

**RESPONSE TO RWQCB COMMENTS
BASEWIDE PETROLEUM EVALUATION METHODOLOGY
DRAFT APPENDIX K PETROLEUM SITES EVALUATION
MOFFETT FEDERAL AIRFIELD**

December 15, 2000

This document presents responses to comments by the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) on the Draft Appendix K – Petroleum Sites Evaluation to the Petroleum Site Evaluation Technical Memorandum dated August 2, 2000, for Moffett Federal Airfield (MFA). Comments were received from Mr. Joseph Chou via e-mail on November 6, 2000. Comments are presented in **bold** type; responses follow in regular type.

GENERAL COMMENT

Comment 1: The most important assumptions made in this report to support the no further action recommendation are the source of petroleum had been removed and the groundwater plume is stable. These assumptions were based on groundwater and soil data collected in the past. Tank 1 was removed in 1991, Tank 32 and Tank 131 were removed in 1994 and 1995 respectively. No original information or detailed discussion can be found in this report regarding whether free products were identified at any of the three sites or not. The Navy further conducted soil and groundwater sampling in August 1999 to confirm the tanks sites are ready for closure. Most of the soil samples were with low-level petroleum concentration or below detection limits. However, all the soil samples were taken from the depths less than 5.0 feet bgs, these results may not be useful to conclude the completion of source removal or natural attenuation because the most contaminated area were found at the depth of 9.0 feet bgs.

The Navy should include the original tank removal information or, at minimum, a synopsis to clearly address the concern of remaining free products. In addition, the Navy should explain how the 1999 soil data could be used to compare with 1991 and 1995 detections.

Response: The Navy has added further information from the original tank removal report to Section 3.0 to support the statement that no free product was found at the tanks. In addition, the 1999 sample depths are comparable to the 1991 and 1995 samples because groundwater was encountered at 3 feet below ground surface (bgs) and the 1999 samples were collected at 4 feet bgs.

SPECIFIC COMMENTS

Comment 1. Page K-2, Section 2.0 Background; It is not clear to us whether free products were found at any of the three USTs discussed in this report. No complete tank removal records or detailed discussion of previous excavation activities can be found in the text to support the no free product statement in the Executive Summary.

Response: Further discussion from the original tank removal reports (Navy 1995 and ECC 1996) have been added to Sections 3.1 and 3.2 to support the statement that no free product was found at Tanks 1, 32, and 131 and that the 1999 sample depths were appropriate for the evaluation of contamination in soil and groundwater.

Comment 2. Page K-7, Section 5.0 Physical Site Characteristics; According to the State Water Resource Control Board Resolution Number 88-63, both the shallow and deep groundwater aquifers at Moffett Field, except the northeastern portion of the base, are potential drinking water sources. The San Francisco Bay RWQCB has identified the groundwater beneficial uses at Moffett Field as municipal and domestic supply in its Water Quality Control Plan (1995). Although the groundwater is not currently used as drinking water source at Moffett Field, it would not relax any regulatory requirements in protecting groundwater quality from drinking water standards.

Response: The following text will be added to Section 5.0, "Also, it is highly unlikely that the deeper drinking-water aquifers will be affected by petroleum contamination at MFA because: (1) thick, low-permeability aquitards lie between the A and B aquifers and between the B and C aquifers; (2) currently, an upward gradient exists from the C aquifer to the upper aquifers; (3) most fuel products are less dense than water; (4) the presence of silt and clay soils in the unsaturated zone will most likely inhibit migration of petroleum compounds to the water table; and (5) dissolved-phase constituents would not be expected to be found in deeper aquifers unless transported there under advective flow (TtEMI 1999). A more complete discussion of the aquifers and aquitards at MFA is included in the TM."

Comment 3. Page K-8, Section 5.0 Physical Site Characteristics; Please note that: (1) the upward gradient may be reversed for various reasons, (2) B aquifer, as a potential source of drinking water, is more vulnerable than the C aquifer, (3) NASA's ongoing redevelopment project may have a significant impact on future water uses at Moffett Field.

Response: The following text will be added to Section 5.0, "The B aquifer, immediately beneath the A aquifer, is more vulnerable to potential contamination. Groundwater in the B aquifer is not currently used for any purpose at MFA. Similar to the C aquifer, the B aquifer is separated from contaminants by a thick, continuous aquitard (A/B aquitard), and an upward gradient currently exists from the B to the A aquifers. Although groundwater pumping from the B or C aquifers could reverse the upward gradient, no such pumping is planned." The following text will also be added: "Currently, water is supplied to MFA from the Hetch Hetchy aqueduct owned by the City of San Francisco. This water supply source will most likely be used for any future development at MFA; however, NASA's national ongoing redevelopment plan may have a significant impact on future uses of water at MFA. Changes to planned groundwater use will be considered in the evaluation, as appropriate, when they are received from NASA."

Comment 4. Page K-13, Section 8.1.1.1 Construction Worker; The 1999 "non-detect" soil data may not be comparable to the 1995 data. Therefore, a more conservative risk evaluation should be performed at Tank 131 site.

Response: The Navy believes that the 1999 data are comparable to the 1995 data. In reviewing the tank removal report (ECC 1995) and the Santa Clara County Tank Closure Inspection Report, it appears that during excavation and restoration, shallow groundwater was found (3 feet bgs) and the two samples collected within the excavation area were taken at approximately 4 feet bgs. The 1995 data correspond with the 1999 data when groundwater was found at 5.67 feet bgs and the soil sample was collected at 4 feet bgs. The 9 feet bgs sample depth listed in Tables K6 and K7 is incorrect and will be modified in the Draft Final Appendix K report.

Comment 5. Page K-18, Section 10.0 Conclusions, Biodegradation likely occurring; In general, decreases in petroleum concentration in groundwater might well be the result of biodegradation. However, without showing sufficient information on biodegradation rate and groundwater use plan, the conclusion that “the petroleum contaminants in site groundwater will most likely be degraded to acceptable levels before groundwater will be used as a drinking water source” is not defensible and should be revised.

Response: The following text will be added to Sections 5.0 and 10.0, “If petroleum sources have been removed and free product does not appear to exist, stabilization and attenuation of the groundwater plume are expected, resulting in petroleum fuel releases to naturally degrade in California’s subsurface conditions (Rice and others 1995, 1997).”