



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

M60050\_003809  
MCAS EL TORO  
SSIC NO. 5090.3.A

January 13, 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: Draft Final UNSAT-H Modeling Report for IRP Sites 2 and 17 Landfill Covers, Former MCAS El Toro, dated December, 2003

Dear Mr. Piszkin:

EPA has reviewed the Navy's Technical Memorandum dated December, 2003, which summarizes updated modeling results for the landfill covers at IRP Sites 2 and 17. As our enclosed comments elaborate upon, we are concerned with the input parameter used in the model to characterize the amount of liquid that will infiltrate through the State Prescriptive Cover. Given that the Navy on page 6-1 of the tech memo makes the statement that the modeling described in the tech memo demonstrates that any of the modeled soils would meet the substantive requirements for the engineered alternative to the state prescriptive, we believe that it is critical that we all agree that the appropriate input parameter is being used in the model.

Please call or send an e-mail to set up a time to discuss these concerns.

Sincerely,

A handwritten signature in black ink that reads "Nicole G. Moutoux".

Nicole G. Moutoux  
Project Manager

cc: John Broderick, RWQCB  
Rafat Abbasi, DTSC  
Gordon Brown, SWDIV  
Content Arnold, SWDIV

received  
4/20/04

**Review of the Draft Final Technical Memorandum  
UNSAT-H Modeling for Site 2 and Site 17 Landfill Covers  
Former Marine Corps Air Station, El Toro, California,  
December 2003**

**GENERAL COMMENT**

1. As the Regional Water Quality Control Board has noted in prior correspondence and meetings, blending a fat clay with a silty loam in order to achieve the appropriate permeability will require a considerable amount of effort. Please note that it will be necessary for the Navy to have tight quality control during the construction and monitoring of the final landfill cover in order to ensure that the blended material will meet the required hydraulic conductivity.

**SPECIFIC COMMENTS**

1. **Section 4.3.4, Input Parameters, Page 4-6:** The technical memorandum indicates that the alpha parameter used to characterize the barrier layer of the State prescriptive final cover ( $0.01 \text{ cm}^{-1}$ ) was based on the previous technical memorandum prepared by others. This alpha value is 10 to 100 times higher than any of the alpha values determined by Gurdal et al. [2003] in their study of alternative landfill final cover barrier soils, most of which had higher hydraulic conductivities than the State prescriptive final cover soil. We would therefore expect that the actual alpha parameter for the state prescriptive final cover barrier layer be less than  $0.0001 \text{ cm}^{-1}$ . As the alpha parameter governs the infiltrability of the soil [Hillel, 1980], using a value at least an order of magnitude too high likely skewed the results of this modeling. Please revise the technical memorandum to incorporate more realistic values of alpha for the State prescriptive landfill final cover and provide a sensitivity analysis of the effect of alpha on infiltrability of the State prescriptive final cover covering at least the range of  $0.0001$  to  $0.01 \text{ cm}^{-1}$ .
2. **Section 4.3.4, Input Parameters, Page 4-6:** Given that the residual water content of the clay soils (LF100 and LF102) was set to zero in the numerical modeling, please set the residual water content of the barrier layer in the State prescriptive cover to zero also.
3. **Section 4.3.4, Input Parameters, Page 4-6:** It is unclear what the "loam" soil used in the UNSAT-H modeling is supposed to represent. If this soil is not representative of a soil available to the Navy for use as a final cover material at El Toro, please remove consideration of it from the technical memorandum. If the soil was provided for comparison purposes, please indicate that it is a "theoretical" soil included for comparison purposes and provide the soil index properties and USCS designation for the soil to assist the reader in understanding what they are comparing.

**ERRATA**

1. Table 4-3: Please provide the units for alpha in this table.

2. Please turn off “smoothing” in the figures.

## **REFERENCES**

Gurdal, Tayfun and Craig Benson and William Albright [2003] Hydrologic Properties of Final Cover soils from the Alternative Cover Assessment Program, Geo Engineering Report No. 03-02, University of Wisconsin, Madison, February 5.

Hillel, Daniel [1980] Introduction to Soil Physics, Academic Press, New York.