BONKOWSKI & ASSOCIATES, INC.
GEOTECHNICAL SERVICES AND HAZARDOUS MATERIALS MANAGEMENT

RECEIVED

9:17 am, May 22, 2012

Alameda County
Environmental Health

May 15, 2012
Project No. E211346

Mr. Keith Nowell, PG, CHG
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

RE: Site Investigation Work Plan, 1534 Park Street, Alameda, California

Dear Mr. Nowell,

This letter Site Investigation Work Plan for the former dry cleaners at 1534 Park Street in Alameda, California was prepared on behalf of Michael von Wittenau et al. by Bonkowski & Associates, Inc. This plan is submitted to the Alameda County Department of Environmental Health (ACDEH) in response to the letter directive dated January 12, 2012. Pursuant to the requirements of the directive, and agreements made in a meeting with the ACDEH on April 11, 2012, this report develops an investigative approach to evaluate the extent of PCE in shallow soils and groundwater, while gathering enough information to evaluate the risks of exposure to this chemical. This technical approach follows ASTM Method D6235-04(2010), *Standard Practices for Expedited Site Characterization of Vadose Zone and Groundwater Contamination at Hazardous Waste Contaminated Sites;* and evaluates risk associated with exposure following DTSC Final *Guidance For The Evaluation And Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, (October 2011).

This technical approach requires: 1) the preparation of a working Site Conceptual Model, 2) the completion of shallow soil and groundwater quality investigation in close proximity of the source to determine the extent of contamination and risk associated with exposure to tetrachloroethene (PCE) in residual soil, and 3) completion of a soil gas survey to further evaluate various indoor air risk exposure scenarios. The work elements required to complete these tasks are described in subsequent sections below.

Task 1: Working Site Conceptual Model

Prior to conducting any field work, Bonkowski & Associates, Inc. will prepare a working Site Conceptual Model to evaluate existing soil and groundwater contaminant migratory pathways, water quality in the area of the Site, and potential receptors. This will include the preparation of lithologic cross-sections, water level maps, and isoconcentration contour maps, to evaluate the location and possible magnitude of contaminants in the immediate area of the Site (if necessary). Based upon these finding, Bonkowski & Associates, Inc. will perform a subsurface investigation, at locations likely to assess the limits of PCE in shallow soil and groundwater. This information will be used to refine the area of investigation

described in Tasks 2 and 3 and identify possible additional sources. The results of this task will be discussed with ACEHD prior to the implementation of Tasks 2 and 3.

Task 2: Soil and Groundwater Investigation

The first phase of field work is designed to confirm that PCE is present in the immediate vicinity of the Site, and beneath the sewer line lateral that discharges from the property onto Park Street. To complete this task, GeoProbe borings GP-1, GP-2, GP-3, GP-4, GP-5 and GP-6 will be advanced to the top of the shallow groundwater as locations shown on Figure 1. Boring GP-1 is located to sample soils immediately adjacent to and beneath the above referenced sewer line. GP-3 and GP-4 are also located to test soils and groundwater in close proximity to the main sewer line, to evaluate up-gradient sources. The remaining borings are placed downgradient of the Site and will be used to identify PCE that may have migrated downgradient from the former dry cleaners.

The GeoProbe borings will be advanced by a state licensed C-57 well driller, to approximate depths of 15 feet, or the top of the shallow-most groundwater, whichever occurs first. Soil samples will be collected continuously using a clear 4-foot long core barrels placed inside the GeoProbe sampler. Soil samples will be collected from the unsaturated zone at five foot intervals for chemical analysis by EPA Method 8260. The soil cores will be continuously logged by a field geologist the Unified Soils Classification System (USCS) Visual-Manual Procedure ASTM D2488. Organic vapors will be monitored by the field geologist using a photoionization detector and a portable combustible gas meter. To further investigate PCE contamination, grab groundwater samples will be collected and tested by EPA Method 8260, at the completion of each GeoProbe advance.

Task 3: Soil Gas Survey

A soil gas survey will be conducted to evaluate the potential for vapor intrusion to indoor air pathways. Six (6) samples (SV-1, SV-2, SV-3, SV-4, SV-5 and SV-6) will be collected at the approximate locations shown in Figure 1. These locations may be modified based on the results of Task 2 above. The object of this work will be to evaluate the concentrations of any PCE and its breakdown products in vapor that may be present in the soil. In order to reduce the effects of barometric pumping, all vapor samples will be collected approximately five (5) feet below the ground surface (bgs). The depth to groundwater at the site ranges from 11.79 to 13.15 feet bgs. If the target depth cannot be reached, a vapor sample from the closest practical depth will be collected.

Soil gas probes will be advanced using direct push technology. After each probe is advanced to the target depth, the probe will be allowed to set 20 to 30 minutes to allow the vapor and fluid pressures in the ground to equilibrate. At each given soil gas sampling location point, two attempts will be made to obtain gas samples. If the first attempt fails, the sampling

probe will be withdrawn and re-driven a few feet away. This field procedure is in accordance with USEPA Method 5035 and DTSC (2011) guidance documents.

A tracer gas will be applied to the soil gas probes at each point of connection in which ambient air could enter the sampling system. These points include the top of the sampling probe where the tubing meets the probe connection and the surface bentonite seals

The soil gas samples will be tested in the field using a mobile GC/MS laboratory using modified EPA Method 8260 for aromatic and volatile hydrocarbons. The vapor sample collected from each probe location will be tested for:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- 1,1-dichloroethene
- cis-1,2-dichloroethene
- trans-1,2-dichloroethene, and
- Vinyl Chloride

If a mobile lab is not available, the vapor samples will be collected in Summa™, or equivalent, canisters and transported to a California Certified analytical laboratory. The sample will be analyzed using method TO-15.

Task 4: Data Analysis and Reporting

A report will be prepared by Bonkowski & Associates, Inc. describing the findings and conclusions of the field investigation, and will present a working Site Conceptual Model. The report will include a description of subsurface lithologies as shown in cross-sections, residual PCE in soil and dissolved PCE isoconcentration maps, groundwater elevation contour maps, and tabulated chemical test results (as required). The report may recommend further investigation, or possible corrective actions, depending upon the concentration of PCE.

Regardless, if the concentration of PCE in soil gas samples collected adjacent to the building exceed the DTSC prescribed indoor air exposure pathway screening levels, a risk assessment will be performed according the guidelines in the DTSC *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, October 2011. If the information gathered by this investigation do not warrant further investigation based upon the risk of exposure to soil vapor, or soil and groundwater pathways, then the conditions previously reported by AEI will be assumed to only represent a nuisance, and recommendations will be made for regulatory closure.

HEALTH AND SAFETY AND PERMITTING

Bonkowski & Associates, Inc. has an excellent health and safety training and monitoring program. Bonkowski & Associates, Inc. will prepare a Site Health and Safety Plan prior to conducting any fieldwork. The Health and Safety Plan will address 29 Code of Federal Regulations (CFR) 1910.120 requirements regarding basic 40-hour health and safety training, supervisor training and annual refresher training. The work will be performed in Level D protection, unless field conditions otherwise warrant.

Drilling permits will be obtained from Alameda County to advance GeoProbe and soil gas survey borings on this Site. Underground utilities will be checked by notifying Underground Service Alert and confirmed at each well location using a commercial underground utility locator.

CERTIFICATION STATEMENT

This Work Plan has been prepared by the staff of Bonkowski and has been reviewed and approved by the professionals whose signatures appear below. The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted engineering practice in Northern California at the time this Work Plan was prepared. No other warranty is either expressed or implied.

Bonkowski & Associates, Inc. will begin this work within five days of our authorization to proceed. Please feel free to contact either of the undersigned professionals at (510) 450-0770 if you have any questions or need any additional information.

Sincerely,

Bonkowski & Associates, Inc.

Michael S. Bonkowski

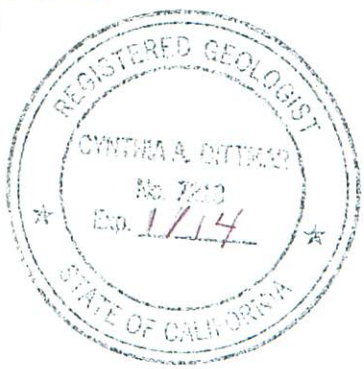
Digitally signed by Michael S. Bonkowski
DN: cn=Michael S. Bonkowski, o=Bonkowski and Associates, Inc., ou=Environmental and Engineering Services, email=mike@bonkowski.com, c=US
Date: 2012.05.15 12:04:47 -07'00'

Michael S. Bonkowski, PG CEG 1329
Senior Managing Principal
Environmental and Engineering Services

Cynthia A. Dittmar

Digitally signed by Cynthia A. Dittmar
DN: cn=Cynthia A. Dittmar, c=US, ou=Bonkowski and Associates, Inc., email=Cindy@Bonkowski.com
Date: 2012.05.15 11:59:50 -07'00'

Cynthia A. Dittmar, PG 7213
Project Geologist



cc Mr. Michael von Wittenau
Mr. Michael Reynolds, Esq.

ATTACHMENTS

Figure 1 Planned Soil Vapor and GeoProbe Sample Locations
Perjury Letter

LEGEND

SV-1 GP-1 — Soil Vapor or GeoProbe Sample Location

Building

Sanitary Sewer, Arrow Indicates Flow Direction

APPROXIMATE SCALE:

50 0 50 100 feet

Project No. E211346	1534 PARK STREET ALAMEDA, CALIFORNIA	PLANNED SOIL VAPOR AND GEOPROBE SAMPLE LOCATIONS	Figure 1
Bonkowski & Associates, Inc.			

May 11, 2012

Mr. Keith Nowell, CHG
Hazardous Materials Specialist
County of Alameda – Health Care Services, Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Site Investigation Work Plan
1534 Park Street, Alameda, California

Dear Mr. Nowell:

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document is true and correct to the best of my knowledge.

Sincerely yours,

Michael von Wittenau

Enclosure