STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY
PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
REGION 2
HEINZ AVE., SUITE 200
BERKELEY, CA 94710-2737

December 2, 1992

Ms. Louise T. Lew
Code 1811
Department of the Navy
Western Division, Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-2402

Dear Ms. Lew:

SOLID WASTE ASSESSMENT TEST (SWAT) REPORT, ALAMEDA NAVAL AIR STATION (ANAS)

The Department of Toxic Substances Control (Department) has completed the review of the SWAT Report received on October 2, 1992. Enclosed are the Department's comments. Response to these comments should be submitted no later than January 15, 1993.

If you have any questions, please call Virginia Lasky at (510) 540-3817.

Sincerely,

Virginia L. Lasky
Associate Hazardous Materials Specialist
Site Mitigation Branch

cc: Gary Munekawa
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Western Division, Naval Facilities Engineering Command
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GENERAL COMMENTS

1. The Water Quality Criteria (WQC) for the protection of marine life or the Maximum Contaminant Levels (MCLs), whichever is more stringent, will be the standards to which the analytical results will be compared to until ARARs are established.

2. Indicate the rationale for the number and depths of soil samples taken at each boring for Sites 1 and 2.

3. Propose a detailed plan to discuss continuous monitoring of wells to determine movement of contamination, effect of seasonal changes, confirm analytical results on some wells, to clarify data that were qualified, and to confirm data that could be a result of laboratory contamination or error, etc.

   DTSC has made comments below regarding monitoring of specific wells. Other wells need to be continuously monitored for the reasons stated above possibly at different time intervals. In general, this is in agreement with your preliminary recommendation contained in the executive summary.

4. Submit all original field notes and lithologic logs.

5. Clarify the statements made in the SWAT Report, Volume 1 in sections 2, 8 and 9. Indicate clearly ground water flow direction in each water bearing zone at each site. Also, please be more precise as to whether the direction is west, northwest, etc rather than using the word "outwardly".

6. There are some detected volatiles and semi-volatiles in the deep water bearing zone in both sites (eg. acetone, bis(2-ethylhexyl)phthalate, etc). The Navy has indicated that they may be caused by laboratory contaminants, plastic containers or the rope being used in the sampling. The Navy should submit a plan to confirm whether the contaminations are indeed caused by the sources indicated above, or submit preventive measures so that these kinds of contamination will be avoided in the future. The outcome of this plan or preventive measures will assist in the future evaluation of data, and efforts will be focused more on the actual problem at the site.

SPECIFIC COMMENTS

Site 1 (Evaluation of Analytical Data)

1. At boring M-028A, acetone is detected at 610 ug/kg at 2.5

feet deep. Although detected at less than a reporting limit of 5,000 and 2,000 ug/l - the real concentration of acetone is unknown. Vinyl Chloride, 1,2-dichloroethene and toluene were also detected in high concentration at well M-028A.

Because of the above concerns, wells M-028A and E should be continued to be monitored on a quarterly basis.

2. Of all sampling locations, monitoring well M-028A was observed to contain the highest concentration of organic contaminants in ground water. The Navy should investigate the source of this contamination by looking into past records of disposal, and if practicable by doing additional soil borings in this area to define the horizontal and vertical extent of contamination. This additional information will assist in planning any kind of remediation for Site 1.

3. Continue to monitor wells M-001E, M-029A and E for both volatiles and semi-volatiles to see any changes in detected concentrations over time.

4. Because of the locations of M-006, M-007 and M-009, it is uncertain whether the TPH, and oil and grease or other contaminations are originating from the landfill, from the vicinity of the wells or east of the wells. Include these areas that need to be investigated to determine the extent of TPH problem.

5. You have been advised of the Department's position on the use of background values as clean-up levels. We find the following of concern in soil: arsenic (98.1 mg/kg) and antimony (600 mg/kg) at 13 feet at M-001-A; barium (6990 mg/kg) at the surface of M-002A; lead (261 mg/kg) and zinc (555 mg/kg) at 0.5 at M-027A; copper (1760 mg/kg) at 2.5 feet of M-028A, 6210 mg/kg at 3 feet of M-028E; and 1560 mg/kg at 4 feet of M-029A.

   In the ground water, copper is detected in several wells above the Water Quality Criteria of 2.9 ug/l. The only metal detected in ground water above the MCL is antimony in wells M-025A and M-002A. (MCL for antimony is 6 ug/l).

6. The B and C Wells should continue to be monitored for Bis(2-ethyhexyl)phthalate and acetone to confirm laboratory contamination or any other source of contamination.

Site 2 (Evaluation of Analytical Data)

1. Similar to previous investigations (i.e., Data Summary Report), phthalates, especially Bis(2-ethylhexyl)phthalate, and polynuclear aromatic hydrocarbons are found in several

wells. Of concern here is Bis(2-ethylhexyl)phthalate at 32 feet below the ground surface.

2. Make note that Bis(2-ethylhexyl)phthalate in several wells are above the MCL of 6 ug/l. The wells are: M-011A, 14A, 19A and E, 20E, 21E, 22A and E, 23A and E, and 24A and E.

3. Continue to monitor wells 24A and E to verify concentration and confirm the existence of semi-volatiles in these wells.

4. Benzene, chlorobenzene and acetone were detected in ground water at wells 24 A and E. Detected benzene and chlorobenzene were above the MCL levels of 1 and 30 ug/l, respectively. Chlorobenzene and acetone were also detected in soil.

5. Presence of bis(2-ethylhexyl)phthalate and acetone should be continued to be monitored in the B and C wells quarterly to confirm any laboratory or other source of contamination.

6. Metals such as: copper, silver and nickel are consistently detected above the WQC in most A and E monitoring wells however, only detected in M-014B, M-020B, M-021C and M-023B in the lower water bearing zone. Zinc was also detected above the WQC in the A and E, and B and C wells. Antimony was also observed to exceed the MCL at A and E wells (M-010A, M-011A) and at B and C wells (M-023B and M-021C).

Quality Control/Quality Assurance

1. The new promulgated MCL for antimony is 6 ug/l. The Navy should ensure that the detection limit for antimony is lower than 6 ug/l.

2. Since the analytical results are to be compared to the WQC when it is more stringent than the MCL or vice versa, the Navy should make an effort to inform the laboratory to try to achieve detection levels lower than the WQC or as close as possible to it.

Site Geologic and Hydrogeologic Characterization

Cross Section

1. Cross Section A-A'

   a. In boring M-12B, the clay zone shown at the base of the artificial fill actually consists of layers (approximately one-foot thick) of clay and clayey gravel (from 27 to 31 feet bgs). This zone may correlate to the clayey gravel zone from 24 to 30 feet bgs in boring M-13C.

b. In boring M-7C, some detail from the boring is missing in the cross section. In the Bay Mud unit, a lens of poorly-graded (well-sorted) sand (SP) is not indicated from 35 to 44 feet bgs. In the Alluvial/Eolian Unit, the interval from 51 to 74 feet bgs consists of poorly-graded sand, not silty sand (SM). Both of these SP zones may correlate to the clayey sand (SC) zones observed in boring M-10B between 56 and 74 feet bgs.

2. Cross Section B-B'

a. The clay zone indicated in boring M-105B from 19 to 32 feet bgs is actually a zone of interbedded clay, poorly-graded sand (SP), and clayey sand (SC). The interbeds range from 1 foot to 3 feet thick. This should be indicated on the cross section as CL/SC/SP. This zone correlates to a similar zone seen in boring M-103B (see below).

b. In boring M-103B, the zone from 14 to 19 feet bgs is interbedded silty sand (SM), poorly-graded sand (SP) and clay (CL). The zone from 27 to 66 feet bgs consists of interbedded clay, silty sand, and clayey sand. It should be indicated as CL/SM/SC on the cross section. This correlates to the zone discussed above in boring M-105B and to boring M-104C.

3. Cross Section C-C'

a. In boring M-24E, the upper 3 feet is sandy gravel (GP). From 3 to 10 feet bgs, the lithologic log shows <u>wood</u> with sand.

b. In boring M-21C, the silty gravel (GM) zone present from 8 to 17 feet bgs is not shown on the cross section. It correlates to the GM zone in boring M-22E. From 18 to 22 feet bgs, a silty zone (ML) is missing above the second GM zone. This silt zone may correlate to the thin clay zones shown in borings M-19E, M-20B, and M-22E.

c. From 1 to 9 feet bgs in boring M-26E is a zone of gravely sand (SW). This correlates to a zone of SW that is also not shown in boring M-27C from 8 to 17 feet bgs. The sand (SP) zone shown beginning at 42 feet is twice as long as indicated on the cross section (extends to 54 feet).

The tendency on these cross sections has been to show zones of interbedded clay and sands in the Bay Mud Unit as just clay. This is misleading and should be corrected on the cross sections. The significance of the well-sorted

sand is that these units represent zones of relatively high transmissivity.

Permeability Values for Aquitards

On page 8-5 is a discussion of the laboratory test results for vertical permeability in the Bay Mud Unit, Alluvial/Eolian Unit, and the Estuarine Unit. All of these values were based on samples collected only from the clay zones in these three units. The SWAT Report does not discuss why laboratory permeability tests were not run on the silty or sandy samples. Slug test results for horizontal permeabilities are available only from the water-bearing zones in the Artificial Fill and the Alluvial/Eolian units.

It is misleading to state that "the vertical hydraulic conductivity of the Holocene Bay Mud Unit ranges from 2.53×10^{-8} cm/sec to 3.16×10^{-8} cm/sec." This is based only upon the clay zones, but the Bay Mud Unit also contains sandier zones with higher permeabilities. The same comment applies to the Alluvial/Eolian Unit. These values should be given as maximum vertical permeabilities.

Monitoring Well System

1. In the zone from the M-27 to the M-1 well clusters (1200 feet) there are no wells in the second water-bearing zone. This is also the area with the highest levels of contaminants. The Bay Mud Unit in this area is predominately clay, but there are some contaminants (acetone, carbon disulfide, chloroform and chloromethane) in the deeper zone in wells M-1B and M-27B. This may be an area where another B or C well is needed.

2. Additional wells are necessary between Site 1 and Site 2. Additional information on the stratigraphy of the Holocene Bay Mud (since there are no soil borings taken within the landfills themselves) and the extent of downgradient contamination from existing wells is necessary.

Field Methods (Appendix C)

1. The results of the Geiger-Mueller readings are not indicated on the lithologic logs in Appendix E, as stated on page C-1. Please provide this information.

2. The last paragraph on page C-3 describes the procedure used for collecting soil samples for volatile analysis. The soil was removed from the soil sampler and placed into glass jars with no headspace. The samples should have been collected

in sample sleeves, as the geotechnical samples were. Any future soil samples collected for volatile analysis should be collected using sample sleeves with end caps.

3. The last paragraph on page C-8 describes the use of a travel blank canister. This is not the appropriate way to use a trip blank. The blank should contain organic free water from the lab. The blank should remain closed and travel with the samples to the lab. It should not be opened in the field, then closed and sent to the lab. Any contamination detected would be more indicative of ambient air conditions. It would not tell you if volatiles were leaking from one closed container and contaminating another closed container. For all future sampling events, trip blanks must be utilized correctly, according to SW-846, Volume 1A, Chapter 1 (see Attachment A).

Borehole logs (Appendix E)

1. In some cases, there is no geotechnical data listed in tables 7-1, 8-3 and 9-1 for geotechnical samples indicated on the lithologic logs. Some examples are: M-18E at 33 and 43 feet bgs; M-20E at 31 feet bgs; M-22E at 10 feet bgs; M-25E at 20 feet bgs; and M-26E at 17 feet bgs.

ATTACHMENT A

laboratory with the sample containers. Trip blanks and equipment blanks are two specific types of field blanks. * Trip blanks are not opened in the field. They are a check on sample contamination originating from sample transport, shipping and from site conditions. Equipment blanks are opened in the field and the contents are poured appropriately over or through the sample collection device, collected in a sample container, and returned to the laboratory as a sample. Equipment blanks are a check on sampling device cleanliness.

CALIBRATION CHECK: Verification of the ratio of instrument response to analyte amount, a calibration check, is done by analyzing for analyte standards in an appropriate solvent. Calibration check solutions are made from a stock solution which is different from the stock used to prepare standards.

CHECK SAMPLE: A blank which has been spiked with the analyte(s) from an independent source in order to monitor the execution of the analytical method is called a check sample. The level of the spike shall be at the regulatory action level when applicable. Otherwise, the spike shall be at 5 times the estimate of the quantification limit. The matrix used shall be phase matched with the samples and well characterized: for an example, reagent grade water is appropriate for an aqueous sample.

ENVIRONMENTAL SAMPLE: An environmental sample or field sample is a representative sample of any material (aqueous, nonaqueous, or multimedia) collected from any source for which determination of composition or contamination is requested or required. For the purposes of this manual, environmental samples shall be classified as follows:

Surface Water and Ground Water;

Drinking Water -- delivered (treated or untreated) water designated as potable water;

Water/Wastewater -- raw source waters for public drinking water supplies, ground waters, municipal influents/effluents, and industrial influents/effluents;

Sludge -- municipal sludges and industrial sludges;

Waste -- aqueous and nonaqueous liquid wastes, chemical solids, contaminated soils, and industrial liquid and solid wastes.

From: SW 846, Volume 1A, Chapter 1