

2101 Webster Street
12th Floor
Oakland, CA 94612
(510) 663-4100 • FAX (510) 663-4141



June 14, 1999
Project 4850.01

Mr. Ernesto Galang
Engineering Field Activity, West
Naval Facilities Engineering Command
Bldg. 208, 2nd Floor
900 Commodore Drive
San Bruno, California 94066-2402

Subject: Draft Final Site 12 Corrective Action Plan for Time-Critical Removal of
Petroleum Hydrocarbon-Contaminated Soil and Groundwater Remediation
Naval Station Treasure Island
San Francisco, California

Dear Mr. Galang:

This letter presents the results of a review of the *Draft Final Site 12 Corrective Action Plan for Time-Critical Removal of Petroleum Hydrocarbon-Contaminated Soil and Groundwater Remediation* (Draft Final CAP) prepared by Tetra Tech EM Inc. (TtEMI) on behalf of the Department of the Navy Engineering Field Activity West (the Navy). This review was performed by Geomatrix Consultants, Inc. (Geomatrix), on behalf of the City and County of San Francisco, Mayor's Office, Treasure Island Project (the City). Comments to the Draft CAP, which proposed limited soil excavation in the vicinity of Building 1311, were previously submitted on behalf of the City in a letter from Geomatrix to the Navy dated March 19, 1999. However, the scope of this time-critical removal action has changed since that time. The results of additional soil sampling indicated that soil excavation alone may not be sufficient. Alternative remedial options were presented in a memorandum from IT Corporation to the Navy dated May 14, 1999, and further discussed in a meeting of the Remedial Project Managers/BRAC Cleanup Team (RPM/BCT) on May 26, 1999. The Draft Final CAP proposes a combination of soil excavation and in situ treatment using ORC (oxygen-releasing compounds) and chemical oxidation.

Our comments are summarized below:

- The origin and basis for the interim cleanup levels proposed in the Draft Final CAP should be clarified. For example, the City did not contribute to the development of the interim cleanup goals as intimated in Section 2.3 and 4.0. In fact, the City does not agree with using these values as discussed during the May 26, 1999 meeting. It would also be helpful if additional information regarding the basis for the interim cleanup goals was provided when they are first mentioned in Section 2.3 of the Draft Final CAP. For instance, this section should specify that the values of 1300 milligrams per kilogram (mg/kg) and 8800 mg/kg are

Mr. Ernesto Galang
Engineering Field Activity, West
Naval Facilities Engineering Command
June 14, 1999
Page 2

based on protection of human health (residents and construction workers, respectively) and apply to diesel range hydrocarbons (reported as total petroleum hydrocarbons as diesel [TPHd]), not total TPH (gasoline, diesel, and motor oil-range hydrocarbons combined). We would also suggest that this section specify that these values are based on toxicity criteria that have since been withdrawn by the U.S. EPA and are highly uncertain. With regard to the interim cleanup level for groundwater (1.4 milligrams per liter [mg/l]), this section of the Draft Final CAP should specify that this value is based on protection of aquatic organisms and applies to total TPH. Finally, we recommend that Section 2.3 specify that the interim cleanup goals were developed specifically for Treasure Island and are not contained within or related to the Regional Water Quality Control Board's (RWQCB's) interim guidance for low-risk fuel sites.

- It is our understanding that the interim cleanup goals in soil agreed to by the Navy apply only to the vicinity of Building 1311, not to Site 12 as a whole. Therefore, we recommend rewording or removing the statement that soil in several areas of Site 12 contains TPH at concentrations above the interim cleanup goals (last paragraph of page 4).
- Section 3.1 states that the CAP is expected to be approved by the Navy and other agencies on June 15, 1999, which is the day after comments to the Draft Final CAP are due. However, given the nature and extent of the comments contained in this letter, the City does not expect that the CAP can be approved as scheduled. Section 3.1 goes on to state that, assuming the CAP is approved on June 15, 1999, soil excavation will begin in late June and all construction related to groundwater treatment will be completed by August 1, 1999. However, Section 2.4 states that additional sampling is required to define the extent of affected soil and groundwater. Even if the CAP could be approved by June 15, 1999, the next iteration of the work plan for additional characterization has not been issued nor are these field activities reflected in the schedule presented in Figure 3. Therefore, it is unclear if the proposed schedule can be met.
- The City does not believe that roads should present a barrier to excavation.
- The mechanism for hydrogen peroxide's action depends on the concentration of hydrogen peroxide and the presence of catalysts. At low concentrations and in the absence of catalysts, hydrogen peroxide serves as an oxygen carrier (an oxygen releasing compound) to support aerobic microorganisms – a slow remedial action. At high concentrations in the presence of appropriate catalysts, hydrogen peroxide generates hydroxyl radicals that directly oxidize organic matter – a rapid remedial action. The CAP should specify which of these approaches is intended.



Mr. Ernesto Galang
 Engineering Field Activity, West
 Naval Facilities Engineering Command
 June 14, 1999
 Page 3

- The amount of hydrogen peroxide needed depends on the amount of petroleum to be oxidized/metabolized. One cubic yard of soil (assumed mass: 1.5 metric tons) containing 10,000 mg/kg of petroleum would require three to ten 55-gallon drums of 35% hydrogen peroxide solution. Depending on how much petroleum is removed by excavation, the amount of hydrogen peroxide required could exceed several truckloads. The CAP should include an estimate of how much petroleum is expected to remain after excavation and how much hydrogen peroxide will be required to oxidize it.
- Where free product is present, there is a risk of forming organic peroxides, which are unstable and explosive. The CAP should specify how the formation of organic peroxides would be avoided.
- Fluids entering shallow soil at 1000 to 5000 pounds per square inch (psi) would fracture the soil. If high-pressure injection is used, then the CAP should describe measures that will be taken to prevent hydrogen peroxide solution from erupting from the ground surface.
- Section 3.2.1 states that TPH concentrations in soil range up to 12,550 mg/kg; however, Figure 2 shows TPH concentrations in soil up to 43,200 mg/kg.

If you have any questions regarding these comments, please call me at (510) 663-4100.

Sincerely yours,

GEOMATRIX CONSULTANTS, INC.

Gregory P. Brorby, DABT
 Senior Toxicologist

GPB/pp

I:\Doc_Safe\4000s\4850.01\Doc Review\Bldg 1311 draft final CAP.doc

- cc: Martha Walters, SFRA
 David Rist (DTSC)
 David Leland (RWQCB)
 James Ricks, Jr. (EPA)
 Jim Sullivan (Navy BEC)
 Jerry Wickham (TEMI)
 John Baur (IT)

Paul Hehn
 Nathan Brennan
 Pat Nelson
 Dale Smith
 ARC Ecology
 Information Repository (3 copies)

} RAB