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Cal/EPA

Department of Toxic Substances Control

245 West Broadway, Suite 425
Long Beach, CA 90802-4444

July 8, 1996

Pete Wilson
Governor

James M. Strock
Secretary for Environmental Protection

Mr. Kurt Baer
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway, Room 18
San Diego, California 92132-5181

DRAFT REMEDIAL INVESTIGATION (RI) REPORT LONG BEACH NAVAL SHIPYARD (LBNSY), LONG BEACH, CALIFORNIA

Dear Mr. Baer:

The California Environmental Protection Agency (Cal/EPA) has completed its review of the *Draft Remedial Investigation Report Long Beach Naval Shipyard, Long Beach, Calfironia (Draft RI Report)*, dated April 1996. The Draft RI was prepared by Bechtel National, Inc.

The *Draft RI Report* contains the findings of all site investigations for Long Beach Naval Shipyard, Sites 8 through 13. Risks and hazards are properly quantified, according to the approved workplan. Since, LBNSY has been slated for closure, it is necessary for the Navy to assess exposures with the assumption that current buildings will be removed. Cal/EPA does not agree with the Navy's conclusion that the risk assessment supports no remediation for soils at (LBNSY), because future land users can be exposed by pathways which are not considered in this version of the document. The Navy should submit a modified plan to the regulatory agencies so that all parties can agree on how to make the final version of the risk assessment complete for it's purpose. This final risk assessment should include inorganic Chemicals of Potential Concern (COPC) removed due to comparison to apparently contaminated background samples. Also, data inappropriately excluded because of elevated detection limits should be included in the final calculations of exposure point concentrations.

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The Department of Toxic Substances Control (DTSC) has compiled comments on this document from its internal technical staff and from the Regional Water Quality Control Board - Los Angeles (RWQCB) which are enclosed with this letter. If you have any questions, please contact me at (310) 590-5565.

Sincerely,

Alvaro Gutierrez

Alvaro Gutierrez
Base Closure Team Member
Region 4 Base Closure Unit
Office of Military Facilities

Enclosure

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GENERAL COMMENTS

The document is quite thorough and well written. The risk assessment is properly prepared, according to the approved workplan. However, Long Beach Naval Shipyard (LBNSY) is under closure and scheduled for future redevelopment. This necessitates assessing exposure settings not included in the original workplan. Therefore, DTSC cannot agree with the Navy's conclusion that soils at LBNSY do not present significant risks. Before responding to the specific comments below, DTSC recommends that the Navy submit a modified plan to the regulatory agencies, so all parties can agree on how best to finalize the document

SPECIFIC COMMENTS

1. **Figure 2-10, 200-Foot Sand / Gaspur, Groundwater Elevation Contour Map (Spring 1995):** Figure 2-10 contains an error in the Legend description of the contour line. The contour lines described as representing chloride concentrations should be described as representing iso-elevations of the potentiometric levels in the Gaspur 200-foot sand.

   DTSC recommends that the Legend be revised to properly describe the features being represented by the contour lines.

2. **Page 2-12, Section 2.1.5.3, Factors Affecting the Groundwater Flow Regime, Drydock No. 1 HPRS:** As commented on the draft RI Report for the Long Beach Naval Station, the discussion of the Drydock 1 dewatering wells does not include any explanation why relief drains connecting the shallow water bearing zone to the Gaspur aquifer are not causing drawdown of water levels near the relief drains even when pumping at long-term rates in excess of 2000 gallons per minute. The design of the hydrostatic pressure relief system (HPRS) was meant to cause drawdown in the shallow water bearing zone. The Gaspur water bearing zone may have a much higher hydraulic conductivity than the sand drains, or the sand drains may have become clogged by acting as filters for suspended solids or by providing habitat for colonizing bacteria.

   The Navy's response to comments on the Draft RI for Long Beach Naval Station Sites 1-6A, stated that the impact on local ground water flow direction and rates would be addressed in the Long Beach Naval Shipyard RI Report. The impacts of pumping the HPRS are apparently too small to be measured. The Navy acknowledges that the HPRS has little, if any, impact on ground water levels in the shallow zone and the upper Gaspur

formation, but provides no assurance that if the HPRS is rehabilitated, and causes changes in ground water flow directions, they would re-evaluate the ground water flow regime. The design and efficient operation of potential remediation measures may be impacted by a properly operating HPRS.

DTSC recommends that the Navy provide plans and schedules for HPRS rehabilitation, and assurances that ground water flow in the shallow water bearing zone be monitored and re-assessed if remedial measures could be impacted by a change in the ground water flow caused by changes in the performance of the HPRS.

3. **Section 5.5, IR Site 12 and Section 5.6, IR Site 13:** The discussion of the distribution of poly-nuclear aromatic hydrocarbons (PAHs) and semi-volatile organic compounds (SVOCs) in soil is complete, but would be unclear to a reader not familiar with the data. A contour map of iso-concentrations of PAHs, SVOCs, or a total of both provides a clear picture of the distribution, the separate areas of contamination, and the buildings that obstruct further contaminant delineation. DTSC found that a contour map of the total concentration of PAHs and SVOCs minus the overlapping compounds, provided an adequately clear picture when using iso-concentration contour intervals of 10, 100, 1000, 10,000, and 100,000 micrograms per kilogram.

   DTSC recommends that the Navy provide iso-concentration contour maps of PAHs and SVOCs in soils for the combined Site 12 and Site 13 area.

4. **Section 5.7.2.1, Contaminant Fate and Transport, IR Site 8, Conceptual Model:** The conceptual model for fate and transport for Site 8 and the other Shipyard sites uses the method of assessing the risk of individual contaminant calculated concentrations reaching the Southern California Edison (SCE) pumping plant from each source. The current ground water chemistry at the pumping plant is not provided. The additional load from the many other sites not on Shipyard property are not addressed. The additional total load from the Shipyard is not addressed. One of the precepts of environmental impact investigation and assessment is that the aggregate load is an important consideration. That is, does the total Long Beach Naval Complex additional projected organic and inorganic load, as well as can now be determined, reaching the SCE pumping plant, exceed or cause to exceed a significant risk level?

   If necessary, the individual site load information can be used to determine which site(s) would provide the best reductions in chemical load if

remediated.

DTSC recommends that the Navy determine the total contaminant load reaching the SCE pumping plant caused by the Long Beach Naval Complex, whether that load presents a significant risk, and whether by adding to existing or projected ground water chemical load the total Long Beach Naval Complex load causes the SCE pumping plant chemical load to exceed a significant risk level.

5. **Units for Soil Gas:** The units are not given for the entries in the bodies of Tables 5.2-6 and 5.2-7. Without knowing these units, DTSC cannot evaluate the Navy's argument elsewhere that indoor air samples are less than health-based values. The same thing seems to occur for most of the tables with results of soil gas. Please show units clearly for each table.

6. **Populations at Risk, Sec. 6.3.1, pp. 6-6 ff.:** In the approved risk assessment workplan, the Navy assumed that current buildings would remain in place and two potentially exposed populations were identified, current shipyard workers and utility workers involved in short-term trenching or construction. At the time that workplan was written and approved, LBNSY was an open military facility; however, LBNSY is now a closing military facility and the property will be leased or transfered to a future reuse entity. Thus, it is no longer appropriate to assume that current Navy buildings will remain undisturbed. Closure of the facility makes it necessary for the Navy to assess potential exposures of future workers to via the pathways customarily used for the industrial setting. This includes exposure to surface and subsurface soils, assuming the absence of pavement.

7. **Toxicity Criterion for Manganese, Sec. 6.4.1.3, p. 6-13:** The Navy is apparently basing its selection of a reference dose for manganese on certain language entered into the IRIS data base in late 1995. The current IRIS file on manganese seems to offer three different values for the oral reference dose to be used under defined conditions. It is DTSC understanding that USEPA regional toxicologists have decided to continue using the former reference dose for manganese, 5×10^{-03} mg/kg-day. DTSC recommends the Navy also use this value. For additional information or guidance on this subject, please contact Dr. Sophia Serda of USEPA Region IX at (415) 744-2307.

8. **Dermal Absorption, Section 6.4.1.5, p. 6-14:** DTSC agrees with the Navy that oral toxicity criteria should not be corrected for absorption for

use in estimating dermal risk or hazard. However, DTSC recommends that the Navy use the values for dermal absorption of certain chemicals and classes published in *Preliminary Endangerment Assessment Guidance Manual* (DTSC, 1994).

9. **Statistical Determination of Ambient Concentrations of Metals in Soils, Sec. 3, Appendix E:** DTSC does not accept some of the background threshold values for metals in soils shown in Table 3-1. This affects the selection of metals of concern across the entire site. Keeping in mind that much metal working occurred at LBNSY throughout its operation, it would not be surprising to find metals in soils at concentrations higher than some defined "local background". When statistical descriptions present evidence of populations of seemingly elevated values of metals probably released at the site, such elevated values can not be included in the description of ambient conditions

According to Figure 3-1 (Is this the missing Figure E-1?), if data sets fail tests for normality and lognormality, outliers should be identified and removed, then distributions will be retested. The presence of outliers due to contamination may be inferred when detected concentrations range over several orders of magnitude and/or when inflection points are obvious in the plot of cumulative frequency vs. concentration or the logarithm of concentrations. Such outliers should be removed prior to estimating the threshold value for "background".

Following this reasoning, DTSC thought values shown in Table 3-1 were surprisingly high for antimony, arsenic, cobalt, copper, lead, manganese, and zinc, especially when compared to similar values shown in Table H1-1 in the RI report for LBNS. Geochemical evidence from Appendix G leads us to accept the Navy's proposed values for arsenic and cobalt, but too few outliers were removed for the other metals, as discussed below.

Antimony: Figure E-6 shows several inflections. The inflection at a concentration corresponding to about e^2 (~7 4 mg/kg) might represent the upper range of the population nearest the origin. The value selected in Table H1-1 for LBNS was 7.39. Is the horizontal portion near 50% frequency a series of non-detects? If so, it might be useful to plot detected values only to identify an inflection with better certainty. In any case, it is not clear that all the outliers have been removed.

Copper: The concentrations of copper used to derive the threshold value range through nearly five orders of magnitude, which is far too wide.

Figure E-19 suggests two populations, the lower of which has a maximum near e^4 (~55 mg/kg). This lower population is almost certainly lognormally distributed, so a parametric estimate of a threshold value is possible. Discussion in Appendix F suggests that a population with elevated values of copper might be expected due to formation of complexes with organic carbon, but no data are presented to indicate that such complexes are present at LBNSY. Even it this were the case, the origin of the carbon could have been a release by the Navy. Sandblasting materials used at LBNSY contained copper, so releases could have occurred. Please recalculate the threshold value based on the lower of the two populations.

Lead: Data on lead are similar to copper. Figure E-23 suggests three lognormally distributed populations. The lower of these have maxima near e^2 (~7.4 mg/kg) and e^4 (~55 mg/kg). Even if complexes of lead with organic material are present, which has not been demonstrated, why are three populations evident if not for contamination? Releases of lead due to shipyard operations are probable. Please recalculate the threshold value using no more than the lower two of these populations.

Manganese: Figure E-25 suggests a lognormally distributed population with a maximum near e^4 (~400 mg/kg). Please recalculate the threshold value using only data from this lower population.

Zinc: The data for zinc (Figure E-39) are quite similar to those for copper. Values below e^4 (~55 mg/kg), apparently represent one lognormally distributed population from which a threshold value should be calculated.

10. **Geochemical Determination of Ambient Concentrations of Metals, Sec. 3, Appendix F:** The geochemical analysis presented in Appendix F is an excellent adjunct to the statistical procedures in Section 3 and Appendix E that DTSC has seen in earlier reports for defining ambient concentrations of metals in soils at Long Beach Naval Station (LBNS). When the two methods yield different results, DTSC technical support staff determines whether the Navy is correct to favor the geochemically defined upper limit of ambient concentrations, because it is underlain by physical and chemical mechanisms, whereas the statistical method is purely descriptive.

For metals in groundwater, DTSC defers this issue to the Los Angeles Regional Water Quality Board for the acceptability of the values shown in Table 3-2. The values in this table were apparently derived properly, according to the procedures described in the text of Section 3.

11. **Excluded Data, Appendix G:** The reason for exclusion of every datum listed in Tables G-1 through G-5 is that the chemical was not detected in the sample and one-half of the sample quantitation limit (SQL) is "significantly" greater than the highest detected concentration (C_{max}) for that chemical. From the content of the table, "significant" apparently is taken to mean 3 x C_{max}. DTSC rejects these exclusions for the two reasons given below. Please include all these data in the calculations of exposure point concentrations.

First, Section 5.3.2 of *Risk Assessment Guidance for Superfund Human Health Evaluation Manual Part A* (USEPA, 1989) permits exclusion of non-detects from samples with unusually high SQLs, if inclusion of such data would drive the calculation of the exposure point concentration higher than C_{max}. However, DTSC guidance permits the Navy to select as the exposure point concentration the lower of C_{max} or the 95% upper confidence limit on the mean value (Chap. 2, Sec. 3.3.1, *Supplemental Guidance for Human Health Multimedia Risk Assessments for Hazardous Waste Sites and Permitted Facilities*, DTSC, 1992). Thus, inclusion of all the values in Appendix G cannot affect the selection of the exposure point concentration

Second, most of the values to be excluded are non-detects for polycyclic aromatic hydrocarbons (PAH) at Sites 12 and 13. Several PAH were detected at Sites 12 and 13 (Tables 5.5-8 and 5.6-6) and are thus chemicals of potential Concern (COPC) at these sites. Thus, it is not reasonable to assume that chemicals detected in one area of a site are not present in other samples which were collected nearby but which were found to have elevated detection limits.

State of California

Memorandum

Alvaro Guitterez
Department of Toxic Substances Control
245 W. Broadway, Suite 350
Long Beach, CA 90802-4444

Date: June 21, 1996

File : 90-75

From : **CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—LOS ANGELES REGION**
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject : **DRAFT REMEDIAL INVESTIGATION (RI) REPORT - LONG BEACH NAVAL SHIPYARD, LONG BEACH, CALIFORNIA (File No. 90-75)**

We have received the Draft Remedial Investigation (RI) Report for the Long Beach Naval Shipyard, dated April 1996. Our comments are as follows:

General Comments

- Include plume maps for COC's above screening criteria in both soil and groundwater wherever feasible. This may facilitate source identification.

- Delete "All Analytes Non Detect" boxes from figures (about 14 on Figure 5-69) in order to reduce clutter.

- Include the local groundwater flow direction on all figures displaying groundwater information. Flow direction and gradient should be as "site specific" as possible. Include "determine vertical gradients" in the recommended future actions for Sites 9, 10, 11, 12, and 13.

- Indicate whether the groundwater monitoring wells were gauged and surveyed simultaneously. This is of particular interest in the areas of recent subsidence.

- We do not object to the groundwater screening criteria listed in bullet 6 on page 3-1. However, we believe that they have been applied inappropriately at Sites 8 through 13. All groundwater contamination exceeding the screening criteria selected must be delineated and remediated as appropriate. We do not concur with the Navy's approach of using the Southern California Edison Long Beach Generating Station's dewatering discharge as the "point of compliance" for all the Naval Shipyards groundwater contamination. Table 8-3, Recommended Future Actions For Groundwater, should be reevaluated based on this comment.

Site 9

- We understand that a chrome plating shop existed in building 129. Locate storage and dip tanks, associated

with the plating operations, on Figures 5-19 and 5-20. Indicate if all chemicals associated with chrome plating operations were sampled in the footprint of the plating shop area.

- A minimum of four storage tanks, in concrete sump-like structures, on either side of the Building 129 North exit, were removed in the 1970's (D. Rollefson, pers. com., 1996). Indicate whether the above tanks/sumps were possibly part of the trench/sump system described on page 5-19. Locate the above on Figures 5-19, and 5-20, and indicate whether the area was sampled. Also, we believe that the sump discovered on the southeast corner of Building 129 should be sampled.

Site 10

- The groundwater elevations for SP-10-04, MW-28, SP-10-02,and MW-10-02 on Figure 5-34 show a groundwater gradient sloping towards Drydock 1. This may be a reflection of the Drydocks influence on the shallow groundwater. Please discuss.

- The RI describes, on page 5-57, scrap stored in bins on the eastern side of the site. The sampling in the northeast corner shows metal and SVOC contamination. however, the remainder of the eastern portion of the site was not sampled. Based on the results from the northeastern corner, we believe that further sampling along the eastern edge of the site is appropriate.

- The geophysical anomaly in the southwest portion of site 10 presents a significant data gap and should be addressed(see General bullet 3 and Site 10 bullet 1).

Site 11

- Include a figure displaying pertinent groundwater information.

- Note that Figure 5-46 shows the groundwater elevation at this site dropping from -5 ft below Parking Lot F to -10 ft adjacent to Drydock 1. This appears to reinforce the observation that the Drydock has a localized impact on the shallow water table. Please discuss.

- Lysimeters were installed, under our direction, on the exposed portions of Site 11 in order to monitor the impact of rainfall and irrigation on the grit-impacted hillside. Figure 5.4-7 indicates that arsenic, copper, lead, molybdenum, and zinc are leaching out of the hillside soils at levels that are several magnitudes over the Water Quality Objectives for the Protection Of Marine

Aquatic Life. TCLP and STLC testing of the sandblast grit produce similar results (Figure 5.4-2). We believe that, based on the results of the Draft RI, soil samples should be analyzed using EPA Method 1312 (Synthetic Precipitate Leaching Procedure). Please address.

Site 12

- Include groundwater flow directions in Figures 5-68 and 5-69.

- The discussion of contaminants in soil on page 1-121 indicates that soil samples containing black sand or sandblast grit with a petroleum odor showed significant PAH and metals contamination. However, a three foot layer of similar material discovered in boring SP-12-05, was only sampled for organotins. We believe that this data gap should be addressed.

- Based on the TCLP, STLC, and lysimeter data from sandblast-grit impacted areas of Site 11, we believe that the leachability of metals at this site should be addressed.

- Indicate whether the liquid filling the N-S oriented low area described on page 5-108 could be an oil spill or an oil sump related to the oil production. Also, clarify whether the black oily material discovered in HP-12-32 may be a part of the above mentioned spill or sump.

If you have any questions regarding the above, please contact Hugh Marley at (213) 266-7669.

for J.E. ROSS, Unit Chief
Site Cleanup Unit