

Memorandum

To : Tom Berkins
San Francisco Bay Regional Board

Date : SEP 21 1987



Gil Torres
Senior Engineering Geologist, CEG 675
Division of Water Quality

From : **STATE WATER RESOURCES CONTROL BOARD**

Subject: **SAMPLING PLAN (REVISED), NAVAL AIR STATION - MOFFETT FIELD**

Comments regarding the revised June 30, 1987 Sampling Plan by Kennedy/Jenks/Chilton for the Moffett Field Naval Air Station are as follows:

LIST OF FIGURES

For the purpose of conformance, modifications need to be made to some figure titles in this list and to corresponding titles on several figures.

LIST OF TABLES

Modifications to titles on this list and to corresponding table titles need to be made. Also, Table 4-4 needs to be listed.

Page 1.4, second paragraph, second sentence

"CM" should be "GM"

TABLE 1-2, SITE 1

Well MW-12B or W7-9 (AX) is partially screened in gravel.

TABLE 1-3

It is more correct to indicate or footnote that no casing was installed at the seven EB wells which are listed.

Page 2.2, first paragraph, next to last sentence

During the June 16, 1987 telephone conversation, I understood that "grid soil sampling" was to be performed also at Site 7.

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Page 2.5, General Element 1, first sentence

Based on available data, it is likely that the target depth intervals are more than enough to fully penetrate each of the designated aquifer units.

Page 2.5, General Element 2, first sentence and page 2.13, first paragraph, last sentence

The quality of most geophysical logs, obtained during the Verification Step of the Confirmation Study, is poor to inadequate. Thus, I recommend that the availability of such information at a nearby location not be a criterion for deciding whether to geophysically log at any bore hole to be drilled.

Page 2.6, General Element 7

Proposed or final study details of the Interim Remedial Measure Investigation should be submitted for Regional Board staff review and commentary as necessary.

Page 2.6, second paragraph, third sentence

Litholog W1-4A (abandoned) and nearby ground surface elevations suggest that refuse exists at depths lower than 13 feet below sea level at the Runway Landfill.

Page 2.7, second paragraph, second sentence

W1-1A should be W1-1(A).

Page 2.8, first paragraph, first and ^{second} sentences

Available geophysical log data indicate that the top of the BC aquitard may be less than 125 feet at Site 1. The core samples to be obtained should provide the necessary corroborative information for appropriately selecting this B aquifer zone-BC aquitard contact. Also, previous MEW work suggests the rotary drilling and coring at one boring has allowed for proper obtainment of continuous sampling as well as meeting the geophysical logging needs.

Page 2.8, second paragraph, first sentence

Because refuse was penetrated at W1-3(A), it appears that proposed well W1-8(A) should be relocated further to the north. Another A-aquifer well should be located north of boring A1-2 (where refuse was penetrated). Also, in view of the considerable distance between wells W1-3(A) and -4(A), an A-aquifer well seems to be necessary along that northern landfill boundary. The eastern landfill boundary appears to need A-aquifer evaluation between W1-4(A) and proposed well W1-6(A).

Page 2.8, fifth paragraph; page 2.11, second paragraph; page 2.13, third paragraph and page 4.16, second paragraph

Continuous recorder monitoring for possible tidal influence should be conducted during a high tide period because such observations may be for no more than one week.

Page 2.8, sixth paragraph, first sentence

After "sampled" add "monthly".

Page 2.9, last paragraph, last sentence

The Phase I and II lithologs may show existence of aquifer material at the W2-2(A) and -3(A) locations.

Page 2.10, fourth paragraph, second and third sentences

If a B1-aquifer well becomes necessary at the proposed W2-5(A) location, then this boring also should be geophysically logged.

Page 2.10, fifth paragraph, last sentence

Proposed wells W2-6(A) and -7(A) should be installed only if A-aquifer material is discerned from appropriate boring samples.

Page 2.11, fourth paragraph, second through fifth sentences

The existence and extent of the A- and B1-aquifers can be better determined based on the lithologic and geophysical logs to be gathered. I concur that available data have not been obtained in an optimal manner.

Page 2.11, fourth paragraph, fifth sentence

After "The" add "depth interval of the".

Page 2.12, first paragraph, first sentence

If the reference is to MW-20A, then "W7-14(A)" should be "W7-14(A)"; if the second "W7-14(A)" refers to MW-20B, then it should be changed to "W7-15(B1)".

Page 2.12, second paragraph, last sentence and Tables 1-1 and 1-2

According to the geophysical log, W3-10(CX) is screened to monitor C-aquifer material. Thus, the litholog seems to inaccurately depict the relative thickness of the aquifer material and, on this basis, the "CX" designation should be changed to "C".

Page 2.14, fourth paragraph

It is likely that the definition of A-, B- and C-aquifer units will be refined pursuant to the subsurface data to be gathered at Site 4.

Page 2.14, fifth paragraph, last sentence

"W7-14(A)" should be "W7-14(AX)".

Page 2.15, first paragraph, fourth sentence

"W4-5(A)" should be "W4-5(AX)".

Page 2.16, first paragraph, first sentence

In accordance with the last paragraph, next to last sentence or page 4.4, it should be clear that the lithologic logging will be on the basis of continuous coring.

Page 2.16, third paragraph, last sentence and page 2.17, last paragraph, last sentence

Generally, the depth intervals on Table 2-4 should allow for more than full penetration of target zones.

Page 2.16, last paragraph

Add "W7-2(AX)" and "W7-3(AX)".

Page 2.19, fourth paragraph

Additional wells may be found to be necessary east of Patrol Road.

Page 2.25, fifth paragraph and Figure 2-9

"W10-3(B1)" should be "W10-3(B2)" on Figure 2-9.

Page 2.25, last paragraph and page 2.26, first paragraph

It appears that improved geophysical log data should be obtained near W10-3(B2) and W10-4(B1) to facilitate interpretation of A-, B1- and B2-aquifer definition.

Page 2.26, fifth paragraph, first sentence

It should be clear that "one additional A-aquifer well" refers to W10-5(A) according to Figures 2-2 and 2-9. However, despite the W10-1(AX) litholog, the W10-4(B1) spontaneous potential and 6-foot lateral resistivity curves

suggest that aquifer material exists between a 25- to 30-foot depth interval. On the other hand, the geophysical logs obtained on the detail resistance and the short and long normal runs are inadequate to corroborate the SP/6-foot lateral resistivity run. Thus, it seems that quality-controlled geophysical logging remains necessary at this location.

Page 2.26, fifth paragraph, third sentence

"W10-7(B1) should be W10-6(B1)".

Page 2.27, first paragraph, second sentence

Existing well "-4(A)" should be "-2(A)".

Page 2.27, third paragraph, third sentence

According to the 6-foot lateral and one of the long normal resistivity curves, it appears that the screened interval is partially set along C-aquifer material at W3-10(CX).

Page 2.27, last paragraph

According to the W3-10(CX) geophysical logs, it is apparent that the screen at this well is along an interval that underlies at least two equally or more permeable C-aquifer units that exist between a 110- to 150-foot depth.

Page 2.28, third paragraph, first and second sentences

It is understood that lithologic logging of these C-aquifer bore holes will be accomplished by continuously coring to the target drilling depth at each location. If this is not the case, then coring can be conducted at selected depths to corroborate contacts between aquifers and aquitards. Also, to establish an early common understanding of which aquifer units should be screened for optimal data gathering, it is important that geophysical and lithologic logs be submitted to Regional Board staff for immediate review prior to installation of C-aquifer wells.

TABLE 2-5

Specific depths to and thicknesses of aquifers and aquitards will probably change as data are gathered during Phases I and II.

Page 4.1, first paragraph

The soil gas investigations should not be conducted after the onset or during precipitation periods.

Page 4.2, last paragraph, first and third sentences

It is probable that existing monitoring wells are inadequate to compare the possible occurrence of chemicals in soil gas and ground water.

Page 4.5, second and third paragraphs and page 4.6, fourth paragraph, first sentence

Generally, the rotary wash method with coring capability is a known efficient technique for sampling, lithologging and drilling through A- and B1-aquifer materials. The hollow auger method could be comparable for lithologic data gathering if it is complemented by core sample collection capability.

Page 4.6, first paragraph, second sentence

Continuous coring should be possible at all bore hole locations.

Page 4.7, second paragraph, second sentence

According to this statement, the title of Table 4-1 should be changed on both pages 1 and 2. "Adjacent to" or "twinned" does not necessarily mean that it is proposed to geophysically log all of the listed wells.

Page 4.8, last paragraph, second sentence and page 4.8, first paragraph

What would be the lowest "high yield" amount? Also, it is not clear that a 6-inch diameter well is necessary for extraction purposes if a "very low yield" is anticipated.

Page 4.10, fourth paragraph, second sentence

Pursuant to the proposed Phase I and II work, the presence or absence of the A-aquifer should be confirmed on a site-specific basis.

Page 4.10, fifth paragraph, first paragraph

Continuous coring before augaring would provide more definitive subsurface information.

Page 4.11, second and third paragraphs

Depth to the top and corresponding thickness of each aquifer and aquitard will probably be modified on the basis of the proposed work to be conducted during Phases I and II.

Page 4.12, fourth paragraph, first and second sentences

Depending on the bore hole location and the local concentration of chemicals in ground water, cross-communication (contamination?) can occur when these casing hammer or dual tube drilling methods are used.