Treadwell&Rollo

5 June 2008
Project No. 2820.04

Mr. Jerry Wickham
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Response to Technical Comments
Site Mitigation Completion Report
901 Jefferson Street
Oakland, California

Dear Mr. Wickham:

On behalf of A.F. Evans, Treadwell & Rollo is pleased to respond to your letter of 18 April 2008, in which you present Alameda County Environmental Health's (ACEH's) technical comments to the Treadwell & Rollo *Site Mitigation Completion Report, 901 Jefferson Street, Oakland, California* (SMCR), dated 17 March 2008. Your comments are reproduced below, each followed by our response, including technical discussion and additional provided information (where applicable). With this response letter, we are requesting you approve completion of the site mitigation work and issue a "no further action" determination for the site.

1. ***Residual TPH Concentrations in the Area of Boring B-9.*** *The "Site Mitigation Completion Report," indicates that risk exposure to future residents by direct contact to soil has been mitigated by excavation to a maximum depth of 7 feet bgs. We request that you also present an evaluation of potential risk from vapor intrusion due to residual fuel hydrocarbons in soil and groundwater. This evaluation must include review of data from groundwater samples collected beneath the northeastern portion of the site.*

   Soil vapor samples were not collected at the 901 Jefferson Street site, so the potential risk from vapor intrusion from residual fuel hydrocarbons that may remain in soil or groundwater at the site will be evaluated based on the construction characteristics of the redeveloped Site, the nature and depth of reported compounds, and the available soil and groundwater data.

   The building foundation type is mat foundation with slab-on grade. The slab consists of a 6-inch concrete slab with moisture barrier, over 6 inches of aggregate base and 6 inches of prepared subgrade. Subgrade parking lifts in the western two-thirds of the building compose approximately 30 percent of the building footprint. The parking lift pits extend to 6 feet 8 inches below the top of the slab, and are of the same basic construction (Ron Linch of LMI [General Contractor], personal communication, 19 May 2008; see response to question 3, below). The moisture barrier and slab will preclude the migration of VOCs in soil vapor to the ground-floor occupied units (parking garage, lofts, commercial spaces). To meet building codes, the garage is equipped with a ventilation system that removes 27,000 standard cubic feet per minute (SCFM)

from the garage and exhausts it at the roof. Were soil vapor to migrate through the moisture barrier and slab and into the garage, it would be drawn through the garage to the roof. These construction features minimize the possibility of soil vapor migrating to or accumulating in the occupied first-floor areas of the building.

Petroleum hydrocarbons were reported in soil samples collected in 2004 in boring B-9 in the central part of the Site. At 8 feet below the ground surface (bgs), Total Petroleum Hydrocarbons quantified as gasoline (TPHg) and diesel (TPHd) were reported at 120 milligrams per kilogram (mg/kg) and 2,400 mg/kg, respectively. At 10.5 feet bgs, TPHg and TPHd were reported at 950 mg/kg and 5,800 mg/kg, respectively. The samples analyzed for TPHd were not prepared using "silical gel rinsate" and therefore may be anomalously high due to the naturally-occurring non-petroleum organic compound interference. Subsequent excavation to 7 feet bgs in this area and sampling at 5 feet bgs below the buried oil drums encountered during excavation, also in the area of boring B-9, did not indicate the presence of petroleum hydrocarbons. The shallower sample (at 8 feet bgs) is 7 feet below the bottom of the slab and slightly more than 1 foot deeper than the bottom of the parking lift pits. One of the parking pits is within 5 horizontal feet of the reported location of B-9 and the area of the drum removal. Therefore, if volatile compounds were to migrate from the location of the reported petroleum hydrocarbons, they would likely migrate via the parking lift pits to the garage and be vented at the roof.

With respect to the possible presence of residual hydrocarbons in groundwater, the last sampling of groundwater was performed on 1 August 1995 by Streamborn, after augmented bioremediation of the groundwater. Depth to groundwater was greater than 20 feet. Groundwater samples were collected from three wells in the northeastern corner of the Site (MW-19, PTW-1, and MW-5) and one well in the central-eastern part of the Site (MW-18). These samples were analyzed for TPHg and volatile organic compounds (VOCs) with the following detected concentrations:

Well	**TPHg**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**
MW-19	12.0	0.17	0.088	0.13	0.30
PTW-1	0.8	0.009	Nd	Nd	Nd
MW-5	5.3	0.19	0.009	0.007	0.010
MW-18	2.5	0.046	0.008	0.002	0.004
ESL	NA	0.540	380	170	160

Notes: results in milligrams per liter; TPHg = Total Petroleum Hydrocarbons quantified as gasoline; NA = not applicable; Nd = not detected; ESL = Vapor Intrusion Environmental Screening Level (Table E-1, Regional Water Quality Control Board [RWQCB], 2007).

These sample results were used to show the success of the augmented bioremediation and were accepted by ACEH in granting "no further action" for the Site in 1996. All results are below the

Environmental Screening Levels (ESLs) for evaluation of potential vapor intrusion (RWQCB, 2007). Because the bioremediation proved the presence of suitable microbial fauna for breaking down the hydrocarbons, it is likely these groundwater concentrations have been significantly reduced since these samples were collected.

We believe potential risk for current Site users of significant exposure to volatile compounds from vapor intrusion is minimal, because:

a) the Site construction provides a barrier to vapor migration;

b) the garage ventilation system will capture vapors that may migrate beyond the moisture barrier and slab;

c) the reported TPHg and TPHd concentrations at 8 and 10.5 feet bgs in boring B-9 were data that were not confirmed, based on comfirmation samples collected during soil excavation, and likely higher than actually present (for TPHd, based on laboratory preparation);

d) the TPHg and BTEX compounds reported in groundwater in 1995 were below the current (2007) ESLs for vapor intrusion, were at more than 20 feet bgs, and are very likely lower at the present time, as a result of natural biological degradation over time.

2. ***Imported Fill.*** *The "Site Mitigation Completion Report," indicates that additional soil was imported from a site at 900 Minnesota Street in San Francisco. Please describe the type of facility at 900 Minnesota Street in San Francisco and whether there are known or potential environmental conditions at the facility. Also please present a summary of the analytical data reviewed for the imported fill from 900 Minnesota Street in San Francisco.*

Review of a previous environmental report (*Phase II Environmental Site Assessment of the Former Esprit De Corp Office Elevator Shaft and Parking Lot, Located at 900 Minnesota Street, San Francisco, California*, by Secor International Incorporated, 5 December 2003) indicated the following information.

The site at 900 Minnesota in San Francisco was previously the location of a paint warehouse and distribution center. No other previous use was found during Treadwell & Rollo's review of site information. A 7,500-gallon underground storage tank on the eastern side of the site, used to store diesel fuel for the paint company's trucks, had been closed in place. Soil samples collected from three borings adjacent to the tank had contained low concentrations of total petroleum hydrocarbons (maximum 10 mg/kg). The underground storage tank abandonment was performed under the oversight of the San Francisco Department of Public Health, which approved abandonment in place.

The Minnesota site consisted of 4 to 15 feet of fill overlying weathered but intact bedrock of sandstone and shale. The area to be used for fill was in the west and northwest part of the site. Secor collected samples of fill at various depths in 5 locations (Secor had planned to advance 11 soil borings to characterize the soil at the site, but advanced only 5 because of "time constraints and difficult drilling conditions). The borings advanced included SB-5, SB-9, SB-10, SB-11 and SB-14. Soil samples were collected at five-foot intervals in each boring, but only the samples

exhibiting the highest PID readings in each boring were analyzed. Samples were analyzed for TPH-g, TPH-d, TPH-mo, BTEX, LUFT-5 metals, and semivolatile organic compounds (SVOCs).

Detected chemicals in the soil samples are shown in the table below. All detected chemicals were below their applicable ESLs for residential land use with the exception of benzene in samples SB-11-10 and SB-12-10, both collected at 10 feet bgs. The benzene concentrations in these two samples are greater than the benzene ESL for residential land use of 0.044 mg/kg. These borings were located in the eastern half of the Site, which was not part of the material imported to 901 Jefferson

Sample	TPHg	TPHd	B	T	EB	X	Cr	Pb	Ni	Zn	NP	MN	FL	PH
SB-5-5		5.9				0.0051	19	7.7	37	59	0.07			
SB-9-9		1.1					24	4.7	34	50				
SB-11-10	3.6	12	0.57	0.89	0.075	0.34	34	24	67	57	0.26	0.44	0.12	0.12
SB-12-10	1.1	4.7	0.07	0.28	0.029	0.12	20	7.7	36	68	0.14			
SB-14-10		6.9					17	6.9	33	51		0.09		

Notes: results in milligrams per kilogram; TPH-g = Total Petroleum Hydrocarbons quantified as gasoline; TPHd = Total Petroleum Hydrocarbons quantified as diesel; B = benzene; T = toluene; EB = ethyl benzene; X = total xylenes; Cr = chromium; Pb = lead; Zn = zinc; NP = naphthalene; MN = 2-methyl naphthalene; FL = fluorene; PH = phenanthene

Import soil for 901 Jefferson Street was excavated from the west and northwest part of the Minnesota Street site (characterized by samples from borings SB-9 and SB-14. Approximately 4 feet of fill was removed and set aside, and the underlying sandstone and shale bedrock was excavated, broken down, and transported to Jefferson Street for use.

3. ***Depths of Parking Pits and Dewatering.*** *Please describe the depth and construction of the subsurface parking pits. In addition, please describe whether the parking pits include any type of sumps or other dewatering systems.*

The parking lift pits are 6-feet 8-inches deep. The pit walls are 12 inches thick and the bases of the pits are 24 inches thick (including the mat foundation). Construction is of concrete with moisture barriers. The parking floor and lift pits all drain to one ejector pit with a pump and three floats. The ejector pit controls have a high-level alarm and pump controls. The pump removes water to the storm sewer (Ron Linch of LMI [General Contractor], personal communication, 19 May 2008). Because of the moisture barriers, only rain water or surface runoff coming in through the garage entrance and any incidental water generated by cleaning the garage will collect in the garage.

We hope this letter answers your questions. We appreciate the opportunity to work with you on this project. If you have any questions or require additional information, please contact us at (510) 874-4500, extension 529.

Sincerely yours,
TREADWELL & ROLLO, INC.

PROFESSIONAL GEOLOGIST
GROVER BUHR
No. 5596
STATE OF CALIFORNIA

Grover Buhr, PG
Senior Geologist

Glenn M. Leong, REA
Senior Associate Scientist

28200406.OAK

cc. Anye Spivey, A.F. Evans