UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

March 16, 2004

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: EPA Review Comments on 60% Design Submittal and Pre-Design Investigation Technical Memorandum, Shallow Groundwater Unit Remedy, IRP Site 24, Former MCAS El Toro, dated January 30, 2004

Dear Mr. Piszkin:

EPA has reviewed the above-reference document in support of the remedial design for the shallow groundwater plume at IRP Site 24. The enclosed comments elaborate on issues which were raised at the at the March 3rd conference call. Our primary comments relate to continued use of Soil Vapor Extraction to enhance groundwater cleanup and performance monitoring of the groundwater.

If you have questions, please call me at (415) 972-3012.

Sincerely,

Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

cc: Karnig Ohannessian, SWDIV
John Broderick, RWQCB
Tayseer Mahmoud, DTSC
Marcia Rudolph, RAB Subcommittee Chair
Robert Woodings, RAB Co-Chair
Herb Levine, EPA

Comment on Pre-Design Investigation Technical Memorandum

As we indicated on the teleconference on March 3rd, we do not concur with the Navy's conclusions that SVE is not a cost-effective remedial enhancement option. The Navy concludes that there is an insufficient concentration of volatile organic compounds (VOCs) in the dewatered region of the Site 24 aquifer to make Soil Vapor Extraction (SVE) in this zone worthwhile. The concentration of VOC in the soil gas in the dewatered zones varied between 4 and 30 ug/l whereas the concentration of TCE alone in the air above groundwater impacted at a concentration of 500 ug/l (aqueous) should be in the vicinity of 200 ug/l (vapor). Even at the extremely low flow rate induced at well 24EX6OB2 (73 standard cubic feet per minute) for the vacuum (10.5 inches of mercury vacuum) and the low VOC concentrations, a single SVE well at 24EX6OB2 would still be removing about the same amount of VOC mass from the site that the entire shallow groundwater unit (SGU) groundwater extraction system will be (35 wells)[1] at considerably lower cost. In addition, cleaning up the dewatered zone in the aquifer cannot be accomplished by groundwater extraction. Hence, when the groundwater pumps are turned off and the groundwater table returns to its previous level, the groundwater will be reimpacted by the residual VOCs in the dewatered zone and may require further groundwater extraction. We recommended that the Navy reconsider the use of SVE as a groundwater cleanup system enhancement once the SGU groundwater extraction system is installed and operating, at least in the three known hot spots.

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[1]At 400 gpm and 100 ug/l TCE, the SGU system will extract about 80 kilograms of TCE per year. At 73 scfm and 28 ug/l TCE, an SVE system at 24EX6OB2 would remove about 30 kilograms of TCE per year. However, we expect that the vapor flow rates would be much higher once the residual water in the dewatered zone is extracted and the air permeability of the soils increases. In addition, we expect the concentration of TCE in the dewatered zone to be higher than 28 ug/l.

Comments on 60 Percent Design Submittal

GENERAL COMMENTS

1. More information and detail regarding performance monitoring for the groundwater at Site 24 should be provided in the 90% design submittal. Performance Monitoring is critical as it will help determine whether the groundwater extraction system is operating as expected. Locations of wells to be used for performance monitoring and frequency of monitoring should be discussed in detail with the BCT and appropriate technical staff. We suggest a working meeting be held to discuss performance monitoring prior to submittal of the 90% design. Please refer to EPA's guidance document titled, "Methods for Monitoring Pump and Treat Performance" (EPA/600/R-94/123 June 1994) when developing the performance monitoring plan. The document can be found at http://www.epa.gov/oerrpage/superfund/resources/gwdocs/per_eva.htm.

2. Navy agreed to change the design in response to EPA's comments on the 30% design, however many of the responses to comments will not be incorporated into the design until the 90 percent submittal. This is acceptable, however the comments made on the 30% design and associated responses should be included as appendices once again in the 90% design.

3. Given that the site boundary wells will be started up before the on-base wells, the Navy should consider placing a check valve in the system between the two groups of wells to avoid pressurizing the system up stream of the base boundary wells.

SPECIFIC COMMENTS

1. **Section 5.2, Startup, Page 5-6:** Startup and operation of the groundwater extraction system will have to be coordinated with the Irvine Ranch Water District Irvine Desalter Project (IDP) plant operators. In particular, testing of whether shutdown signals from the IDP plant will shut down the groundwater extraction system should be verified during initial startup of the groundwater extraction system. Please include in the 90% design submittal

2. **Appendix D, Material Selection Report for Conveyance Piping, Section D3.2, Non-Mechanical Joints, Page D-4:** The report indicates that mechanical joints are not suitable for underground piping because of the difficulty of inspection. Most water utilities require that underground PVC pipe be joined mechanically because of the undesirability of contaminating the water being conveyed by the pipe with the solvent used in the joint. Solvent contamination of Site 24 extracted groundwater would also cause problems for the Navy even though the water will eventually undergo air stripping to remove volatile compounds. Please provide further support for the statement that mechanical joints are unreliable and, if possible, indicate that solvent-cementing will not be allowed. If neither mechanical joints nor solvent-cementing is allowable, then PVC

piping is probably not feasible for this project (though it was selected for main aquifer and potable water extraction well conveyance systems). The installation costs for PVC and HDPE pipe appear to be reversed in Table D-6, which may have influenced the decision to select HDPE over PVC.

3. **Appendix F, Design Specifications, Section 02300, Earthwork, Page 5:** The requirements for testing soils brought on to the site for use as fill include toxicity characteristic leaching potential (TCLP) testing, but do not specify the analyses to be run on the leaching extract nor are criteria provided to allow acceptance of the fill based on these analyses. If all of the applicable TCLP tests are run on a sample collected from every 1000 yd^3 of soil brought on to the site to provide assurance that the soils are not characteristically hazardous the cost will be extremely high and it is not clear that the results would be acceptable (even if the material is not characteristically hazardous, it might not be appropriate fill). While analyzing fill for "metals" is appropriate, the specification should list the metals to be analyzed for and provide acceptance criteria. Please reconsider the proposed quality criteria for clean fill.

4. **Appendix F, Design Specifications, Section 02300, Earthwork, Page 7:** Drawing C-11 indicates the buried pipe will be placed in a trench 3.5 feet wide, whereas the specification requires that the trench not be more than 2.5 feet wide (for 6 inch diameter buried pipe). Please revise the design to resolve this discrepancy.

5. **Appendix F, Design Specifications, Section 02525, Extraction Wells:** California Well Standards published by the California Department of Water Resources require that wells to be used for domestic production be disinfected. The standards also require that the gravel pack incorporate some form of disinfectant. It is recognized that the water to be extracted from these wells is not intended for domestic purposes and that some disinfectants may be incompatible with the reverse osmosis membranes. However, as biofouling of wells at El Toro has been an issue in the past and as the treatment train for the extracted water will not remove all pathogenic organisms (some water bypasses the reverse osmosis system), the Navy may wish to consider disinfecting the extraction wells during installation. Similarly, allowing well vault water to drain into the well casings, through 1/4 inch diameter holes drilled in the casing, may not be a good idea from either a sanitary or well maintenance viewpoint.

6. **Appendix F, Design Specifications, Section 02559, Vaults and Piping and Equipment in Vaults, Page 3:** The specification indicates that the well vaults will be equipped with sump pumps and the well vault piping with strainers, though these pumps and strainers are not shown on the mechanical drawings. Please revise the design to resolve these discrepancies.

7. **Appendix F, Design Specifications, Section 11211, Pumps, Page 2:** The pump efficiency requirements in Section 1.2.3 are probably impossible to meet for the groundwater extraction well pumps given the complex nature of the system. As the pumps were selected in Appendix E, the specifications should probably be revised to specify those pumps (or equivalent).

8. **Appendix F, Design Specifications, Section 15200, Conveyance Pipelines, Pages 9 and 10:** The specification indicates that above ground joints in PVC pipes will be solvent-cemented. If at all possible, these joints should be elastometric mechanical joints as the solvent may impact the extracted water at detectable levels which may confound understanding of groundwater conditions.

RESPONSE TO COMMENTS ON 30% DESIGN

1. The response to Specific Comment 6 indicates that there is no need for double-contained piping as, "...the results of toxicity tests performed on the IRP Site 24 groundwater shows it to be non-toxic."

   Section 66261.24(a), Characteristic of Toxicity, of Title 22 of the California Code of Regulations indicates that there are five criteria for determining if a waste is characteristically hazardous (one of them being fish toxicity) and the waste is hazardous if any of the criteria are met. In the case of Site 24, any groundwater extracted with trichloroethylene (TCE) concentrations in excess of 500 ug/l would be a characteristic hazardous waste. Please address this issue

ERRATA

1. The first sentence in the second paragraph of Section 3.4.1 appears to have been garbled during editing.

2. **Appendix F, Design Specifications:** Section 02120 references a Bechtel standard operating procedure on page 1. This should probably be replaced with the equivalent Earth Technology standard operating procedure.

3. **Appendix F, Design Specifications, Section 02559, Vaults and Piping and Equipment in Vaults, Page 4:** It is unclear what, "The pressure transmitter shall have a minimum pressure of 150 psig." means. Also, the well vault should be in accordance with Section 3410 (Precast Structural Concrete) rather than Section 3300 (Cast-In-Place Concrete).