N00236.002471
ALAMEDA POINT
SSIC NO. 5090.3

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

June 20, 2005

Mr. Thomas L. Macchiarella
Southwest Division Naval Facilities Engineering Command
Attn: Code 06CA.TM
1220 Pacific Highway
San Diego, CA 92132-5190

DRAFT WORKPLAN FOR REMEDIAL INVESTIGATION REPORT, ALAMEDA POINT SITE 31, ALAMEDA, CALIFORNIA

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document dated April 11, 2005. Enclosed are our comments prepared by the Geological Services Unit (GSU) and the Human Health and Ecological Risk Division (HERD). Please contact me at 510-540-3767 or mliao@dtsc.ca.gov if you have any questions.

Sincerely,

Marcia Y. Liao

Marcia Liao
Remedial Project Manager
Office of Military Facilities

Enclosure

Cc: Greg Lorton, SWDiv
Darren Newton, SWDiv
Anna-Marie Cook, EPA
Judy Huang, RWQCB
Elizabeth Johnson, City of Alameda
Peter Russel, Russell Resources
Jean Sweeney, RAB Co-Chair
Lea Loizos, Arc Ecology

Printed on Recycled Paper

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Marcia Liao, Project Manager
Office of Military Facilities
700 Heinz Avenue, Suite 200
Berkeley, California 94710

FROM: Michelle Dalrymple, PG Michelle Dalrymple
Engineering Geologist
Geologic Services Unit

REVIEWED BY: Stewart W. Black, PG
Senior Engineering Geologist
Geologic Services Unit

DATE: June 14, 2005

SUBJECT: **REVIEW OF THE DRAFT WORK PLAN FOR REMEDIAL INVESTIGATION AT IR SITE 31, ALAMEDA POINT, ALAMEDA, CALIFORNIA, DATED 11 APRIL 2005**

ACTIVITY REQUESTED

Per your request, the Northern California Geological Services Unit (GSU) has reviewed the *Draft Work Plan for Remedial Investigation at IR Site 31, Alameda Point, Alameda, California* dated April 11, 2005 (DWP). The DWP was prepared by CDM Federal Programs Corporation (CDM) for the U.S. Department of the Navy (Navy), Naval Facilities Engineering Command, Southwest Division. GSU has reviewed the DWP with respect to the technical adequacy and completeness of the approach proposed to characterize the nature and extent of contamination. Review activities consisted of reading the document and reviewing the file for background issues.

PROJECT SUMMARY

The purpose of the DWP is to present the planned approach to conducting a remedial investigation (RI) at IR Site 31. The objective of the RI is to collect and evaluate data to support remedial decisions. The specific objectives of the RI are to:

- Characterize soils to determine the nature and extent of contamination that resulted from previous activities;

- Assess the human-health and ecological risk posed by soil and soil vapors at the site;

- Evaluate whether site soils are contributing contaminants to groundwater beneath the site.

If the data indicate that the IR Site 31 is contributing contaminants to the areawide groundwater plume that exists beneath IR Site 31, then additional characterization may be required that is beyond the scope of work proposed in this DWP.

GENERAL COMMENTS

A. There appears to be incomplete and inconsistent information with respect to previous investigations conducted at IR Site 31.

- Section 2.4 of the DWP states that data were collected at IR Site 31 during seven previous investigations.
- Section 2.5 of the DWP states that five previous investigations included the collection of samples from IR Site 31.
- Section 2.4.4 of Attachment A (Sampling and Analysis Plan [SAP]) lists 17 previous investigations that have been performed "at or around" IR Site 31.
- Section 2.5 of Attachment A, states that four investigations have included the collection of samples at IR Site 31.

After reviewing these sections, it is not possible to determine which investigations performed "at or around" IR Site 31 yielded data that can be used qualitatively or quantitatively to develop the scope of work for the RI to be performed at IR Site 31. These inconsistencies must be resolved and a clear picture of previous investigations must be presented before GSU can concur with the sampling approach proposed in the DWP. Relevant analytical data from these investigations must be included on maps in the SAP.

Recommendation

GSU requests that discussions of previous investigations in the DWP be consistent and inclusive of all previous data obtained from IR Site 31. These discussions should include groundwater data obtained from previous wells installed by ERM in 1987 and the status of these wells. GSU requests that the dates for the 17 previous investigations listed in the SAP be provided along with a reference for each. GSU also requests that data

from previous investigations be included on maps in the SAP (see General Comment C). Finally, GSU requests that lithologic, hydrogeologic, and chemical data from all previous investigations be evaluated, discussed, and presented in the DWP.

B. GSU does not agree that data gaps do not exist for indoor air. It appears that only limited indoor air sampling has been performed at IR Site 31. Indoor air samples were apparently collected at 30 of the 160 housing units at IR Site 31 in approximately 1993 when the houses were first built. It is the opinion of GSU that additional indoor air sampling should be performed at the residential housing units that exist over the areawide volatile organic compound (VOC) plume to determine whether any changes in indoor air concentrations have occurred over the past 12 years that may result in unacceptable risks. Groundwater conditions beneath the site have changed. It is possible that subsequent upward migration of vapors from groundwater has resulted in an accumulation of vapors beneath the building foundations that would result in higher indoor air concentrations with time. The best way to obtain reliable information regarding risks to on-site receptors is through the collection of periodic indoor air samples. GSU understands that the houses were built over a "vapor barrier." However, GSU questions how the barrier was designed and if it can be demonstrated that the integrity of this barrier has not diminished over time (see Specific Comment No. 11).

Recommendation

GSU recommends that the Navy collect periodic indoor air samples from select homes located over the VOC plume at IR Site 31. These data can be compared to the indoor air concentrations estimated from the Johnson & Ettinger (J&E) modeling to serve as a check on the reliability of the modeling results.

C. GSU cannot concur with the proposed sampling locations for soil and groundwater presented in the DWP without further information. First of all, comprehensive maps of soil, soil gas, and groundwater data from previous investigations have not been included in the work plan (see General Comment A and Specific Comment No. 12). These maps are critical to determine where previous contamination has been found and where data gaps may exist. In addition, the rationale for the proposed soil and groundwater sampling locations is not adequately described or discussed (see Specific Comment Nos. 13 and 16).

Recommendation

GSU requests that the rationale for the spatial distribution of soil and groundwater sampling locations be discussed in greater detail in Section 4 of the SAP. Please include the analytical results from previous investigations and the locations of historical site features in determining proposed sample locations.

SPECIFIC COMMENTS

1. Section 1.1 – Purpose and Objectives and Attachment A, Section 1.2 – Investigation Objectives. These sections mention that the results of previous investigations indicate that polynuclear aromatic hydrocarbons (PAH) contamination is present at IR Site 31. It should also be noted that the results of earlier investigations (ERM 1987 and 1988) indicate the possible presence of metals contamination in soil as well. **Please include a reference to the ERM investigations in this section and briefly summarize the findings (see General Comment A).**

2. Section 1.1 – Purpose and Objectives and Attachment A, Section 1.2 – Investigation Objectives. The stated purpose of the RI in these sections does not include an assessment of ecological risks posed by the site. **Please add this component of the RI to these sections.**

3. Section 1.2 – Scope of the Remedial Investigation. It is stated that the scope of the RI is to define the nature and extent of non-PAH organics and inorganics in the soil within the IR Site 31 boundaries. However, previous investigations performed at IR Site 31 indicate that PAH contamination may be present. **GSU recommends that this section clarify that the RI will incorporate data from previous investigations to evaluate the nature and extent of PAH contamination, as well as non-PAH organics and inorganics. It should be stated that useable data from all previous investigations will be combined with data from this RI to evaluate human-health and ecological risks.**

4. Section 1.2 – Scope of the Remedial Investigation. **GSU requests another component be added to the scope of the RI which is to evaluate the fate and transport of contaminants in soil.**

5. Figure 1-2 – Site Location Map. GSU finds the legend on this figure to be misleading. The solid black line used to illustrate the IR site boundary only surrounds IR Site 25. **GSU recommends revising this figure to highlight IR Site 31. See also Figure 1-2 in Attachment A.**

6. Section 2.1 – Site Description and Attachment A, Section 2.2 – Site Description. It is unclear how it was determined that approximately 50 percent of IR Site 31 is "open space." In viewing Figure 2-1, *Site Features Map*, it appears that the site is used almost entirely for residential housing. **Please clarify. Also, please add the outline of removed Warehouse 369 to the site features map and label removed buildings 172 and 369 on the map.**

7. Section 2.2 – Alameda Point Description and Site History and Attachment A, Section 2.2 – Site Description. **Please add the timeframe in which Building 172 and Warehouse 369 were demolished based on the aerial photograph review.**

8. Section 2.5.1 – Soil Sampling and Attachment A, Section 2.5.1 Soil Sampling. These sections do not state whether the two soil samples collected during the Environmental Baseline Survey (EBS) are considered usable for the RI. **Please clarify.**

9. Section 2.5.2 – Groundwater Sampling and Attachment A, Section 2.5.2-Groundwater Sampling. GSU questions why groundwater data from the prior ERM investigations (1987 and 1988) are not included in these sections. **Please include a discussion of these data and whether or not they are considered useable for the purposes of this RI.**

10. Section 2.5.2 – Groundwater Sampling and Attachment A, Section 2.5.2 Groundwater Sampling. These sections state that quarterly groundwater sampling as part of the basewide monitoring program included three wells on IR Site 31 since 2002. In the following sentence it is stated that in 2004, there were a total of six monitoring wells on-site that were sampled for VOCs as part of the ongoing quarterly basewide monitoring program. This statement references *Shaw 2003*. (Please note that *Shaw 2003* is not provided in the reference list for the work plan.) Based on a review of Table 4-3 in the SAP, it appears that three new monitoring wells were installed at IR Site 31 in May 2004. **Please clarify the information regarding the installation and sampling of these new wells. Please also provide a reference for this information.**

11. Section 2.5.4 – Indoor Air Sampling, and Attachment A, Section 2.5.4 - Indoor Air Sampling. GSU disagrees that the summary of data and past evaluations of indoor air presented in these sections are sufficient to conclude that there is no data gap that needs to be addressed for indoor air. It is stated in these sections that, at the time of indoor air sample collection, the units were newly constructed. The housing units at IR Site 31 were constructed in approximately 1993. GSU questions whether these were the only indoor air samples historically collected from homes located over the VOC plume at IR Site 31. Since the upward migration of contaminant vapors from groundwater may have resulted in the

subsequent accumulation of vapors beneath the building foundations at IR Site 31, it is possible that indoor air concentrations may have increased with time. In addition, based on the discussion of MTBE results in indoor air samples collected in the North Housing, GSU questions whether seasonal sampling of indoor air should be performed. **GSU recommends that the Navy collect periodic indoor air samples from select homes located over the VOC plume at IR Site 31 (see General Comment B).**

It is also stated in this section that vapor migration from groundwater is unlikely because the Marina Village housing units were constructed with vapor barriers. **Please clarify why vapor barriers were determined to be necessary, how the vapor barriers were designed, and whether it can be demonstrated that the barriers have remained intact and will continue to remain intact given the nature of the subsurface fill materials at IR Site 31 and potential for subsidence.**

12. Attachment A, Section 2.4 – Previous Investigations at IR Site 31. Two figures referenced in this section are missing from the DWP. The two missing figures were intended to present the analytical results of previous soil gas, soil, and groundwater samples collected at IR Site 31. **Please include figures summarizing the analytical results of previous soil gas, soil, and groundwater sampling. GSU cannot evaluate the adequacy of the proposed sampling approach without a spatial representation of the sample results from all previous investigations (see General Comments A and C).**

13. Attachment A, Section 4.1.1 – Soil Sampling and Analysis. The rationale for the proposed soil boring locations is not explained. It is not clear why 15 of the 50 proposed soil borings are planned to be located immediately adjacent to previous locations and why a modified sampling grid is proposed for the remaining 35 soil borings. Also, GSU questions whether the locations of former Warehouse 369 and Building 172 were used in scoping the investigation and selecting sample locations. It appears that several soil borings are proposed within the footprint of the former warehouse. Finally, it is the opinion of GSU that samples should be collected along the eastern site boundary, adjacent to the former DRMO scrapyard, to determine if contamination has migrated from this area to IR Site 31. **Please clarify the rationale for the proposed soil sampling locations. Please also clarify how it was determined that the proposed sampling grid is sufficient to adequately characterize the nature and extent of chemicals in soil at the site for the purposes of the risk assessment. GSU requests that the locations of former buildings at the site and the DRMO scrapyard, immediately east of the site, be considered in designing the sampling strategy.**

14. Section 4.1.2 – Groundwater Sampling and Analyses. It is the opinion of GSU that all available data from the basewide groundwater monitoring program for IR Site 31 wells should be used to assess consistency with the areawide plume, not just data from the 2004 quarterly sampling as proposed. **Please consider using all historical groundwater data available for the site to evaluate whether a site-specific release of contamination has occurred.**

15. Section 4.1.2 – Groundwater Sampling and Analyses. This section refers to portions of the aquifer beneath IR Site 31 that occur above and below a "silty clay interbed." GSU questions how it was determined that a silty clay interbed exists beneath IR Site 31. **Please clarify.**

16. Section 4.1.2 – Groundwater Sampling and Analyses. The rationale for the 10 proposed discrete groundwater sample locations is not presented or discussed. **Please include rationale for the 10 proposed discrete groundwater sample locations and describe how data from these locations will be sufficient to determine whether there has been a chemical release to groundwater that is unique to IR Site 31. Also, since groundwater samples are to be used as input for the J&E model, a certain number of groundwater samples should be collected from areas where the highest concentrations of VOCs are expected to occur and should not be collected from low permeability materials that will result in a high degree of volatile losses.**

17. Section 5.1 – Field Methods and Procedures. **Please include a subsection to describe the methods and procedures that will be used for the collection of discrete groundwater samples.**

If you have any questions, please feel free to contact me at (510) 540-3926 or via e-mail at mdalrymp@dtsc.ca.gov.

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

1011 North Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Marcia Liao, DTSC Project Manager
OMF Berkeley Office
700 Heinz Street, Second Floor
Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.
Staff Toxicologist, HERD
1011 North Grandview Avenue
Glendale, CA 91201

DATE: June 20, 2005

SUBJECT: NAVAL AIR STATION ALAMEDA (ALAMEDA POINT) DRAFT WORK PLAN FOR IR SITE 31 SAMPLING
[SITE 201209-18 PCA 18040 H:16]

BACKGROUND

HERD reviewed the document titled *Draft Work Plan for Remedial Investigation at IR Site 31, Alameda Point, Alameda, California* dated 11 April, 2005. This document was prepared by CDM Federal Programs Corporation of San Diego, California. The review of this draft work plan (WP) is in response to your request transmitted via electronic mail on June 8, 2005.

Installation Restoration (IR) Site 31 was designated an IR site because groundwater beneath the site is impacted by an area-wide Volatile Organic Compound (VOC) plume containing benzene, naphthalene and chlorinated VOCs beneath IR Site 31 and surrounding areas, some of which are also IR sites. Area-wide human health impacts associated with the VOC groundwater plume were addressed in the IR Site 25 Human Health Risk Assessment (HHRA). IR Site 31, now called Marina Village Housing, was historically used for storage and warehousing on portions of the site from 1950 to 1990. There is no documented spill or release at IR Site 31, however previous investigations report that IR Site 31 soil may be impacted by polycyclic aromatic hydrocarbons (PAHs).

NAS Alameda was an active naval facility from 1940 to 1997. Operations included aircraft, engine, gun and avionics maintenance; fueling activities; and metal plating, stripping and painting.

GENERAL COMMENTS

The focus of the Draft Work Plan is solely the number, placement and analysis of soil and groundwater samples. Several critical issues (e.g., Quality Assurance/Quality Control criteria which determined whether previous sample results were or were not usable for risk assessment and any proposed statistical testing for 'ambient') which would normally be included in a Sampling and Analysis Plan (SAP) are not included in this Draft Work Plan. These issues will need to be addressed prior to development of the IR Site 31 HHRA and screening Ecological Risk Assessment (ERA).

SPECIFIC COMMENTS

1. Health effects related to PAHs in soil and groundwater will be incorporated in the IR Site 31 HHRA based on previous sampling results which focused solely on PAHs (Section 1.2, page 1-3). Since the initiation of this most-recent PAH investigation, naphthalene has been classified as a carcinogen via the inhalation route by the Office of Environmental Health Hazard Assessment (OEHHA). Naphthalene must be included in the calculation of incremental cancer risk via the inhalation pathway. HERD defers to the DTSC Project Manager to determine whether the PAHs at IR Site 31 are adequately characterized by the 648 soil samples collected from 163 borings (Section 2.5, page 2-4) in the most recent PAH investigation. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.

2. DTSC has released Interim Final Guidance covering sampling for and evaluation of indoor air exposure (DTSC, 2004). This guidance includes the same recommendation of 5 feet below ground surface (bgs) as the initial depth for any soil gas measurement and therefore is in agreement with the referenced soil vapor guidance from the U.S. EPA and California Regional Water Quality Control Board and with the proposal to collect groundwater samples due to the shallow IR Site 31 groundwater. The proposed evaluation of the IR Site 31 vapor intrusion pathway should be in conformance with this DTSC guidance.

3. Please indicate in the discussion of the investigations of the Naval Air Station Alameda Supply Annex warehouse area whether the recommendation for 'replacing the top 6-inches to 1-foot of soil' (Section 2.2, page 2-2) was ever completed.

4. Quarterly groundwater sampling, including three wells in IR Site 31, has been completed as part of the base-wide monitoring program since 2002 (Section 2.5.2, page 2-5). Please provide the rationale for proposing that the groundwater

concentrations, used as characteristic of the IR Site 25 area-wide groundwater, should be restricted to the 2004 quarterly groundwater data (Section 2.5.2, page 2-5 and Attachment A, Section 2.5.2, page 2-10). A single recent event of groundwater sampling should be used as characteristic of area-wide groundwater only in the event that groundwater concentrations are stable or steadily decreasing over time.

5. The IR Site 25 groundwater plume is referred to as a 'benzene plume' in the text (Section 2.5.2, page 2-5 and Attachment A, Section 2.4.5, page 2-9) and 'dissolved phase benzene' (Attachment A, Section 2.4.2, page 2-7). The Data Quality Objectives (DQO) tables (Table 3-1, Step 1 and Attachment A, Table 3-1, Step 1) refer to a 'benzene and naphthalene plume'. The plume should be referenced as a 'benzene and naphthalene' plume if both VOCs are present at significant risk-based concentrations, especially given the designation of naphthalene as carcinogenic via the inhalation route of exposure by OEHHA. The OEHHA inhalation unit risk is $3.4 \times 10^{-5}/(\mu g/m^3)$ and the OEHHA inhalation cancer slope factor is 1.2×10^{-2} $(mg/kg/day)^{-1}$ (http://www.oehha.ca.gov/air/hot_spots/naphth.html).

6. HERD defers to the DTSC Geological Services Unit (GSU) regarding the stipulation that the vertical boundary for the IR Site 31 groundwater requiring evaluation is 24 feet below ground surface (bgs) (Table 3-1, page 3-5, Step 4, third bulleted item).

7. Please amend the reference to the sample evaluation process to Attachment A, Section 4.2 (Table 3-1, page 3-5, Step 5 and Step 6). The main body of the text contains no Section 4.2 and the sample evaluation criterion are listed in the text of Attachment A at Section 4.2.

8. Characterization of soil gas measurements, conducted as part of the 1992 Remedial Investigation (RI) of IR Site 2, from the HHRA as unusable (Attachment A, Section 2.5.4, page 2-11) based on elevated detection limits is unreasonable. Contaminants which are detected are obviously present even if elevated detection limits cause some samples to be reported as Non-Detect (ND) at elevated concentrations. The detected soil gas concentrations from the 1992 IR Site 2 investigation should be used in the HHRA.

9. The soil sampling outline (Attachment A, Section 4.1.1, page 4-1) does not indicate whether a soil sample collected for chemical analysis will be a composite sample in the depth intervals listed or a discrete sample at some depth within the range specified (e.g., 2 to 4 feet bgs). HERD favors composite samples in smaller depth intervals over composites over larger depth intervals. However, observations during sampling (e.g., soil staining or the presence of scrap materials) may also alter planned sampling depths. Please be more specific in the sampling plan within each boring.

10. The process outlined for the ERA (Attachment A, Section 4.2.2, page 4-7) is acceptable given the lack of significant terrestrial habitat due to current residential land use. However, all the toxicity criteria used to develop the required chemical detection limits (Attachment A, Table 6-2) are related to human health effects. There would appear to be no on-site exposure pathway to IR Site 31 groundwater for ecological receptors. A comparison of terrestrial ecological screening criteria (e.g., EPA Ecological Soil Screening Levels [EcoSSLs] or Oak Ridge National Laboratory Ecological PRGs) to proposed chemical detection limits for soil should be made and detection limits specified to meet these ecological criteria where technically feasible.

11. The U.S. EPA Region 9 residential-use soil Preliminary Remediation Goals (PRGs) (Attachment A, Table 6-2) were checked at random and those checked, with the exception of naphthalene outlined above, are correct.

CONCLUSIONS

Two issues are noted which affect the sampling itself: 1) whether and/or how composite samples will be collected within the soil depth intervals described and the definition of any composite samples, and; 2) analytical techniques with sufficient detection limits to evaluate ecological hazard related to IR Site 31 soils. These issues should be resolved prior to mobilization for soil sampling.

Several other issues regarding the carcinogenicity of naphthalene, data sources for the HHRA and evaluation of the chemical analytical results produced by this sampling for the HHRA and ERA can be resolved prior to development the respective risk assessments.

REFERENCE

DTSC, 2004. INTERIM FINAL GUIDANCE FOR THE EVALUATION AND MITIGATION OF SUBSURFACE VAPOR INTRUSION TO INDOOR AIR. December, 15, 2004, (Revised February 7, 2005). (http://www.dtsc.ca.gov/ScienceTechnology/HERD_POL_Eval_Subsurface_Vapor_Intrusion_interim_final.pdf).

HERD Internal Review: Michael Anderson, Ph.D.
Staff Toxicologist

cc: Sophia Serda, Ph.D.
U.S. EPA Region IX (SFD-8-B)
75 Hawthorne Street
San Francisco, CA 94105

Ned Black, Ph.D., BTAG Member
U.S. EPA Region IX (SFD-8-B)
75 Hawthorne Street
San Francisco, CA 94105

Ms. Beckye Stanton, BTAG Member
California Department of Fish and Game
1700 K Street, Room 250
Sacramento, CA 94244-2090

Charlie Huang, Ph.D., BTAG Member
California Department of Fish and Game
1700 K Street, Room 250
Sacramento, CA 94244-2090

Laurie Sullivan, M.S., BTAG Member
National Oceanic and Atmospheric Administration
c/o U. S. EPA Region 9 (H-1-2)
75 Hawthorne Street
San Francisco, CA 94105-3901

Naomi Feger, BTAG Member
Judy Huang
San Francisco Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612