



January 21, 1997

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 MCAS EL TORO
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Department of
 Toxic Substances
 Control

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Mr. Joseph Joyce
 BRAC Environmental Coordinator
 U.S. Marine Corps Air Station - El Toro
 P. O. Box 95001
 Santa Ana, California 92709-5001

James M. Strock
 Secretary for
 Environmental
 Protection

**COMMENTS ON AQUIFER TEST REPORT, SITE 24, OPERABLE UNIT (OU)-2A,
 MARINE CORPS AIR STATION (MCAS) EL TORO**

Dear Mr. Joyce:

The Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB) have reviewed the above subject document dated November 26, 1996, prepared by Bechtel National, Inc. The report presents the results of the aquifer testing at Site 24, the Volatile Organic Compounds (VOCs) Source Area portion of OU-2A.

This letter is to transmit the enclosed DTSC comments on the report. The RWQCB does not have significant comments on the document. If you have any questions, please call me at (310) 590-4891.

Sincerely,

Tayseer Mahmoud
 Remedial Project Manager
 Base Closure Unit
 Office of Military Facilities
 Southern California Operations

Enclosure

cc: Mr. Glenn Kistner, SFD-8-2
 Remedial Project Manager
 U. S. Environmental Protection Agency
 Region IX
 Federal Facilities Cleanup Office
 75 Hawthorne Street
 San Francisco, California 94105-3901



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cc: Mr. Lawrence Vitale
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Mr. Pat Brooks
Bechtel National, Inc.
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Mr. Andy Piszkin
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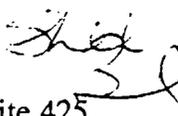
MEMORANDUM



Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

TO: Mr. Tayseer Mahmoud
Office of Military Facilities
Base Closure Unit
245 West Broadway, Suite 425
Long Beach, California 90802

FROM: Sherrill Beard, CHG 
Geologic Services Unit
245 West Broadway, Suite 425

DATE: January 17, 1997

SUBJECT: Comments on "Aquifer Test Report Marine Corps Air Station El Toro, California"

The Geologic Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) has reviewed the document entitled "Aquifer Test Report Marine Corps Air Station (MCAS) El Toro, California" (Report), dated November 24, 1996. The Report was prepared by Southwest Division, Naval Facilities Engineering Command, in conjunction with Bechtel National, Inc. (Bechtel).

Per your request, GSU staff reviewed the Report which includes two constant discharge pumping tests conducted on well 24EX1 and an injection test conducted on well 24IN1 at Site 24 and one constant discharge pumping test conducted on well 24EX2. The aquifer tests were performed to evaluate 1) sustainable extraction and injection rates, 2) radius of influence, and 3) hydraulic characteristics of the shallow groundwater unit.

General Comments and Recommendations

1. Section 1.2, Purpose, page 1-1

Although the format of the Report is acceptable, data collected during the aquifer tests does not satisfy the purposes stated in the Report. Maximum sustainable extraction yield was not determined (include tables showing extraction and injection yields in the body of the report),



hydraulic conductivities are calculated using estimated transmissivities which are often based on insufficient and non-interpretable test data, subsequently, resulting in unreliable radius of influence estimates (Section E2.6, Radius of Influence Estimates). GSU suggests the pumping duration of future extraction tests be increased and the pumping rate decreased, which would provide adequate data to calculated aquifer properties.

Additionally, results obtained from the more distant monitoring wells would be improved by increasing the pumping period. If long term pump tests are preformed several weeks prior to starting extraction from the monitoring wells or future extraction wells, and water levels are monitored in surrounding wells, estimates of transmissivity and storativity for the site will be more accurate. This information will be necessary to design a permanent extraction system.

2. GSU suggests a trouble shooting flow chart be developed addressing common problems which occur during the process of conducting a pump test. The chart should be incorporated into Bechtel's Standard Operating Procedure 14 (Aquifer Testing). The flow chart would guide the technical field crew through common problems which arise in the field during aquifer pump testing.
3. Capture zone analysis should be included in the report as a primary purpose for the aquifer test. The capture zone width and distance down gradient to the stagnation point should be calculated. Also, figures showing the various capture zones should be submitted.
4. As determined during the remedial investigation, most of the groundwater contamination is located in the upper part of the aquifer. Therefore, since the extraction system will focus on the contaminated portion of the aquifer, the screened intervals of additional extraction and observation wells should be placed in the upper section of the shallow groundwater aquifer.
5. A technical meeting should be scheduled prior to installing additional extraction and observation wells.

Specific Comments

1. **Section 1.5, Hydrogeologic Conditions, page 1-11**

Include waterlevel data which supports the conclusion that the shallow aquifer is unconfined. This information will support the selection of the analytical methods that are used to interpret the data generated from the aquifer test.

2. **Section 3.3.1, Well 24EX1 Test Description, page 3-3**

The purpose of step-drawdown tests are to determine an optimum sustainable discharge rate low enough to prevent pumping the extraction well dry before the end of the aquifer test. This rate was determined as 20 gpm for Well 24EX1. The *Report* attributes the inability for the well to produce 20 gpm throughout the duration of the initially planned three day pump test to a boundary condition. Well 24EX1 has a 100 foot screen, the observation wells were only slightly effected, and the cross-section presented on Figure 5-1 show the lithology to be mostly coarse-grained (sand). Provide a sufficient description in the conceptual model which would reflect a depositional environment capable of producing a boundary condition given the screen length of the extraction well. Additionally, provide the constant-rate drawdown data for Test No.2 (as shown for Test No.1 on Figure 5-2), which should also reflect the same boundary condition. appropriately designed step-drawdown test data may show extraction wells should be pumped at a lower discharge rate to sustain drawdown levels without pumping the extraction well dry.

3. **Section 4.3, Drawdown, Buildup, and Recovery Test Calculation, Tables 4-3 through 4-6**

Please clarify what is meant by "average" hydraulic conductivity.

4. **Appendix E**

The organization of Appendix E is confusing. The title of the appendix is "Aquifer Test Analytical Methods". The reviewer would expect generic description of the test methods used for the aquifer tests. There is a generic description of the Neuman method and the Theis recovery method, and then there is a description of the Cooper-Jacob method and

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the Dupuit-Forschheimer well discharge formula, both of which include site specific information. Appendix E should be rewritten to reflect a consistent (either site specific or generic) approach for each of the analytical methods utilized during the process of analyzing the data.

5. **Appendix E, Section E2.6 Radius of Influence Estimates, page E-6**

Radius of influence estimates are presented as a primary purpose for performing aquifer tests at the site. GSU suggest incorporating this section of Appendix E into the body of the report.

This concludes our comments. If you have any questions, please contact Sherrill Beard at extension 5528.

Reviewed by: Theodore Johnson, CHG
Geologic Services Unit



cc: Karen Baker, CEG, CHG, Southern California Region
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