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Ser 1811GM/L3079
Nov 18, 1992

Ms. Virginia Lasky
Department of Toxic Substances Control
700 Heinz Ave., Suite 200
Berkeley, CA 94710

Subj: RESPONSES TO COMMENTS ON DRAFT FINAL DATA SUMMARY REPORT: BACKGROUND AND TIDAL INFLUENCE STUDIES AND ADDITIONAL WORK AT SITES 4 AND 5 AT NAS ALAMEDA

Dear Ms. Lasky:

We are providing as enclosure (1), responses to your September 16, 1992 comments on the draft final Data Summary Report: Background and Tidal Influence Studies and Additional Work at Sites 4 and 5. Changes requested by the DTSC to figures and tables have been made and will be incorporated into the final version of the above-referenced document.

If you have any questions regarding our responses to your comments, please contact either Mr. Gary J. Munekawa, Code 1811GM, (415) 244-2524 or Mr. George Kikugawa, Code 1811GK, (415) 244-2559.

Sincerely,

Original signed by:

LOUISE T. LEW
Head, Installation Restoration Section

Encl: (1) Responses to Comments on Draft Final Data Summary Report: Background and Tidal Influence Studies and Additional Work at Sites 4 and 5

Copy to:
California Regional Water Quality Control Board (Attn: Janette Baxter)
US Environmental Protection Agency (Attn: Julie Anderson)
NADEP (Attn: Paul Pentony)
NAS Alameda (Attn: Randy Cate)
PRC Environmental Management, Inc. (Attn: Duane Balch)
James M. Montgomery, Consulting Engineers, Inc. (Attn: Ken Leung)

Blind Copy to:
1811, 1811GM, 1811GK, Admin Record (3 copies)
WRITER; Gary J. Munekawa/1811GM/x2524
FILE: Alameda/NAS
Chron, Blue, Pink, Green

NAVAL AIR STATION, ALAMEDA
ALAMEDA, CALIFORNIA

DATA SUMMARY REPORT
BACKGROUND AND TIDAL INFLUENCE STUDIES
AND ADDITIONAL WORK AT SITES 4 AND 5

RESPONSE TO DTSC COMMENTS

This attachment presents the Navy's response to comments received from the State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC) on September 16, 1992. The DTSC comments are presented verbatim in bold typeface. The Navy responses are in normal typeface.

SOIL AND GROUNDWATER BACKGROUND SAMPLES

Comment #1: **Ms. Roberta Hough of the Community Advisory Committee (CAC) provided some comments during the Technical Review Committee Meeting on August 27, 1992 regarding the calculated background values for some metals. Although DTSC disagree with the concept of using background in a clean-up scenario, Ms. Hough has some valid comments. The concerns are the inclusion of high concentration of silver (147 mg/kg), zinc (316 mg/kg) and mercury (0.644 mg/kg) found in Table 2-3 in the calculation of the average value for background. This in turn increased the value of the standard deviation and also elevated the tolerance limit. Should these high concentrations be included in the calculation for average? Perhaps the Navy should look at the possibility of whether these values are outliers, typo error, quality control/quality assurance issue or maybe indication of contamination. It is also difficult to compare these values to Table 2-4 especially if we do not know what part of the United States these samples originated or whether the locations of these samples can be considered background. Please revise portion of the report that deals with the calculation of background value by addressing the comments above.**

DTSC reserves the right to make any further comments regarding calculations of background samples.

Response to Comment: The cited mercury and zinc values are correctly entered into the tables and the laboratory QA/QC appears to be adequate. Arbitrarily removing these data from the data set would bias the data set and the statistical tolerance interval. The value of <147 for silver for the 3-foot sample from boring MBG-1 is a typographical error. The value should read <1.47. The error has been corrected and updated tables will be included in the Final Data Summary Report (DSR).

The reference from which the table is taken (Dragun, 1988) does not cite specific locations for the samples used to calculate the metals ranges found in Table 2-4.

Comment #2: There are other statistical test methods that could be used in determining background value. Please provide rationale for choosing Tolerance Interval.

Response to Comment: In general, there are two statistical methods to evaluate data of a population (such as soil and groundwater data). The first is the student's t test and the second is the calculation of statistical tolerance intervals.

The student's t test is used to compare the means of data sets. An interval around the mean of a sample population is calculated. This interval contains the mean of the entire population with a given percentage of certainty. To use the student's t test, a sample population is collected and an interval is calculated using the mean for the sample population, the estimate of the standard deviation for the sample population, the size of the sample population, and a numerical constant that varies based on the probability level chosen and the degrees of freedom used to calculate the standard deviation.

As described in Sections 2.6 and 2.7 of the DSR, the statistical tolerance interval is the interval within which a given percentage of measured values are expected to fall a given percentage of the time.

The purpose of the statistical analysis at NAS Alameda is to determine the range of concentrations that would be expected in the background population for certain inorganic constituents. Once the range is established, any sample collected at the base can be compared to the background range to determine whether or not it may reflect background conditions. Because the desire is to compare individual samples to the calculated background interval, the statistical tolerance interval method was employed.

The text in Sections 2.6 and 2.7 of the Final DSR will be updated to include this discussion of the two statistical methods.

SOIL AND GROUNDWATER INVESTIGATION AT SITES 4 AND 5

Comment #1: Because of the inconsistencies of chromium (+6) chromium and chromium (total) results, it is necessary to resample and verify their actual concentrations for both sites 4 and 5. Collection of samples can be done during the fieldwork on cyanide sampling.

Response to Comment: Due to a calibration error at the laboratory, the reported results for hexavalent chromium were off by a factor of 1,000. The laboratory error was not discovered until a review of raw data was requested in an attempt to determine why the hexavalent chromium results were elevated. Revised results, along with a detailed explanation of the laboratory calibration error, will be included in the Final DSR.

Comment #2: **Figure 5-1 shows 2 areas for Wastewater Treatment. One of them is probably the Selective Plating Shop.**

Response to Comment: Figure 5-1 has been corrected.

Comment #3: **Provide labels for the different vats, containers or treatment unit indicating the chemicals being used and the type of operation or treatment process being employed in Figure 5-2.**

Response to Comment: The requested information has been added to Figure 5-2.

Comment #4: **Provide the locations of soil and groundwater samples that were collected, in a drawing or map, at the Selective Plating Shop, wastewater treatment, battery storage and former hazardous waste storage areas.**

Response to Comment: This information is provided on Figure 5-1.

Comment #5: **Table 5-4 shows elevated concentrations of volatile organics especially 1,1,1-Trichloroethane. Please confirm results by resampling groundwater at boring B--05PS-04 and analyzing for volatile organics. This high concentration could be an indication of proximity to a source. This possibility should be investigated and reported.**

Vinyl Chloride's (VC) reporting limit at 25,000 micrograms/liter is very high compare to its Maximum Contaminant Level (MCL) of 0.5 ug/l. This is perhaps one of many instances where high reporting limit with very low MCL should have been noted in the report. Because of the high concentrations of volatile organics in this boring compare to other borings, there is a possibility that VC also may be present. To determine the actual concentration of VC, it is recommended, if feasible, that VC concentration be analyzed employing analytical method that will reduce interference from other volatile organics or that will provide an accurate reading for VC alone.

Response to Comment: Further sampling in the plating shop will be included in the work plan for follow-on activities at the Phases 2B and 3 sites. Recommendations for sampling locations will be included in the work plan. We think resampling of B-05PS-04 will not add significantly to our knowledge of the nature and extent of contamination underneath the plating shop. Rather, additional sampling in the north central portion of the plating shop (vicinity of B-05PS-04) and in the downgradient direction will help fill data gaps.

The detection limit for vinyl chloride in sample B-05PS-04 is 25,000 micrograms per liter (μg/L) due to dilution of the sample. The detection limit was not compared to the Maximum Contaminant Level (MCL) for vinyl chloride because it has not been established that MCLs are appropriately applied to the shallow water-bearing zone at NAS Alameda.

It is not feasible to analyze specifically for vinyl chloride. In volatile organic analyses by gas chromatography/mass spectrography (GC/MS), all volatiles in the sample are purged simultaneously and injected directly into the instrument. If a sample contains volatile compounds at high concentrations, the peaks for those compounds can mask the peaks of other compounds, thus preventing quantification of the masked peaks. When this occurs, as in sample B-05PS-04, the sample is diluted until the compounds at high concentrations produce discrete, quantifiable peaks. Detection limits are raised according to the magnitude of the dilution. There is no mechanism to purge vinyl chloride without also removing the other volatiles in the sample. Thus, it is not possible to analyze for vinyl chloride alone.

Comment #6: The Navy should address or incorporate all current findings in Site 5 in the development of workplan for additional fieldwork for Data Summary Report (Phases 2B and 3) or the CN fieldwork.

Response to Comment: All data collected at Site 5, including the additional sampling to be performed beneath the cyanide process line of the plating shop, will be considered when the work plan for additional field work is developed.

Comment #7: DTSC acknowledges the Navy's action to immediately resample B-05WT-02 when they discovered that holding time for SVOC has been exceeded.

Response to Comment: No response required.

TIDAL INFLUENCE STUDY

Comment #1: Figure 3-1. Is bay water allowed to move freely in and out of Seaplane Lagoon? Movement of water must be unconstrained by man made structures if the Lagoon is to be used as a reference for tidal fluctuations.

Response to Comment: The Seaplane Lagoon has an opening directly into San Francisco Bay that measures approximately 700 feet across. The opening into the Oakland Inner Harbor is approximately 900 feet across. Thus, the Seaplane Lagoon is as open to fluctuations in San Francisco Bay as the Oakland Inner Harbor. In addition, the Seaplane Lagoon is the nearest body of water to the sites to which it was compared, and thus is expected to exert the greatest influence on water levels at those sites, irrespective of its connection to the bay. This information will be incorporated into the text of the Final DSR.

Comment #2: **Figure 3-2. Average ground water elevations were calculated using a particular filtering method. The field data sheets of the actual transducer readings and the conversions to elevation in feet need to be included if the results of the filtering method are to be evaluated.**

Response to Comment: The transducer readings, conversion to elevation, and rolling averages will be provided in the Final DSR for each well in the tidal influence study.

Comment #3: **Page 3-2 and Figure 3-2. The statement is made that water level changes for M-07A-02 and M-07A-03 were apparently not tidally influenced. It is apparent from the graphs that water elevations gradually changed over the 72 hour period and changes in M-07A-02 through 04 appear to be significant. The changes may be the result of longer period lunar or solar influences, or possibly from barometric changes, or drift in the electronics. On page 3-5, the report states that the changes may related to artificial recharge. A graph covering the entire data collection period (4 to 5 days) should be drawn for this site to see if a cyclic variation can be detected.**

Although water level elevations were higher in M7A-03 than M7A-04 for most of the 72 hour period, the elevations in these two wells were reversed for 2 or 3 hours at the beginning of the test. Data collected before and after the period represented by the graph should be checked to see if any other reversals have occurred at site 7A. If this has occurred, then flow direction and gradient have changed, and separate contour maps should be generated.

Response to Comment: A hydrograph covering the entire data collection period (slightly less than 5 days) has been prepared for Site 7A and will be included in the Final DSR. Fluctuations in water levels measured at Site 7A over the course of the 5-day study are not diurnal or correlatable with diurnal tidal cycles measured in the Oakland Inner Harbor.

Water levels in wells M07A-02 and M07A-03 vary over the 5-day period in an apparently non-cyclical fashion. The elevation in M-07A-03 varies sufficiently to reverse the groundwater gradient at the site. The mechanism driving the fluctuations, and the nature of the fluctuations (i.e., cyclical over a period longer than 5 days, or always non-cyclical), in M07A-02 and M07A-03 should be identified in order to make predictions about the gradient and flow direction over time.

Additional water level investigations at Site 7A will be conducted as part of the follow-on work planned for the Phases 2B and 3 sites. The water levels in all of the wells at Site 7A will be monitored for a 3-week period to determine if the variation in groundwater elevation is cyclical over a period longer than 5 days. Additionally, to assess the impact of atmospheric pressure on the groundwater elevations, atmospheric pressure will be monitored for the duration of the study.

It is premature to produce a second groundwater contour map at a different point in the tidal cycle for Site 7A. A second map tied to a different point in the tidal

cycle may give the misleading impression that fluctuations are related to tidal influence: that has not been clearly demonstrated by the data available to date. When the mechanism driving the fluctuations is identified, and the behavior of groundwater at the site over time is understood, contour maps illustrating the variations in flow direction and/or gradient will be generated.

The text of the Final DSR will be updated to include this discussion of the Site 7A water level data.

Comment #4: Figure 3-7. Why wasn't water elevations from well M-07A-01 included in the contour map?

Response to Comment: Water elevations for well M07A-01 will be added to the contour map.

Comment #5: Page 3-3, 2nd paragraph. The surface seal must be repaired.

Response to Comment: The surface seal referred to on Page 3-3, 2nd paragraph is the temporary surface seal placed over the top of the well casing while the transducer cables were in the well. The concrete surface seal at the well head has not been compromised.