



October 1, 2009
Project 4850.005.3

Mr. James B. Sullivan
Mr. Jim Whitcomb
Mr. Charles Perry
Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

**Subject: Comments on Draft Work Plan for Data Gaps Investigation Installation
Restoration Site 6 Former Fire Training School
August 2009
Naval Station Treasure Island
San Francisco, California**

Dear Mr. Sullivan, Mr. Whitcomb and Mr. Perry:

On behalf of the Treasure Island Development Authority (TIDA), AMEC Geomatrix, Inc. (AMEC) has reviewed the subject Draft Work Plan for Data Gaps Investigation Installation Restoration (IR) Site 6 Former Fire Training School (Draft Site 6 Work Plan) prepared by Engineering /Remediation Resources Group, Inc. (ERRG) on behalf of the U.S. Department of the Navy (Navy). Our comments are presented below.

GENERAL COMMENTS

Potential Impacts beneath Building 461. During the June 3, 2009 Base Realignment and Closure (BRAC) Cleanup Team (BCT) scoping meeting, the Navy agreed to discuss the construction date of Building 461 relative to the know timeframe the burning activities occurred at Site 6, to assess whether potential contamination may exist beneath the building. Based on information presented in Section 2.6, Building 461 was constructed in 1970. Site 6 operations were conducted for at least 25 years prior to construction of the building (since 1944). The southeast corner of the building appears likely to have been downwind of the Former Burn Pit and it is possible that airborne deposition of dioxins may have occurred over soil that is now beneath the building. Sample locations DX17 and DX18 (near the southern side of this building) are proposed as contingency sample locations. We believe it is prudent to collect primary samples at these locations to assess whether dioxins could be present beneath Building 461.

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Mr. James B. Sullivan, Mr. Jim Whitcomb and Mr. Charles Perry
Department of the Navy
October 1, 2009
Page 2

Dioxin Data Gaps—Soil Sampling Strategy. The conceptual model for the release of dioxins and furans states, "Due to their limited mobility, dioxins are commonly found only in the upper 6 inches of soil and do not readily migrate into deeper soils or leach into groundwater. Burn layers from previous IR Site 6 test pits were generally thin and encountered within 6 inches of the surface." However, the sampling strategy proposed indicates that samples will be collected at depths ranging from 0.5 to 2.5 feet below ground surface (bgs). It appears that the proposed sampling will miss the interval where the dioxins are most likely to be found (upper 6 inches). Please clarify sample depths on Worksheet 18.1 by providing the entire sample interval (not just a single depth). Does a depth of 0.5 (Worksheet 18.1) refer to a sample interval is 0-0.5 feet or a sample interval is 0.5 to 1 foot?

Additionally, we believe that soil borings should be advanced in the area south and west of TP022, where dioxin TEQ was 1,013 nanograms per kilogram (ng/kg). The lateral extent south and west of this location has not been delineated.

Total Petroleum Hydrocarbons (TPH) Data Gaps—Soil Sampling Strategy. The text on page 4-5 indicates that the objectives of the soil sampling are to assess whether petroleum constituents in vadose zone soil (0 to 5.5 feet bgs) pose an unacceptable risk to humans and to assess whether petroleum constituents in both saturated and unsaturated soil (0 to 10 feet bgs) may be serving as a source to groundwater. Because humans may come into contact with soil that is greater than 5.5 feet deep (especially construction and utility workers), we believe that deeper soil also should be assessed to determine whether it poses an unacceptable risk to human health. The sampling and analysis plan should collect data (volatile organic compounds [VOCs] and polycyclic aromatic hydrocarbons [PAHs]) to assess risk to human receptors that may come into contact with deeper soil. (This comment also applies to relevant sections of the SAP, including SAP Worksheet 11.2)

We also believe that several borings should be advanced in the vicinity of the 40x40 excavation and the helicopter training area. Although many shallow soil samples (less than 5.5 feet bgs) were collected in this area, virtually no deeper soil samples were collected. One deeper sample was collected at a depth of 7 to 7.5 feet bgs and it had TPH as gasoline (TPHg) detected at 12,000 milligrams per kilogram (mg/kg) (06-HP064). The lateral extent of this deeper impact has not been delineated.

Recent Department of Toxic Substances Control (DTSC) Interim Guidance Pertaining to Evaluation of TPH. The BCT should discuss the recent DTSC Interim Guidance pertaining to evaluation of TPH in risk assessments and the collection of analytical data using a fractionated approach.¹ If the new Interim Guidance is followed, it will impact the methods used to analyze soil, groundwater and soil vapor samples for TPH.

¹ California Department of Toxic Substances Control, Human and Ecological Risk Division, 2009, Interim Guidance Evaluating Human Health Risks from Total Petroleum Hydrocarbons (TPH), June 16.

Mr. James B. Sullivan, Mr. Jim Whitcomb and Mr. Charles Perry
Department of the Navy
October 1, 2009
Page 3

SPECIFIC COMMENTS

1. **Section 2.5 Current Land Use and Proposed Reuse (and Section 10.1.2 of SAP).** The text states that the proposed reuse for IR Site 6 may include residential, open space, and publicly oriented uses and cites Tetra Tech's 2007 Final Site Management Plan as the source of information. We suggest that the appropriate source document be cited (i.e., the 1996 Draft Reuse Plan).
2. **Section 3.2 Additional Investigations and Remedial Activities.** Samples from several previous investigations have been analyzed for metals. Has the Navy reviewed these data to ensure that there are no data gaps associated with metals?
3. **Section 4.1 Data Gap 1—Delineate Dioxins and Furans in Soil.** Please provide the dates of the aerial photographs that suggest the presence of a former burn pit at the site.
4. **Section 4.3 Data Gap 3—Collect Soil Gas Samples to Evaluate Potential Vapor Intrusion Pathway.** Some of the planned soil vapor sample locations are near former location SV-04B, where VOCs were detected at concentrations above screening levels. It would be helpful to show the former sample location on Figure 7. Additionally, we believe it would be appropriate to collect soil vapor samples near Building 468 (Waste Water Treatment Plant parcel), which overlies the UST 248 groundwater plume and an additional sample adjacent to Building 461 (east of proposed sample SG03) because of the uncertainty of the extent of the UST 240 plume.
5. **Section 4.3 Data Gap 3—Collect Soil Gas Samples to Evaluate Potential Vapor Intrusion Pathway (TI Specific Screening Levels for Soil Gas).** The text states that "The preliminary screening levels selected for the data gap evaluation are the TI specific screening levels for TPH fractions and TPH constituents documented in recent IR Site 6 reports (Shaw, 2005c)." The Shaw 2005 document referenced does not present screening levels for TPH fractions. This document does present 2005 Water Board Environmental Screening Levels (ESLs) for TPH constituents (benzene, toluene, ethylbenzene and xylenes [BTEX] and methyl tertiary butyl ether [MTBE]), but it does not include ESLs for TPH itself. Additionally, the ESLs were updated in 2008 and the preliminary screening levels should be revised accordingly (e.g., ethylbenzene). Finally, we note that the Navy modified the screening levels by normalizing the values to a target Hazard Quotient (HQ) of 1 (rather than a HQ of 0.2 used by the Water Board). We do not object to this modification to the preliminary screening level, however, the Navy should consider cumulative risk and hazards (e.g., the Hazard Index) for all constituents detected when screening soil vapor samples.

Mr. James B. Sullivan, Mr. Jim Whitcomb and Mr. Charles Perry
Department of the Navy
October 1, 2009
Page 4

6. **Section 4.4 Data Gap 4—Groundwater Sampling to Evaluate Petroleum Hydrocarbon Plume Stability.** The groundwater elevation contours presented on Figure 8 provide the primary basis for the placement of the proposed temporary wells. The report should provide the date that groundwater elevations were measured and provide some indication about whether historic groundwater flow directions have varied. Are the groundwater contours presented on Figure 8 indicative of typical groundwater flow directions or have there been historical fluctuations?

Additionally, we believe that it would be appropriate to install a temporary well along the leading edge of the UST 240 plume, between proposed temporary well TW-4 and former well 06-MW18. Such a well would be downgradient of former well 06-MW22, where elevated concentrations of TPH were detected in groundwater.

Finally, the last paragraph of this section indicates that groundwater plume stability will be evaluated by preparing time-series plots depicting chemical concentrations over time. However, Section 5.2.5 indicates that the temporary wells will only be left in place until one round of validated data are collected. How will time-series plots be developed with only one round of data?

7. **Section 5.2.5 Groundwater Sample Collection.** The text does not discuss whether the temporary wells will be developed prior to sample collection. However, SAP Worksheet 11.4 does mention well development. Please discuss well development and the methods to be used in section 5.2.5. Additionally, the text states that screen lengths may be approximately 12 feet long whereas SAP Worksheet 11.4 states that well screens will be no longer than 10 feet. Please resolve the discrepancy. We encourage the use of shorter well screens.
8. **Section 5.2.7 Soil Boring and Well Abandonment.** It is unclear whether temporary well construction materials will be removed prior to backfilling with cement-bentonite grout.
9. **Section 5.3 Test pit Excavation and Sampling.** The section should describe the measures that will be taken to ensure that backfilled test pits are adequately compacted.
10. **Figures 5 and 6.** It is not clear whether previous samples were analyzed for petroleum-related VOCs and PAHs. Most posted sample results are for TPH and it is not clear whether (1) samples were not analyzed for VOCs and PAH or (2) samples were analyzed for VOCs and PAHs and concentrations were below screening levels.
11. **SAP Worksheet 11.3.** Based on information presented under Step 7 of this table, it appears that soil vapor samples will only be analyzed for VOCs (including naphthalene). It is common practice to analyze soil vapor samples at petroleum



Mr. James B. Sullivan, Mr. Jim Whitcomb and Mr. Charles Perry
Department of the Navy
October 1, 2009
Page 5

release sites for TPH and the Water Board has developed TPH environmental screening levels for soil vapor samples. We believe that it is appropriate to analyze soil vapor samples for TPH.

12. **SAP Worksheet 15.1.** The Project Action Limit (PAL) for dioxins/furans is simply identified as "TEQ" in the worksheet. We understand how the TEQ system will be used, but what numerical action limit will be used for the calculated TEQ results?
13. **SAP Worksheet 18.1.** We have the following comments on this worksheet.
 - The work sheet indicates that sample location DX12 will be in the central portion of Site 6. However Figure 4 shows this location at the southern property boundary. Please resolve.
 - At sample location SB06, a soil sample is proposed to be collected only at a depth of 3 feet bgs. We believe that a deeper soil sample also needs to be collected at this location because elevated concentrations of TPH were detected at depths of 6 to 7 feet bgs in nearby borings 06-HP069 and 06-HP087.
 - Some borings in the UST 240 Area will have the deepest samples collected at 4.5 to 5 feet (SB01, SB04 and SB05). Borings should be advanced deep enough to assess whether there is floating product on top of the water table (which reportedly is at a depth of 5.5 feet bgs). We have previously expressed concerns about the potential for free product to remain in this area (October 14, 2005 comments on Draft Closure Report)
 - Sample locations SB01 through SB28 are being advanced to further assess the extent of petroleum impacts. The table indicates that some soil samples will only be analyzed for TPH, others will only be analyzed for VOCs and PAHs, and other samples will be analyzed for TPH, VOCs and PAHs. In the absence of a clear rationale for excluding some analyses, we believe that all soil samples should be analyzed for TPH, VOCs and PAHs.

MISCELLANEOUS COMMENT

Section 5.1.1 Permitting and Notifications. Under the list of parties to be notified of the work, the text refers to the TI Development Agency. The correct name is the Treasure Island Development Authority.



Mr. James B. Sullivan, Mr. Jim Whitcomb and Mr. Charles Perry
Department of the Navy
October 1, 2009
Page 6

We appreciate the opportunity to review the Draft Site 6 Work Plan. Feel free to contact me if you have any questions.

Sincerely yours,
AMEC GEOMATRIX, INC.

A handwritten signature in black ink that reads "Gary R. Foote". The signature is written in a cursive, flowing style.

Gary R. Foote, P.G. #5044
Principal Geologist

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cc: Mr. Michael Tymoff, TIDA
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