

March 26, 2012

Reuse & Redevelopment Program
Alaska Department of Environmental Conservation
Contaminated Sites Program
610 University Ave.
Fairbanks, Alaska 99709

Attn: Ms. Melinda Brunner

**RE: WORK PLAN FOR STOCKPILE SAMPLING AND MANAGEMENT, KOBUK
ABANDONED TANK FARM, KOBUK, ALASKA
HAZARD ID 4615**

We are pleased to submit our work plan to conduct stockpile sampling and management for the Kobuk Abandoned Tank Farm in Kobuk, Alaska. The project objective is to document current conditions at the abandoned tank farm site and determine whether target analyte concentrations in the soil stockpile allow its use as daily cover at the local landfill.

This work plan was prepared under Shannon & Wilson's Alaska Department of Environmental Conservation (ADEC) Hazardous Substance Spill Prevention and Cleanup Term Contract 18-4002-12. This plan was developed in material accordance with our February 3, 2012 technical proposal. ADEC authorization to proceed was received on February 9, 2012 with Notice to Proceed No. 18-4002-12-040.

BACKGROUND

The abandoned tank farm, known as the Old Fuel Distribution Site or New Backup Generator Site, is owned by the City of Kobuk and is located on Lot 26, U.S. Survey #37-88. The site is situated on the northern bank of the Kobuk River in Kobuk Alaska, as shown in the vicinity map provided as Figure 1. The site was once a fueling station and tank farm and is now the backup generator site.

The abandoned tank farm was the site of a 2007 ADEC Brownfield Assessment. Approximately 260 to 270 cubic yards of diesel range organics (DRO)-impacted soil was excavated from the abandoned tank farm site and transported to the stockpile location near the Kobuk Landfill. Location of the soil stockpile is shown in Figure 1.

Of the nine soil samples collected from the excavation limits, one sample contained DRO concentrations greater than the most stringent ADEC Method 2 cleanup level for the under 40 inches precipitation zone (18 AAC 75.341, October 2011). That sample, collected from beneath

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the tank fill port of an existing above ground storage tank (AST), contained 2,660 milligrams per kilogram (mg/kg) DRO. Another sample, collected from outside of the containment in an area that was unable to be completely excavated due to equipment limitation and nearby utilities, contained 0.0485 mg/kg benzene, which is greater than the ADEC cleanup level of 0.025 mg/kg.

DRO concentrations in eight samples collected from the stockpile were greater than the ADEC cleanup level of 250 mg/kg, with concentrations ranging from 693 mg/kg to 2,710 mg/kg. Benzene concentrations in the stockpile samples ranged from non-detect to 0.103 mg/kg, which is greater than the ADEC cleanup level.

PROJECT ACTIVITIES

The work to be conducted for this project includes sampling the soil stockpile, photo documentation of the current conditions at the Backup Generator site, and preparing a summary report.

Sampling will be performed in general accordance with the ADEC approved work plan and ADEC's May 2010 *Draft Field Sampling Guidance*. Following approval of this work plan and the receipt of the permission to access the property, Shannon & Wilson will implement the approved work plan. Shannon & Wilson will also coordinate with local utility companies to identify underground utilities prior to initiating field work. Work on this project will be conducted by ADEC-Qualified Person, as defined by 18 AAC 75.990. A site specific job safety analysis worksheet will be prepared and implemented in accordance with Shannon & Wilson's Corporate Health and Safety Plan.

If the conditions encountered in the field necessitate modifications or deviations from the work plan, the field representative will communicate the issues with the Shannon & Wilson project manager. The Shannon & Wilson project manager will then contact the ADEC project manager to discuss how modifications or deviations should be handled.

Task I – Stockpile Sampling and Visual Site Assessment

Upon ADEC approval of the work plan and coordination with the City of Kobuk for site access and equipment, Shannon & Wilson's field representative will mobilize to the site to implement the field activities. Under contract to Shannon & Wilson, the City of Kobuk will provide an excavator and operator to advance test pits in the soil stockpile to facilitate sample collection.

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Stockpile Sampling

After removing the top liner, we will identify the locations of at least 27 test pits, which will be advanced by our subcontractor, for collection of screening samples from the approximately 270 cubic yards of stockpile. The test holes will be advanced using the excavator bucket or hand tools at spatially representative locations across the containment cell. The soil screening samples will be collected at least 18 inches beneath the exposed surface and at various depths to adequately represent soil contaminant distribution within the stockpile. The samples will be collected from the excavator bucket or directly from the test hole.

One field screening sample will be obtained from each test hole. The samples collected from the test holes will be "screened" for organic vapors using a photoionization detector (PID) calibrated with 100 parts per million (ppm) isobutylene standard gas. The PID will be used to sample the volatile vapors released from the soil using an ADEC-approved headspace sampling method. Headspace samples will be collected in quart-size re-sealable plastic bags by filling them with freshly exposed soil to between one-third to one-half of capacity and then sealing the top. Headspace samples will be warmed to at least 40° F and allowed to develop for at least 10 minutes prior to field headspace screening. Field PID readings will be obtained within 60 minutes of the sample collection. The PID display will be observed, and the maximum reading will be recorded for each sample. An empty bag will be tested as a blank to assess possible interferences from the bags themselves.

In accordance with the ADEC's May 2010 *Draft Field Sampling Guidance*, four analytical samples, plus one field duplicate, will be collected. The samples will be selected based on field screening results and to provide spatial representation of different locations and depths. The soil samples will be analyzed for DRO by Alaska Method (AK) 102 and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B. The samples will be collected from the backhoe bucket or excavation walls using disposable spoons. For each analytical sample location, the BTEX jar will be filled before the DRO jar. For each BTEX sample, at least 25 grams of soil, but no more than what can be completely submerged with 25-milliliters of methanol, will be placed into a pre-weighed, 4-ounce glass jar with a septa lid. A 25-milliliter aliquot of methanol containing an AK 101 surrogate will be poured over the soil within 10 seconds of collection. The DRO samples will be placed into unpreserved 4-ounce glass jars and filled to the top of the jars. For quality control purposes, one field duplicate sample will be collected, and one trip blank will accompany the project samples and be tested for BTEX. The project samples will be placed into coolers maintained at 2° C to 6° C with gel ice and will be

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submitted to SGS North America Inc. of Anchorage, Alaska, and analyzed on a standard two-week turnaround basis.

Investigation derived waste (IDW) will include sampling gear such as emptied, used, re-sealable plastic bags, gloves, and disposable sample spoons. These materials will be disposed at the local landfill as non-hazardous solid waste. Decontamination water will not be generated because disposable sampling equipment will be used. The soil from the headspace samples will be emptied back into the stockpile. Except for the analytical samples, soil will not be removed from the stockpile.

Document Current Conditions at the Backup Generator Site

We will visit the Backup Generator Site to observe and document the current site conditions. At least 30 photos with sufficient resolution to be printed clearly in an 8-inch by 10-inch format will be taken at various locations across the site.

Task II – Summary Report

Following completion of the field activities, Shannon & Wilson will prepare a summary report. The report will include a description of field activities, observations, and procedures, laboratory analytical results, scaled site plans, a summary of changes or variances from the work plan, copies of field notes, project photographs, QA/QC narrative, and an ADEC Laboratory Data Review checklist, and conclusions. The analytical results for the site will be evaluated using the cleanup levels listed in 18 AAC 75.341 for the under 40 inches precipitation climate zone. We will provide recommendations for final disposition of the stockpiled soil, additional remedial activities needed, and observed conditions of the backup generator site, as appropriate.

The project deliverables will include progress status reports with each invoice, an electronic copy of the draft summary report (MS Word format), and a final summary report incorporating comments from the ADEC. Four (4) hard copies and four (4) electronic copies of the final report, provided on compact disks, will be submitted to the ADEC. The electronic copies will be in MS Word and pdf, with tables also provided in MS Excel and photographs also provided in jpeg format.

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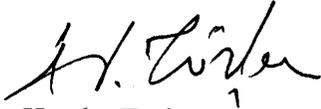
SCHEDULE

We anticipate conducting the field work during the week of April 30, 2012. The draft report will be submitted by May 31, 2012. A final report incorporating ADEC comments will be provided approximately 2 weeks following receipt of comments, with a target date of June 15, 2012. The project will be closed out by June 30, 2012.

If you have questions or comments regarding this work plan, please contact Matt Hemry, P.E. or the undersigned at (907) 561-2120

Sincerely,

SHANNON & WILSON, INC.



Haydar Turker
Principal Engineering Geologist

Enc: Figure 1 – Site Plan

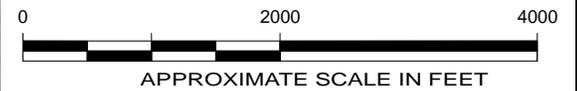
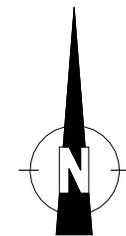
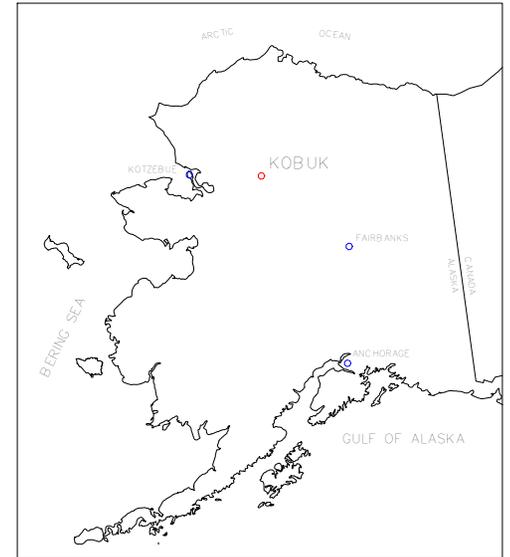
ACCEPTANCE

Please sign below as acceptance of this work plan to conduct the stockpile sampling and management activities at Kobuk Abandoned Tank Farm, Kobuk, Alaska.

By: _____
ADEC Representative Signature

Printed Name: _____

Date: _____



Kobuk Abandoned Tank Farm
Kobuk, Alaska

Site Plan

March 2012

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Geotechnical & Environmental Consultants

Fig. 1

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth Mapping Service.