106	City/State/Zip	Kansas City, MO 64106	F															
Phone	(816) 412-1755	Phone	(816) 412-1755	G															
Fax	(816) 410-1748	Fax	(816) 410-1748	H															
e-Mail Address	christina.engemann@tetra-tech.com	e-Mail Address		I															
				J															
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
21	SS1	6/15/17	0957	Soil	NA	2	X	X	X	X	X								
22	SS2		1017	Soil	NA	2	X	X	X	X	X								
23	SS3		1033	Soil	NA	2	X	X	X	X	X								
24	SS4		1128	Soil	NA	2	X	X	X	X	X								
5	<div style="text-align: center;"> <p>OAG</p> <p>6/15/17</p> </div>																		
6																			
7																			
8																			
9																			
10																			
Sampler(s) Please Print & Sign		Shipment Method		Turnaround Time in Business Days (BD)				Results Due Date:											
Christina Engemann		FedEx		<input type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD															
Relinquished by:		Date:	Time:	Received by:		Notes:													
Christina Engemann		6/15/17	1600	FedEx															
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler ID Cooler Temp QC Package: (Check One Box Below)													
FedEx		6/16/17	1030			<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRAP Checklist <input type="checkbox"/> Level III Std QC/Raw Date <input type="checkbox"/> TRAP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other _____													
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):															
Ker		6/16/17	1245																
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																			

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 ALS Environmental 3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185		Date: <u>6/13/17</u> Time: <u>1:00</u> Name: <u>Mr. Steve Brown</u> Company: <u>Tyco Inc.</u>	
		CUSTODY SEAL	
Seal Broken By:		Date:	

ORIGIN ID:MKCA (816) 421-1741
EMILY FISHER
TETRA TECH
415 OAK STREET
KANSAS CITY, MO 64106
UNITED STATES US

SHIP DATE: 15 JUN 17
ACTWGT: 10.00 LB MON
CAD: 0565151/CARE3012

BILL SENDER

TO RECEIVING DEPT.
ALS LABORATORY GROUP
3352 128TH AVE

HOLLAND MI 494249263

(616) 399-6070
REF: 103X9026140002019020



494249263

2 of 2

MPS# 7053 6907 3979
Met# 7053 6907 3968

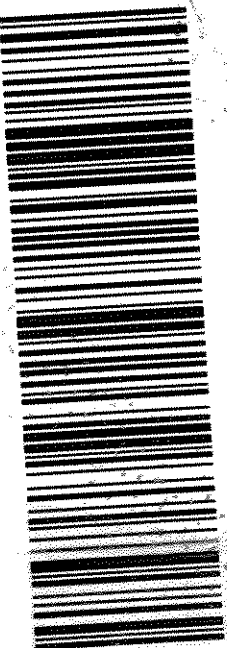
0201

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FRI - 16 JUN 10:30A
PRIORITY OVERNIGHT

Part # 156148-434 RIT2 12/15



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3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 6/15/17
Time: 10:00
Name: Christina Ferguson
Company: Tetra Tech

Seal Broken By:

Date:

Sample Receipt Checklist

Client Name: **TETRATECH - MO**

Date/Time Received: **16-Jun-17 10:30**

Work Order: **17061002**

Received by: **KRW**

Checklist completed by Keith Wurenga 16-Jun-17 Reviewed by: _____
eSignature Date eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☒ No ☐ Not Present ☐

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Container/Temp Blank temperature in compliance? Yes ☒ No ☐

Sample(s) received on ice? Yes ☒ No ☐

Temperature(s)/Thermometer(s): 3.0/3.0 C 3.8/3.8 C SR2

Cooler(s)/Kit(s): _____

Date/Time sample(s) sent to storage: 6/16/2017 12:59:39 PM

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒

Water - pH acceptable upon receipt? Yes ☐ No ☐ N/A ☒

pH adjusted? Yes ☐ No ☐ N/A ☒

pH adjusted by: _____

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



ALS GROUP USA, CORP
ATTN: Joe Ribar
3352 128th AVE
HOLLAND MI 49424

Date Received: 21-JUN-17
Report Date: 06-JUL-17 14:35 (MT)
Version: FINAL

Client Phone: 616-399-6070

Certificate of Analysis

Lab Work Order #: L1945862
Project P.O. #: NOT SUBMITTED
Job Reference: 17061002
C of C Numbers: 7718
Legal Site Desc:

Rick Hawthorne
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1945862-1 SB1 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 11:05 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 16.7 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-2 SB1 (1-8) Sampled By: CLIENT on 14-JUN-17 @ 11:20 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 17.0 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-3 SB2 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 11:38 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 18.3 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-4 SB2 (1-8) Sampled By: CLIENT on 14-JUN-17 @ 11:50 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 17.1 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-5 SB3 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 12:19 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 16.6 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-6 SB3 (1-6) Sampled By: CLIENT on 14-JUN-17 @ 12:35 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 22.1 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-7 SB4 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 13:05 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 10.9 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-8 SB4 (1-8) Sampled By: CLIENT on 14-JUN-17 @ 13:20 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	 19.0 <0.0010	 	 0.10 0.0010	 % ug/g	 22-JUN-17 06-JUL-17	 22-JUN-17 06-JUL-17	 R3754043 R3766495
L1945862-9 SB5 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 13:45 Matrix: SOIL							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1945862-9 SB5 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 13:45 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	23.6 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-10 SB5 (1-4) Sampled By: CLIENT on 14-JUN-17 @ 13:51 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	27.0 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-11 SB6 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 14:37 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	15.8 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-12 SB6 (1-8) Sampled By: CLIENT on 14-JUN-17 @ 14:44 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	16.3 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-13 SB7 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 15:10 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	16.4 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-14 SB7 (1-8) Sampled By: CLIENT on 14-JUN-17 @ 15:20 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	18.6 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-15 SB8 (0-1) Sampled By: CLIENT on 14-JUN-17 @ 15:40 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	14.3 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-16 SB8(1-8) Sampled By: CLIENT on 14-JUN-17 @ 15:50 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	17.3 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-17 SB9 (0-1) Sampled By: CLIENT on 15-JUN-17 @ 10:51 Matrix: SOIL							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1945862-17 SB9 (0-1) Sampled By: CLIENT on 15-JUN-17 @ 10:51 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	9.37 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-18 SB9 (1-8) Sampled By: CLIENT on 15-JUN-17 @ 10:57 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	19.0 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-19 SB10 (0-1) Sampled By: CLIENT on 15-JUN-17 @ 11:11 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	13.3 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-20 SB10(1-8) Sampled By: CLIENT on 15-JUN-17 @ 11:17 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	22.3 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 06-JUL-17	R3754043 R3766495
L1945862-21 SS1 Sampled By: CLIENT on 15-JUN-17 @ 09:57 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	21.1 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 01-JUL-17	R3753944 R3766315
L1945862-22 SS2 Sampled By: CLIENT on 15-JUN-17 @ 10:17 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	20.9 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 01-JUL-17	R3753944 R3766315
L1945862-23 SS3 Sampled By: CLIENT on 15-JUN-17 @ 10:33 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	19.4 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 01-JUL-17	R3753944 R3766315
L1945862-24 SS4 Sampled By: CLIENT on 15-JUN-17 @ 11:28 Matrix: SOIL Miscellaneous Parameters % Moisture Warfarin	9.64 <0.0010		0.10 0.0010	% ug/g	22-JUN-17 06-JUL-17	22-JUN-17 01-JUL-17	R3753944 R3766315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
NSSM	Non-standard sample matrix. Modified methods were used for sample processing and analysis.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
WARFARIN-LCMS-WT	Soil	Warfarin by LC/MS-MS	EPA 1694 (Modified)

Non-standard sample matrix.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

7718

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1945862

Report Date: 06-JUL-17

Page 1 of 2

Client: ALS GROUP USA, CORP
3352 128th AVE
HOLLAND MI 49424

Contact: Joe Ribar

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil						
Batch	R3753944							
WG2554332-6	DUP	L1945862-21						
% Moisture		21.1	21.3		%	1.2	20	22-JUN-17
WG2554332-5	LCS		99.8		%		90-110	22-JUN-17
% Moisture								
WG2554332-4	MB		<0.10		%		0.1	22-JUN-17
% Moisture								
Batch	R3754043							
WG2554280-3	DUP	L1945862-1						
% Moisture		16.7	16.8		%	0.3	20	22-JUN-17
WG2554280-2	LCS		100.6		%		90-110	22-JUN-17
% Moisture								
WG2554280-1	MB		<0.10		%		0.1	22-JUN-17
% Moisture								
WARFARIN-LCMS-WT		Soil						
Batch	R3766315							
WG2554347-10	DUP	L1945862-21						
Warfarin		<0.0010	<0.0010	RPD-NA	ug/g	N/A	50	01-JUL-17
WG2554347-8	LCS		98.4		%		50-150	01-JUL-17
Warfarin								
WG2554347-7	MB		<0.0010		ug/g		0.001	01-JUL-17
Warfarin								
WG2554347-11	MS	L1945862-21	123.9		%		50-150	01-JUL-17
Warfarin								
Batch	R3766495							
WG2553922-7	LCS		105.9		%		50-150	06-JUL-17
Warfarin								
WG2553922-1	MB		<0.0010		ug/g		0.001	06-JUL-17
Warfarin								
WG2553922-8	MS	L1945862-14	114.9		%		50-150	06-JUL-17
Warfarin								

Quality Control Report

Workorder: L1945862

Report Date: 06-JUL-17

Page 2 of 2

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Subcontractor:
ALS Laboratory Group
60 Northland Road
Unit 1
Waterloo, ON

TEL: (519) 886-6910
FAX:
Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 16-Jun-17
COC ID: 7718
Due D: 23-Jun-17

Page 1 of 2

Environmental

Salesperson: **Bruce Schlatter**

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order	20-17061002	Project Name	17061002	A Subcontracted Analyses (SUBCONTRACT)												
Work Order		Project Number		B												
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C												
Send Report To	Joseph Ribar	Inv Attn	Accounts Payable	D												
Address	3352 128th Ave	Address	3352 128th Ave	E												
				F												
City/State/Zip	Holland, Michigan 49424	City/State/Zip	Holland, Michigan 49424	G												
Phone	(616) 399-6070	Phone	(616) 399-6070	H												
Fax	(616) 399-6185	Fax	(616) 399-6185	I												
eMail Address	joe.ribar@alsglobal.com	eMail CC		J												

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1 17061002-01B	SB1 (0-1)	Soil	14/Jun/2017 11:05	(1) 4OZGNEAT	X									
2 17061002-02B	SB1 (1-8)	Soil	14/Jun/2017 11:20	(1) 4OZGNEAT	X									
3 17061002-03B	SB2 (0-1)	Soil	14/Jun/2017 11:38	(1) 4OZGNEAT	X									
4 17061002-04B	SB2 (1-8)	Soil	14/Jun/2017 11:50	(1) 4OZGNEAT	X									
5 17061002-05B	SB3 (0-1)	Soil	14/Jun/2017 12:19	(1) 4OZGNEAT	X									
6 17061002-06B	SB3 (1-6)	Soil	14/Jun/2017 12:35	(1) 4OZGNEAT	X									
7 17061002-07B	SB4 (0-1)	Soil	14/Jun/2017 13:05	(1) 4OZGNEAT	X									
8 17061002-08B	SB4 (1-8)	Soil	14/Jun/2017 13:20	(1) 4OZGNEAT	X									
9 17061002-09B	SB5 (0-1)	Soil	14/Jun/2017 13:45	(1) 4OZGNEAT	X									
10 17061002-10B	SB5 (1-4)	Soil	14/Jun/2017 13:51	(1) 4OZGNEAT	X									
11 17061002-11B	SB6 (0-1)	Soil	14/Jun/2017 14:37	(1) 4OZGNEAT	X									
12 17061002-12B	SB6 (1-8)	Soil	14/Jun/2017 14:44	(1) 4OZGNEAT	X									
13 17061002-13B	SB7 (0-1)	Soil	14/Jun/2017 15:10	(1) 4OZGNEAT	X									
14 17061002-14B	SB7 (1-8)	Soil	14/Jun/2017 15:20	(1) 4OZGNEAT	X									

Comments:

Please analyze samples by for Warfarin by method 8321. Thank you.



L1945862-COFC

Relinquished by:

Date/Time

Received by:

Date/Time

Cooler IDs

Report/QC Level

Std

Relinquished by:

Date/Time

Received by:

Date/Time

21 JUN-17
1300

7.1°C



Subcontractor:
ALS Laboratory Group
60 Northland Road
Unit 1
Waterloo, ON

TEL: (519) 886-6910
FAX:
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Date: 16-Jun-17
COC ID: 7718
Due D 23-Jun-17

Environmental

Salesperson **Bruce Schlatter**

Customer Information		Project Information		Parameter/Method Request for Analysis										
Purchase Order	20-17061002	Project Name	17061002	A Subcontracted Analyses (SUBCONTRACT)										
Work Order		Project Number		B										
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C										
Send Report To	Joseph Ribar	Inv Attn	Accounts Payable	D										
Address	3352 128th Ave	Address	3352 128th Ave	E										
				F										
City/State/Zip	Holland, Michigan 49424	City/State/Zip	Holland, Michigan 49424	G										
Phone	(616) 399-6070	Phone	(616) 399-6070	H										
Fax	(616) 399-6185	Fax	(616) 399-6185	I										
eMail Address	joe.ribar@alsglobal.com	eMail CC		J										
ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
15 17061002-15B	SB8 (0-1)	Soil	14/Jun/2017 15:40	(1) 4OZGNEAT	X									
16 17061002-16B	SB8 (1-8)	Soil	14/Jun/2017 15:50	(1) 4OZGNEAT	X									
17 17061002-17B	SB9 (0-1)	Soil	15/Jun/2017 10:51	(1) 4OZGNEAT	X									
18 17061002-18B	SB9 (1-8)	Soil	15/Jun/2017 10:57	(1) 4OZGNEAT	X									
19 17061002-19B	SB10 (0-1)	Soil	15/Jun/2017 11:11	(1) 4OZGNEAT	X									
20 17061002-20B	SB10 (1-8)	Soil	15/Jun/2017 11:17	(1) 4OZGNEAT	X									
21 17061002-21B	SS1	Soil	15/Jun/2017 9:57	(1) 4OZGNEAT	X									
22 17061002-22B	SS2	Soil	15/Jun/2017 10:17	(1) 4OZGNEAT	X									
23 17061002-23B	SS3	Soil	15/Jun/2017 10:33	(1) 4OZGNEAT	X									
24 17061002-24B	SS4	Soil	15/Jun/2017 11:28	(1) 4OZGNEAT	X									

Comments:

Please analyze samples by for Warfarin by method 8321. Thank you.



L1945862-COFC

Relinquished by:

Date/Time

Received by:

Date/Time

Cooler IDs

Report/QC Level

Std

Relinquished by:

Date/Time

Received by:

Date/Time

7.1°C

SN

21 JUN 17

1300

10

APPENDIX E

TABLES

TABLE E-1

**SUMMARY OF METALS IN SOIL SAMPLES
FORMER HEALTH EMERGENCY HAZMAT SITE, KANSAS CITY, MISSOURI
RESIDENTIAL CRITERIA**

Sample ID	Laboratory ID	Analyte and Associated Concentration (mg/kg)							
		Mercury	Arsenic	Barium	Cadmium	Chromium*	Lead	Selenium	Silver
SB1/0-1	17061002-01	0.055	12	200	0.13 J	19	36	2.8	0.12 J
SB1/1-8	17061002-02	0.041	7.8	120	ND	18	13	2.9	0.064 J
SB2/0-1	17061002-03	0.025	13	160	ND	21	19	3.6	0.11 J
SB2/1-8	17061002-04	0.038	8.9	170	ND	20	13	3.2	0.067 J
SB3/0-1	17061002-05	0.048	9.7	240	0.11 J	19	24	3.1	0.098 J
SB3/1-6	17061002-06	0.034	12	440	0.059 J	29	17	4.6	0.18 J
SB4/0-1	17061002-07	0.022	7.9	180	ND	20	23	2.8	0.070 J
SB4/1-8	17061002-08	0.055	13	240	0.027 J	29	28	3.9	0.062 J
SB5/0-1	17061002-09	0.057	12	580	0.82 J	41	39	3.3	0.042 J
SB5/1-4	17061002-10	0.035	8.9	250	3.3	33	23	4.5	0.082 J
SB6/0-1	17061002-11	0.034	10	260	ND	19	16	3.7	0.065 J
SB6/1-8	17061002-12	0.033	11	260	ND	26	14	3.4	0.062 J
SB7/0-1	17061002-13	0.042	12	330	ND	18	20	4	0.057 J
SB7/1-8	17061002-14	0.028	7.2	150	ND	18	14	3.2	0.049 J
SB8/0-1	17061002-15	0.047	8.6	200	0.064 J	17	19	3	0.056 J
SB8/1-8	17061002-16	0.010 J	8.8	150	ND	17	15	2.9	0.036 J
SB9/0-1	17061002-17	0.22	8.3	280	0.58 J	16	580	2.8	0.091 J
SB9/1-8	17061002-18	0.051	11	200	ND	20	58	3.1	0.046 J
SB10/0-1	17061002-19	0.048	9.7	260	0.31 J	22	52	3.3	0.089 J
SB10/1-8	17061002-20	0.042	13	160	0.25 J	30	16	3.3	0.041 J
SS1	17061002-21	0.082	4.0	160	8.0	15	470	<i>1.8 J</i>	0.13 J
SS2	17061002-22	0.068	12	210	0.23 J	20	30	3.3	0.053 J
SS3	17061002-23	0.093	9.7	150	1.1	17	49	3	0.16 J
SS4	17061002-24	0.80	5.0	430	2.4	23	870	2.5	0.24 J
Screening Values (mg/kg)									
EPA RSL - Residential Soil		1.1	0.68	1,500	7.1	12,000	400	39	39
MRBCA LDTLs		2.19 ^{INH}	3.89 ^{SDC}	2,040 ^{GWP}	9.31 ^{GWP}	74,600 ^{SDC}	3.74 ^{GWP}	6.27 ^{GWP}	16.2 ^{GWP}
Tier 1 Residential RBTL - Soil Type 2 - Surface Soil		46.3	3.89	15,000	16.8	74,600	260	380	374
Tier 1 Residential RBTL - Soil Type 2 - Subsurface Soil		4.17	NE	NE	NE	NE	260	NE	NE
Jackson County, Missouri, Average Background		0.016	16.603	NE	NE	NE	40.96	0.499	NE

Notes:

Bold Analyte concentration equals or exceeds the EPA Residential Soil RSL**Shade** Analyte concentration equals or exceeds the MRBCA LDTL**Shade** Analyte concentration equals or exceeds the MRBCA RBTL*Italics* Analyte concentration equals or exceeds the county average background**Shade** Indicates sample was collected from surface soil**Shade** Indicates sample was collected from subsurface soil

EPA RSL U.S. Environmental Protection Agency Regional Screening Level

GWP Protection of domestic groundwater use pathway

INH Indoor inhalation pathway

J Analyte is present at an estimated concentration between the method detection limit and the reporting limit

LDTL Lowest Default Target Level

mg/kg Milligrams per kilogram

MRBCA Missouri Risk-Based Corrective Action

ND Not detected

NE Not established

RBTL Risk-Based Target Level

SDC Soil direct contact pathway

* Total chromium; screening values are for chromium (III), as hexavalent chromium is not believed to have been used at the site

TABLE E-2

**SUMMARY OF METALS IN SOIL SAMPLES
FORMER HEALTH EMERGENCY HAZMAT SITE, KANSAS CITY, MISSOURI
INDUSTRIAL/NON-RESIDENTIAL CRITERIA**

Sample ID	Laboratory ID	Analyte and Associated Concentration (mg/kg)							
		Mercury	Arsenic	Barium	Cadmium	Chromium*	Lead	Selenium	Silver
SB1/0-1	17061002-01	0.055	12	200	0.13 J	19	36	2.8	0.12 J
SB1/1-8	17061002-02	0.041	7.8	120	ND	18	13	2.9	0.064 J
SB2/0-1	17061002-03	0.025	13	160	ND	21	19	3.6	0.11 J
SB2/1-8	17061002-04	0.038	8.9	170	ND	20	13	3.2	0.067 J
SB3/0-1	17061002-05	0.048	9.7	240	0.11 J	19	24	3.1	0.098 J
SB3/1-6	17061002-06	0.034	12	440	0.059 J	29	17	4.6	0.18 J
SB4/0-1	17061002-07	0.022	7.9	180	ND	20	23	2.8	0.070 J
SB4/1-8	17061002-08	0.055	13	240	0.027 J	29	28	3.9	0.062 J
SB5/0-1	17061002-09	0.057	12	580	0.82 J	41	39	3.3	0.042 J
SB5/1-4	17061002-10	0.035	8.9	250	3.3	33	23	4.5	0.082 J
SB6/0-1	17061002-11	0.034	10	260	ND	19	16	3.7	0.065 J
SB6/1-8	17061002-12	0.033	11	260	ND	26	14	3.4	0.062 J
SB7/0-1	17061002-13	0.042	12	330	ND	18	20	4	0.057 J
SB7/1-8	17061002-14	0.028	7.2	150	ND	18	14	3.2	0.049 J
SB8/0-1	17061002-15	0.047	8.6	200	0.064 J	17	19	3	0.056 J
SB8/1-8	17061002-16	0.010 J	8.8	150	ND	17	15	2.9	0.036 J
SB9/0-1	17061002-17	0.22	8.3	280	0.58 J	16	580	2.8	0.091 J
SB9/1-8	17061002-18	0.051	11	200	ND	20	58	3.1	0.046 J
SB10/0-1	17061002-19	0.048	9.7	260	0.31 J	22	52	3.3	0.089 J
SB10/1-8	17061002-20	0.042	13	160	0.25 J	30	16	3.3	0.041 J
SS1	17061002-21	0.082	4.0	160	8.0	15	470	1.8 J	0.13 J
SS2	17061002-22	0.068	12	210	0.23 J	20	30	3.3	0.053 J
SS3	17061002-23	0.093	9.7	150	1.1	17	49	3	0.16 J
SS4	17061002-24	0.80	5.0	430	2.4	23	870	2.5	0.24 J
Screening Values (mg/kg)									
EPA RSL - Industrial Soil		4.6	3	22,000	98	180,000	800	580	580
MRBCA LDTLs		2.19 ^{INH}	3.89 ^{SDC}	2,040 ^{GWP}	9.31 ^{GWP}	74,600 ^{SDC}	3.74 ^{GWP}	6.27 ^{GWP}	16.2 ^{GWP}
Tier 1 Non-Residential RBTL - Soil Type 2 - Surface Soil		630	15.9	181,000	74.8	472,000	660	4,780	4,480
Tier 1 Non-Residential RBTL - Soil Type 2 - Subsurface Soil		33.5	NE	NE	NE	NE	660	NE	NE
Jackson County, Missouri, Average Background		0.016	16.603	NE	NE	NE	40.96	0.499	NE

Notes:

Bold Analyte concentration equals or exceeds the EPA Residential Soil RSL**Shade** Analyte concentration equals or exceeds the MRBCA LDTL**Shade** Analyte concentration equals or exceeds the MRBCA RBTL*Italics* Analyte concentration equals or exceeds the county average background**Shade** Indicates sample was collected from surface soil**Shade** Indicates sample was collected from subsurface soil

EPA RSL U.S. Environmental Protection Agency Regional Screening Level

GWP Protection of domestic groundwater use pathway

INH Indoor inhalation pathway

J Analyte is present at an estimated concentration between the method detection limit and the reporting limit

LDTL Lowest Default Target Level

mg/kg Milligrams per kilogram

MRBCA Missouri Risk-Based Corrective Action

ND Not detected

NE Not established

RBTL Risk-Based Target Level

SDC Soil direct contact pathway

* Total chromium; screening values are for chromium (III), as hexavalent chromium is not believed to have been used at the site

TABLE E-3

**SUMMARY OF HERBICIDES AND PESTICIDES IN SOIL SAMPLES
FORMER HEALTH EMERGENCY HAZMAT SITE, KANSAS CITY, MISSOURI
RESIDENTIAL CRITERIA**

Sample ID	Laboratory ID	Analyte and Associated Concentration (mg/kg)				
		2,4-D	4,4-DDD	4,4-DDE	4,4-DDT	Dieldrin
SB1/0-1	17061002-01	ND	ND	0.031	0.0082 J	ND
SB1/1-8	17061002-02	ND	ND	0.0064 J	ND	ND
SB2/0-1	17061002-03	ND	ND	ND	ND	ND
SB2/1-8	17061002-04	ND	ND	ND	ND	ND
SB3/0-1	17061002-05	ND	ND	ND	0.0055 J	ND
SB3/1-6	17061002-06	0.022	ND	ND	ND	ND
SB4/0-1	17061002-07	ND	ND	ND	ND	ND
SB4/1-8	17061002-08	ND	ND	ND	ND	ND
SB5/0-1	17061002-09	ND	ND	ND	ND	ND
SB5/1-4	17061002-10	ND	ND	ND	ND	ND
SB6/0-1	17061002-11	ND	ND	ND	0.0027 J	ND
SB6/1-8	17061002-12	ND	ND	ND	ND	ND
SB7/0-1	17061002-13	ND	ND	ND	ND	ND
SB7/1-8	17061002-14	ND	ND	ND	ND	ND
SB8/0-1	17061002-15	ND	ND	ND	ND	0.021 J
SB8/1-8	17061002-16	ND	ND	ND	ND	ND
SB9/0-1	17061002-17	ND	ND	ND	0.011 J	ND
SB9/1-8	17061002-18	ND	ND	ND	ND	ND
SB10/0-1	17061002-19	ND	0.03 J	1.2	0.86	0.024 J
SB10/1-8	17061002-20	ND	ND	ND	ND	ND
SS1	17061002-21	ND	ND	0.18 J	0.18 J	ND
SS2	17061002-22	ND	ND	0.02 J	0.016 J	ND
SS3	17061002-23	ND	0.1 J	0.16	0.2	ND
SS4	17061002-24	ND	ND	0.42 J	0.44 J	ND
Screening Values (mg/kg)						
EPA RSL - Residential Soil		190	0.19	2	1.9	0.034
MRBCA LDTLs		9.38	20.2	14.3	14.3	0.0936
Tier 1 Residential RBTL - Soil Type 2 - Surface Soil		611	20.2	14.3	14.3	0.301
Tier 1 Residential RBTL - Soil Type 2 - Subsurface Soil		515,000	3,790,000	3,320,000	4,760,000	525

Notes:

Shade	Indicates sample was collected from surface soil
Shade	Indicates sample was collected from subsurface soil
D	Dichlorophenoxyacetic acid
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethene
EPA RSL	U.S. Environmental Protection Agency Regional Screening Level
J	Analyte is present at an estimated concentration between the method detection limit and t
LDTL	Lowest Default Target Level
mg/kg	Milligrams per kilogram
MRBCA	Missouri Risk-Based Corrective Action
ND	Not detected
RBTL	Risk-Based Target Level

TABLE E-4

**SUMMARY OF HERBICIDES AND PESTICIDES IN SOIL SAMPLES
FORMER HEALTH EMERGENCY HAZMAT SITE, KANSAS CITY, MISSOURI
INDUSTRIAL/NON-RESIDENTIAL CRITERIA**

Sample ID	Laboratory ID	Analyte and Associated Concentration (mg/kg)				
		2,4-D	4,4-DDD	4,4-DDE	4,4-DDT	Dieldrin
SB1/0-1	17061002-01	ND	ND	0.031	0.0082 J	ND
SB1/1-8	17061002-02	ND	ND	0.0064 J	ND	ND
SB2/0-1	17061002-03	ND	ND	ND	ND	ND
SB2/1-8	17061002-04	ND	ND	ND	ND	ND
SB3/0-1	17061002-05	ND	ND	ND	0.0055 J	ND
SB3/1-6	17061002-06	0.022	ND	ND	ND	ND
SB4/0-1	17061002-07	ND	ND	ND	ND	ND
SB4/1-8	17061002-08	ND	ND	ND	ND	ND
SB5/0-1	17061002-09	ND	ND	ND	ND	ND
SB5/1-4	17061002-10	ND	ND	ND	ND	ND
SB6/0-1	17061002-11	ND	ND	ND	0.0027 J	ND
SB6/1-8	17061002-12	ND	ND	ND	ND	ND
SB7/0-1	17061002-13	ND	ND	ND	ND	ND
SB7/1-8	17061002-14	ND	ND	ND	ND	ND
SB8/0-1	17061002-15	ND	ND	ND	ND	0.021 J
SB8/1-8	17061002-16	ND	ND	ND	ND	ND
SB9/0-1	17061002-17	ND	ND	ND	0.011 J	ND
SB9/1-8	17061002-18	ND	ND	ND	ND	ND
SB10/0-1	17061002-19	ND	0.03 J	1.2	0.86	0.024 J
SB10/1-8	17061002-20	ND	ND	ND	ND	ND
SS1	17061002-21	ND	ND	0.18 J	0.18 J	ND
SS2	17061002-22	ND	ND	0.02 J	0.016 J	ND
SS3	17061002-23	ND	0.1 J	0.16	0.2	ND
SS4	17061002-24	ND	ND	0.42 J	0.44 J	ND
Screening Values (mg/kg)						
EPA RSL - Industrial Soil		2,500	2.5	9.3	8.5	0.14
MRBCA LDTLs		9.38	20.2	14.3	14.3	0.0936
Tier 1 Non-Residential RBTL - Soil Type 2 - Surface Soil		6,160	71.8	50.6	50.7	1.06
Tier 1 Non-Residential RBTL - Soil Type 2 - Subsurface Soil		4,140,000	19,900,000	17,400,000	25,000,000	2,750

Notes:

Shade	Indicates sample was collected from surface soil
Shade	Indicates sample was collected from subsurface soil
D	Dichlorophenoxyacetic acid
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethene
EPA RSL	U.S. Environmental Protection Agency Regional Screening Level
J	Analyte is present at an estimated concentration between the method detection limit and the reportable level
LDTL	Lowest Default Target Level
mg/kg	Milligrams per kilogram
MRBCA	Missouri Risk-Based Corrective Action
ND	Not detected
RBTL	Risk-Based Target Level

APPENDIX F

PROPERTY PROFILE FORM



United States
ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

Draft For Approval
OMB Number No. 2050-0192
Expires 05/31/2016

PROPERTY PROFILE FORM—Brownfields

Public reporting burden for this collection of information is estimated to average x.xx hours per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate, or any other aspect of this collection of information, including suggestions for reducing this burden, to the Environmental Protection Agency, Office of Environmental Information, Code 2822T, Washington, DC 20460; and to the Paperwork Reduction Project, Office of Management and Budget, Washington, DC 20503. DO NOT RETURN your form to either of these addresses. Send your completed form to the address provided by the issuing office.

PART I- PROPERTY INFORMATION

COOPERATIVE AGREEMENT RECIPIENT INFORMATION

1. Cooperative Agreement Recipient Name (State/Tribe for Section 128(a) Cooperative Agreements; requestor/contractor for TBAs):

City of Kansas City, Missouri

2. Cooperative Agreement Number (Contract number for TBAs):

EP-S7-06-01

3. What type of cooperative agreement funding is being used for this property?

- ☐ Assessment ☐ Section 128(a) – State and Tribal Response
☐ Revolving Loan Fund ☐ Multi-Purpose Grant
☐ Cleanup ☒ TBA (EPA Regions Only)
☐ Area Wide Planning

4. For Assessment, Cleanup, and Revolving Loan Fund cooperative agreements, what type of funding is being used at this property?

- ☐ Hazardous Substance ☐ Petroleum ☒ Both

5a. Indicate if this form is the initial or Updated Form:

- ☒ Initial Form ☐ Updated Form

5b. If "Updated Form," what's the ACRES Property ID?

PROPERTY BACKGROUND INFORMATION

6. Property Name: KCMO Municipal Farms Former HEHS Site

7a. Street Address: 8100 Ozark Road

7b. City: Kansas City

7c. County: Jackson 7d. State: MO

7e. ZIP Code: 64129

8. Size (in acres): 18.60

9. Parcel Number(s): 32-420-02-01-00-0-00-000

STATE & TRIBAL BROWNFIELDS/VOLUNTARY RESPONSE PROGRAM INFORMATION

10. State & Tribal Program Enrollment (If the property is not enrolled in a state program, check the Property Not Enrolled check box):

Date of Enrollment: ID Number (if applicable): ☒ This Property Is Not Enrolled in a State or Tribal Program

PROPERTY GEOGRAPHIC INFORMATION (EPA Brownfields Program, or its contractors, will provide complete latitude/longitude information if cooperative agreement recipients are unable)

11a. Latitude
(Use 00.000000 decimal degree format):

39.042777

11b. Longitude
(Use -000.000000 decimal degree format):

-94.494349

11c. Horizontal Collection Method:

Global Positioning Method- Unspecified Parameters

11d. Source Map Scale Number (Only if a map/photo was used):

11e. Reference Point (e.g., Center of Facility or Station):

Center of a Facility or Station

11f. Horizontal Reference Datum (Choose one):

- ☐ NAD27-North American Datum of 1927 ☒ WGS84-World Geodetic System of 1984
☐ NAD83-North American Datum of 1983

PART II- ENVIRONMENTAL ACTIVITIES

ENVIRONMENTAL ASSESSMENT INFORMATION (Mandatory for Assessment Cooperative Agreements, State and Tribal Property-Specific Assessments, and TBAs; and, if information is available, for Cleanup and RLF cooperative agreement recipients. CA = Cooperative Agreement)

Table A – Environmental Assessment Activity (If there are multiple assessments, please use a separate line for each assessment)

Environmental Assessment Detail			Source of Funding (enter one source of funding per line; do not include funding received prior to the award of this					Name of Entity Providing Funds	Amount of Funding Expended on this Activity
Activity	Start Date	Completion Date	This US EPA CA	Other Federal	State/Tribal (exclude §128(a) funds)	Local Gov't	Private/ Other		
Phase II	5/19/2016	6/1/2018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	USEPA Region 7	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

12a. Indicate Whether Cleanup is Necessary: ☒ Yes ☐ No ☐ Unknown

12b. If Unknown, Select Reason:

If Other _____

CONTAMINANTS & MEDIA AFFECTED INFORMATION (Mandatory for all cooperative agreement types)

Table B - Contaminants and Media Affected (check all that apply):

Contaminants			
Class of Contaminant	REC*	Found	Cleaned Up
Petroleum/Petroleum Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Controlled Substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCBs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SVOCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VOCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lead	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other Metals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PAHs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Contaminants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No Contaminants	<input type="checkbox"/>		
Unknown	<input type="checkbox"/>		

Media		
Media	Affected	Cleaned Up
Soil	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air	<input type="checkbox"/>	<input type="checkbox"/>
Surface Water	<input type="checkbox"/>	<input type="checkbox"/>
Ground Water	<input type="checkbox"/>	<input type="checkbox"/>
Drinking Water	<input type="checkbox"/>	<input type="checkbox"/>
Sediments	<input type="checkbox"/>	<input type="checkbox"/>
Building Materials	<input type="checkbox"/>	<input type="checkbox"/>
Indoor Air	<input type="checkbox"/>	<input type="checkbox"/>
No Media Affected	<input type="checkbox"/>	
Unknown	<input type="checkbox"/>	

*REC = Recognized Environmental Conditions

ENVIRONMENTAL CLEANUP INFORMATION (Mandatory for Cleanup and RLF Cooperative Agreements and State & Tribal Property-Specific Cleanups; and, if information is available, for Assessment Cooperative Agreements and TBAs)

13. Cleanup Activity Start Date: _____

14a. Cleanup Activity Completion Date: _____

15. Acres Cleaned Up: _____

14b. Cleanup Completion Documentation

☐ NFA ☐ Environmental Professional Certified

16. Date No Further Action/Cleanup Completion Document Issued

(If the property was not enrolled in a state or tribal program, leave blank):

Date: _____

17. Number of Cleanup Jobs Leveraged: _____

18. If EPA Brownfields funding was used, indicate the type and amount (If any non-EPA funding was used, fill out Table C):

Type	Amount
<input type="checkbox"/> Cleanup	
<input type="checkbox"/> Cooperative Agreement	
<input type="checkbox"/> RLF Loan	

Type	Amount
<input type="checkbox"/> RLF Subgrant	Date RLF Subgrant Signed _____
<input type="checkbox"/> Section 128(a) State/Tribal	

Table C - Environmental Cleanup Leveraged Funding Detail

Source of Funding (Enter one source of funding per line; do not include funding received prior to the award of this EPA Cooperative Agreement)					Name of Entity Providing Funds	Activity Funded	Amount of Funding Expended on this Activity
Other Federal	State/Tribal (exclude §128(a) funds)	Local Gov't	Private/ Other	Cost Share			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

PART II- ENVIRONMENTAL ACTIVITIES (continued)

INSTITUTIONAL & ENGINEERING CONTROLS INFORMATION *(Mandatory for all cooperative agreement types)*

19a. Indicate whether Institutional Controls are required: ☐ Yes ☐ No ☒ Unknown

19b. If Institutional Controls were required, indicate the category (check all that apply):

- ☐ Proprietary Controls (e.g., easements, covenants) ☐ Governmental Controls (e.g., zoning, building codes)
- ☐ Informational Devices (e.g., state registries, deed notices) ☐ Enforcement/Permit Tools (e.g., permits, consent decrees)

Additional Institutional Controls Information:

Address of Data Source (URL if available): _____

19c. Indicate whether Institutional Controls in place: ☐ Yes ☒ No Date: _____

20a. Indicate whether Engineering Controls are required: ☐ Yes ☐ No ☒ Unknown

20b. If Engineering Controls were required, indicate the category (check all that apply):

- ☐ Cover Technologies (e.g., Capping) ☐ Immobilization Process (e.g., Encapsulation, In-Situ Solidification) ☐ Engineered Barriers (e.g., Slurry Walls, Sheet)
- ☐ Security (e.g., Guard, Fences) ☐ Other _____

Additional Engineering Controls Information:

Address of Data Source (URL if available): _____

20c. Indicate whether Engineering Controls in place: ☐ Yes ☐ No Date: _____

REDEVELOPMENT AND OTHER LEVERAGED ACCOMPLISHMENTS *(Mandatory for Assessment, Cleanup and RLF Cooperative Agreements; and, if information is available, for State and Tribal Property Specific Activities and TBAs)*

21. Redevelopment Start Date: _____ 22. Redevelopment Completion Date: _____

Table D- Redevelopment Leveraged Funding Detail

Source of Funding (Enter one source of funding per line; do not include funding received prior to the award of this EPA Cooperative Agreement)				Name of Entity Providing Funds	Activity Funded	Amount of Funding Expended on this Activity
Other Federal	State/Tribal	Local Gov't	Private/ Other			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

23. Number of Redevelopment Jobs Leveraged: _____

24. Future Use, Planned and Actual Acreage (Check all that apply. For properties with multi-story buildings only, please indicate both the entire square footage and the square footage for each type of reuse (e.g., a three-story building with first floor commercial and remaining floors residential).

	Planned		Actual	
	Acres	Sq. Ft.	Acres	Sq. Ft.
<input type="checkbox"/> Residential	_____	_____	_____	_____
<input checked="" type="checkbox"/> Greenspace	18.60	_____	18.60	_____
<input type="checkbox"/> Industrial	_____	_____	_____	_____
<input type="checkbox"/> Commercial	_____	_____	_____	_____
<input type="checkbox"/> Multi-story	_____	_____	_____	_____

PART II- ENVIRONMENTAL ACTIVITIES (continued)

ANECDOTAL PROPERTY INFORMATION *(If information is available for all cooperative agreement types)*

25. Property Highlights:

The HEHS was used by the City until the 1990s and was demolished in 1998. During this Phase II TBA, soil samples confirmed recognized environmental conditions to the subject property (i.e. possible historical releases of contaminants) via presences of pesticides-related compounds and metals. Additional geotechnical soil sampling to assess stability of the soil for future development occurred.

PROPERTY PHOTOGRAPH INFORMATION

26. Indicate whether photographs are available: ☒ Yes ☐ No 27. Indicate whether video is available: ☐ Yes ☒ No

PART III- ADDITIONAL PROPERTY INFORMATION

PROPERTY HISTORY INFORMATION

28. Property Description / History / Past Ownership:

See above anecdotal property information

29. Predominant Past Use(s) (Check all that apply. For properties with multi-story buildings only, please indicate both entire square footage and the square footage for each type of past use (e.g., a three-story building with first floor commercial and remaining floors residential.)

	Acres	Actual Square Feet
<input type="checkbox"/> Residential	_____	_____
<input type="checkbox"/> Greenspace	_____	_____
<input checked="" type="checkbox"/> Industrial	18.60	_____
<input type="checkbox"/> Commercial	_____	_____
<input type="checkbox"/> Multi-story building	_____	_____

OWNERSHIP & SUPERFUND LIABILITY *(Mandatory for Cleanup and RLF Cooperative Agreements)*

30a. Ownership Entity:

☐ Government (Tribal, State, Local) ☒ Private

31a. During the life of the cooperative agreement, did ownership change?

☐ Yes ☐ No

30b. Current Owner:

City of Kansas City, Missouri

31b. If "yes," did Superfund federal landowner liability protections factor into the ownership change?

☐ Yes ☐ No ☐ Unknown

PART IV- APPROVALS

32. Cooperative Agreement Recipient Project Manager

Name (please print):

Signature

Date:

33. US EPA Regional Representative

Name (please print):

Signature

Date:

Todd Davis, Project Manager

ATTACHMENT 1
GEOTECHNICAL REPORT



GEOTECHNOLOGY **INC**
FROM THE GROUND UP

**KCMO MUNICIPAL FARMS
KANSAS CITY, MISSOURI**

Prepared for:

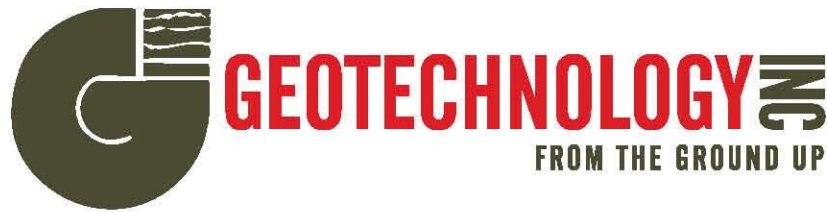
TETRA TECH, INC.
Kansas City, Missouri

Prepared by:

GEOTECHNOLOGY, INC.
Overland Park, Kansas

Geotechnology Job No. J024838.01

October 19, 2017



October 19, 2017

J024838.01

Ms. Christy Engemann, EPI
Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106

KCMO MUNICIPAL FARMS
KANSAS CITY, MISSOURI

Dear Ms. Engemann:

Presented in this report are the results of geotechnical drilling and laboratory testing services provided for the referenced project. Field exploration and reporting services were provided in general accordance with the scope of services described in Geotechnology's proposal P024838.01 dated June 26, 2017. Tetra Tech, Inc. (Tetra Tech) authorized these services by issuance of Task Order No. 1140167-0-1, award date July 26, 2017. Tetra Tech authorized geotechnical laboratory testing services by issuance of Task Order No. 1140166-0-0, award date July 7, 2017.

SCOPE OF SERVICES

Briefly, geotechnical services consisted of drilling 17 borings, laboratory testing, and preparation of a report with boring logs, a boring location plan and a description of the subsurface conditions at the boring locations. Our scope of services initially included pushing a Shelby tube at each boring location. The stratigraphy at some of the boring locations, however, consisted of coarse fill and/or natural soils with substantial gravel content. Such soils cannot be effectively sampled with Shelby tubes and, therefore, split-spoon sampling techniques were used.

PROJECT AND SITE DESCRIPTION

The overall project consists of the redevelopment of a tract of ground in Jackson County, Missouri. The project is in the conceptual stages of design, and geotechnical information has been requested to assist in determining potential areas of development to be included in the Habitat Restoration and Green Infrastructure Plan.



The project site is dissected by I-435. The west half of the project site is bordered by Manchester Trafficway (a.k.a. Coal Mine Road) on the north and west; I-435 on the east, and residential developments on the south. The east half of the project site is bordered by Raytown Road on the northeast; Ozark Road on the southeast and south; I-435 on the west; and Eastern Avenue on the north. The site location and regional topography of the area per the 2015 U.S.G.S. map are shown on Plate 1.

FIELD EXPLORATION AND LABORATORY TESTING

FIELD EXPLORATION

The field exploration consisted of drilling 17 borings, designated as Borings B-1 through -17, at approximately the locations shown on Plate 2. A representative of Tetra Tech staked the boring locations. Elevations at the boring locations, which are provided on the boring logs given in Appendix B, were estimated using Google Earth software. A registered land surveyor should locate the borings if a higher degree of horizontal and vertical measurements is required.

Each boring was drilled using a track-mounted Diedrich D-50 rotary drill rig equipped with 4-inch diameter flight augers. Standard penetration tests (SPTs) were performed using an automatic hammer with measure efficiency. Split-spoon samples and Shelby tube samples were obtained at the depths indicated on the boring logs. Explanations of the terms and symbols used on the boring logs are also included in Appendix B.

An engineer or geologist from Geotechnology provided direction during field exploration, observed drilling and sampling, and prepared logs of the material encountered. Unless noted on the boring logs, the lines designating the changes between various strata represent approximate boundaries. The transition between materials could be gradual or could occur between recovered samples. The stratification given on the boring logs, or described herein, is for use by Geotechnology in its analyses and should not be used as the basis of design or construction cost estimates without realizing that there can be variation from that shown or described.

The boring logs and related information depict subsurface conditions only at the specific locations and time where sampling was performed. The passage of time can result in changes in conditions, interpreted to exist, at or between the locations where sampling was performed.

LABORATORY TESTING

Laboratory testing included moisture content determinations on samples of fine-grained soil and shale. Atterberg limits tests and grain size analyses were performed on selected fine-grained soil samples. Dry unit weight determinations and unconfined compressive strength tests were performed on Shelby tube samples. Results of the laboratory tests are presented on the boring logs. A summary of the laboratory tests and plots of the grain size analyses are presented as Appendix C.



SUBSURFACE CONDITIONS

The following is a brief description of the subsurface conditions encountered at the boring locations. Refer to the boring logs for more details of the subsurface conditions.

STRATIGRAPHY

Boys Grow (Borings B-1 through -4). Boys Grow is located west of I-435. The stratigraphy at these borings generally consists of fill underlain fine-grained soil to the depths explored (20 feet). Auger refusal material was not encountered.

The fill occurs to approximate depths of 2 feet, 6 feet and 12 feet at Borings B-1 through -3; fill was not encountered at Boring B-4. The fill sampled includes fat clay, limestone gravel, brick fragments, shale, sand and slag. The fine-grained soil is brown, generally has a medium stiff and stiff consistency, and is comprised of fat clay with occasional rock fragments.

The Hub (Borings B-5 through -15). The Hub is located east of I-435. Fill occurs to the auger refusal depth of 8.5 feet at Boring B-6; to the split-spoon sampler refusal depth of 20 feet in Boring B-9, and to depths of 3 feet and 1.5 feet at Borings B-8 and -10. The fill sampled generally includes fat clay, lean clay, rock fragments and limestone gravel.

Fine-grained soil occurs below the fill at Borings B-8 and -10 and in the upper stratum at Borings B-5, -7, and -11 through -15. The fine-grained soil consists of medium stiff and stiff, lean clay and fat clay underlain, if present, by very stiff to hard, lean and fat, shaley clay. The fine-grained soil occurs to auger refusal at Borings B-8 and -15 (i.e. 6 feet and 19 feet, respectively); to depths ranging from 2 to 14 feet at Borings B-5, -7 and -12 through -14, and to the 20-foot depth of exploration in Boring B-10.

Below the fine-grained soil (i.e. clay and shaley clay), weathered limestone and clay occurs to auger refusal at Borings B-5, -11 and -14 (i.e. respective depths of 8 feet, 6.5 feet and 7 feet). Below the fine-grained soil, shale occurs to the 16.5-foot auger refusal depth at Boring B-12 and to the 19-foot split-spoon sampler refusal depth at Boring B-13. Below the fine-grained soil at B-7, shale underlain by limestone occurs to the 11.5-foot auger refusal depth.

Auger refusal occurs at Borings B-5 through -8, -11, -12, -14 and -15. Auger refusal could represent a boulder, rock ledge or bedrock. Since rock coring was not performed the character of the auger refusal material could not be determined.

Community Garden (Borings B-16 and -17). The Community Garden is also located east of I-435. At Boring B-16 the stratigraphy consists of fill to a depth of approximately 4 feet underlain by fine-grained soil to the 10-foot auger refusal depth. The fill sampled includes fat clay, rock fragments, brick and sand. The fine-grained soil consists of brown, soft to medium stiff, lean to fat clay.



Boring B-17 is surfaced with topsoil. Below the topsoil, the stratigraphy consists of fine-grained soil that transitions to shale. The fine-grained soil consists of reddish brown, medium stiff, fat clay to a depth of approximately 5.5 feet, below which the clay becomes tan, stiff to hard, lean to fat and shaley. Shale is present at a depth of approximately 18 feet. The sampled shale was soft, gray and slightly weathered. Boring B-17 was terminated at split-spoon sampler refusal at a depth of approximately 19 feet.

GROUNDWATER

Groundwater was encountered in Borings B-1 through -4, -9, -13 and -17 during drilling, and a summary of these depths is provided in the following table. Groundwater levels might not have stabilized, particularly in less permeable cohesive soil, prior to backfilling. The indicated or lack of groundwater levels might not represent present or future levels. Groundwater levels can vary over time due to the effects of seasonal variation in precipitation, recharge, level of the nearby Blue River, or other factors not evident at the time of exploration. Therefore, groundwater might be higher or lower than the levels indicated on the boring logs. Water might be trapped in permeable pockets of fill and in utility trenches. Groundwater can also occur near the top of rock.

GROUNDWATER DATA			
Boring	Approximate Depth (feet)	Boring	Approximate Depth (feet)
B-1	17.5	B-9	6
B-2	5.5	B-13	13.5
B-3	5.5	B-17	17.5
B-4	6		

LIMITATIONS OF REPORT

This report has been prepared on behalf of, and for the exclusive use of the client for specific application to the named project as described herein. If this report is provided to other parties, it should be provided in its entirety with all supplementary information. In addition, the client should make it clear that the information is provided for factual data only, and not as a warranty of subsurface conditions presented in this report.

Geotechnology has attempted to conduct the services reported herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. The findings contained in this report are professional opinions. The report is not a bidding document and should not be used for that purpose.

The findings contained in this report are based on the data obtained from the subsurface exploration. The field exploration methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Consequently, subsurface conditions may vary gradually, abruptly, and/or nonlinearly between sample locations and/or intervals.

A copy of "Important Information about This Geotechnical-Engineering Report" that is published by the Geotechnical Business Council (GBC) of the Geoprofessional Business Association (GBA) is included in Appendix A for your review. The publication discusses some other limitations, as well as ways to manage risk associated with subsurface conditions.

ENCLOSURES

The following attachments are included in and complete this letter report:

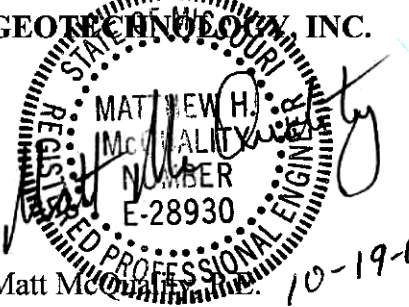
- Plate 1 - Site Location and Topography
- Plate 2 - Aerial Photograph of Site and Boring Locations
- Appendix A - Important Information about This Geotechnical-Engineering Report
- Appendix B - Logs of Borings B-1 through -17
Boring Log: Terms and Symbols
- Appendix C - Summary of Laboratory Tests
Plots of Grain Size Analyses

* * * * *

It has been our pleasure to provide geotechnical services to you. Please contact the undersigned if you have questions, or need further information or clarification about this document.

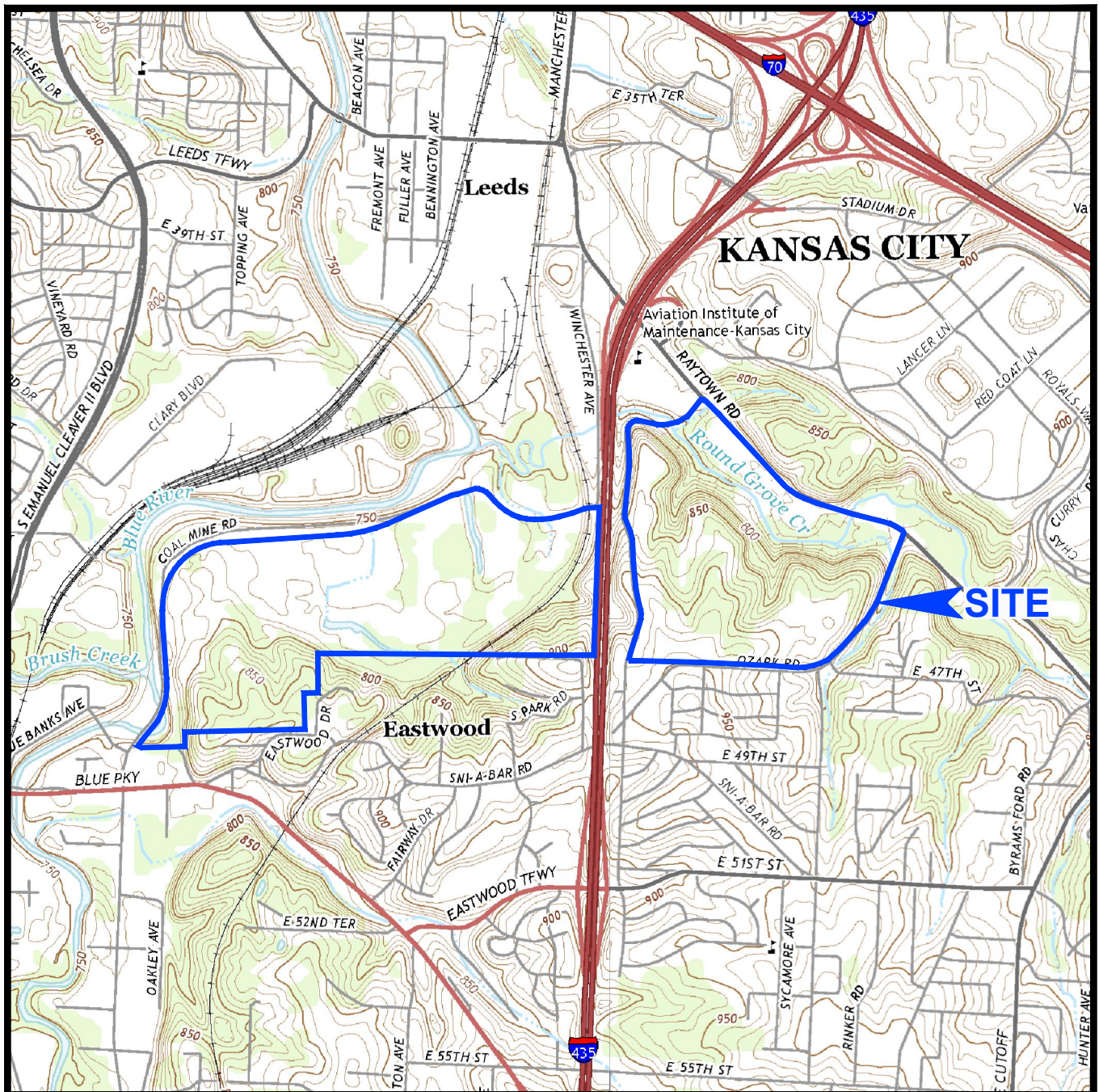
Respectfully submitted,

GEOTECHNOLOGY, INC.


Matt McQualley
Branch Manager

MHM/JAW:mhm/ljd

Copies submitted: (1) pdf
(3) bound
(1) unbound



NOTES

1. Plan adapted from 7.5 minute U.S.G.S. maps for Kansas City, Missouri-Kansas and Independence, Missouri quadrangles, last revised in 2015.

0 2,000 4,000



SCALE IN FEET

Drawn By: WAH	Ck'd By: MHM	App'vd By: JAW
Date: 9-11-17	Date: 9/27/17	Date: 9/29/17



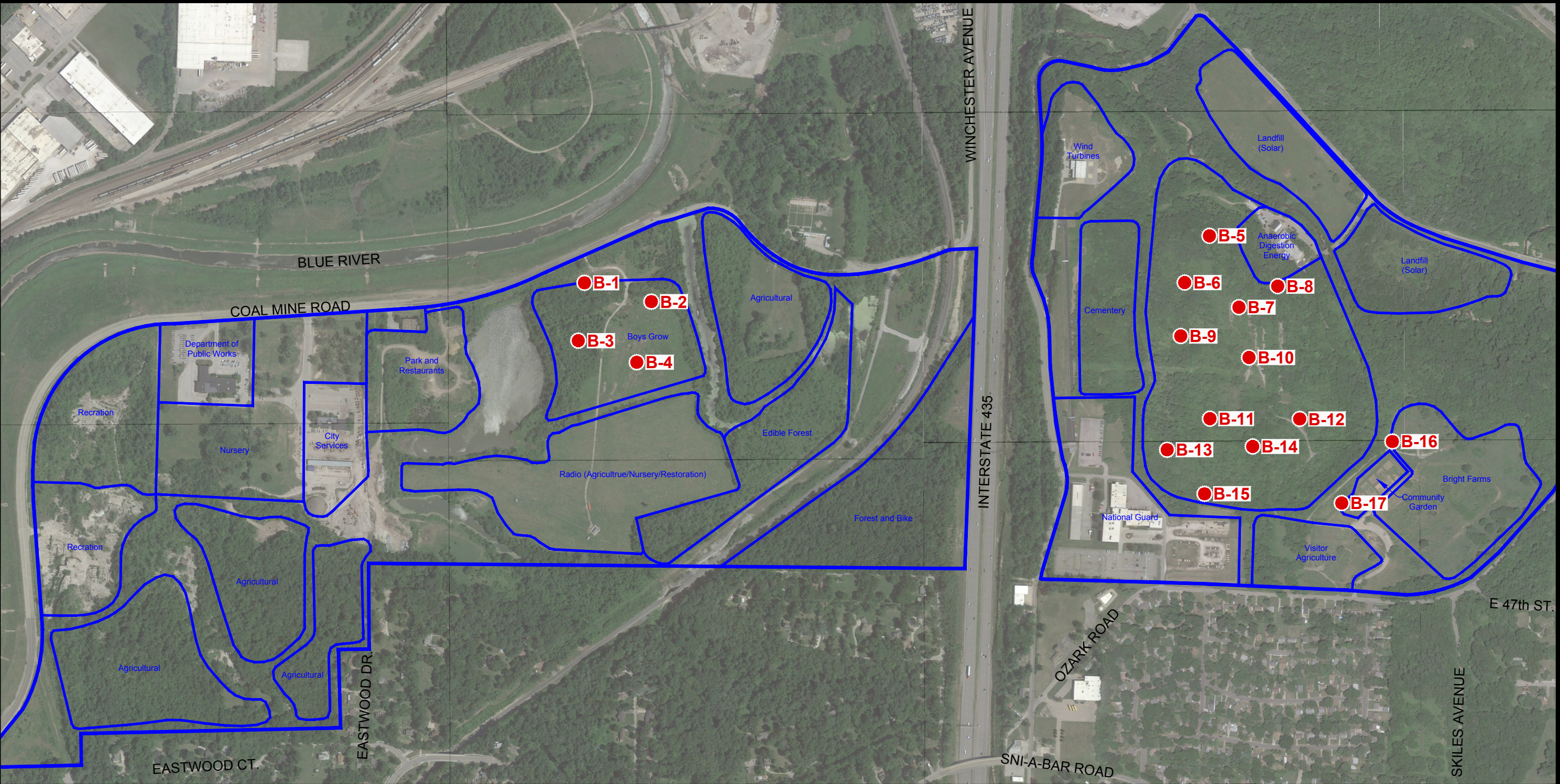
KCMO Municipal Farms
Kansas City, Missouri

SITE LOCATION AND TOPOGRAPHY

Project Number
J024838.01

PLATE 1



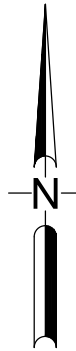



NOTES

1. Plan adapted from a June 10, 2017 aerial photograph courtesy of Google Earth and a drawing dated June 16, 2017 titled "Figure 2 Geotechnical Boring Locations" prepared by Tetra Tech.
2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location



Drawn By: WAH	Ck'd By: MHM	App'vd By: JAW
Date: 9-11-17	Date: 9-27-17	Date: 9/29/17
		
KCMO Municipal Farms Kansas City, Missouri		
AERIAL PHOTOGRAPH OF SITE AND BORING LOCATIONS		
Project Number J024838.01		PLATE 2

APPENDIX A

**IMPORTANT INFORMATION ABOUT
THIS GEOTECHNICAL-ENGINEERING REPORT**

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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APPENDIX B

LOGS OF BORINGS B-1 THROUGH -17 BORING LOG: TERMS AND SYMBOLS

[illegible]

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

Surface Elevation <u>770</u> Datum <u>NAVD88</u>		Completion Date: <u>9/7/17</u>		GRAPHIC LOG DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		SAMPLES		SHEAR STRENGTH, tsf Δ - UU/2 ○ - QU/2 □ - PP/2 0,5 1,0 1,5 2,0 2,5		
DEPTH IN FEET		DESCRIPTION OF MATERIAL						STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT)		
								WATER CONTENT, % PL ----- LL 10 20 30 40 50		
5	FILL: fat clay, limestone gravel, shale, brick fragment, slag (rough drilling from surface)		N60 = 13							
			3-5-4	SS1	▲					
			N60 = 9							
			2-3-3	SS2	▲					
10	CLAY - brown and gray, stiff to medium stiff, fat - (CH)		N60 = 13							
			3-4-5	SS3	▲	●				
			96	ST4	○	●				
15	CLAY - brown and gray, medium stiff to soft, lean to fat - (CL) to CH		N60 = 7							
			2-2-3	SS5	▲	●				
			N60 = 6							
20	Boring terminated at 20 feet.		1-2-2	SS6	▲	●				

GROUNDWATER DATA

ENCOUNTERED AT 5.5 FEET ∇

DRILLING DATA

4" AUGER HOLLOW STEM
 WASHBORING FROM FEET
RRM DRILLER MHM LOGGER
Diedrich D50 DRILL RIG
 HAMMER TYPE Auto
 HAMMER EFFICIENCY 88 %

Drawn by: ADC Check by: MHM App'vd by: JAW
 Date: 9/22/17 Date: 9/27/17 Date: 9/29/17

GEOTECHNOLOGY
FROM THE GROUND UP

KCMO Municipal Farms
Kansas City, Missouri

LOG OF BORING: B- 2

Project No. J024838.01

REMARKS:

Completion Date: 9/6/17

Datum NAVD88

GRAPHIC LOG

DRY UNIT WEIGHT (pcf)
SPT BLOW COUNTS
CORE RECOVERY/RQD

SAMPLES

SHEAR STRENGTH, tsf

Δ - UU/2 \bigcirc - QU/2 \square - PP/2

0,5 1,0 1,5 2,0 2,5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

Figure 1 shows a horizontal scale for Water Content, % ranging from 10 to 50. The scale is labeled 'PL' at the left end and 'LL' at the right end. A solid black dot is positioned at the 30 mark on the scale.

10 20 30 40 50

DEPTH
N FEET

DESCRIPTION OF MATERIAL

CLAY - brown, medium stiff, lean to fat - (CL) to CH

$$N60 = 10$$

3-3-4

$$N_{60} = 10$$

3-3-4

101

7-17

--	--

Weathered SHALE

Weathered LIMESTONE (rough drilling)
sampler refusal

Auger refusal at 11.5 feet.

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT
ENCOUNTERED DURING DRILLING

REMARKS:

DRILLING DATA

4" AUGER HOLLOW STEM
WASHBORING FROM FEET
RRM DRILLER MHM LOGGER
Diedrich D50 DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

Drawn by: ADC
Date: 9/22/17

Check by: MHM
Date: 9/27/17

App'vd by: JAW
Date: 9/29/17



KCMO Municipal Farms Kansas City, Missouri

LOG OF BORING: B- 7

Project No. J024838.01

Project No. J024838.01

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

[illegible]

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

BORING LOG: TERMS AND SYMBOLS

GENERAL NOTES

- Information on each boring log is a compilation of subsurface conditions based on soil or rock classifications obtained from the field as well as from laboratory testing of samples. The strata lines on the logs may be approximate or the transition between the strata may be gradual rather than distinct. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.
- Relative composition and Unified Soil Classification designations are based on visual estimates and are approximate only. If laboratory tests were performed to classify the soil, the unified designation is shown in parenthesis.
- Value given in Unit Dry Weight/SPT Column is either a unit dry weight in pounds per cubic foot, if adjacent to a ST sample designation, or blows per 6-inch increment if adjacent to a SS sample designation.

ABBREVIATIONS

UU/2 Shear Strength from Unconsolidated – Undrained Triaxial Test (ASTM D2850)
 QU/2 Shear Strength from Unconfined Compression Test (ASTM D2166)
 SV Shear Strength from Field Vane (ASTM D2573)
 PL Plastic Limit (ASTM D4318)
 LL Liquid Limit (ASTM D4318)

LEGEND

CS	Continuous Sampler
GB	Grab Sample Taken From Auger Cuttings or Wash Water Return
NX 100 42	NX Rock Core with Percent Recovery/R.Q.D. Given In Adjacent Column
PST	Three Inch Diameter Piston Tube Sample
SS	Split Spoon Sample (Standard Penetration Test)
ST	Three Inch Diameter Shelby Tube Sample
*	Sample Not Recovered
SV	Field Vane Test

SPLIT – BARREL SAMPLER DRIVING RECORD

Blow per Foot (N-Value)

25.....25 blows drove sampler 12 inches after initial 6 inches of seating.
 75/10".....75 blows drove sampler 10 inches after initial 6 inches of seating.
 50/S3".....50 blows drove sampler 3 inches during initial 6 inch seating interval.

NOTES: 1. To avoid damage to sampling tools, driving is limited to 50 blows during any six inch interval.
 2. N-Value (Blow Count) is the standard penetration resistance based on the total number of blows, using a 140-lb hammer with 30-inch free fall, required to drive a split spoon the last two of three, 6-inch drive increments. (Example: 4/7/9, N = 7 + 9 = 16). Values are shown as a summation on grid plot and may be shown as 4/7/9 in Unit Dry Weight – SPT column.

RELATIVE COMPOSITION

Trace.....0-10 %
 With/Some..... 11-35 %
 Soil modifier such..... > 35 %
 As silty, clayey, sandy, etc.

DENSITY OF GRANULAR SOILS

Descriptive Term: **N—Value**
 Very Loose.....0 - 4
 Loose.....5 - 10
 Medium Dense..... 11 - 30
 Dense..... 31 - 50
 Very Dense.....> 50

STRENGTH OF COHESIVE SOILS

Consistency	Undrained Shear Strength Tons Per Sq. Ft.	Field Test	Approximate N-Value Range
Very Soft.....	less than 0.12	Thumb will penetrate soil more than 1" ..	0 - 1
Soft.....	0.13 to 0.25	Thumb will penetrate soil about 1"	2 - 4
Medium Stiff.....	0.26 to 0.50	Thumb will penetrate soil about ¼"	5 - 8
Stiff.....	0.51 to 1.00	Thumb hardly indents soil.....	9 - 15
Very Stiff.....	1.01 to 2.00	Thumb will not indent soil, but readily indented with thumbnail.....	16 - 30
Hard.....	greater than 2.00.....	Thumbnail will not indent soil.....	> 30

SOIL GRAIN SIZE

U.S. STANDARD SIEVE

12"	3"	¾"	4	10	40	200		
BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		
300	76.2	19.1	4.76	2.00	0.42	0.074	0.002	
SOIL GRAIN SIZE IN MILLIMETERS								

SOIL STRUCTURE

Calcareous – Having appreciable quantities of carbonate.
Fissured – Containing shrinkage or relief cracks, often filled with sand or silt; usually more or less vertical.
Slickensided – Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the ease of breaking along those planes.
Layer -- Inclusion greater than 3 inches thick.
Seam – Inclusion 1/8 inch to 3 inches thick extending through the sample

Parting – Inclusion less than 1/8 inch thick.
Pocket – Inclusion of material of different texture that is smaller than the diameter of the sample.
Interlayered – Soil samples composed of alternating layers of different soil types.
Intermixed – Soil samples composed of pockets of different soil types and a layered or laminated structure is not evident.
Laminated – Soil sample composed of alternating partings or seams of different soil type.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYM BOL	DESCRIPTION	PLASTICITY CHART	
Coarse-Grained Soils (More than 50% Larger than No 200 Sieve Size)	Gravel and Gravelly Soils	Clean Gravels Little or no Fines	GW	Well-Graded Gravel, Gravel-Sand Mixture		
		Gravels with Appreciable Fines	GP	Poorly -Graded Gravel, Gravel-Sand Mixture		
			GM	Silty Gravel, Gravel-Sand-Silt Mixture		
	Sand and Sandy Soils	Clean Sands Little or no Fines	GC	Clayey-Gravel, Gravel-Sand-Clay Mixture		
Fine-Grained Soils (More than 50% Smaller than No 200 Sieve Size)	Silt and Silty Soils	Clean Sands Little or no Fines	SW	Well-Graded Sand, Gravelly Sand		
		Sands with Appreciable Fines	SP	Poorly Graded Sand, Gravelly Sand		
			SM	Silty Sand, Sand-Silt Mixture		
			SC	Clayey Sand, Sand-Clay Mixture		
	Clays	Liquid Limit Less Than 50	ML	Silt, Clayey Silt, Silty or Clayey Very Fine Sand, Slight Plasticity		
			CL	Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity		
			OL	Organic Silts, or Silty Clays of Low Plasticity		
			MH	Silt, Fine Sandy or Silt Soil with High Plasticity		
	Highly Organic Soils	Liquid Limit More Than 50	CH	Clay, High Plasticity		
			OH	Organic Clay of Medium to High Plasticity		
			PT	Peat, Humus, Swamp Soil		

VISUAL DESCRIPTION CRITERIA*

TABLE 1: CRITERIA FOR DESCRIBING ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

TABLE 2: CRITERIA FOR DESCRIBING PARTICLE SHAPE

Description	Criteria
Flat	Particles with width/thickness X3
Elongated	Particles with length/width X3
Flat and Elongated	Particles meet criteria for both flat and elongated

TABLE 3: CRITERIA FOR DESCRIBING MOISTURE CONDITION

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soil is below the water table

TABLE 4: CRITERIA FOR DESCRIBING REACTION WITH HCL

Description	Criteria
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming rapidly

TABLE 6: CRITERIA FOR DESCRIBING CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

*NOTES: 1. Tables adapted from ASTM D2488 "Description and Identification of Soils" (Visual-Manual Procedure)
2. Tables 5, 7 and 11 incorporated into other information on this plate.

TABLE 8: CRITERIA FOR DESCRIBING DRY STRENGTH

Description	Criteria
None	The dry specimen crumbles into powder with mere pressure of handling
Low	The dry specimen crumbles into powder with some finger pressure
Medium	The dry specimen breaks into pieces or crumbles with considerable finger pressure
High	The dry specimen cannot be broken with finger pressure. Specimen will break into pieces between thumb and a hard surface.
Very High	The dry specimen cannot be broken between the thumb and a hard surface

TABLE 9: CRITERIA FOR DESCRIBING DILATANCY

Description	Criteria
None	No visible change in the specimen
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing.
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing.

TABLE 10: CRITERIA FOR DESCRIBING TOUGHNESS

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and soft.
Medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and the lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump have very high stiffness

TABLE 12: IDENTIFICATION OF INORGANIC FINE-GRAINED SOILS FROM MANUAL TESTS

Soil Symbol	Dry Strength	Dilatancy	Toughness
ML	None to low	Slow to rapid	Low or thread cannot be formed
CL	Medium to high	None to slow	Medium
MH	Low to medium	None to slow	Low to medium
CH	High to very high	none	High

APPENDIX C

**SUMMARY OF LABORATORY TESTS
PLOTS OF GRAIN SIZE ANALYSES**

Borehole	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	%<#200 Sieve	Classification	Qu/2 (tsf)	Strain %	Pocket Pen. (tsf)
B- 1	1.0	17.8									
B- 1	3.0	20.8	104.8	53	16	37		CH	1.020	2.4	
B- 1	6.0	24.6		61	17	44	85	CH			
B- 1	8.5	25.9									
B- 1	13.5	25.7		51	16	35		CH			
B- 1	18.5	28.0									
B- 2	6.0	25.3		59	21	38		CH			
B- 2	8.0	25.8	96.0						0.800	5.8	
B- 2	13.5	29.8		48	16	32		CL			
B- 2	18.5	28.9									
B- 3	1.0	16.5									
B- 3	3.5	14.4									
B- 3	6.5	22.4									
B- 3	8.5	33.2									
B- 3	13.5	27.2		57	23	34		CH			
B- 3	18.5	29.0									
B- 4	1.0	23.3		51	19	32		CH			
B- 4	3.5	30.8									
B- 4	6.0	22.9	103.7				90		2.660	13.0	
B- 4	8.5	29.2									
B- 4	13.5	31.5									
B- 4	18.5	30.0									
B- 5	1.0	22.0									
B- 5	3.0	17.5	108.5	66	15	51		CH	2.510	4.2	
B- 6	1.0	18.8									
B- 6	3.5	22.8									
B- 6	6.0	26.9									
B- 7	1.0	24.2		48	25	23		CL			
B- 7	3.5	22.6					96				
B- 7	6.0	22.6	101.0						0.520	1.8	
B- 7	8.5	31.9									
B- 8	1.0	23.9									
B- 8	3.5	44.6		84	34	50		CH			
B- 9	1.0	21.6									
B- 9	3.5	25.4									
B- 9	6.0	28.9		45	17	28		CL			
B- 9	8.5	29.6									
B- 9	18.5	29.5									
B-10	1.0	19.9		56	19	37		CH			
B-10	3.0	19.8	104.4						1.720	2.1	
B-10	6.0	21.8									
B-10	8.5	17.7		49	24	25	90	CL			



Summary of Laboratory Results

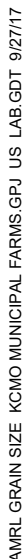
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Borehole	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	%<#200 Sieve	Classification	Qu/2 (tsf)	Strain %	Pocket Pen. (tsf)
B-10	13.5	19.5									
B-10	18.5	19.0									
B-11	1.0	23.5									
B-11	3.5	20.0									
B-12	1.0	23.2		38	17	21	91	CL			
B-12	3.0	22.5	99.2	41	16	25		CL	0.990	2.2	
B-12	6.0	21.0									
B-12	8.5	24.2									
B-12	13.5	23.6									
B-13	1.0	23.7									
B-13	3.5	22.3		54	25	29	93	CH			
B-13	6.0	15.7	115.2	47	22	25		CL	3.080	3.2	
B-13	8.5	14.5									
B-13	13.5	9.4									
B-14	1.0	24.4		48	16	32		CL			
B-14	3.5	21.9					89				
B-15	1.0	23.7		64	22	42	85	CH			
B-15	3.0	22.8	96.8						1.200	1.5	
B-15	6.0	15.9									
B-15	8.5	18.1		63	18	45		CH			
B-15	13.5	9.7									
B-16	3.5	25.6									
B-16	6.0	28.9	91.5	50	19	31		CH	0.610	15.0	
B-16	8.5	28.4									
B-17	1.0	23.1		61	15	46	76	CH			
B-17	3.0	26.4	97.6						0.530	1.5	
B-17	6.0	18.0									
B-17	8.5	16.6		48	21	27		CL			
B-17	13.5	16.9									
B-17	18.5	14.2									



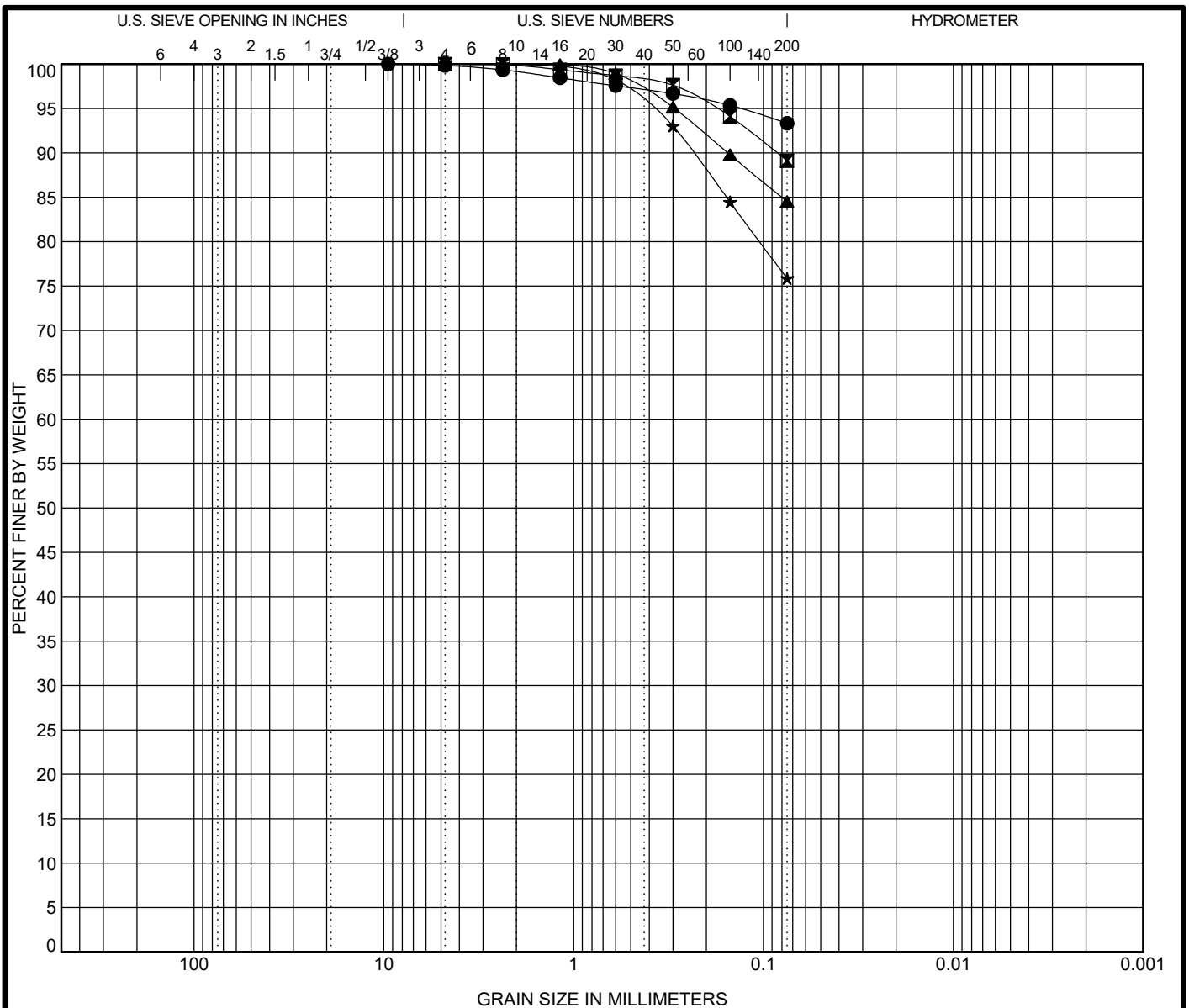
Summary of Laboratory Results

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Specimen Identification			Classification				LL	PL	PI	Cc	Cu
●	B- 1	at 6.0'	FAT CLAY with SAND(CH)				61	17	44		
☒	B- 4	at 6.0'	FAT CLAY-CH								
▲	B- 7	at 3.5'	LEAN to FAT CLAY-CL to CH								
★	B-10	at 8.5'	LEAN to FAT SHALEY CLAY-(CL) to CH				49	24	25		
◎	B-12	at 1.0'	LEAN CLAY(CL)				38	17	21		
Specimen Identification			2.00mm	0.425mm	0.075mm	0.02mm	0.002mm	0.001mm	%Silt	%Clay	
●	B- 1	at 6.0'	100.0	95.5	84.8				84.8		
☒	B- 4	at 6.0'	100.0	98.2	90.4				90.4		
▲	B- 7	at 3.5'	99.8	99.3	96.0				96.0		
★	B-10	at 8.5'	99.8	98.7	89.5				89.5		
◎	B-12	at 1.0'	99.7	97.6	91.3				91.3		





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification			LL	PL	PI	Cc	Cu
●	B-13	at 3.5'	FAT CLAY(CH)			54	25	29		
☒	B-14	at 3.5'	LEAN to FAT CLAY-CL to CH							
▲	B-15	at 1.0'	FAT CLAY with SAND(CH)			64	22	42		
★	B-17	at 1.0'	FAT CLAY with SAND(CH)			61	15	46		

Specimen Identification	2.00mm	0.425mm	0.075mm	0.02mm	0.002mm	0.001mm	%Silt	%Clay
● B-13 at 3.5'	99.1	97.1	93.3					93.3
☒ B-14 at 3.5'	99.8	98.2	89.1					89.1
▲ B-15 at 1.0'	100.0	97.1	84.5					84.5
★ B-17 at 1.0'	99.9	95.6	75.9					75.9



GRAIN SIZE DISTRIBUTION

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