COMPLIANCE / ENGINEERING / REMEDIATION

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August 11, 2010

Mr. Jerry Alberts
Manager, Environmental and Regulatory
Antero Resources Piceance Corporation
1625 17th St., Suite 300
Denver, CO 80202

RE: Workplan for Environmental Site Assessment and Associated Regulatory Reporting
Gravel Pit Pipeline Release
NESE-7-T6S-R92W

Dear Mr. Alberts:

LT Environmental, Inc. (LTE) is pleased to present workplan to complete an environmental site assessment (ESA) at the Gravel Pit (Site) located in Garfield County, Colorado (Figure 1). The purpose of this ESA is to define the horizontal and vertical extent of hydrocarbon impacted soils and groundwater and evaluate geologic and hydrogeologic data for evaluation of remedial technologies. Once the magnitude and extent are defined, LTE will evaluate remedial technologies and submit remediation recommendations to Antero Resources Piceance Corporation (Antero). Upon Antero approval, LTE will prepare a workplan for remediation activities.

BACKGROUND

On July 27, 2010, Antero reported a release of an unknown volume of produced water from a pipeline that runs between the Robinson A Pad to the River Ranch A Pad. Impacted groundwater was first observed in a natural groundwater seep within a wall at the adjacent gravel pit to the west of the Robinson A Pad. An excavation along the pipeline revealed the release point as a failure in the pipeline (Figure 2).

Surface water samples have been collected from the natural seeps along the east wall of the gravel pit, along two drainages that convey water from east to west across the gravel pit, and from outlet ponds on the west side of the gravel pit. Available results indicate petroleum hydrocarbons have impacted the groundwater/surface water at the Site. Antero indicated the groundwater from the natural seep is currently being diverted and stored in a temporary pit. The impacted groundwater in the pit is routinely evacuated by a transport truck and hauled offsite to Antero's Wasatch Pond for reuse in fracing activities. Due to the porous nature of the gravel substratum, even temporary storage of the impacted groundwater can lead to infiltration and additional groundwater contamination.

SCOPE OF WORK

The proposed scope of work (SOW) covered in this workplan includes the following;

- Submittal of an initial Form 27 prior to ESA activities;
- Conducting the ESA;
- Completing an ESA Summary Report; and
- Preparing a subsequent Form 27 Remediation Workplan.

All deliverables will be submitted to Antero for review prior to completion. If Antero feels an initial Form 27 detailing planned ESA activities is unnecessary and can be conveyed verbally to the Colorado Oil and Gas Conservation Commission (COGCC), LTE will exclude the initial Form 27.

INITIAL WORKPLAN PREPARATION

LTE will prepare an initial Form 27 workplan that summarizes the proposed ESA activities and scope for submittal to the COGCC. This workplan will be prepared immediately upon notice to proceed and can be submitted to the COGCC for approval prior to ESA activities being initiated.

SOIL BORING ADVANCEMENT / MONITORING WELL INSTALLATION

The current ESA design has been based on phone conversations and background information provided by Antero, including surface water analytical results from July 27 through July 29, 2010. If field conditions and analytical results allow for full delineation of the soil and groundwater impacts with fewer soil borings / monitoring wells and sampling, LTE will only install the necessary wells.

LTE proposes that an estimated 24 soil borings be advanced by hollow stem auger drilling in a grid orientation across the release area. Additional soil borings have been added to the area immediately surrounding the release point to quantify soil impacts above the water table. Each soil boring will be temporarily converted to a monitoring well to allow for groundwater sample collection. The soil borings will be logged by an LTE geologist and visually inspected for the presence/absence of petroleum hydrocarbon odor and/or staining. LTE personnel will also use a photoionization detector (PID) to screen for the presence of volatile organic compounds during the drilling process.

Soil boring total depths are estimated to range from 15 feet to 35 feet below ground surface (bgs) as dictated by groundwater elevation and the vertical distribution of soil and groundwater impacts. A majority of the soil borings (16) will be installed within the gravel pit that is already excavated to 20 feet to 25 feet bgs. Depth to groundwater is

estimated at 5 feet to 10 feet below grade inside the gravel pit, while the depth to groundwater at the release location is anticipated to be approximately 30 feet to 35 feet bgs.

Following completion of each soil boring, a temporary monitoring well will be constructed of one-inch diameter polyvinyl chloride (PVC) casing and 0.010-inch factory slotted PVC well screen. Silica sand (size 10-20) will be placed at the bottom of the well to above the well screen to act as a filter pack for the temporary monitoring wells. Bentonite chips will be placed from above the silica sand pack to the ground surface and then hydrated to provide a seal against surface contamination and precipitation runoff. Wells will be completed with exposed PVC stickups two feet above the ground surface. Steel wellhead protection can be added at a later date, if necessary.

SOIL SAMPLING

Each soil boring will be continuously field-screened using a PID to identify volatile organic compounds and define the vertical extent of impact in the soil. Soil samples will be collected from sample intervals with the highest PID measurement or intervals exhibiting petroleum hydrocarbon staining/odor. If field-screening methods indicate no impacts to the soil, a sample will be collected from the soil/groundwater interface.

Soil samples will be transferred into laboratory-prepared, 4-ounce, wide-mouth glass jars and placed on ice until delivered with a completed chain-of-custody (COC) to a laboratory for analysis. Soil samples will be submitted for analysis of total petroleum hydrocarbons (TPH) by United States Environmental Protection Agency (EPA) Method 8015M. TPH is a combination of total volatile hydrocarbons-gasoline range organics (TVH-GRO) and total extractable hydrocarbons-diesel range organics (TEH-DRO). Soil samples will also be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B.

LTE believes the use of an onsite mobile lab to expedite the receipt of laboratory analytical data could prove beneficial. With the use of an onsite laboratory, LTE believes that mobilization costs for a drilling subcontractor can be potentially reduced by ensuring that delineation of soil and groundwater impacts are confirmed with analytical results while the drilling equipment still remains onsite. If a traditional fixed lab is used, transportation of the samples back to Denver and rushed turnaround times could lead to increased lab costs and potential down time for the onsite equipment and crews while waiting on analytical results.

For the purpose of this workplan, LTE has presented costs for using a traditional, fixed, offsite lab and an onsite mobile lab during ESA activities (Table 1). Costs have been included with 3 day turnaround times. If Antero feels this expedited turnaround time is unnecessary, costs can be adjusted. Increased costs due to potential re-mobilization of

subcontractors or downtime waiting on laboratory results were not quantified in the offsite laboratory scenario.

GROUNDWATER SAMPLING

Following installation, each of the groundwater monitoring wells will be purged and developed. During water well sampling, each well will be gauged for free product and the water will be checked for the presence or absence of sheen or odor. LTE will also conduct field screening of pH, conductivity, temperature, and total dissolved solids (TDS) while purging and sampling each well. Groundwater samples will be collected from each well and will be submitted for laboratory analysis of BTEX by EPA Method 8260B.

REPORTING / REMEDIATION WORKPLAN PREPARATION

LTE will present Antero with a summary report detailing ESA activities, lithology, field screening, and laboratory results. The report will include tables and figures that depict the magnitude and extent of the soil and/or groundwater impacts at the Site.

Upon authorization from Antero, LTE will also provide a completed Form 27 for submittal to the COGCC, which will summarize the ESA results and propose the proper remediation technology for the Site. Data tables, figures presenting sample locations, remediation technology description, layout, schedule, and laboratory reports will be included in the submittal.

ASSUMPTIONS

The following are the assumptions made by LTE in the preparation of this workplan:

- The SOW has been based on limited groundwater analytical results from surface water samples collected from July 27 to July 29, 2010;
- Antero will acquire access to the properties on which ESA is necessary;
- All work will be completed within the estimated schedule weather permitting;
- Hollow stem auger drilling will be capable of installing the soil borings / monitoring wells in the gravel substratum to the required depth;
- The current proposed ESA plan will be accepted by the COGCC;
- The current ESA boundary will effectively delineate the entire area of soil and groundwater impacts (additional wells will not be required);
- Soil from the borings will be spread onsite at each boring location;

- The COGCC will allow characterization of inorganics through field screening of pH, conductivity, and TDS. If additional characterization of inorganic impacts is required by the COGCC, these samples can be collected from the completed monitoring wells and analyzed by an analytical laboratory with standard turnaround time to reduce costs; and

- Groundwater from well purging and sampling activities can be disposed in the temporary storage pit for reuse in Antero fracing activities.

ESTIMATED SCHEDULE

LTE anticipates the field work can be initiated within five business days once Antero has provided LTE with notice to proceed. LTE expects that work could be initiated as soon as August 16, 2010. LTE anticipates the time to complete the field work will be no more than five working days; four days to install the wells, and one day to conduct groundwater sampling. LTE will submit the ESA Summary Report to Antero within 5 days to 10 days of receipt of the final analytical results. Upon Antero approval of the ESA Summary Report, LTE will begin preparation of the remedial approach. Upon Antero approval, LTE will complete the Form 27 remediation workplan within 5 days.

POTENTIAL REMEDIAL APPROACH

Based on our current understanding of the release site, anticipated subsurface conditions, and physical chemical properties of the release, we believe that it is likely that air sparging / soil vapor extraction (AS/SVE) will be the most cost effective remedial technology for the Site. Specific conditions that indicate that AS/SVE will be effective are:

- Volatile nature of contaminants of concern (COCs);

- Potential for relatively large plume size (greater than 80 feet x 80 feet);

- Porous nature of subsurface lithology at the Site;

- Relatively shallow groundwater table;

- Access restrictions based on property use; and

- Availability of natural gas from the Antero Tank Battery on the Robinson A Pad to power remediation equipment;

Description of Proposed Remediation Technologies

AS consists of injecting ambient air below the groundwater table. The air bubbles diffuse into the groundwater and traverse horizontally and vertically through the water-saturated soils. The volatile petroleum hydrocarbon compounds that are exposed to the injected air volatilize into the gas phase rising to the vadose zone where the vapors are captured and discharged on the surface via the SVE system. A negative pressure is induced in the unsaturated soils using vapor recovery wells (SVE system) to collect vapors that become partitioned from the groundwater. The SVE system also results in volatilization and removal of hydrocarbons from the unsaturated soil horizon.

In addition to the physical stripping action, AS/SVE both increase the dissolved and gaseous oxygen content of the groundwater and soil which enhances natural biodegradation of the petroleum hydrocarbons. AS has shown to be an aggressive and effective remedial technique for volatile petroleum hydrocarbon remediation in groundwater. SVE is an effective unsaturated soil remedial technology and is the preferred technology to capture petroleum hydrocarbon vapors in the subsurface emitted from the AS process.

LTE's Experience with AS/SVE

LTE has extensive experience in conducting petroleum hydrocarbon assessment and remediation work in a variety of settings, for many different clients, exhibiting diverse subsurface conditions. LTE has worked with or is currently working with over 96 oil and gas, oil field service, refinery, retail, and bulk storage clients. We have conducted assessments and/or remediation in the Rocky Mountain Region (Colorado, Wyoming, Utah, Montana, New Mexico), Nebraska, Texas, Oklahoma, Louisiana, Illinois, Florida, Indiana, Mississippi, Ohio, Kentucky, Pennsylvania, South Carolina, and Quebec and Alberta, Canada. LTE is well versed in working with clients ranging from multi-national billion dollar corporations, to smaller, independent companies.

LTE has conducted multiple projects in similar geologic settings to the Gravel Pit Site. LTE's believes that by obtaining a thorough understanding of the subsurface conditions, receptors, stakeholder concerns, geologic/hydrogeologic conditions, and other factors that affect the contaminant distribution (Site Conceptual Model), success of the remediation program can be maximized. LTE is committed to obtaining appropriate site assessment data and using these data to recommend remedial methods that will achieve the goals of a cost effective, timely closure, while minimizing surface impacts and disturbance to current property uses.

LTE currently manages approximately 50 active remediation sites across the United States. These sites have generally been designed, installed, and operated by LTE. These currently active remediation sites include:

- 14 remediation systems for the Wyoming Department of Environmental Quality;

- Large scale system, 600 feet x 600 feet plume (slurry wall, 100 gpm water treatment system, AS/SVE), protecting a tributary creek from free product seeps, in a cultural resource historic district in Northeast Utah;
- Dewatering/Water treatment system along a light rail track (I-25 corridor), to prevent contaminated water from encroaching on the light rail tunnels;
- 6 active mechanical remediation sites for an E&P producer in Weld County, Colorado;
- 5 additional active mechanical remediation sites for another E&P producer in Weld County, Colorado;
- 8 completed and closed remediation sites for a bulk fuel storage client throughout the United States;
- 2 active remediation sites for the Nebraska Department of Environmental Quality;
- 15 completed and closed Underground Storage Tank sites for retail facilities in Denver, Colorado; and
- A variety of injection and mechanical sites for chlorinated and non-chlorinated plumes throughout the United States.

Based on our extensive experience conducting petroleum hydrocarbon assessments and remediation, LTE is well qualified to complete environmental work at the Gravel Pit Site and obtain site closure with the COGCC. LTE understands that the Gravel Pit Site will require urgency to remediate, and we look forward to initiating work on this Site. LTE can initiate work immediately, and looks forward to achieving cleanup goals before the onset of winter, 2010.

We appreciate the opportunity to provide you with this workplan, and look forward to working with you soon.

Sincerely,

LT ENVIRONMENTAL, INC.

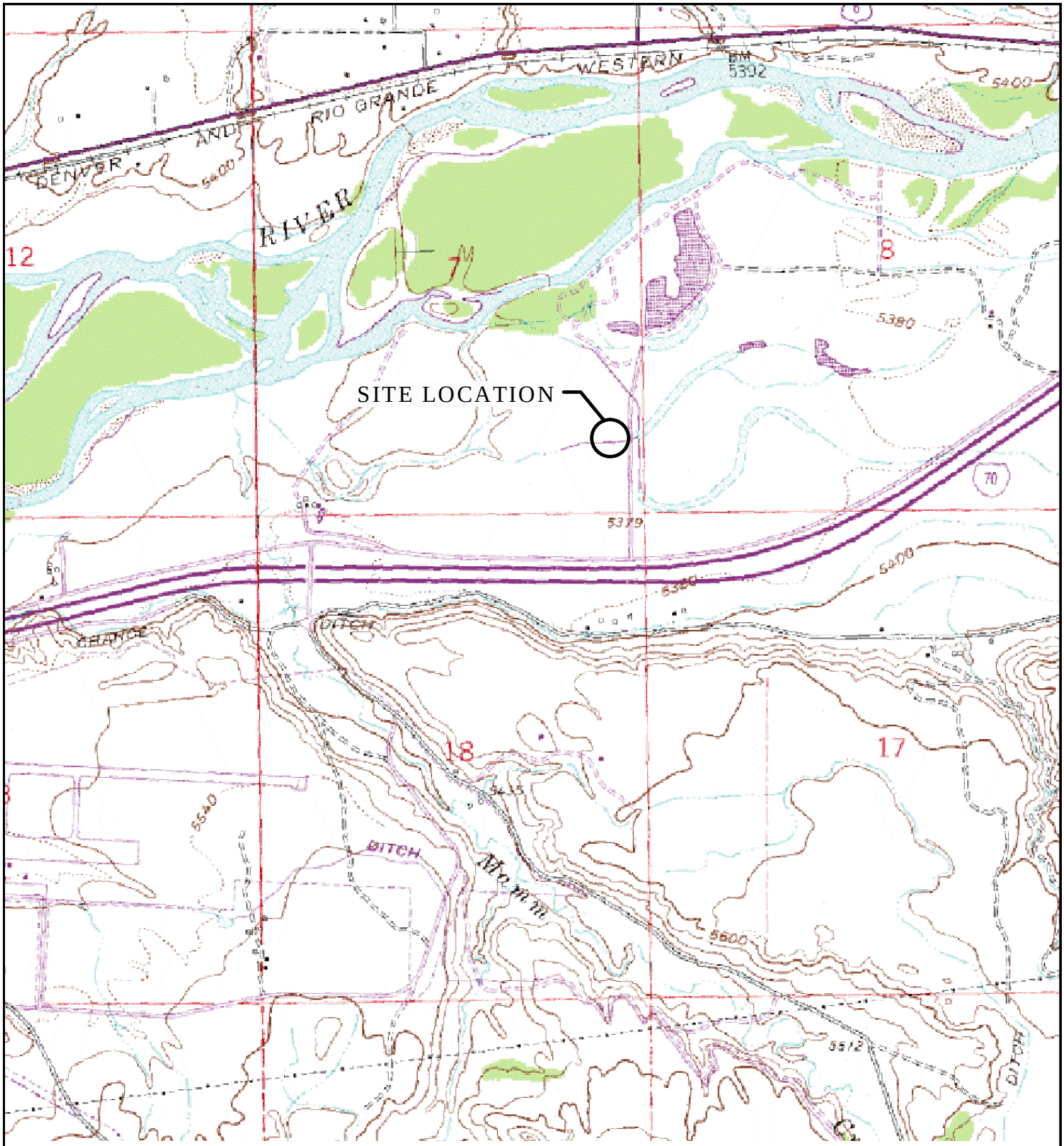
Brian Dodek
Project Manager / Geologist

Steve Kahn, P.E.
Senior Engineer

Attachments (3):

Figure 1 - Site Location Map
Figure 2 - Site Assessment Layout

Attachment - Remediation Technology Example Photos



LEGEND

SITE LOCATION

0 375 750 1500

FEET

SOURCE: TOPOZONE.COM
USGS 7.5' QUADRANGLE
(NAD27)

FIGURE 1
SITE LOCATION MAP
GRAVEL PIT RELEASE
SESE 7-T6S-R92W
GARFIELD COUNTY, CO
ANTERO RESOURCES PICEANCE CORPORATION

ANTERO RESOURCE/GRAVEL PIT

LEGEND

NATURAL SEEP 1-SP ● SURFACE WATER SAMPLE LOCATION

⊕ SOIL BORING/TEMPORARY MONITORING WELL LOCATION

X RELEASE LOCATION

0 25 50 100

FEET

FIGURE 2
SITE ASSESSMENT LAYOUT
GRAVEL PIT RELEASE
SESE 7–T6S–R92W
GARFIELD COUNTY, CO
ANTERO RESOURCES PICEANCE CORPORATION

ANTERO RESOURCE/GRAVEL PIT

LT ENVIRONMENTAL REMEDIATION TECHNOLOGY
EXAMPLE PHOTOGRAPHS

Photo 1: Air sparging system with a diesel-powered air compressor. Fuel tank is bermed.

Photo:2 Air sparging/soil vapor extraction system trailer. Components are housed in a trailer for versatility and ease of transport to treat multiple sites.

LT ENVIRONMENTAL REMEDIATION TECHNOLOGY
EXAMPLE PHOTOGRAPHS

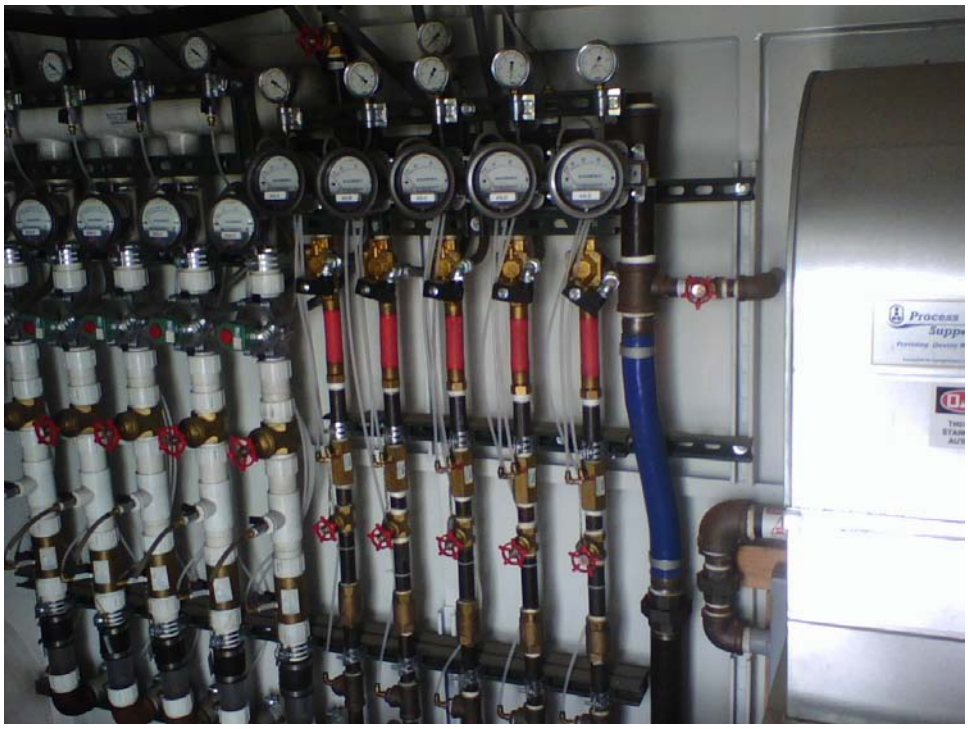


Photo 3: Air sparging/soil vapor extraction manifold. The manifold allows distribution of air in system piping/wells.

Photo 4: The natural gas generator runs off of wellhead gas, which allows the system to operate in remote locations without electrical infrastructure.

LT ENVIRONMENTAL REMEDIATION TECHNOLOGY
EXAMPLE PHOTOGRAPHS

Photo 5: Aboveground air sparging well. The wellhead allows measurement and adjustment of well air flow.

Photo 6: Aboveground air sparging well and associated aboveground piping infrastructure.