MEMORANDUM

M60050.000810
MCAS EL TORO
SSIC # 5090.3

DATE: April 14, 1989

TO: S. R. Holm, Captain, CEC USN, Director of Facilities Management

FROM: William R. Mills Jr., General Manager

SUBJECT: TECHNICAL CONCERNS WITH JMM INTERIM REPORT

Thank you for allowing OCWD staff to review the James M. Montgomery interim report regarding El Toro MCAS Perimeter Investigation prior to your formal presentation at our April 19th Board Meeting. After reviewing the report, we request clarification on the following technical issues.

AQUIFER HYDRAULICS

1. Provide the basis for determining hydraulic gradient between TIC 56 and TIC 35, which do not appear to be on current or any historical groundwater flowlines.

2. Provide the basis for determining hydraulic conductivity in the central Irvine Subbasin using pump test data from aquifers beneath the base.

3. Considering the methods used for determining hydraulic gradient and hydraulic conductivity, is the evaluation of groundwater flow velocities west of the base valid? Also, based on this reported estimate of flow velocities, shouldn't contamination from the raceway also be ruled out?

CONTAMINANT SOURCES

1. Provide discussion of possible on base sources of contamination throughout the history of the base. For example, were different areas used over time for VOC disposal? Were different chemical suites used over time? Can degree of VOC use be linked to increases in base activity (e.g., Korean War and Vietnam War)?

2. The report only investigates sources at some points of use and/or disposal. The District is concerned that the investigation and report concentrated only on the groundwater pathways of contaminant movement and ignores the off base surface runoff pathways. Contaminated surface runoff along Bee Canyon Wash and Aqua Chinon Wash probably occurred because oil and grease associated with base activities were analyzed for and found off base. Could VOCs have been present in such runoff (as free product or in dissolved phase) and subsequently infiltrated into the groundwater basin off base? If so, future investigations should consider these pathways.

3. The investigation reports of several possible off base sources of VOC contamination, but provides no evidence to support this conclusion. Please provide evidence of alternative sources, if this is available.

4. The report suggests that pumping at TIC 55 diverted contamination from south of the base, across the southern boundary, toward the well. The District has two concerns about this theory. First, the Cluster Well pump test indicates that the shallow aquifer is hydraulically isolated from the deeper aquifers in this area. With this the case, how could contamination in the shallow aquifer move toward TIC 55 if the shallow aquifer at TIC 55 is not perforated by the well (first perforated interval is 305 to 454 feet below ground surface)? Second, based on historical pumping records, which indicate that TIC 55 extracted between about 200 and 400 acre-feet per year, and based on the low hydraulic conductivity of the aquifers in the area, is it reasonable that the zone of pumping influence (capture zone?) is 2,000 feet?

5. Assuming that the source of the off base contaminant plume overlies the plume, based on the JMM estimate of groundwater flow velocities, why is the first sign of any contamination in MCAS 1 and 7 found in the deep aquifer? If contamination was from a nearby (central Irvine) source, shouldn't the upper aquifers show some signs of contamination resulting from vertical migration of the VOCs?

PLUME DELINEATION

1. Why don't the maps delineating on base plumes encompass known contaminated wells TIC 55 and PS-6?

2. Considering that TIC 68 and TIC 74 are plugged based on the District's video surveys, are these valid monitoring points to conclude the separation of on base and off base plumes?

3. The report suggests that contamination at the southern base boundary is confined to the upper-most aquifer. The report also states that this aquifer has a low hydraulic conductivity, and therefore contamination could not have been transported a significant distance off base. The District questions this conclusion because only the shallowest aquifer zone was explored with monitoring wells and no off base monitoring wells were drilled in the "gap" between the on and off base plumes.

CONTAMINANT CLEAN-UP

1. How can aquifer cross contamination occur during pumping of existing irrigation wells? More likely, cross contamination would occur while the wells stand idle.

TITLE: TECHNICAL CONCERNS WITH E JAMES M. MONTGOMERY INTERIM REPORT RE: THE MCAS EL TORO PERIMETER STUDY

AUTHOR: WILLIAM R. MILLS

DATE: 4/14/89
CATEGORY: 1.2