STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

DEPARTMENT OF HEALTH SERVICES
2151 BERKELEY WAY
BERKELEY, CA 94704

N00217.000476
HUNTERS POINT
SSIC NO. 5090.3

August 17, 1988

Commanding Officer
Naval Station Treasure Island
Building I (Code 70)
San Francisco, CA 94130-5000
ATTN: Mr. Kam Tung

DHS COMMENTS ON HUNTERS POINT PHEE

Dear Mr. Tung:

Enclosed are our comments on the draft Public Health and Environmental Evaluation (PHEE) for Hunter's Point Annex.

Please revise this document per our comments and submit the final draft by September 16, 1988.

If you have any further questions, please contact William Owen of my staff at (415) 540-2592.

Sincerely,

Howard Hatayama, Chief
Site Mitigation Unit
Region 2
Toxic Substances Control
Division

Enclosure

cc: attached list

HH:wo

D/N 36

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Rev: August 1988

COMMENTS ON HUNTERS POINT DRAFT PHEE

I. GENERAL COMMENTS

A. There needs to be further development on the potential risk to the environment, particularly on San Francisco Bay and its resident organisms. This will involve an assessment of its current flora and fauna, and may also necessitate additional offshore sampling for contaminants.

B. This document as presented is incomplete in that it has not been written for the uninitiated reader. A more complete document should be prepared for the overall PHEE assessment (defined on page 1-6 of the Public Health and Environmental Evaluation Plan [PHEEP]), one that is geared more toward the layman. This final document should include all justifications that back the scientific inferences.

On the same note, all factual statements and assumptions should be referenced or stated as appropriate to the discussion. Rationalizations and digressions into logic need to be clearly spelled out. The ultimate goal of this document is that it should stand on its own, and not need additional support or interpretation by outside experts.

II. PUBLIC HEALTH AND ENVIRONMENTAL EVALUATION PLAN (PHEEP)

A. Page 3-4, Task 1.3: This task only discusses site specific hydrogeologic descriptions. It is the Department's position that such studies of themselves will only provide a partial assessment of a significant contaminant pathway at Hunters Point. the final PHEE should provide a hydrogeologic summary of the entire facility. This will entail additional effort on the part of the Navy to perform a complete hydrogeologic study of the Hunters Point facility.

B. Page 3-6, 2nd paragraph: The "octanol-water partition coefficient" should be changed to "organic carbon partition coefficient".

C. Page 3-6, 4th paragraph: The standard approach to dose-exposure calculations typically assumes a 70-kg man as the receptor. Unfortunately, this is more appropriate for industrial exposure. When looking at public health, women and children need to be considered

as well. Therefore, a 10-kg child (the more sensitive receptor) should be used for these calculations. This will also require changing the soil ingestion value of 100 mg for the 70-kg man to the more appropriate 590 mg for the 10-kg child. If the argument is that only 70-kg males will be exposed, the rationale for this argument should be presented early in the document.

D. Page 3-7, Item 3: The "regulatory criteria" referred to here should be specified. Please remember that the regulatory criteria spelled out in Article 11, Title 22 of the California Code of Regulations are not applicable from a health-assessment standpoint, and should not be used as such.

E. Page 3-8: In addition to the listed criteria for choosing indicator chemicals, the following should also be considered: 1) ease of analytical determination; 2) representativeness of a family of compounds found on the site.

F. Page 3-9: The abbreviation for the reference dose, RD, should be changed to RfD, in keeping with EPA's nomenclature.

G. Page 3-17, 2nd paragraph: This paragraph should be deleted. Since no practical solution is given for absorption rates, it is necessary and appropriately conservative to assume 100% dose absorption for the receptor.

H. Page 3-17, Task 4.1: Recent changes at EPA employ the RfDs rather than the ADI. The Navy should consider incorporating such changes into this document.

I. Page 3-18, Task 4.2: This task discusses the use of available carcinogen potency (q*) calculations to determine unit cancer risks. Will unit cancer risks be calculated for which no q* values are available? If so, how will this calculation be done?

J. Page 3-19, Tasks 5.1 through 5.3: In addition to site-specific exposures, a complete exposure level should also be calculated. Where data are available, synergistic and antagonistic effects should be considered. Otherwise, the additive model can be used.

III. PRELIMINARY PUBLIC HEALTH AND ENVIRONMENTAL EVALUATION (PPHEE)

A. Page ES-2: Radioactivity should be included in the list of indicator chemicals on this page.

B. Page ES-3: The rationale for a 5-year exposure to worst-case conditions should be substantiated by more than a personal communication (Section 4, page 4-10). If substantiation cannot be properly established, some margin of safety should be included in the calculations.

C. Page ES-4: The assumption that winds are primarily eastward is oversimplified, since local eddy currents and directional changes occur daily. These changes should be factored into the exposure estimates.

D. Page 1-4, 1st Paragraph: A rationale for extrapolating data for worst-case scenarios should be provided.

E. Page 4-3: The assumption that since VOCs were not found in the surface soils there is no atmospheric release is unjustified. A surface-flux determination should be made (preferably using a surface-flux isolation chamber) to substantiate such a conclusion. A second option would be to remove this assumption by deleting the 2nd sentence of the 3rd paragraph.

F. Page 4-12: Several possible routes of exposure were not discussed, particularly uptake of chemicals by shellfish and other marine organisms used as food. Based on the fragmentary data currently available, potential routes of exposure that are judged insignificant in this PPHEE should be re-examined after site characterization.

G. Page 4-23: The statement is made that accidental solid ingestion after dermal exposure is thought to contribute minimally to possible human intake of chemicals. Although this may be true in some cases, if family housing is constructed on base potential exposures to children could be significant by this route. Tenant workers who contact soil and do not wash their hands before eating or smoking may also be exposed by this route. Asbestos is present on site and workers clothes could become contaminated. Wives of asbestos workers have developed lung tumors from handling and laundering of contaminated clothes. Carcinogenic PAHs may be absorbed through the epidermis. Some of the many organic chemicals present

at the landfill may be potent skin irritants or sensitizers (e.g. nickel and chromium). Thus, soil contact must be considered as an exposure route. Chemicals migrating into the Bay may be ingested by marine organisms and incorporated into the food chain. For purposes of completeness this potential exposure route should be discussed. Heavy metals and PCBs in shellfish are examples of contamination of a food source.

H. Page 4-28: Please provide reference rationale for the statement that, if copper were leaching into the Bay from the site, its bioavailability would be in doubt due to chemical interactions in Bay waters. Precipitation of copper would lead to its presence in sediment where it could be taken up by bottom dwellers.

I. Page 4-32: The use of TLVs implies that only workers will be exposed to contaminants at Hunters Point. However, since there will be a resident population subject to potential exposure, the focus should be on this population, with the secondary benefit that workers will also be protected.

J. Page 4-34, 3rd Paragraph: No justification is given for assuming that all chromium on the site would be in the trivalent state. Some may be present in the carcinogenic hexavalent state. This should be addressed.

K. Page 4-36: When transfer of chemicals from the site to the Bay is estimated, soil blowing off site to the Bay, surfact water run-off, and ground water seepage should all be considered.

L. Page 5-1: The section on data deficiencies (Section 5.0) falls short of the mark by only giving broad recommendations to correct these gaps, specifically in the areas of soil, groundwater plume and receptor characterizations. Since this is meant to be a comprehensive document that can be understood by the public, general statements like "Data on chemicals... needs to be collected..." and "...describe those chemical sources adequately..." are not acceptable. Specific data gaps that may affect chemical migration and exacerbate exposure risks must be addressed (e.g., soil composition and structure, groundwater pH, land use, etc.). Attached for edification are excerpts from the EPA's <u>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA</u> (Attachment A). Although not all of the data needs

outlined in this attachment will be necessary or applicable to Hunters Point, it should serve as an example of the level of detail we need to see when addressing data gaps.

M. Page 5-8: Marine organisms potentially susceptible to pollutants migrating off-site should be considered as potential receptors. Sampling of sediments in the Bay just offshore should be considered, especially for metals and PCBs. Sampling of shellfish offshore adjacent to the land fill, bayfill, and sub-base areas would be useful if these areas are a habitat for them.

N. Page 6-1: The suggestions outlined in this section only partially address risk minimization. Additional measures will clearly be needed. In the meantime, these suggested steps should be viewed as interim measures to be undertaken prior to the final remedial action. Additional steps should include mitigation of the asbestos hazard at the power plant (both inside the building and on outside structures), and mitigation of the potential metal exposure to workers at the Battery and Electroplating Shop.

O. Appendix D: The model for fugitive dust emissions is sensitive to wind speed and particle size distribution. These parameters should be actually measured on site in order to obtain a reasonable estimate of the dust emission rate. In the full PHEE all model parameters and sample runs should be furnished.

P. Industrial Landfill (IR-1)

1. Page 2-6, 3rd Paragraph: The three boring depths for soil sampling should be indicated here.

2. Page 3-5: With regard to metals, copper and chromium should be listed as indicator chemicals for soils, due to the high concentrations and toxicity to marine life of the former, and the potential carcinogenicity of the latter in its hexavalent state. Antimony and thallium should be considered for listing for both soil and groundwater, provided they are significantly in excess of background. Later, during remediation, the list of metals may be narrowed for areas where the listed metals are found together, so that mitigating the indicator chemical will also mitigate other contaminants.

Carcinogens such as chrysene should be listed as indicator chemicals, especially when present at relatively high concentrations. Chemicals present in high amounts which exhibit reproductive toxicity, such as xylenes, toluenes and benzene derivatives should also be considered for inclusion.

High concentrations of carcinogenic solvents were found in ground water, including benzene, trichloroethylene (TCE), and vinyl chloride. We feel the highest ranking of these should be listed as an indicator chemical. The rationale for the choice of chemicals should be included. A more complete characterization of the environmental or health risks posed by these chemicals could be done after completion of the RI.

3. Page 3-9, 2nd Paragraph: "PH" should be corrected to read "pH".

4. Page 3-16, Section 3.1.4.4: As currently written, this section is inaccurate and misleading. Specifically, adults are not of primary concern for lead ingestion, and children absorb between 50-60% of an ingested dose of lead. This section needs revision to reflect these facts.

   The ATSDR has reduced the level of lead in blood considered to be associated with toxicity in children to 15 ug/dl.

5. Page 4-4, Last Paragraph: The reference to "episodic and unlikely" leaching of arsenic, lead and nickel is unsupported and should be deleted.

   Regarding potential releases from the industrial landfill, we do not agree that the vegetation was heavy enough to preclude surface run-off to the Bay or fugitive dust emissions. We also doubt that air sampling was thorough enough to rule out emissions of the large array of organic chemicals present into the air. Emissions could occur from: (1) soil to air, (2) ground water to soil to air, or (3) ground water to Bay water to air.

6. Page 4-5: Given the admitted possibility of vehicular traffic, we do not agree that tracking releases of chemicals are unlikely. The presence of high concentration of PCBs, lead, and other chemicals could result in a significant releases.

Q. Bay Fill Area (IR-2)

1. Page 3-20, 2nd Paragraph: More detail needs to be provided for the screening of metals fragments (e.g., screen sizes used, sieving procedure, etc.).

2. Page 3-21: Carcinogens present at high levels such as TCE, DEHP, chrysene, and other carcinogenic PAHs should be reconsidered for listing as indicator chemicals. Unless it is known that chromium is not present in the hexavalent state, it should also be considered for inclusion as an indicator chemical. Because of the toxicity of tin to marine organisms its inclusion as an indicator chemical should also be investigated.

   Asbestos should be considered as an indicator chemical at the Bay Fill site; Some explanation or discussion should be given to the presence of "molecular sulfur" at five ppm in ground water.

   Nonpriority pollutants should not be arbitrarily eliminated just because little is known about their toxicity. For example, 1,3 oxathiolane is present at 25 parts per million (ppm) in ground water at the Bay fill site yet its toxicity or reasons for its exclusion are not discussed. For little known chemicals present at high concentrations, literature searches for toxicity data can be conducted. If necessary, structure activity correlations can be estimated.

R. Oil Reclamation Ponds (IR-3)

1. We did not find PCBs listed per se in Table 3-20, although it was chosen as an indicator compound (hexachloro-1,1-biphenyl was listed as a non-priority pollutant for soil). A more detailed rationale should be given for choosing this indicator chemical.

2. Consideration should be given to including the following as indicator chemicals (the media of concern is given in parentheses): benzene (soil, groundwater); carcinogenic PAHs, including chrysene (soil); DEHP (soil), chromium (soil, groundwater); 1,4-dichlorobenzene (groundwater); lead (groundwater).

3. Page 3-35: Here the document indicates that 1,4-dichlorobenzene is not carcinogen. Recent studies (1986) found this compound to be carcinogenic in both rats and mice in an NTP bioassay. The document should be revised accordingly.

4. Page 4-6: It is indicated that benzo(a)pyrene is not expected to be released to groundwater, yet 8 ug/l of this compound has been detected in groundwater (Table 3-23), along with considerable amounts of PAHs. This discrepancy should be corrected.

S. Old Tranformer Storage Yard (IR-5)

1. Page 2-14, Section 2.6.4: Which PCBs were found and what were the levels detected? Such information is needed for any risk analysis.

2. Page 4-7: Given the large number of tenants on the base, we do not feel tenant presence can be discounted at this site for potential PCB releases.

T. Pickling and Plate Yard (IR-9)

1. Page 3-50: The section for arsenic has been mislabeled. This section should be numbered "3.9.4.1".

Table 3-2
SUMMARY OF SITE GEOLOGY

Information Needed	Purpose or Rationale	Collection Methods
o Geology of unconsolidated overburden and soil deposits - Thickness and areal extent of units - Lithology; mineralogy - Particle size and sorting; porosity o Geology of bedrock - Type of bedrock (igneous, metamorphic, sedimentary) - Lithology; petrology - Structure (folds, faults) - Discontinuities (joints, fractures, bedding planes, foliation) - Unusual features such as igneous intrusive bodies (dikes), lava tubes, solution cavities in limestone (Karst)	For both unconsolidated and bedrock geology: o Evaluate the influence of geology on water-bearing units and aquifers o Evaluate the influence of geology on release and movement of contaminants o Obtain information on the engineering geologic aspects of site remediation	For both unconsolidated and bedrock geology: o Determination of regional geology from available information - Published reports (geologic reports, ground-water reports, soil survey reports) - State geologic maps - USGS topographic quadrangle maps - Descriptions of regional geology from previous reports of site investigations o Site reconnaissance mapping - Field mapping of surficial soil and overburden units, bedrock outcrops, surface water drainage, springs, and seeps - Analyses of aerial photography or other remote imagery - Surface geophysics o Subsurface explorations - Test borings or core borings (with or without sampling) - Test pits and trenches - Description and logging of subsurface geologic materials - Sample collection for laboratory analyses of physical properties and mineral content - Borehole geophysics

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ATTACHMENT A: SAMPLE EXCERPTS FROM GUIDANCE FOR CONDUCTING REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES UNDER CERCLA, U.S. EPA, MARCH 1988.

Table 3-3
SUMMARY OF SOIL AND VADOSE ZONE INFORMATION

Potential Information Needed	Purpose or Rationale	Collection Methods: Primary	Collection Methods: Secondary
Soil Characteristics:			
Type, holding capacity, temperature, biological activity, engineering properties	Estimate the effect of the properties on infiltration and retardation of leachates and the release of gaseous contaminants	Reports and maps by Federal and county agencies, Soil Conservation (SCS) publications	Borehole sampling, laboratory measurements (ASTM methods), water budget methods, instantaneous rate method, seepage meters, infiltrometers, test basins
Soil Chemistry Characteristics:			
Solubility, ion speciation, adsorption coefficients, leachability, cation exchange capacity, mineral partition coefficients, chemical and sorptive properties	Predict contaminant movement through soils and availability of contaminants to biological systems	Existing scientific literature	Chemical analysis, column experiments, leaching tests
Vadose Zone Characteristics:			
Permeability, variability, porosity, moisture content, chemical characteristics, extent of contamination	• Estimate flux in the vadose zone	Existing literature	Water budget with soil moisture accounting Draining profile methods Measurement of hydraulic gradients Estimates assuming unit hydraulic gradient Flow meters Methods based on estimating or measuring hydraulic conductivity, using: o Laboratory parameters o Relationships between hydraulic conductivity and grain size o Catalog of hydraulic properties o Field measurements of hydraulic conductivity using single or multiple wells
	• Estimate velocity in the vadose zone	Existing literature	o Tracers o Calculations using flux values o Calculation using long-term infiltration data
	o Evaluate pollutant movement in the vadose zone	Existing literature	Four probe electrical method Electrical conductivity probe Salinity sensors Solids sampling followed by laboratory extraction of pore water Solids sampling for organic and microbial constituents Suction Lysimeters Sampling perched ground water

Table 3-4
SUMMARY OF SURFACE-WATER INFORMATION THAT MAY BE IMPORTANT TO SITE CHARACTERIZATION

Information Needed	Purpose or Rationale	Appropriate Collection Methods: Primary	Appropriate Collection Methods: Secondary
Drainage Patterns:			
o Overland flow, topography, channel flow pattern, tributary relationships, soil erosions, and sediment transport and deposition	Determine if overland or channel flow can result in onsite or offsite flow and if patterns form contaminant pathways	Topographic maps, site inspection, and soil conservation services	Aerial mapping, and ground survey
Surface-Water Bodies:			
o Flow, stream widths and depths, channel elevations, flooding tendencies, and physical dimensions of surface-water impoundments	Determine volume and velocity, transport times, dilution potential, and potential spread of contamination	Public agency data and atlases; catalogs, maps, and handbooks for background data	Aerial mapping, and ground survey
o Structures	Effect of manmade structures on contaminant transport and mitigation	Public agency maps and records and ground survey	
o Surface-water/ground-water relationships	Predict contaminant pathways for interceptive remedial actions	Public agency reports and surveys	Water level measurements, and modeling
Surface-Water Quality:			
o pH, temperature, total suspended solids, suspended sediment, salinity, and specific contaminant concentrations	Provide capacity of water to carry contaminants and water/sediment partitioning	Public agency computerized data files, handbooks, and open literature	Sampling and analysis

Table 3-7
SUMMARY OF IMPORTANT GROUND-WATER INFORMATION

Information Needed	Purpose or Rationale	Appropriate Collection Methods: Primary	Appropriate Collection Methods: Secondary*
Ground-Water Occurrence:			
o Aquifer boundaries and locations	Define flow limits and degree of aquifer confinement	Existing literature, water resource atlases	Installation of wells and piezometers (single level or multilevel)
o Aquifer ability to transmit water	Determine potential quantities and rates for treatment options	Pumping and injection tests of monitor wells	Ground-water level measurements (over time to monitor seasonal variations)
			Instrument survey of wells for calculation of ground-water elevations
			Borehole and surface geophysics
Ground-Water Movement:			
o Direction of flow	Identify most likely pathways of contaminant migration	Existing hydrologic literature	Water level measurements in monitor wells
			Testing of hydraulic properties using slug tests, tracer tests, and pump tests (short- or long-duration, single or multiple well)
			Elevation contours of water table or potentiometric surface
			Analytical calculations of flow directions and rates
			Computer generated simulations of ground-water flow and contaminant transport (using analytical or numerical methods)
			Generation of site water balance
o Rate of flow	Determine maximum potential migration rate and dispersion of contaminants	Existing hydrologic literature	Hydraulic gradient, permeability, and effective porosity from water level contours, pump test results, and laboratory analyses

*May be appropriate if detailed information is required or if it is the only method due to a paucity of published data.

Table 3-7 (continued)

Information Needed	Purpose or Rationale	Appropriate Collection Methods: Primary	Appropriate Collection Methods: Secondary*
Ground-Water Recharge/Discharge:			
o Location of recharge/ discharge areas	Determine interception points for withdrawal options or areas of capping	Existing site data, hydrologic literature, site inspection	Comparison of water levels in observation wells, piezometers, lakes, and streams Field mapping of ground-water recharge areas (losing streams, interstream areas) and ground-water discharge to surface water (gaining streams, seeps, and springs)
o Rate	Determine variability of loading to treatment options	Existing literature	Water-balance calculations aided by geology and soil data
Ground-Water Quality:			
o pH, total dissolved solids, salinity, specific contaminant concentrations	Determine exposure via ground water; define contaminant plume for evaluation of interception methods	Existing site data	Analysis of ground-water samples from observation wells, geophysics

*May be appropriate if detailed information is required or if it is the only method due to a paucity of published data.

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Table 3-8
SUMMARY OF IMPORTANT ATMOSPHERIC INFORMATION

Information Needed	Purpose or Rationale	Appropriate Collection Methods: Primary	Appropriate Collection Methods: Secondary
Local Climate: o Precipitation o Temperature o Wind speed and direction o Presence of inversion layers	Define recharge, aeolian erosion, evaporation potential, effect of weather patterns on remedial actions, area of deposition of particulates	National Climate Center (NCC) of National Oceanic and Atmospheric Administration; local weather bureaus	Onsite measurements and observations
Weather Extremes: o Storms o Floods o Winds	Determine effect of weather extremes on selection and timing of remedial actions, and extremes of depositional areas	NCC; State emergency planning offices; Federal Emergency Management Agency flood insurance studies	
Release Characteristics: o Direction and speed of plume movement o Rate, amount, temperature of release o Relative densities	Determine dispersion characteristics of release	Information from source facility, weather services, air monitoring services	Onsite measurements

Table 3-9
SUMMARY OF IMPORTANT ECOLOGICAL INFORMATION

Information Needed	Purpose or Rationale	Appropriate Collection Methods	
		Primary	Secondary
Fauna and Flora	Determine potentially affected ecosystems; determine presence of endangered species	Records of area plants and animals survey, survey of plants and animals on or near site; survey of site or area photographs	Ground surveys and sample collection
Critical Habitats	Determine area on or near site to be protected during remediation	Records of site environment	Ground survey
Land Use Characteristics	Determine if terrestrial environment could result in human exposure, e.g., presence of game animals, agricultural land	Agricultural and development maps; site survey	Ground and aerial survey
Water Use Characteristics	Determine if aquatic environment could result in human exposure, e.g., presence of game, fish, recreational water	Water resource agency reports; site surveys	
Biocontamination	Determine observable impact of contaminants on ecosystems	Records of site environment	Sampling and analysis

Table 3-10
SUMMARY OF IMPORTANT SOURCE INFORMATION

Information Typically Needed	Purpose or Rationale	Collection Methods: Primary	Collection Methods: Secondary
Facility Characteristics:			
o Source location	Locate above-ground and subsurface contaminant sources	Site inspection facility records, archival photos	Remote sensing, sampling, and analysis
o Type of waste/chemical containment	Determine potential remedies for releases	Site inspection	Remote sensing
o Integrity of waste/chemical containment	Determine probability of release and timing of response	Site inspection	Sampling and analysis; nondestructive testing
o Drainage control	Determine probability of release to surface water	Site inspection; topographic maps	
o Engineeered structures	Identify possible conduits for migration or interference with remedial actions	Site inspection; facility records	Remote sensing
o Site security	Determine potential for exposure by direct contact; may dictate response	Site inspection	
o Known discharge points (outfalls, stacks)	Determine points of accidental or intentional discharge	Site inspection; facility records	

Table 3-10 (continued)

Information Typically Needed	Purpose or Rationale	Collection Methods: Primary	Collection Methods: Secondary
o Mapping and surveying	Locate existing structures and obstructions for alternatives evaluation, site features, and topography	Existing maps (USGS, county, land development)	Remote sensing; surveying
Waste Characteristics:			
o Type	Determine contaminants for exposure assessments and for treatment options	Site inspection; waste manifests	Sampling and analysis
o Quantities	Determine magnitude of potential releases	Site inspection	Sampling and analysis; geophysical surveys
o Chemical and physical properties	Determine environmental mobility, persistence, and effects; determine parameters for development and evaluation of alternatives	Site inspection, handbooks, CHEMTREC/CHMTNS, Chemical Information Service (CIS), and facility records	Sampling and analysis
o Concentrations	Determine quantities and concentrations potentially released to environmental pathways	Site inspection	Sampling and analysis