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NAVSTA Treasure Island TYPIST: B. Palmer/21 Sep 88/Ser 3791h
Harding Lawson Associates FILE: HP/DOHS

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Ser 1145/HP/DOHS

30 SEP 1988

Mr. Dwight Hoenig
Department of Health Services
State of California
Toxic Substances Control Division
North Coast Section
2151 Berkeley Way, Annex 7
Berkeley, CA 94704

Subj: PROPOSED SOIL GAS SURVEY INVESTIGATION, NAVAL STATION, TREASURE ISLAND, HUNTERS POINT ANNEX

Dear Mr. Hoenig:

The possibility of applying soil gas survey techniques at Naval Station, Treasure Island, Hunters Point Annex was discussed during a conference phone call on July 29, 1988 involving members of my staff, our consultants (Harding-Lawson Associates), and members of your staff and the Technical Support Services of the Department of Health Services. It was agreed that these techniques could be best applied initially at the Group I sites where soil and ground water contamination by volatile organic compounds are suspected.

The Department of Health Services requested that we provide a draft addendum to the Phase II reconnaissance Work Plan describing a soil gas survey program for the Group I sites. Enclosure (1) is provided for your review and comment. We wish to implement this program during the Phase II reconnaissance activities expected to begin by mid-October 1988. Your staff indicated that they would cooperate by providing a "fast-track" review of our proposed program to assist us in meeting our anticipated schedule. Please supply your comments on the soil gas survey program by October 7, 1988 so that we may incorporate your comments. Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Mr. Gregory Brown, Code 1146GB, (415) 877-7502).

Sincerely,

P. W. DRENNON
CAPTAIN, CEC, USN
COMMANDER

Encl:
(1) Addendum to the Phase II Reconnaissance Activities, Soil Gas Survey, Group I Sites, Naval Station, Treasure Island, Hunters Point Annex

Copy to:
Regional Water Quality Control Board (Attn: Steve Ritchie)
Bay Area Air Quality Management District (Attn: Scott Lutz)
U.S. Environmental Protection Agency (Attn: Jerry Clifford)
California Dept. of Fish & Game (Attn: Mike Rugg)
U.S. Fish & Wildlife Service (Attn: Don Palawski)
National Oceanic & Atmospheric Administration (Attn: Sharon Christopherson)
City and County of San Francisco (Attn: David Wells)
San Francisco District Attorney (Attn: Steve Castleman)

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ADDENDUM
PHASE II RECONNAISSANCE ACTIVITIES

SOIL GAS SURVEY

NAVAL STATION TREASURE ISLAND
HUNTERS POINT ANNEX

Enclosure (1)

SECOND ADDENDUM
PROPOSED RECONNAISSANCE ACTIVITIES

This document is the second addendum to the Navy's letter dated March 25, 1988, which described proposed reconnaissance activities for the Naval Station, Treasure Island, Hunters Point Annex (HPA). This addendum describes the use of soil gas survey techniques at HPA as requested in a conference phone conversation between representatives of the California Department of Health Services (DHS), Harding Lawson Associates (HLA), and the Navy on July 20, 1988 (*DHS, 1988*).

Soil Gas Analysis as a Qualitative Screening Tool

The use of soil gas analysis as a screening tool for volatile organic compounds has been proven in numerous case studies (*Glaccum, Noel, Evans, and McMillan [1983]; Jacot [1983]*). There are several soil gas sampling techniques; most entail introducing a hollow sampling probe to a specified depth in the unsaturated soil and then removing a soil gas sample by using a vacuum pump. Qualitative analysis of the soil gas sample is then performed using a portable photoionization detector.

Application of Soil Gas Analysis at Hunters Point Annex

A qualitative screening of volatile organic compounds by soil gas analysis at HPA will enable more precise placement of exploratory borings. All field work conducted during this investigation will be in compliance to the HPA Site Safety Plan (*HLA, 1988b*). The sampling strategy is based on the following information:

- Group I sites have been identified as areas suspected of containing volatile organic compounds
- Depth to ground water at these sites is between 5 and 7 feet below ground surface

A grid pattern with 100-foot centers will be established across the work site. The soil gas grid will be tied into the existing 200-foot grid established during a previous reconnaissance task. The grid corner markers will be surveyed by a licensed surveyor so that sampling locations can be mapped accurately and resampled if necessary. If a "hotspot" is detected, closer spacing of sampling points will be required to investigate the areal extent of each "hotspot". Sampling probes will be driven to approximately 3 feet below ground surface. Interference from ground water will be avoided by keeping the probe intake at least 2 feet above the water table.

Soil gas sampling will consist of the following steps:

- Stake grid corners; lay out 100-foot grid pattern
- Drill access hole with 1 1/2-inch-diameter solid flight auger gasoline- or hydraulic-powered drill at each grid location
- Insert hollow 1-inch-diameter, 2-foot long sampling probe into access hole to depth of 1.5 feet below ground surface
- Seal annular space at surface with drill cuttings or sealing collar
- Place vacuum on sampling probe utilizing neoprene access tubing that is sealed onto the top of the sampling probe
- Remove two sampling-probe volumes of soil gas and seal probe
- Allow 10-15 minute equalization period prior to sample measurement
- Insert organic vapor analyzer (OVA) probe into soil gas sampling probe (utilizing neoprene access tube) and monitor readings for 1 to 2 minutes; record highest measurement
- Pull out probe, and purge OVA sampler prior to next reading.

Calibration of the OVA prior to use is necessary to correlate the results. The OVA will be calibrated as described in Section 12 of the HPA Quality Assurance Project Plan (QAPP) (*HLA, 1988a*) prior to use each day and at the end of each field day. Additional calibrations will be made if conditions warrant. Background air quality will

be recorded prior to each soil gas sampling event. Care will be so that no exhaust or vapor contamination from gas-powered engines interferes with soil gas analytical results. Replicate analyses will be performed at 10 percent of the sampling sites. Replicate analyses will consist of repetition of the soil gas probe purging, equalization, and OVA measurement. It is our experience that reproducible results can be achieved using this process. However, subsurface soil and soil pore moisture conditions may cause variations in measurements after additional soil gas is extracted from sample probe.

Following the qualitative soil gas screening, the data will be entered into a computer database and contoured to delineate anomalous areas that may need further characterization. Anomalous areas will be further investigated with 25- to 50-foot grids, depending on the size and concentration of each anomaly.

Once the extent of each anomaly is known, portable gas chromatograph soil gas quantification will be conducted using methods described in Section 5.3 and Appendix B of the HPA QAPP (*HLA, 1988a*). The quantification of each anomaly will serve as an indication of the type of volatile chemicals present in the ground water/soils at the Group I sites. These data can then be used to adjust boring and well locations and the numbers of borings and wells that will be installed during the Remedial Investigation.

REFERENCES

Department of Health Services, 1988. Personal Communications with Bill Owen, James Frampton, John Harris.

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Harding Lawson Associates, 1988a. *Quality Assurance Project Plan (QAPP), Naval Station, Treasure Island, Hunters Point Annex, San Francisco, California.* May 1988.

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Jacot, B.J., 1983. *OVA Field Screening at a Hazardous Waste Site*, pp. 76-78, In Natl Conf. Proc. Mts Management of Uncontrolled Hazardous Waste Sites, October 31, 1983, Hazardous Material Control Research Institute (HMCRI), Washington, D.C.