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Superfund

April 12, 2002

SUPERFUND RECORDS

Mr. Roy Crossland
START Project Officer
U.S. Environmental Protection Agency, Region 7
901 North 5th Street
Kansas City, Kansas 66101

Site: Le Mars Coal Gas
TD #: IA0001032556
Break: 2.4
Other: 04/12/02

07VH
LDF

**Subject: Quality Assurance Project Plan
Le Mars Coal Gas Site, Le Mars, Iowa
U.S. EPA Region 7 START, Contract No. 68-S7-01-41, Task Order No. 0076
Task Monitor: Dan Garvey, On-Scene Coordinator**

Dear Mr. Crossland:

Tetra Tech EM Inc. is submitting the attached Quality Assurance Project Plan for removal assessment activities at the Le Mars Coal Gas site. If you have any questions or comments, please contact Mr. Rick Claytor, the START Project Manager, at (816) 736-9663.

Sincerely,

Rick Claytor, CHMM
START Project Manager

Hieu Q. Vu, PE, CHMM
START Program Manager

Enclosures

**QUALITY ASSURANCE PROJECT PLAN FOR A REMOVAL ASSESSMENT
LE MARS COAL GAS SITE
LE MARS, IOWA**

**Superfund Technical Assessment and Response Team (START) Contract
Contract No. 68-S7-01-41, Task Order 0076**

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
901 N. 5th Street
Kansas City, Kansas 66101

April 12, 2002

Prepared By:
Tetra Tech EM Inc.
8030 Flint Street
Lenexa, Kansas 66214

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**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Le Mars Coal Gas Site**

Project Information:

Site Name: Le Mars Coal Gas		City: Le Mars	State: Iowa
EPA Project Manager: Dan Garvey		START Project Manager: Rick Claytor	
Approved By: <i>[Signature]</i> For AC	Title: START Project Manager	Date: 4/12/02	Prepared For: EPA Region 7 Superfund Division
Approved By: <i>[Signature]</i>	Title: START Program Manager	Date: 4/12/02	
Approved By: <i>[Signature]</i>	Title: START QA Manager	Date: 4/12/02	Prepared By: Rick Claytor Date: 04/12/02
Approved By: <i>[Signature]</i>	Title: EPA Project Manager	Date: 4/18/02	Tetra Tech START Project Number: G9011.02.0076.00
Approved By: <i>[Signature]</i>	Title: EPA Superfund QA Manager	Date: 4/22/02	

1.0 Project Management:

1.1 Distribution List

EPA—Region 7: Dan Garvey, EPA Project Manager
 Bob Dona, Superfund QA Coordinator

START: Rick Claytor, Project Manager

1.2 Project/Task Organization

Dan Garvey, of the EPA Region 7 Superfund Division, will serve as the EPA Project Manager for the activities described in this QAPP. Rick Claytor, of Seagull Environmental Technologies, Inc. (SETI), will serve as the START Project Manager.

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 Integrated Assessment Activities, November 1998, and contains site-specific data quality objectives for the sampling activities described herein.

Description attached.

Description in referenced report:

_____	Title	_____	Date
-------	-------	-------	------

1.4 Project/Task Description:

- | | | |
|--|---|--|
| <input type="checkbox"/> CERCLA PA | <input type="checkbox"/> CERCLA SI | <input type="checkbox"/> Brownfields Assessment |
| <input type="checkbox"/> Other (description attached): | <input type="checkbox"/> Pre-CERCLIS Site Screening | <input checked="" type="checkbox"/> Removal Assessment |

Schedule: Field work is scheduled for May 2002

Description in referenced report:

_____	Title	_____	Date
-------	-------	-------	------

1.5 Quality Objectives and Criteria for Measurement Data:

- | | |
|------------------------|---|
| a. Accuracy: | <input checked="" type="checkbox"/> Identified in attached table. |
| b. Precision: | <input checked="" type="checkbox"/> Identified in attached table. |
| c. Representativeness: | <input checked="" type="checkbox"/> Identified in attached table. |
| d. Completeness*: | <input checked="" type="checkbox"/> Identified in attached table. |
| e. Comparability: | <input checked="" type="checkbox"/> 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. Water samples collected from municipal wells will be considered "critical samples", because their data may impact widespread public health, and the results are crucial to accurately assess the overall threat(s) posed by the site.

<p>2.5 Quality Control Requirements: <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Identified in attached table.</p> <p><input checked="" type="checkbox"/> Field QC Samples: For this investigation, field QC samples will consist of one field blank (water) prepared with DI water provided by EPA Region 7 Laboratory, one water trip blank prepared by the EPA Region 7 Laboratory, and one Summa trip blank (Summa canister returned to the laboratory in an evacuated state). The field blank will be collected to evaluate contamination of sampling containers and/or preservatives, along with an assessment of contamination introduced during the sampling procedure(s). The trip blanks will be collected to evaluate contamination introduced during transportation of the containers/samples. All QC samples will be submitted for the analyses listed in the attached tables. Criteria for evaluation of blank samples are dependent on the levels of contamination found in environmental samples to determine whether the environmental samples are representative. Analytical results of QC 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 contamination. One collocated Summa sample will be collected from an indoor sampling location to assess method precision. A blind Summa PE sample will be prepared by the EPA Region 7 Laboratory to assess method accuracy. Data for the collocated and PE samples will be compared to values in Region 7 EPA's LIMS Lite QC database to evaluate precision and accuracy of those methods. Because the evaluation of total method precision of the other media/methods is not required to meet the objectives of this investigation, no duplicate (or collocated) samples of the remaining media will be collected. Analytical error (precision and accuracy) will be determined by the analysis of laboratory-prepared duplicates and spikes in accordance with the specified analytical methods.</p> <p><input type="checkbox"/> Other (Describe):</p>	
<p>2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements: <input type="checkbox"/> Not Applicable</p> <p><input checked="" type="checkbox"/> Testing, Inspection, and maintenance of analytical instrumentation will be performed in accordance with the previously referenced SOPs and/or manufacturers' recommendations.</p> <p><input checked="" type="checkbox"/> Other (Describe): Testing, inspection, and maintenance of field instruments (water quality meter, PID, etc.) will be performed in accordance with manufacturers' recommendations.</p>	
<p>2.7 Instrument Calibration and Frequency: <input type="checkbox"/> Not Applicable</p> <p><input checked="" type="checkbox"/> Calibration of laboratory equipment will be performed as described in the previously referenced SOPs and/or manufacturers' recommendations.</p> <p><input checked="" type="checkbox"/> Other (Describe): Calibration of field instruments (water quality meter, PID, etc.) will be performed daily, as described in the manufacturers' recommendations.</p>	
<p>2.8 Inspection/Acceptance Requirements for Supplies and Consumables: <input type="checkbox"/> Not Applicable</p> <p><input checked="" type="checkbox"/> 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 <i>Specifications and Guidelines for Obtaining Contaminant-Free Containers</i>.</p> <p><input type="checkbox"/> Other (Describe):</p>	
<p>2.9 Data Acquisition Requirements: <input type="checkbox"/> Not Applicable</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> Other (Describe):</p>	
<p>2.10 Data Management:</p> <p><input checked="" type="checkbox"/> All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.1C.</p> <p><input type="checkbox"/> Other (Describe):</p>	
<p>3.0 Assessment and Oversight:</p>	
<p>3.1 Assessment and Response Actions:</p> <p><input checked="" type="checkbox"/> Peer Review <input checked="" type="checkbox"/> Management Review <input type="checkbox"/> Field Audit <input type="checkbox"/> Lab Audit</p> <p><input checked="" type="checkbox"/> Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.5A and 2430.12D.</p> <p><input type="checkbox"/> Other (Describe):</p>	
<p>3.1A Corrective Action:</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> Other (Describe):</p>	

3.2 Reports to Management: <input type="checkbox"/> Audit Report <input type="checkbox"/> Data Validation Report <input type="checkbox"/> Project Status Report <input type="checkbox"/> None Required <input checked="" type="checkbox"/> 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. <input type="checkbox"/> Other (Describe):	
4.0 Data Validation and Usability:	
4.1 Data Review, Validation, and Verification Requirements: <input type="checkbox"/> Identified in attached table. <input checked="" type="checkbox"/> Data review and verification will be performed by a qualified analyst and the laboratory's section manager as described in Region 7 EPA SOPs 2430.5A and 2430.12D. <input type="checkbox"/> Other (Describe):	
4.2 Validation and Verification Methods: <input type="checkbox"/> Identified in attached table. <input checked="" type="checkbox"/> The data will be validated in accordance with Region 7 EPA SOPs 2430.5A and 2430.12D. <input checked="" type="checkbox"/> The EPA site manager will inspect the data to provide a final review. The EPA site manager will review the data, if applicable, for laboratory spikes and duplicates, laboratory blanks, and the field blank to ensure that they are acceptable. The EPA site 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. <input type="checkbox"/> Other (Describe):	
4.3 Reconciliation with User Requirements: <input checked="" type="checkbox"/> 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 site manager. <input type="checkbox"/> Other (Describe):	

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Le Mars Coal Gas Site**

Table 1: Sample Summary

Site Name: Le Mars Coal Gas				City: Le Mars, Iowa			
TA Project Manager: Rick Claytor				Activity/ASR #: To be determined		Date: 04/12/02	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Method	Analytical Method
16	Soil Gas	residential yards near the site	to evaluate attribution of indoor air VOCs to a subsurface source	10-12 feet bgs	BTEX	EPA SOPs 4231.149A & 4230.7A	EPA SOP 3230.4D
16	Air	interior of residences near the site	to determine whether residents are being exposed to hazardous levels of VOCs evaporating from the groundwater plume	in basements (8) & living areas (8)	BTEX	EPA SOP 2313.4A	EPA SOP 3230.4D
12	Water	monitoring wells	to determine the current status of the groundwater plume	N/A	BTEX, PAHs, cyanide	EPA SOP 4230.15A	EPA SOPs 3230.9A, 3260.3B, & 3135.2D
2	Water	municipal wells	to determine whether the municipal water supply is being impacted by a release to groundwater	N/A	BTEX, PAHs, cyanide	EPA SOP 4230.10A	EPA SOPs 3230.9A, 3260.3B, & 3135.2D
8	Soil	two residential yards south of the site	to determine the extent that site-related contaminants have migrated off site	0-4 inches	PAHs, cyanide	EPA SOP 4231.12A	EPA SOPs 3230.2C & 3135.7B

Background Samples

4	Soil Gas	residential yards outside of the area impacted by the site	to determine background concentrations in soil gas of residential yards in the area	10-12 feet bgs	BTEX	EPA SOPs 4231.149A & 4230.7A	EPA SOP 3230.4D
2	Air	exterior locations in the site vicinity	to determine background concentrations in ambient air	N/A	BTEX	EPA SOP 2313.4A	EPA SOP 3230.4D
4	Air	inside residences outside of the area impacted by the site	to determine background concentrations in interior air of households in the area	in basements (2) & living areas (2)	BTEX	EPA SOP 2313.4A	EPA SOP 3230.4D
1	Soil	residential yard outside of the area impacted by the site	to determine background concentrations in soil of residential yards in the area	0-4 inches	PAHs, cyanide	EPA SOP 4231.12A	EPA SOPs 3230.2C & 3135.7B
3	Water	off-site existing wells	to determine background concentrations for the three groundwater aquifers present at the site	N/A	BTEX, PAHs, cyanide	EPA SOP 4230.10A	EPA SOPs 3230.9A, 3260.3B, & 3135.2D

QC Samples

1	Air	trip blank	to assess field/transportation-related contamination	N/A	BTEX	N/A	EPA SOP 3230.4D
1	Water	field blank	to assess field-introduced contamination	N/A	BTEX, PAHs, cyanide	N/A	EPA SOPs 3230.9A, 3260.3B, & 3135.2D
1	Water	trip blank	to assess field/transportation-related contamination	N/A	BTEX	N/A	EPA SOP 3230.9A
1	Air	collocated sample	to assess method precision	N/A	BTEX	EPA SOP 2313.4A	EPA SOP 3230.4D
1	Air	performance evaluation sample	to assess method accuracy	N/A	BTEX	N/A	EPA SOP 3230.4D

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Le Mars Coal Gas Site**

Table 2: Data Quality Objective Summary

Site Name: Le Mars Coal Gas			Location: Le Mars, Iowa					
TA Project Manager: Rick Claytor			Activity/ASR #: To be determined			Date: 04/12/02		
Analysis	Analytical Method	Data Quality Measurements					Sample Handling Procedures	Data Management Procedures
		Accuracy	Precision	Representativeness	Completeness	Comparability		
SOIL GAS and INDOOR/AMBIENT AIR								
BTEX	see Table 1	per analytical method	per analytical method	judgmental sampling based on professional judgement	100%; no critical samples have been defined	standardized procedures for sample collection and analysis will be used	see Section 2.3 of QAPP	see Section 2.10 of QAPP
WATER								

BTEX, PAHs, & cyanide	see Table 1	per analytical method	per analytical method	judgmental sampling based on professional judgement	100%; samples from municipal wells are critical samples	standardized procedures for sample collection and analysis will be used	see Section 2.3 of QAPP	see Section 2.10 of QAPP
SOIL								
PAHs & cyanide	see Table 1	per analytical method	per analytical method	judgmental sampling based on professional judgement	100%; no critical samples have been defined	standardized procedures for sample collection and analysis will be used	see Section 2.3 of QAPP	see Section 2.10 of QAPP

APPENDIX A

Site-Specific Information for a Removal Site Evaluation at the Le Mars Coal Gas Site

INTRODUCTION

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has been tasked by the United States Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a removal site evaluation (RSE) at the Le Mars Coal Gas site in Le Mars, Iowa. The former manufactured gas plant (FMGP) facility was constructed by the Le Mars Gas Light Company in 1884 and operated until 1898, when it was purchased by the Le Mars Gas Company. At that time, the facility was converted from a coal gas operation to a water and oil gas facility. In 1939, the Le Mars FMGP facility was converted to natural gas. The Iowa Public Service Company purchased the natural gas distribution system in 1942, including the FMGP facility. In 1953, the property was sold and the gas plant was dismantled. A service building was subsequently built on the property. In 1967, the property was sold to the current owner, the City of Le Mars, which uses it as a maintenance shop and storage facility. Waste disposal practices at the FMGP are not known, but several past investigations have identified wastes and by-products associated with FMGP operations in surface soils and sediments, subsurface soils, and groundwater. The primary purposes of this investigation are to assess the potential impacts of previous manufactured gas production activities on indoor residential air quality and nearby residential soils, and to evaluate the current status of the groundwater plume.

To achieve those goals, this RSE will include the collection of groundwater samples from existing monitoring and municipal wells, 24-hour whole air samples from the basements and main living areas of nearby homes, and soil samples from nearby residential yards. Soil gas samples will also be collected from the yards of the residences where indoor air samples are collected to determine the attribution of any indoor air contaminants to volatile organic compounds (VOCs) evaporating from the underlying groundwater plume. This Quality Assurance Project Plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for this investigation. An analysis of the data acquired during this project will be performed, in accordance with the procedures outlined in the QAPP and in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300.415(b)(2)), to determine the need for a removal action.

SITE LOCATION/DESCRIPTION

The site is located at 311 1st Street NE in northeast Le Mars, Iowa, in Plymouth County. The FMGP site covers 1.6 acres and is currently occupied by the Le Mars Street Department, which utilizes an office, maintenance shop, two storage buildings, and a shed. A map depicting the proposed study area is included as Appendix B. Manufactured gas production activities have left elevated levels of benzene, toluene, ethyl benzene, and xylene (BTEX), polynuclear aromatic hydrocarbons (PAHs), and cyanide in surface and subsurface soils, and underlying groundwater at the site. Residents within the city limits of Le Mars obtain drinking water from the Le Mars municipal water supply, which is served by five wells. Two of those wells (identified as Well #4 and Well #8) are located within 2,000 feet of the site.

SAMPLING STRATEGY AND METHODOLOGY

The sampling activities are tentatively scheduled to begin in late May 2002 and will require the utilization of approximately four Tetra Tech START personnel. The field activities will require approximately 1 week to complete. The laboratory data obtained for all samples collected during this project will be compared to all applicable or relevant and appropriate requirements (ARARs) to determine whether further response is warranted.

Groundwater Sampling

The two municipal wells near the site (Well #4 and Well #8) will be sampled during this project, along with 12 existing monitoring wells in the site vicinity (see Appendix B). The municipal water samples will be collected from taps/spigots near the well heads prior to any treatment systems. The supply lines/systems will be purged for approximately 5 minutes before the samples are collected. Water samples collected from monitoring wells will be sampled with dedicated bladder pumps. Three casing volumes will be purged from each monitoring well prior to sample collection. An oil/water interface probe will be used prior to purging to determine the thickness of any petroleum-related product floating in each well and to measure the depth to the liquid surface (from the top of the well casing). A photoionization detector (PID) will be used upon opening each well to measure concentrations of airborne VOCs at the well head and in the breathing zone. Field parameters (pH, temperature, conductivity, and turbidity) for each groundwater sample will be measured and recorded on the respective sample field sheets. Other pertinent data, including property ownership information and exact sample locations, will also be included on the field sheets. Groundwater samples will also be collected from three existing off-site wells (to be selected in the field) to represent background concentrations for each of three aquifers that have been identified at the site. Interviews with well owners and/or reviews of well installation records will be performed to ensure that background samples from the three aquifers are obtained. Water samples submitted for analysis of BTEX will be collected in four 40-milliliter vials and preserved with hydrochloric acid (HCl) to a pH < 2. Water samples that will be analyzed for PAHs will be collected in 128-ounce amber glass jugs, and samples that will be analyzed for cyanide will be collected in 1-liter cubitainers and preserved with sodium hydroxide (NaOH) to a pH > 12. All water samples will be stored in coolers maintained at 4E C until they are submitted to the receiving laboratory.

Video logging of the two sampled municipal wells may also be performed during this project (by a company subcontracted by Tetra Tech START) to evaluate the integrity of the wells (i.e., identify cracked casings or other locations where infusion by waterborne contaminants could occur).

Indoor Air Sampling

Two air samples will be collected from each of approximately eight homes, using pumped canister collection systems. One sampling location will be in the basement, and the other will be in a commonly occupied area of the residence, such as the living room. Each sample will be collected over a continuous 24-hour period. The sampled homes will be selected from an area where the groundwater plume has been previously identified, with an emphasis on selecting residences with sump pumps and/or known water leaks in the basements (promoting the introduction of VOCs originating from groundwater into the homes). An explosimeter/oxygen level meter will be used to identify potentially dangerous concentrations of flammable VOCs in the residences prior to sampling. In addition, pre-sampling interviews and inspections will be performed to identify potential sources of BTEX in the residences, other than from the underlying groundwater plume. That information will be documented appropriately to assist with subsequent data interpretation. Two residences outside of the groundwater plume will be selected for similar indoor air sampling to establish baseline conditions. In addition, two 24-hour Summa™ samples of outside ambient air will be collected within the study area to provide additional information on background concentrations of BTEX compounds. Pertinent sampling data, including property ownership information and exact sample locations, will be included on field sheets. All Summa™ samples will be submitted to the Region 7 EPA Laboratory for analysis of BTEX.

Soil Gas Sampling

Two soil gas samples will be collected from the yard of each residence where indoor air samples are collected. These samples will be collected from depths of 10 to 12 feet below ground surface, using a Geoprobe hydraulic direct push apparatus. The exact locations of these samples will be determined in the field. Each soil gas sample will be collected by driving steel rods to the desired sampling depth, inserting disposable polyethylene tubing into the rod string, and securing the tubing to the bottom of the rods with an airtight fitting. The other (surface) end of the tubing will be attached to a vacuum pump, which will be used to purge the tubing of ambient air. The surface end will then be transferred to an evacuated Summa™ canister, which will be opened to allow collection of soil gas vapors. An in-line vacuum gauge will be used to determine when sample collection has been achieved. Two soil gas samples will also be collected from each of the aforementioned residences where background indoor air samples are collected. All pertinent sampling information, including collection times and locations, will be recorded on field sheets. All Summa™ samples will be submitted to the Region 7 EPA Laboratory for analysis of BTEX.

Soil Sampling

Surface soils will be collected from two residential properties immediately south of the site (see Appendix B). At each of those properties, the yard will be divided into four quadrants, and a nine-aliquot composite sample of surface soil (0- to 4-inch depth) will be collected from each quadrant. Disposable stainless steel spoons will be used to collect the aliquots, which will be composited in disposable aluminum pie pans prior to transfer to two 8-ounce glass jars. Pertinent data, including property ownership information and exact sample locations, will be included on field sheets. One off-site residence will also be selected (in the field) where a nine-aliquot sample will be collected to represent background concentrations of the contaminants of interest. All soil samples will be stored in coolers maintained at 4E C until they are submitted to the receiving laboratory for analysis of PAHs and cyanide. Because of the volatile nature of BTEX compounds, coupled with their potential mode of migration from the site (air dispersion), it is not suspected that elevated BTEX concentrations are present in off-site soils as a result of site-related contamination. Consequently, the soil samples will not be analyzed for BTEX.

In accordance with the QAPP, one water field blank will be prepared with DI water provided by the EPA Region 7 Laboratory, and one water trip blank will be prepared by the EPA Region 7 Laboratory to assess the quality control (QC) of the sampling activities. In addition, one unopened Summa™ canister will be submitted to the laboratory as a trip blank, along with one blind Summa™ performance evaluation (PE) sample prepared by the Region 7 EPA Laboratory to assess method accuracy. One collocated Summa™ sample will be collected from an indoor air sampling location (to be determined in the field) to assess method precision. The data obtained for the PE and collocated samples will be compared to acceptable ranges in Region 7 EPA's LIMS Lite QC database to evaluate precision and accuracy of those media/methods.

Disposal of investigation-derived wastes (IDW) and procedures for equipment and personal decontamination will be addressed in a site-specific health and safety plan prepared by Tetra Tech START. In general, it is anticipated that most IDW will consist of disposable sampling supplies (gloves, paper towels, etc.) that will be disposed of off site as uncontaminated solid waste. Purge water from monitoring wells sampled during this project will be directed through an activated carbon treatment unit before discharge.

A summary of all anticipated samples for this project is provided in Table 1 of this QAPP. The standard operating procedures (SOPs) and chain-of-custody procedures referenced in the QAPP will be followed throughout the sampling activities to verify the integrity of the samples from the time of collection until they are submitted to the laboratory for analysis.

ANALYTICAL METHODS

All samples will be submitted to the EPA Region 7 Laboratory in Kansas City, Kansas, for analysis. The water samples from the monitoring and municipal wells will be analyzed for BTEX, PAHs, and cyanide. Soil samples will be analyzed for PAHs and cyanide. The Summa™ samples (soil gas, indoor air, ambient air) will be analyzed for BTEX only. All samples will be analyzed according to SOPs and methods described in the QAPP. Standard detection limits for those methods will be adequate for this project. Appropriate containers and physical/chemical preservation techniques will be employed during the field activities to help verify that representative analytical results are obtained. An Analytical Services Request (ASR) form will be completed by the EPA project manager and submitted to the EPA Region 7 Laboratory prior to the field activities. At this time, it is anticipated that samples will be submitted to the laboratory in May 2002.

APPENDIX B

Site Area Map