



November 30, 2016

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

**Subject: Quality Assurance Project Plan for a Phase II Targeted Brownfields Assessment
KCMO Municipal Farms, Kansas City, Missouri
EPA Region 7, START 4, Contract No. EP-S7-13-06, Task Order No. 0002.019.020
Task Monitor: Todd Davis, Site Assessment Manager**

Dear Mr. Davis:

Tetra Tech, Inc. is submitting the attached Quality Assurance Project Plan (QAPP) for a Phase II Targeted Brownfields Assessment (TBA) of the KCMO Municipal Farms site in Kansas City, Missouri. The TBA will include investigations to determine whether hazardous substances are associated with recognized environmental conditions identified during Phase I assessments of the Health Emergency Hazmat Site within KCMO Municipal Farms. The TBA will also include a geotechnical and hydrology investigation of developable land within each priority development area.

If you have any questions or comments, please contact me at (816) 412-1760.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Christin Russell'.

for

Christin Russell
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, EPA Project Officer (cover letter only)

**QUALITY ASSURANCE PROJECT PLAN
PHASE II TARGETED BROWNFIELDS ASSESSMENT
KCMO MUNICIPAL FARMS 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
Superfund Division
11201 Renner Boulevard
Lenexa, Kansas 66219

November 30, 2016

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106

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**Region 7 Superfund Program
Addendum for the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2012)
for the KCMO Municipal Farms Site, Kansas City, Missouri**

Project Information:

Site Name: KCMO Municipal Farms		City: Kansas City	State: Missouri
EPA Project Manager: Todd Davis		START Project Manager: Christin Russell	
Approved By: <i>[Signature]</i>	Prepared For: EPA Region 7 Superfund Division		
Title: START Project Manager	Date: 11-29-16		
Approved By: <i>[Signature]</i>			
Title: START Program Manager	Date: 11-29-16		
Approved By: <i>[Signature]</i>	Prepared By: Christin Russell		Date: November 2016
Title: START QA Manager	Date: 11-29-16		
Approved By:			
Title: EPA Project Manager	Date:	Tetra Tech START Project Number: X9025.14.0002.019.020	
Approved By:			
Title: EPA Region 7 QA Manager	Date:		

1.0 Project Management:

1.1 Distribution List:

EPA—Region 7: Todd Davis, EPA Task Monitor
Diane Harris, Region 7 QA Manager

START: Christin Russell, Project Manager

1.2 Project/Task Organization:

Todd Davis, of the EPA Region 7 Superfund Division, will serve as the EPA Project Manager for the activities described in this QAPP. Christin Russell, of Tetra Tech, Inc. (Tetra Tech), will serve as the START Project Manager for field activities.

1.3 Problem Definition/Background:

Description: This site-specific Quality Assurance Project Plan form is prepared as an addendum to the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012), and contains site-specific data quality objectives for the sampling activities described herein.

Description attached. (See below).

Description in referenced report: _____
Title Date

1.4 Project/Task Description:

CERCLA PA CERCLA SI Brownfields Assessment
 Other (description attached): Pre-CERCLIS Site Screening Removal Assessment

Schedule: Field work is scheduled to begin in December 2016. A final report including a description of field activities, analytical data, and recommendations will be submitted to EPA in February 2017.

Description in referenced report: _____
Title Date

1.5 Quality Objectives and Criteria for Measurement Data:

a. Accuracy: Identified in attached table.
b. Precision: Identified in attached table.
c. Representativeness: Identified in attached table.
d. Completeness*: Identified in attached table.
e. Comparability: Identified in attached table.

Other Description:

*A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make site decisions based on any or all of the remaining validated data.

1.6 Special Training/Certification Requirements:

OSHA 1910 Special Equipment/Instrument Operator (describe below): Other (describe below):

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1.7 Documentation and Records:

- Field Sheets Site Log Trip Report Site Maps Video
 Chain of Custody Health and Safety Plan Letter Report Photos
- Sample documentation will follow EPA Region 7 SOP 2420.05.
 Other: Analytical information will be handled according to procedures identified in Table 2.

2.0 Measurement and Data Acquisition:

2.1 Sampling Process Design:

- Random Sampling Transect Sampling Biased/Judgmental Sampling Stratified Random Sampling
 Search Sampling Systematic Grid Systematic Random Sampling Definitive Sampling
 Screening w/o Definitive Confirmation Screening w/ Definitive Confirmation
 Sample Map Attached Other (Provide rationale behind each sample).

The proposed sampling scheme for this project will incorporate a combination of biased/judgmental sampling, screening with definitive confirmation analysis (lead-based paint), and definitive laboratory analysis (asbestos), in accordance with procedures included in the *Guidance for Performing Site Inspections Under CERCLA*, Office of Solid Waste and Emergency Response (OSWER) Directive #9345.1-05, September 1992. All samples will be submitted for analysis to an off-site laboratory subcontracted by START. See Appendices A and B for additional site-specific information and maps. The proposed number of samples is a balance between cost and coverage, and represents a reasonable attempt to meet study objectives while staying within the budget constraints of a typical Targeted Brownfields Assessment.

Sample Summary Location	Matrix	# of Samples*	Analysis
On-site surface soil locations	Surface soil	5	Total Resource Conservation and Recovery Act (RCRA) metals, pesticides/herbicides, warfarin
On-site subsurface soil location	Subsurface soil	5	Total RCRA metals, pesticides/herbicides, warfarin
On-site Geotechnical boring location	Subsurface soil	34	Moisture content, Atterberg limits, and unconfined compressive strength

*NOTE: Quality control (QC) samples are not included with these totals. See Table 1 for a complete sample summary.

2.2 Sample Methods Requirements:

Matrix	Sampling Method	EPA SOP(s)/Methods
Surface soil	Surface soil samples will be collected within 0 to 6 inches below ground surface (bgs) by use of a handheld trowel.	SOP 4231.2012
Subsurface soil	Subsurface soil samples will be collected by use of a Geoprobe direct-push apparatus, using Macro-Core samplers fitted with polyvinyl chloride (PVC) liners, and will be transferred to the appropriate sample containers.	SOPs 4230.07 & 4231.2012
Geotechnical boring	Auger boring for soil exploration and sampling to 20 feet bgs	ASTM D1452-09

2.3 Sample Handling and Custody Requirements:

- Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.06.
 COC will be maintained as directed by Region 7 EPA SOP 2420.04.
 Samples will be accepted according to Region 7 EPA SOP 2420.01.
 Other (Describe): Samples will be accepted in accordance with procedures established by START-contracted laboratories.

2.4 Analytical Methods Requirements:

- Identified in attached table.
 Rationale: The requested analyses have been selected based on historical documentation and program experience with similar types of sites.
 Other (Describe):

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2.5 Quality Control Requirements:

- Not Applicable
- Identified in attached table.
- In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Field QC Samples: For this investigation, field QC samples will include one equipment rinsate blank prepared with deionized (DI) water provided by the START-contracted laboratory. Results from analysis of the equipment rinsate blank will indicate effectiveness of procedures for decontaminating soil sampling equipment. In addition, one soil trip blank will be prepared by the START-contracted laboratory to evaluate contamination introduced during transportation of the containers/samples. The QC samples will be submitted for the analyses listed in the attached tables. Evaluation of blank samples depends on levels of contamination found in environmental samples to determine whether the environmental samples are representative. Analytical results from the blank samples will be evaluated on a qualitative basis by the EPA Project Manager and EPA contractor(s) to determine a general indication of field-introduced and/or laboratory-introduced contamination.
- Other (Describe):

2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:

- Not Applicable
- In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Other (Describe):

2.7 Instrument Calibration and Frequency:

- Not Applicable
- Inspection/acceptance requirements accord with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Calibration of laboratory equipment will be performed as described in the previously referenced SOPs and/or manufacturers' recommendations.
- Other (Describe):

2.8 Inspection/Acceptance Requirements for Supplies and Consumables:

- Not Applicable
- In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- All sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. Sample containers will have Level II certifications provided by the manufacturer in accordance with pre-cleaning criteria established by EPA in *Specifications and Guidelines for Obtaining Contaminant-Free Containers*.
- Other (Describe):

2.9 Data Acquisition Requirements:

- Not Applicable
- In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Previous data/information pertaining to the site (including other analytical data, reports, photos, maps, etc., which are referenced in this QAPP) have been compiled by EPA and/or its contractor(s) from other sources. Some of that data has not been verified by EPA and/or its contractor(s); however, the information will not be used for decision-making purposes by EPA without verification by an independent professional qualified to verify such data/information.
- Other (Describe):

2.10 Data Management:

- All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.01
- Other (Describe): Laboratory data acquired at START-contracted laboratories will be managed in accordance with their established procedures.

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3.0 Assessment and Oversight:

3.1 Assessment and Response Actions:

- Peer Review Management Review Field Audit Lab Audit
- Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.06 and 2430.12
- Other (Describe): Assessment and response actions pertaining to analytical phases of the project will accord with the START-contracted laboratory procedures.

3.1A Corrective Action:

- Corrective actions will be taken at the discretion of the EPA Project Manager whenever there appear to be problems that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the site.
- Other (Describe):

3.2 Reports to Management:

- Audit Report Data Validation Report Project Status Report None Required
- A letter report describing the sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results will be prepared by Tetra Tech START and submitted to the EPA.
- Reports will be prepared in accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Other (Describe):

4.0 Data Validation and Usability:

4.1 Data Review, Validation, and Verification Requirements:

- Identified in attached table:
- Data review and verification will be performed in accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2012).
- Data review and verification will be performed by a qualified analyst and the laboratory's section manager as described in Region 7 EPA SOPs 2430.06, 2430.12 and 2410.10.
- Other (Describe): The analytical data package from the START-contracted laboratory will be validated internally by the contracted laboratory in accordance with the laboratory's established SOPs. The EPA Project Manager will be responsible for overall validation and final approval of the data, in accordance with the projected use of the results.

4.2 Validation and Verification Methods:

- Identified in attached table:
- The data will be validated in accordance with Region 7 EPA SOPs 2430.06, 2430.12, and 2410.10.
- The EPA Project Manager will inspect the data to provide a final review. The EPA Project Manager will also compare the sample descriptions with the field sheets for consistency and will ensure that any anomalies in the data are appropriately documented.
- Other (Describe): Validation of data generated by START-contracted laboratories will be conducted by START chemists in accordance with EPA-approved procedures.

4.3 Reconciliation with User Requirements:

- Identified in attached table:
- If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded, and re-sampling or re-analysis of the subject samples may be required by the EPA Project Manager.
- Other (Describe):

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Table 1: Sample Summary

Site Name: KCMO Municipal Farms				Location: Kansas City, Missouri			
START Project Manager: Christin Russell				Activity/ASR #: START-contracted laboratory			Date: November 2016
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Method	Analytical Method/SOP
5	Surface soil	Proposed soil sampling locations	To assess potential soil contamination	0 to 6 inches bgs	RCRA metals, pesticides/herbicides, & warfarin	SOP 4231.2012	EPA Methods 6010/7471, 8081B, 8151A, and 8321
5	Subsurface soil	Proposed Geoprobe boring locations	To assess potential soil contamination	1 to 8 feet bgs	RCRA metals, pesticides/herbicides, & warfarin	SOPs 4230.07 & 4231.2012	EPA Methods 6010/7471, 8081B, 8151A, and 8321
34	Subsurface soil	Proposed geotechnical boring location	To assess site geological profiles	0 to 20 feet bgs	Moisture content, Atterberg limits, and unconfined compressive strength	ASTM D1452-09	ASTM D2216-10, D4318-05, and D2166M
QC Samples							
1	Water	Rinsate Blank	To evaluate effectiveness of procedures to decontaminate soil sampling equipment	NA	RCRA metals, pesticides/herbicides, & warfarin	NA	EPA Methods 6010/7471, 8081B, 8151A, and 8321
1	Soil	Trip Blank	To assess transportation-related contamination	NA	RCRA metals, pesticides/herbicides, & warfarin	NA	EPA Methods 6010/7471, 8081B, 8151A, and 8321

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Table 2: Data Quality Objective Summary

Site Name: KCMO Municipal Farms				Location: Kansas City, Missouri				
START Project Manager: Christin Russell				Activity/ASR #: START-contracted laboratory			Date: November 2016	
Analysis	Analytical Method	Data Quality Measurements					Sample Handling Procedures	Data Management Procedures
		Accuracy	Precision	Representativeness	Completeness	Comparability		
Soil								
RCRA metals, pesticides/herbicides, & warfarin	See Table 1	Per analytical method	Per analytical method	Biased/judgmental sampling based on professional judgment of the sampling team	100%; no critical samples identified	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.

APPENDIX A

**SITE-SPECIFIC INFORMATION REGARDING A PHASE II TARGETED BROWNFIELDS
ASSESSMENT AT THE KCMO MUNICIPAL FARMS SITE**

INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has been tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a Phase II Targeted Brownfields Assessment (TBA) at the KCMO Municipal Farms site (subject properties) in Kansas City, Missouri (see Appendix B, Figure 1). Primary purposes of the investigation are to conduct a geotechnical investigation to determine suitability of land for development within each priority development area, and a hydrology investigation to assist with planning and design of green infrastructure and possible water storage features for priority site development.

The scope of the TBA will include (1) a geotechnical investigation to generate site geological profiles and determine types and layers of rock outcropping and formations, depth to bedrock, locations of fill and rubble materials, and other information necessary to assess suitability or unsuitability of land for development within priority areas; (2) collection of surface and subsurface soil samples from the Health Emergency and HAZMAT Site (HEHS) within the subject properties; and (3) a hydrology investigation to estimate direction, rate, and volume of precipitation and stormwater in priority areas. The TBA will accord with ASTM International (ASTM) Standard E1903-97-11, Standard Guide for Phase II Environmental Site Assessments (ESA).

This quality assurance project plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for this Phase II TBA. An assessment of the data acquired will occur to determine if further response is warranted.

SITE LOCATION/DESCRIPTION

The subject property encompasses 441 acres of land associated with the KCMO Municipal Farms in Kansas City, Jackson County, Missouri (see Figure 1, Appendix A). Coordinates at the approximate center of the subject properties are 39.041692 north latitude and -94.500805 west longitude (Google Earth 2016).

A Phase I TBA report (Tetra Tech 2016a) included a recommendation for a Phase II TBA of HEHS within the subject properties where recognized environmental conditions (REC) had been identified during that Phase I TBA.

PREVIOUS INVESTIGATIONS

In June 1994, regarding the HEHS, a Phase I Site Characterization report, Investigation Addendum Report, Remedial Action Plan, Closure Plan, and Summary of Closure Corrective Action Sampling Results were prepared on behalf of the City of Kansas City (City) by Burns & McDonnell Waste Consultants, Inc. In the mid-1980s, the City Health Department had begun to use a small, rectangular, fenced-in area that hosted 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 the Missouri Department of Natural Resources (MDNR) after an inspection found numerous violations. Since that time, the HEHS has been sampled, all structures have been demolished, contaminated soil has been excavated, and the State has approved site closure (City 2008).

In March 2011, on behalf of the City, Tetra Tech EM Inc. conducted a Phase I ESA at the area of the proposed Municipal Garden Farm Community Garden, which was within the boundaries of the subject properties (Tetra Tech EM Inc. 2011a). In April 2011, Tetra Tech EM Inc. performed a Limited Phase II ESA at an area near the proposed Municipal Garden Farm Community Garden. No groundwater was encountered. Soil samples collected during the Phase II ESA were 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), Resource Conservation and Recovery Act (RCRA) metals, and pesticides. Based on 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 of the proposed community garden or within adjacent properties (Tetra Tech EM Inc. 2011b).

Environmental Advisors and Engineers, Inc. (EAE) prepared an Area-Wide Brownfields Plan (AWBP) for the Municipal Farms properties to facilitate sustainable reuse and development of the area. The AWBP included 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 Municipal Corrections Institute (MCI), which were on the subject properties, were discussed in the AWBP. The AWBP outlined the history of each facility, 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. Regarded as the primary possibly present contaminants within these conceptual land use plan (CLUP) areas were petroleum-related contaminants,

herbicides, pesticides, rodenticides, lead, and hazardous waste chemicals—based on former uses of those areas as a correctional institution, canning factory, agricultural use, and other Municipal Farm activities (EAE 2012).

In June 2013, Tetra Tech conducted a Phase II TBA of the MCI, which is within the Municipal Farms property boundary. Soil samples were submitted for analyses for the following: herbicides, pesticides, mercury, RCRA metals, TPH-DRO, TPH-ORO, TPH-GRO, and SVOCs. Based on results from those samples, no further sampling was recommended at the former MCI (Tetra Tech 2013a).

In June 2013, Tetra Tech performed a Phase II TBA of the former Lafarge site, which is within the Municipal Farms property boundary. Soil samples were submitted for analyses for the following: RCRA metals (including mercury), TPH-DRO, TPH-ORO, TPH-GRO, VOCs, and SVOCs. Water samples were collected and analyzed for the same constituents. Analyses of water samples for both total metals and dissolved metals occurred (Tetra Tech 2013b).

In August 2014, Tetra Tech conducted a Phase II TBA of the KCMO Public Works East Garage, which is within the Municipal Farms property boundary. Soil, sediment, and groundwater samples were analyzed for PCBs, VOCs, SVOCs, total RCRA metals (including mercury), TPH-GRO, TPH-ORO, TPH-DRO, pesticides, and herbicides. Based on results from these samples, additional sampling may be necessary if a decision to use the groundwater for drinking purposes occurs in the future (Tetra Tech 2014).

On October 31, 2016, START submitted a Phase I TBA report conveying findings at the former HEHS and recommending a Phase II TBA to assess presence of contamination associated with the subject properties. The following were recommended for the Phase II TBA (Tetra Tech 2016):

- Soil sampling for RCRA metals, pesticides/herbicides, and warfarin within the HEHS boundary.
- A geotechnical investigation to determine suitability of land for development within each priority development area.
- A hydrology investigation to assist with planning and design of green infrastructure and possible water storage features for priority site development.

TECHNICAL INVESTIGATIONS

Geotechnical Investigation

A geotechnical investigation will generate site geological profiles and determine types and layers of rock outcropping and formations, depth to bedrock, locations of fill and rubble materials, and other information necessary to assess suitability or unsuitability of priority areas for grading, cultivations, and support of structural improvements and infrastructure—expectedly leading to a more refined estimate of areal extent of developable land within each priority development area.

A START-contracted geotechnical firm will perform the survey, which will include logged borings at as many as 34 locations within the subject properties (see Appendix B, Figure 2). By use of an all-terrain drill rig, borings will advance to depths of 15 to 20 feet below ground surface (bgs) or auger refusal. A field geologist or engineer will direct sampling, assist in collecting samples, document stratigraphy, and classify soil samples. Samples will undergo the following measurements: (1) moisture content to evaluate soil cohesiveness, including compressibility and strength; (2) Atterberg limits to evaluate swelling/heaving potential and compressibility characteristics of fine-grained soil; and (3) unconfined compressive strength to evaluate soil strength to withstand footing bearing pressures and to maintain stability of temporary excavation slopes. The geotechnical firm will conduct these measurements and record them in a preliminary report that START will review.

Hydrology Investigation

A hydrology investigation will estimate direction, rate, and volume of precipitation and stormwater within priority areas to aid planning and design of green infrastructure and possible water storage features for priority site development.

The hydrology investigation will include use of PCSWMM, a software that integrates a geographic information system (GIS)-based user interface with the SWMM modeling engine. Topography, precipitation, soil, and existing hydraulic data will be used to create an integrated catchment model. This model will help determine whether to use a retention pond on site to capture stormwater runoff for irrigation on site.

SAMPLING STRATEGY AND METHODOLOGY

Sampling tentatively scheduled for December 2016 will require approximately 3-5 days. Where applicable, the standard operating procedures (SOP) and chain-of-custody (COC) procedures referenced in this QAPP will be followed throughout sampling activities to verify integrity of samples from time of collection until submittal to the laboratory for analysis. Disposal of investigation-derived wastes (IDW) and procedures for equipment and personal decontamination will be addressed in a site-specific health and safety plan (HASP) prepared by START. Laboratory data obtained from all samples collected during this project will be compared to all applicable or relevant and appropriate requirements (ARAR) to assess whether further response is warranted. For all samples, pertinent data, including analyses to be performed and sample locations, will be recorded on field sheets and in log books. Descriptions of proposed samples to be collected for this Phase II TBA are as follows:

Surface Soil Sampling

During Phase II TBA activities, START will collect five composite surface soil samples (0-12 inches bgs) at locations where RECs have been identified within the HEHS portion of the subject properties. Handheld trowels will be used to collect the samples. Collected soil will be placed in a disposable aluminum pie pan for homogenization, and then transferred to appropriate containers before shipment to the START-contracted laboratory. These containers will be submitted for analyses for RCRA metals, pesticides/herbicides, and warfarin. The sampling device (trowel) will be decontaminated prior to use and after collection of each sample. Decontamination will consist of scrubbing the trowel with brushes in a 5-gallon bucket of Alconox and water, and then rinsing with deionized water. Pertinent data, including analyses to be performed and exact sample locations (Global Positioning System [GPS] coordinates), will be recorded in the field logbook for each sample.

Subsurface Soil Sampling

To collect subsurface soil samples, Tetra Tech proposes to advance soil borings at five locations to 8 feet bgs by use of a Geoprobe direct-push technology (DPT) unit (see Figure 2 in Appendix B). The unit will be equipped with a Macro-Core sampler for collection of soil samples from as many as five soil cores (one obtained at each borehole). Tetra Tech will log soil type and changes in lithology in the DPT soil borings. START will collect five composite subsurface soil samples (1-8 feet bgs). Collected soil will be placed in a disposable aluminum pie pan for homogenization, and then transferred to appropriate containers before shipment to the START-contracted laboratory. These containers will be submitted for analyses for RCRA metals, pesticides/herbicides, and warfarin. Pertinent data, including analyses to be

performed and exact sample locations (GPS coordinates), will be recorded in the field logbook for each sample.

Quality Control Samples

To evaluate sample quality control (QC), one soil trip blank and an equipment rinsate blank will be collected by use of a handheld trowel, as specified in Section 2.5 of the QAPP form. Non-dedicated sampling equipment will be decontaminated following sampling at each location.

IDW consisting primarily of used tubing, gloves, and other solid waste will be disposed of as uncontaminated solid waste. Soil cuttings will be disposed of on site as non-hazardous waste. Issues pertaining to decontamination of personnel and sampling equipment will be addressed in a site-specific HASP prepared by START.

ANALYTICAL METHODS

All samples will be submitted to a subcontracted laboratory for analysis. All samples will be analyzed according to the subcontracted laboratory's SOPs and analytical methods referenced in the QAPP. Standard turnaround times and detection limits for those methods will be adequate for this project. Appropriate containers and physical/chemical preservation techniques will be employed during field activities to help verify acquisition of representative analytical results.

REFERENCES

City of Kansas City, Missouri (City).

- 2008. 8100 Ozark Road – KCMO Health Emergency Hazmat Site. Historical Summary of Site Activities. August 26.

Environmental Advisors and Engineers, Inc. (EAE).

- 2012. Area-Wide Brownfields Plan, Municipal Farms Brownfields, Kansas City, Missouri. August.

Google Earth.

- 2016. Latitude and longitude of approximate center of the KCMO Municipal Farms at 8100 Ozark Road, Kansas City, Missouri.

Tetra Tech EM Inc.

- 2011a. Phase I Environmental Site Assessment Rev. 01, 8700 Ozark Road, Kansas City, Missouri. August.

- 2011b. Phase II Environmental Site Assessment, 8700 Ozark Road, Kansas City, Missouri (Municipal Farm Community Garden Project). August.

Tetra Tech, Inc. (Tetra Tech).

- 2013a. Phase II Targeted Brownfields Assessment, Municipal Correctional Institute, Kansas City, Missouri. August.

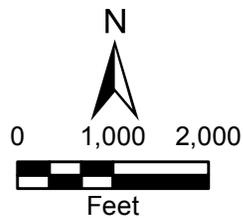
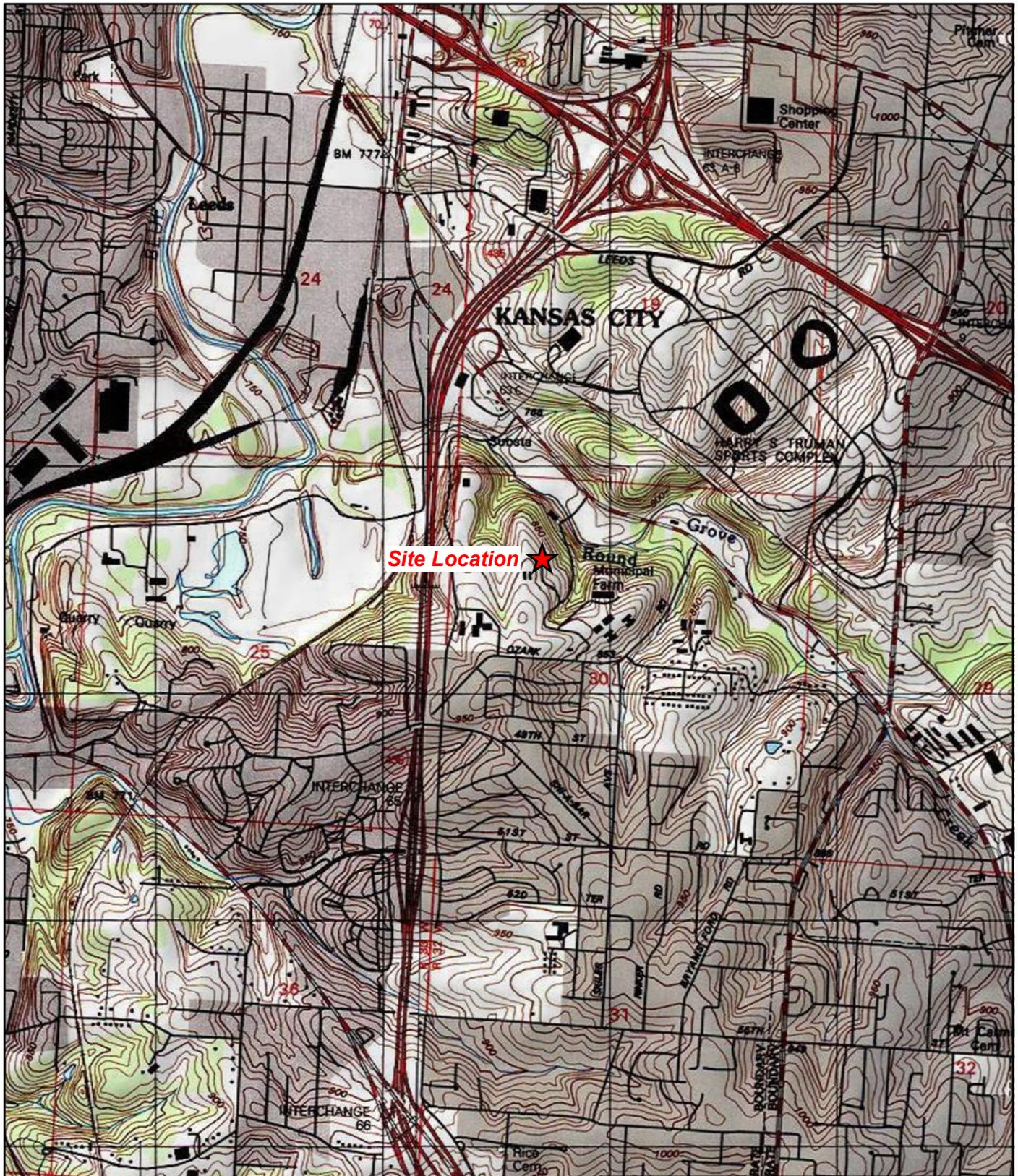
- 2013b. Phase II Targeted Brownfields Assessment, Former Lafarge Site, Kansas City, Missouri. August.

- 2014. Phase II Targeted Brownfields Assessment, KCMO Public Works East Garage, Kansas City, Missouri. August.

- 2016. Phase I Targeted Brownfields Assessment KCMO Municipal Farms. September.

APPENDIX B

FIGURES



KCMO Municipal Farms
 Kansas City, Missouri

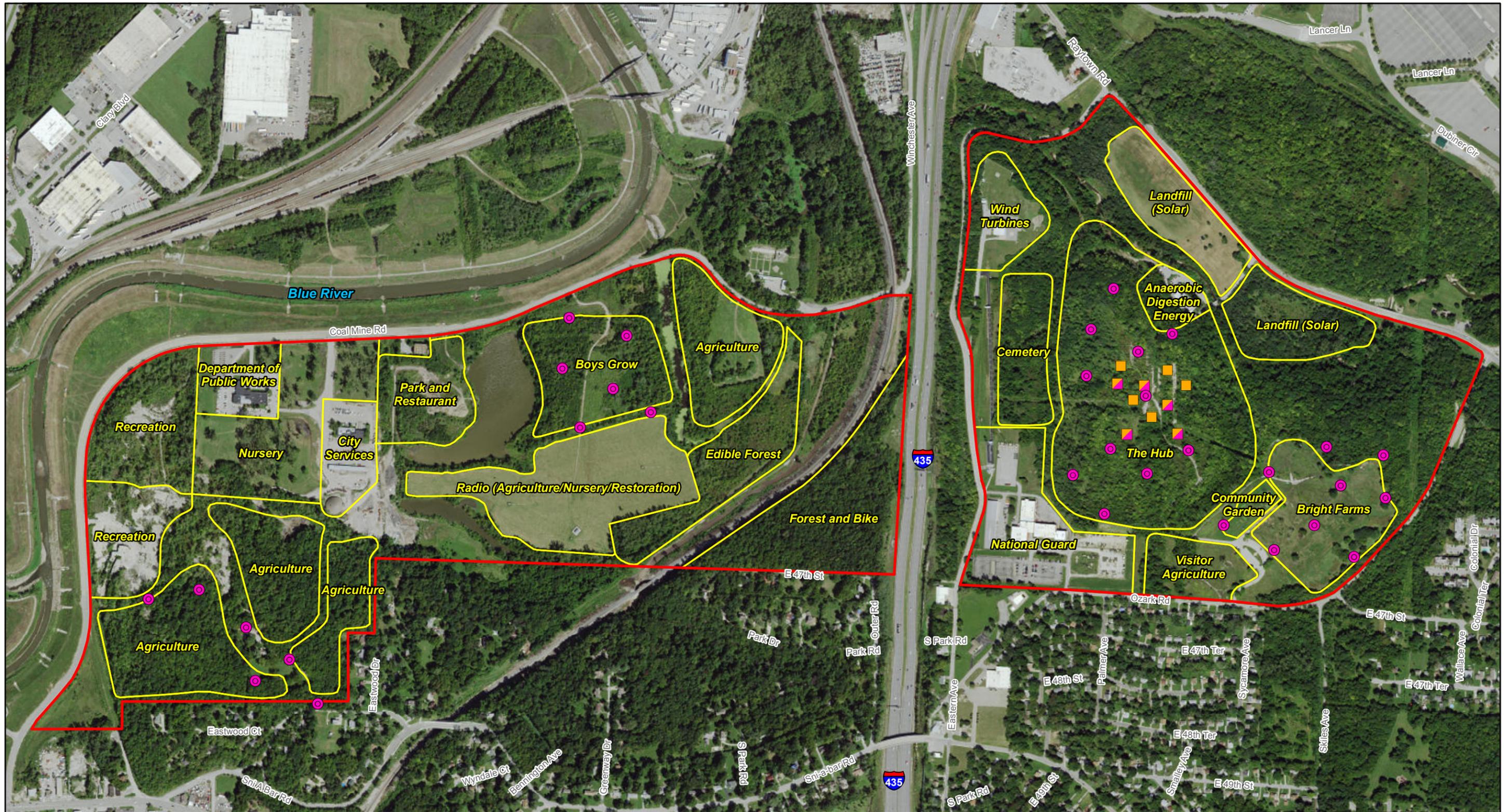
Figure 1
 Site Location Map



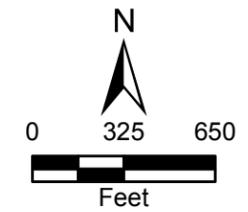
X:\GIS\025.000\2019\020\Project\mxd\Figure_1_PhaseII.mxd

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

Date: 11/11/2016 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.020



- Legend**
- Proposed geotechnical boring location
 - Proposed subsurface soil sample location
 - Proposed surface soil sample location
 - Approximate site boundary
 - Conceptual reuse area



KCMO Municipal Farms
Kansas City, Missouri

Figure 2
Proposed Sample Location Map



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