



January 22, 1997



Cal/EPA

Department of  
Toxic Substances  
Control

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Commanding Officer  
Engineering Field Activity, West  
Attention: Code 18, Mr. Ernesto M. Galang  
Naval Facilities Engineering Command  
900 Commodore Drive  
San Bruno, California 94066-5006

Pete Wilson  
Governor

James M. Strock  
Secretary for  
Environmental  
Protection

Dear Mr. Galang:

**Re: Draft (on Shore) Remedial Investigation Report,  
Naval Station Treasure Island, San Francisco,  
California**

The Department of Toxic Substances Control and the Regional Water Quality Control Board (the State) have completed the review of Draft Remedial Investigation (RI) Report, Naval Station Treasure Island, submitted on October 24, 1996.

The report stated in its conclusion and recommendations that a number of "data (packages) and evaluations were not included in this draft RI report, but are necessary for the complete evaluation of the sites." These data packages include: (1) Groundwater modeling results, (2) TPH Toxicity testing results, (3) Additional sampling at sites 12 and 17, and (4) Phase IIB RI Groundwater monitoring well sampling results. The report further suggested that these data packages to be included in the future editions (i.e., Draft Final RI Report) of this report.

The state agrees that these data packages are essential to the completion of evaluation of the sites. The lacking of these data packages and their subsequent evaluations basically render the report incomplete. Instead of waiting to review the complete evaluations of these sites in the future editions of the report, we decided to treat the submittal of the draft RI report as incomplete. We are providing you with our initial

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comments on the portions of the report that we feel is prudent for us to comment on at this time. We will complete our comments after the submittal of the Draft RI report is completed.

If you have any questions regarding to this letter, please contact me at (510) 540-3822.

Sincerely,



Chein Ping Kao, P.E.  
Senior Hazardous substance  
Engineer  
Office of Military Facilities

Enclosure (3)

cc: Ms. Rachel Simons  
US EPA, Region 9  
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Mr. Gina Kathuria  
California Regional Water Quality control Board  
San Francisco Bay Region  
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Jim Sullivan, EPA WEST  
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ARCEcology, RAB  
Admin Record (3 copies)

Department of Toxic of Substances Control  
Comments on  
Draft (On Shore) Remedial Investigation Report

**General Comments:**

1. As stated in page 1-12 Section 1.4.3, This draft RI report only addresses areas pertaining to the potential contamination at the on-shore area of Naval Station Treasure Island. This report should be re-titled as " Draft On-Shore Operable Unit Remedial Investigation Report."

2. It is apparent that this project is taking a spatial (non-random) sampling rather than a statistical (random) sampling approach to characterize the spacial extent of the source(s) or the spread of contamination from a source. Spatial sampling does not assume randomness of sampling. It is inappropriate to apply statistic analysis to spatial (non-random) sampling. Descriptive statistics such as mean, standard deviation, normal distribution, and lognormal distribution as described in Appendix H would have little or no meaning when applied to this type of data.

3. The report ruled out the human health risk from ground water evaluation because the RWQCB's recently adopted San Francisco Bay Basin plan that de-designated ground water at TI as a potential municipal or domestic water supply source. But the report should still evaluate the human health risk based on the potential use of ground water for agricultural, process, and industrial supply.

4. Chemicals of Potential Concern (COPC) in ground water for most of the sites are not identified. This resulted in no discussion of the extent of ground water contamination. A few sites which did identify COPCs (such as site 24), the concentration contour lines are often supported by only one single data point. More

data points are necessary to support the concentration contour lines.

5. The report stated the groundwater modeling would help in assessing the potential impact of the contaminations to the bay. However, it is not clear how would the ground water modeling supplements the field data which should, by itself, define the current extent of contaminations.

7. The notion of a street or parking lot pavement somehow serves as a permanent barrier for the migration of contaminants is troublesome to us. Pavements (specially outdoor pavements) usually are designed to serve for vehicle movements. Expansion joints are typically built in to allow pavements to crack thus release stresses. It is very rare for pavements to be designed as water barrier. Any carrier such as precipitation or any chemical product/wastes in liquid form can easily penetrate through cracks.

8. Often the report leaps into a no-action conclusion by suggesting either the area is paved, the exposure is not expected, or no apparent source for the contamination. The report should focus on defining the extent of the contaminations and quantify the associated risks. The decision whether the site needs remediation, institution control, or no action should be based on risk assessment. The report also seems fail to recognize the difference between the no-action alternative and alternative that may not require remediation but needs land use restriction. One typical example is after reporting detection of certain contamination the report decides that "since the area is paved (or underneath a building), there is no action necessary . . ." It is the DTSC's long standing policy that whenever there is contamination left in the ground that may post a risk for any unrestricted use, a deed restriction is required to be carried with the land and a deed restriction (or institutional control) is one form of remedial actions.

9. When presenting its findings on the extent of contamination the report tends to simply show the sampling points and associated concentrations detected and leave it to the reader to interpret what the extents of the contaminations are. The report needs to be more specific in presenting its conclusion on the extent of contamination by either spell out the boundary in detail or show the boundary on a map.

10. At sites where the report concluded that further investigations or evaluations are necessary to define the nature and extent of the contamination, the report suggests that they be done in the Feasibility Study. This is in contrast with the objective stated in the report that the primary objective of the RI is to define the nature and extent of the contaminations. Feasibility Study is intended to evaluate potential alternatives and select the most efficient and cost-effective remedy to address the contamination that has been quantified during the RI. Feasibility Study should not be used as a step to complete the Remedial Investigation.

**Specific Comments:**

Page 1-10 Second sentence of 1.4.1, "The BRAC Cleanup Team (BCT) concluded that remediation would proceed more efficiently outside of the CERCLA process, under the petroleum exclusion clause." This sentence creates confusion as to what was the reason to remove these nine sites from CERCLA process and should be truck out. DTSC, as a member of the BCT team, is not convinced that remediation would proceed more efficiently outside of CERCLA process. However, the sole reason these sites were removed from the CERCLA process is that these sites are believed to be strictly petroleum contaminated sites and, therefore, under CERCLA's petroleum exclusion provision, are not required to comply with CERCLA.

Page 1-12 Last sentence of 1.4.2 "However, the FFSRA did not consider the site a potential risk, and no samples were collected from the site 02." It is not clear which portion of the FFSRA actually evaluates the potential risk of any site. Please explain how FFSRA makes any decision on the risk of any site.

Section 1.4.4 Please see comments above related to the submittal of a complete Draft RI report.

Fig 2-6 Water table contour lines for 6.0', 7.0', 8.0', and 9.0' in the center portion of the base are very questionable as all four lines are based on only three well points. One of the points (24-MW04) registers 9.95 while was located next to 7.0' contour line.

Fig 2-7 Same comment as above, specially the 7.0' line has only one well point and it registers a reading of 17.11'.

Fig 2-8 The problem of lacking sufficient water level measurements to support the contour map is magnified as this figure try to focus on one area of the base. There is virtually no data to support the 5.5'and 6.0' contour line.

Fig 2-9 Same as above.  
& 2-10

Page 3-26 The last paragraph of the page states that all analytical data from previous investigations were eliminated from the data set. We can understand the concern over the lack of records of QA/QC procedures during the previous investigation. But it does not necessarily mean that they didn't go through QA/QC validation. These findings are the

bases for the further investigation. Since Phase I and II samples were collected from the same locations, unless the new data validated the results of the old data, higher concentration of the two should be used for the identification of COPC as a conservative measure.

Page 3-28 Essential Nutrient Screening, While sodium, Calcium, Iron, Magnesium, and Potassium are in fact endogenous physiologic and essential elements, it is not appropriate to eliminate these elements from the list of constituents of potential concern by comparison to the entire range of North American geologic formations. At a minimum, it would be useful to compare and contrast the values for these elements to the range of concentrations found in Bay Area Region. It is not clear why was Zinc not included in this discussion as zinc is also an essential element.

Bottom paragraph, Please provide rationale for the decision that "If 10 percent or fewer of site concentrations exceeded the ambient concentration for a particular metal in artificial fill, that metal was eliminated from further consideration as a human health COPC." In reviewing Section 5.7.3 of US EPA RAGS (EPA/540/1-89/002, December 1989) and DTSC Guidance, there is no mention of a "10 percent" rule. To substantiate selection of such a "cut-off" or screening criterion, appropriate reference is needed.

Also, the text states "Although Site 11 is located at YBI, site metals concentrations were compared to the TI ambient concentration of each metal in artificial fill since Site 11 consists of artificial fill." It is not appropriate to equate the fill material at TI

to the fill material at site 11 which is basically a landfill for the disposal of variety of wastes. The metal concentrations at all YBI sites should be compared to the YBI background concentrations.

Page 3-30 Bottom of the page. The report cited three reasons why human exposure to chemicals detected in surface water and sediments is not evaluated:

(1) Chronic exposure to surface water and sediment is not expected,

It is not appropriate for the Navy to speculate whether chronic exposure is expected or not unless a specific restriction is in place to prohibit the exposure.

(2) It is difficult to differentiate between contamination in surface water and sediment that is attributable solely to site operation at NAVSTA TI and contamination resulting from non-site related sources.

The source of the contamination plays no role in risk evaluation under CERCLA's joint and several liability provisions. The Navy is the sole owner of the island (except for the portion owned by Coast Guard) and is responsible for all contaminations found on the island regardless it is resulted from a naval operation or not.

(3) the contribution to total risk from these media is expected to be small relative to the risk associated with exposure to soil.

Some evidence should be provided to substantiate this claim.

Page 3-33 See general comments regarding statistic (random) sampling and spatial (non-random) sampling.

Page 7-19 At the top of the page, Since chlorinated solvents were detected in the ground water samples its extent needs to be defined. The report's suggestion that "the solvent contamination was not expected." is not acceptable. In the same paragraph, the report needs to explain how the sampling conducted in September 1996 will help define the extent of the solvent contamination.

At the bottom of the page, last paragraph, The extent of TPH soil contamination is not defined. The petroleum exclusion rule does not apply if any petroleum contamination is commingled with any hazardous substances, the mixture is subject to CERCLA requirements. Until the Extent of TPH contamination is defined and it is clear that they are not commingled with nearby CERCLA sites, the TPH contamination should be continuously managed in the CERCLA program.

Page 7-20 Any metal contamination (lead and Beryllium included) with concentration exceeding the TI ambient concentration should be characterized and evaluated for risk assessment. Whether it is related to the artificial fill is not relevant. The recommendation for no action for soil is premature.

Page 7-21 The source and the extent of Mercury contamination needs to be further defined. Also, at the bottom of the page, while the entire site is paved, the pavement was not designed nor would it serve as a water barrier. The transport of contaminants through cracks in the pavement as the result of precipitation infiltration should not be ignored.

Page 7-22 At the end of second to last paragraph, the report suggested the investigation of TPH

will be completed in UST Program. We recommend that this investigation be kept in the CERCLA program. It would also make more sense to evaluate the total risk of all contaminants considering all the potential Contaminations are in very close vicinity of each other. In the last paragraph, the report acknowledged high concentration of Mercury is detected. It is not clear how the writer reached conclusion of "the affected area is relatively small . . ." When stated "mercury is not detected 50 feet down gradient of the burial area," please specify the referenced data points, specially the ground water flow direction is not well documented here, it is hard to determine which direction is down gradient.

Page 8-18 At the top of the page. The RfD of 2,4-D can be used as a surrogate toxicity value for dichloroprop.

Page 8-21 Last sentence of Section 8.9.1 When the report states "Analytical results from soil sampling adequately delineate the extent of pesticide and herbicide contamination.", it seems to leave the reader to interpret what exactly the extent of the contamination is. It would be much easier for the reader to understand what the writer meant by either spell out the boundary of the extent or show the boundary on a map. This is also true for the lateral extent of TPH contamination described in the next paragraph. The report needs to be more specific on how the writer reaches the conclusion the contamination is limited to the unpaved area.

Page 8-22 Last sentence of the paragraph concerning Pesticides, The report concluded the contamination may have migrated vertically.

It is not clear why wasn't the extent of the vertical migration discussed here. The same is true for the lateral extent of TPH contamination in the next page.

- Page 8-26 Area where MCPP exceeds PRG should not be proposed for no action. Either the full extent of MCPP distribution gets to be defined or the sole MCPP concentration detected be used as a representative sample for the entire area and evaluated for risk assessment.
- Page 10-1 It is interesting that the report indicates that the use of building 41 is unknown between 1968 and 1981. Apparently the same is true for the period between 1987 and 1994 as it skipped this period as well in discussing the historical use of the building. These are relatively recent history; there has to be some records or employees that would reveal the use of the building.
- Page 10-21 Second paragraph, The report states "Given that there is only one groundwater monitoring well on the site, only a limited discussion of the extent of contamination in ground water can be made." It appears that the Navy can propose more monitoring wells to fully discuss the extent of contamination in ground. Also in the next paragraph, it sounds like the author disagrees with the way ground water samples were collected. It is not clear why the Navy would collect samples in a way that they themselves would consider not representative. In the last paragraph, when TPH concentration in the ground water samples from 09-MW01 decreases over time, it is not clear how the report reaches the conclusion that the well is located on the outer portion of TPH contamination.

- Page10-22 At the top of the page, it is not clear how the author defines the extent of lead contamination in ground water.
- Page 11-4 Geophysical investigation report is in Appendix D rather than Appendix A.
- Page11-28 Please explain why VOCs was not considered COCs for soil.
- Page12-14 Paragraph concerning Pesticide/PCB, The report failed to point out, samples were collected only in three locations and pesticide were detected in all three locations. This may indicate a widespread of pesticide contamination that may need to be further investigated. Paragraph concerning Dioxins, areas that detected Dioxins and furans need to be further characterized.
- Page12-15 In paragraph concerning VOC, areas where VOCs were detected needs to be further characterized.
- Page12-17 VOC contamination in ground water should be fully characterized.
- Page12-40 As the report pointed out, the TPH plume was not completely defined at site 12 and further investigation is required to determine its limits. This work should be completed and incorporated in the RI report. The conclusions in this Section did not address the question whether the debris disposal areas, former bunker areas and the former buried oil tank are continuing sources of contamination.
- Fig 13-1 site 24 boundary was only shown as one straight line in this figure. It is easy for reader to mistakenly think site 5 and 17 are

outside of and adjacent to site 24 while these two sites are really inside of site 24 boundary. This may be important to some as to how data are interpreted in relation to each of the three sites.

Page 13-7 Please provide justification for no soil samples and very few ground water samples (only at one monitoring well) were tested for VOCs. The number of SVOCs detected in one particular location or one particular depth does not necessarily address the significance of the findings. The discussion of SVOCs in soil needs to focus on the nature of the chemicals detected and its associated risk.

Page13-17 at the bottom of the page. If beryllium in soil exceeds TI ambient concentration, its nature and extent need to be defined regardless whether the source is identified.

Page13-21 At the bottom of the page. Until the TPH and SVOC contaminations are fully characterized, the soil at site 17 should not be recommended for no action.

Page14-5 While previous investigation conducted by SCI did not detect chlorinated solvents in soil samples, It is not clear why no more soil samples were taken to locate the potential source(s) of the VOCs. It is hard to understand that twenty-five soil samples were taken but none of them were analyzed for VOCs, even there are VOCs found in the groundwater. It would be very helpful to find out where the sources are for the VOCs in ground water.

Page14-22 At the end of first paragraph. The report stated: "Possible sources (for) chlorinated hydrocarbon and benzene contamination may be

related to chemical storage in building 3 and 325 and in the open space area at Site 21." If this is the case, why wasn't there any soil sample taken to confirm that?

On the same page, "metals were detected above AWQC in ground water samples.", but potential source has not been identified. Not only the source but also the extent of the metal contamination needs to be defined.

Fourth paragraph, "The Navy is conducting groundwater modeling which will provide additional information in determining if unacceptable concentrations of COPCs will reach the bay.", It is not clear how ground water modeling would project the concentration of COPCs that would reach the bay, if current extent of contamination is not fully characterized.

Page 15-1 Avenue N is not found in the figures.

Page 15-2 With the close proximity of the abandoned fuel line and chlorinated solvent contamination, the investigation of the abandoned fuel line should be completed within the IR program. Please elaborate on the statement "Another objective of the RI was to establish a baseline of groundwater quality data at TI to assist in evaluating a change in contaminant levels." and how was it accomplished.

Page 15-25 The report seems to be satisfied with the finding that no chlorinated hydrocarbon in the soil as the sources to groundwater contamination is of any concern. Yet soil samples were taken in only three locations around building 99 and one of the three locations detected low level PCE. It would be

prudent to expand the investigation around 24HP01 where PCE was detected.

## Appendix G

It would assist the reader a great deal if the risk assessment results were summarized (by area of concern) in abstract at the conclusion of the Introduction or in the Executive summary of Appendix G.

Section G-1 Toxicity Profiles. For each material listed here the authors should also include exposure levels (e.g., ppm in air and duration) or the dose (e.g., mg/kg/day) associated with the particular toxicologic endpoint listed (e.g., ocular and upper respiratory tract irritation). In the Toxicity Profiles, it would be appropriate and helpful to list U.S. EPA Region IX PRG values for soil, water, and air for each substance provided such has been published. For those substances without a PRG, such should be indicated in the text.

Page G-1-71. The write-up on diesel, gasoline and lubricating oil needs considerable attention, discussing weathering and the comments made in the General Section (above).

For each site-specific risk assessment, it would be most helpful to prepare a summary comparison table giving the background range (in the case of Inorganics only), the range of concentration of each substance found by media, and the PRG for the substance. A summary of risk for each area using the simple PRG addition method should then be added as a column or conclusion to the table prepared for each area of

concern.

Page G-6. It is not clear whether the commercial/industrial exposure scenario includes intrusive activities associated with, for example, utility corridor repair excavation foundation excavation/earthquake retrofit, new construction involving trenching, etc. Such need to be included here and a reasonable (e.g., 90 days) duration of exposure for short-term intrusive activity included for each area of concern.

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**

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**MEMORANDUM**

**TO:** Chein Kao, Project Manager  
Office of Military Facilities, Region 2  
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Berkeley, CA 94704

**FROM:** James M. Polisini, Ph.D.  
Staff Toxicologist  
Human and Ecological Risk Section (HERD)

**DATE:** January 10, 1997

**SUBJECT:** TREASURE ISLAND DRAFT REMEDIAL INVESTIGATION REPORT  
[PCA 14740 SITE 200231-47 H:36]

**Background**

We have reviewed the document titled *Remedial Investigation Report Draft Naval Station Treasure Island, San Francisco, California*, dated October, 1996 and prepared by PRC Environmental Management, Inc. of San Francisco, California. The document was delivered to our offices on November 16, 1995. The draft remedial investigation report consists of Volumes I through V. This review of the ecological risk assessment portions of the remedial investigation report is in response to your written work request dated October 25, 1996.

This review focuses on Sites 8, 11, 28 and 29 on YBI where ecological risk assessments were performed. In addition, Appendix J, containing the ecological risk assessment calculations, was reviewed.

Naval Station Treasure Island occupies both Treasure Island and Yerba Buena Island in San Francisco Bay midway between San Francisco and Oakland. Treasure Island (TI) is manmade and approximately 450 acres in size. Yerba Buena Island (YBI) is a natural island in San Francisco Bay approximately 130 acres in size. The U.S. Army first occupied YBI in 1866. The Navy began operations on YBI in 1896. TI was constructed in 1936 and 1937 as a site for the Golden Gate International Exposition in 1939. TI was leased to the Navy in 1941 for use as a training and personnel processing facility. Naval Station Treasure Island (NAVSTA TI) is used today for processing personnel, and training such as fire fighting. YBI is mainly a residential facility.

**General Comments**

1. The deer mouse, American kestrel and Peregrine falcon were selected as representative species for entire groups of organisms sharing common ecological function and life histories. The fact that the deer mouse is the most abundant and widespread mammal in California and North America (for example Section 11.8.4, page 11-25) is irrelevant in evaluating the



potential ecological hazard at YBI sites. The deer mouse was chosen as a representative species for the group of omnivorous small mammals potentially present at YBI sites. If there is a potential threat to the deer mouse it is indicative of a potential threat to this entire group of species. The same applies to the American kestrel. The American kestrel was chosen as a representative species for the group of species preying on small rodents. A potential threat to the American kestrel is indicative of a potential threat to that group of organisms. While it may be true that the threat to the American kestrel is fairly minimal because the American kestrel could forage in areas other than YBI sites such as Site 11 (Section 118.4, page 11-25), the same logic would not apply to terrestrial predators on small mammals at YBI sites or avian predators with smaller forage areas. Please include some discussion in the risk characterization sections for Sites 08, 11, 28 and 29 regarding the potential impacts on the other species associated with these representative species. This discussion should reflect the species groups developed in the conceptual site model (Figure 3-1).

2. We agree that the lack of habitat associated with the extent of paving and buildings on Treasure Island make the potential exposure for terrestrial receptors insignificant for the sites on Treasure Island. Potential exposure to aquatic receptors in San Francisco Bay is a greater concern for these sites and we look forward to receiving the report on the groundwater modeling and sediment testing.

#### **Specific Comments**

1. The description of mammals, among the terrestrial vertebrates occurring on YBI (Volume 1, Section 2.8.3, page 2-18) and the associated table (Table 2-6), does not mention bats. Each YBI site description, however, includes bats. Please amend this paragraph to include bats.
2. The DTSC draft ecological risk guidance has been finalized. Please amend the reference (Section 3.8, page 3-38) to reference the final document released on July 4, 1996.
3. Please provide the basis for the requirement that inorganic contaminants must exceed the background concentration in greater than 10 percent of the samples for selection as an inorganic contaminant of ecological concern (Section 3.8.1, page 3-39 and each discussion of a YBI site selection of COPCs). We recognize two methods of eliminating inorganic contaminants of potential concern based on background: 1) a comparison with an upper quantile of a background data set; and/or 2) an appropriate statistical test to determine whether the site-specific data are statistically different from an appropriate background data set. In addition, the spatial location of samples with elevated concentrations must be examined to determine whether a limited number of samples with elevated concentrations represent a 'hot' spot.
4. Descriptions of the threat to aquatic receptors in San Francisco Bay is alluded to for many sites on Treasure Island. Groundwater modeling to evaluate potential transport to San Francisco Bay is described as currently in progress. The results of the groundwater modeling are proposed for inclusion in future revisions of the Remedial Investigation (RI) Report (Section 7.8, page 7-18 and Section 7.11, page 7-23). As the next revision of this RI Report will be a draft final document, some independent method of review should be provided for the groundwater modeling results. This comment will not be made for the other TI sites, but applies to all TI sites (Sites 7 and 10, where a similar statement is made regarding inclusion of the groundwater modeling in future revisions of the RI Report. The groundwater modeling must be reviewed by a DTSC hydrogeologist or staff of the San Francisco Regional Water Quality Control Board prior to review of the risk characterization by HERD.

5. The presence of several inorganic contaminants is concluded to be due to artificial fill (Section 7.9.2, page 7-20). Inorganic background samples for Treasure Island were collected from artificial fill. Screening against inorganic background concentrations was performed as part of the selection of contaminants of concern. Those inorganic contaminants remaining are, by definition, not part of the background distribution of contaminants. Please amend the discussion of these contaminants to indicate that these inorganic constituents are contained in fill, but the concentrations are elevated above background at this site.
6. Please use California-specific, inorganic element soil concentrations from unimpacted soils (Bradford, et al., 1996) for comparison to site specific inorganic contaminants rather than United States soil concentrations (Section 9.8.1, page 9-14).
7. If there is a potential threat to the deer mouse (Section 9.8.4, page 9-16) it is indicative of a potential threat to this entire group of species. Please refer to General Comment 1.
8. We do believe the level of investigation was sufficient to determine whether or not the deer mouse population at Site 08 is impacted (Section 9.8.4, page 9-16). Recruitment from areas outside Site 08 might be sufficient to maintain the population despite contaminant-related impacts. Please amend these statements in the text.
9. Please amend the conclusions in the text to include discussion of the species represented by the American kestrel (Section 9.8.4, page 9-16). Please refer to General Comment 1.
10. The soil concentration used in calculation of dose is the lesser of the 95 percent upper confidence limit of the mean or the maximum soil concentration. Please amend the statement in the text, that the maximum soil concentration was used (Section 9.8.4, page 9-17).
11. Please provide a definition in the footnote (Table 9-4) describing the Leachate Factor which does not appear to be a straight percent based on weight of the values contained in the two columns to the left.
12. There appears to be a typographic error where the Greek letter  $\Phi$  appears where the units are either 'mg/l' or ' $\mu$ g/l' not ' $\Phi$ g/L'(Section 10.6.2, page 10-11 and 10.6.4, page 10-12).
13. Please use California-specific, inorganic element soil concentrations from unimpacted soils (Bradford, et al., 1996) for comparison to site specific inorganic contaminants rather than United States soil concentrations (Section 11.8.1, page 11-22).
14. If there is a potential threat to the deer mouse (Section 11.8.4, page 11-25) it is indicative of a potential threat to this entire group of species. Please refer to General Comment 1.
15. We do believe the level of investigation was sufficient to determine whether or not the deer mouse population at Site 11 is impacted (Section 11.8.4, page 11-25). Recruitment from areas outside Site 11 might be sufficient to maintain the population despite contaminant-related impacts. Please amend these statements in the text.
16. Please amend the conclusions in the text to include discussion of the species represented by the American kestrel (Section 11.8.4, page 11-25). Please refer to General Comment 1.
17. Please use California-specific, inorganic element soil concentrations from unimpacted soils (Bradford, et al., 1996) for comparison to site specific inorganic contaminants rather than United States soil concentrations (Section 16.8.1, page 16-11).

18. If there is a potential threat to the deer mouse (Section 16.8.4, page 16-14) it is indicative of a potential threat to this entire group of species. Please refer to General Comment 1.
19. We do believe the level of investigation was sufficient to determine whether or not the deer mouse population at Site 28 is impacted (Section 16.8.4, page 16-14). Recruitment from areas outside Site 28 might be sufficient to maintain the population despite contaminant-related impacts. Please amend these statements in the text.
20. Please amend the conclusions in the text to include discussion of the species represented by the American kestrel (Section 16.8.4, page 16-14). Please refer to General Comment 1.
21. The soil concentration used in calculation of dose is the lesser of the 95 percent upper confidence limit of the mean or the maximum soil concentration. Please amend the statement in the text, that the maximum soil concentration was used (Section 16.8.4, page 16-15).
22. If there is a potential threat to the deer mouse (Section 17.8.4, page 17-14) it is indicative of a potential threat to this entire group of species. Please refer to General Comment 1.
23. We do believe the level of investigation was sufficient to determine whether or not the deer mouse population at Site 29 is impacted (Section 17.8.4, page 17-14). Recruitment from areas outside Site 29 might be sufficient to maintain the population despite contaminant-related impacts. Please amend these statements in the text.
24. Please amend the conclusions in the text to include discussion of the species represented by the American kestrel (Section 17.8.4, page 17-14). Please refer to General Comment 1.

#### **Specific Comments - Appendix J**

1. Please provide additional justification for the method used to calculate the vertebrate prey tissue concentration (Section 1.2.4, page J-8). Biomagnification factors (BMFs) were used to develop the invertebrate prey tissue concentration. The BMF method should be used to develop the vertebrate prey tissue concentration unless BMFs were not available for the contaminants of concern.
2. Birds are the predominant prey items for peregrine falcons (Section 1.1.3, page J-5). The assumption that the deer mouse body burden is representative of a bird body burden (Section 1.3.2, page J-10) is unsupported. We do not agree this is an appropriate assumption. Please provide an estimate of prey bird tissue concentration for the peregrine falcon calculations.
3. Polycyclic aromatic hydrocarbons (PAHs) are divided into low molecular weight (LMW) and high molecular weight (HMW) groups based on whether they have four or more aromatic rings. Fluoranthene and pyrene are then placed in the LMW PAH group based on their non-carcinogenic mode of action. Please provide the basis for using carcinogenesis as the criterion for placing fluoranthene and pyrene in the non-carcinogenic LMW PAH group (Section 1.4, page J-10) in an ecological risk assessment which does not evaluate carcinogenic endpoints.
4. We are unaware of a draft California EPA document which provides guidance on uncertainty analysis (Section 2.5, page J-18). Please provide a complete reference so that we may review this document.

5. Please review the literature citations in the text to determine whether the full reference is provided in the reference section. Several citations were checked at random (Lindstedt, 1987, Peters, 1983 and Gillette, 1987 on page J-20; Linder, et al., 1996 and Munshower, 1994 on page J-102) and found to be omitted from the reference section.
6. The discussion of hazard quotients for the peregrine falcon, the American kestrel and the deer mouse should be balanced for both the 'best-case' and 'worst-case' scenarios. The discussion of hazard quotients for Site 08 (Section 3.1.1, page J-81), Site 11 (Section 3.2.1, page J-85) and Site 29 (Section 3.3.1, page J-89) presents the 'best-case' hazard quotients, which are significantly lower than one, but does not present the 'worst-case' hazard quotients, which are four and five orders of magnitude greater than one for some contaminants of concern. Please present both sets of hazard quotients in the text. It may also prove useful to provide a comparison of the relative magnitude of the 'Best Case' and 'Worst Case' hazard quotients for those contaminants which contribute the majority of ecological hazard. For example the Site 11 'Worst Case' deer mouse hazard quotient for cadmium is 3 orders of magnitude above unity while the 'Best Case' hazard quotient is 1 order of magnitude below unity. This could indicate that cadmium poses a higher potential hazard than contaminants with 'Best Case' hazard quotients which are three or four orders of magnitude below unity.
7. We checked several of the hazard quotient calculations at random using the site-specific dose (Table J1-7 through Table J1-10) and allometrically-adjusted toxicity reference values (TRVs) presented (Table J2-1). We were able to duplicate some of the hazard quotients, but unable to do so for others. The 'Best Case' HQ was calculated as the low dose divided by the numerically low TRV and the 'Worst Case' HQ was calculated as the high dose divided by the numerically high TRV :

IR Site	Receptor	Contaminant	'Best Case' HQ Presented	'Best Case' HQ Calculated	'Worst Case' HQ Presented	'Worst Case' HQ Calculated
11	Kestrel	lead	7.48E-03	7.52E-03	5.30E+05	5.18E+05
	Deer Mouse	cadmium	1.35E-01	1.35E-01	1.03E+03	1.03E+03
	Deer Mouse	lead	5.16E-02	5.16E-02	1.22E+06	1.32E+06
	Deer Mouse	zinc	1.49E-02	1.49E-02	2.23E+03	2.22E+03
28	Kestrel	lead	4.13E-02	4.13E-02	2.93E+06	2.85E+06
	Kestrel	zinc	1.17E-02	1.17E-02	3.00E+04	3.00E+04
	Deer Mouse	lead	2.04E-02	2.04E-02	4.81E+05	5.23E+05
	Deer Mouse	zinc	1.61E-02	1.61E-02	2.40E+03	2.83E+03

The hazard quotients we were unable to duplicate are shaded. The differences are relatively small when compared to the range of hazard quotients between 'Best Case' and 'Worst Case', and should not unduly influence any risk management decisions based on the hazard quotients as presented. All the hazard quotient calculations should be checked and corrected prior to release of the final remedial investigation report.

8. We agree that a more thorough evaluation of the distribution and potential bioavailability of lead at Site 08 would provide further insight into the actual hazard posed by lead (Section 3.1.3, page J-84). A validation study should be performed to determine the actual plant and rodent tissue metal and DDT concentrations at Site 08 for comparison with the tissue concentrations used in this predictive assessment.
9. We agree that a more thorough evaluation of the distribution and potential bioavailability of barium at Site 11 would provide further insight into the actual hazard posed by barium (Section 3.2.3, page J-88). A validation study should be performed to determine the actual

plant and rodent tissue metal, DDT and PAH concentrations at Site 11 for comparison with the tissue concentrations used in this predictive assessment.

10. We agree that a more thorough evaluation of the distribution and potential bioavailability of lead at Site 28 would provide further insight into the actual hazard posed by lead (Section 3.3.3, page J-91). A validation study should be performed to determine the actual plant and rodent tissue metal concentrations at Site 28 for comparison with the tissue concentrations used in this predictive assessment.
11. We agree that a more thorough evaluation of the distribution and potential bioavailability of lead at Site 29 would provide further insight into the actual hazard posed by lead (Section 3.4.3, page J-93). A validation study should be performed to determine the actual plant and rodent tissue metal concentrations at Site 29 for comparison with the tissue concentrations used in this predictive assessment.
12. We agree that the lack of phytotoxicity tests or soil invertebrate tests with bulk soils is a data gap (Section 3.5, page J-94) and a source of some uncertainty. A small number of these tests should be considered in the event Sites 08, 11, 28 and 29 proceed to validation studies.
13. We suggest that the presentation of exposure parameters (Tables J1-1 through J1-3) be amended to include the values carried forward in the low dose and high dose calculations, in addition to the range of values extracted from the literature. The current presentation makes it difficult to compare across tables. For example, the high body weight used for the American kestrel appears to be 145 grams (Table J1-9) while the original table (Table J1-2) appear to indicate a maximum female body weight of 140 grams based on Newton, 1979.
14. The male average body weight for the American kestrel attributed to Cramp, 1980 contains a typographic error in the superscript footnote (Table J1-2), unless the average male weight is 1092 grams.
15. The heading of the invertebrate to soil ratios (Table J1-5) is mislabeled as plant to soil ratios.
16. Please indicate whether the soil to plant and soil to invertebrate ratios (Table J1-6) are on a dry weight or wet weight basis.
17. We located some values for plant to soil and invertebrate to soil ratios which differ markedly from those used (Table J1-6). The other ratios appear protective based on our review of the literature. These ratios are on a wet weight basis:

Contaminant	Type of Ratio	Value Used	Literature Value	Reference
lead	Plant:Soil	High = 0.09	0.75	Carlson and Rolfe, 1979
DDT	Plant:Soil	High = 0.02	0.09	Voerman and Besemer, 1975

18. While we agree that lead appears to pose some potential ecological risk (Section 3.7.1, page J-101) validation studies or risk management decisions should not ignore the potential threat associated with other metals, DDT, and PAHs.

### **Conclusions**

The relatively high hazard quotients for some contaminants based on the 'Worst Case' calculation of high dose and lowest numerical toxicity reference value indicate that validation

Chein Kao  
January 10, 1997  
Page 7

studies should be performed to address the uncertainty in some of the exposure parameters used in these calculations. We agree with the contaminants identified as risk drivers for sites 08, 11, 28 and 29. The validation studies should address the plant, invertebrate and terrestrial prey tissue concentrations of these contaminants.

The ecological risk assessment work plan we previously reviewed, titled *Phase II Ecological Risk Assessment Draft Final Work Plan and Field Sampling Plan Naval Station Treasure Island*, and dated November 8, 1995, outlined investigations of the sediments surrounding Naval Station Treasure Island. When will the results of these investigations be completed?

### References

Bradford, G. R., A. C. Chang, A. L. Page, D. Bakhtar, J. A. Frampton and H. Wright. 1996. Background Concentrations of Trace and Major Elements in California Soils. Univ. of California Riverside, Division of Agriculture and Natural Resources. 52 pp.

Reviewed by: Michael Schum, Ph.D.  
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Human and Ecological Risk Division

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Pete Wilson  
Governor

**January 22, 1997  
File No. 2169.6013 (GK)**

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**SUBJECT: DRAFT REMEDIAL INVESTIGATION REPORT, NAVAL STATION  
TREASURE ISLAND, dated October 1996**

Dear Mr. Kao:

The following comments are based on the San Francisco Bay Regional Water Quality Control Board staff's review of the above referenced document.

**General Comments:**

1. RWQCB staff understands that before the Draft Final Remedial Investigation Report is submitted two documents will be submitted in the interim: (1) Results of the Groundwater Modeling and (2) TPH Toxicity Evaluation. The agencies will have an opportunity to review and comment on these two documents and our comments will be addressed in the Draft Final RI Report. Although the results from the groundwater modeling and TPH toxicity evaluation are forthcoming, RWQCB staff believe this report to be well organized and the data to be presented in a comprehensive and clear manner.
2. As a result of a "San Francisco and Northern San Mateo County Pilot Beneficial Use Designation Project", conducted by the San Francisco Bay RWQCB's groundwater committee, the groundwater at Treasure Island and Yerba Buena Island was recommended for de-designation as municipal and domestic supply and retained designation as agricultural and industrial beneficial uses. The beneficial uses of agricultural and industrial should not be impacted by past military operations, the human health risk assessment should be expanded to consider these pathways.
3. Many of the sites discussed in this RI have had TPH releases, the analysis of Methyl Tertiary Butyl Ether (MTBE) is required for sites where there has been gasoline releases after 1983. If a site requires MTBE analyses, the proposed interim groundwater sampling can be expanded to accommodate this data gap.

4. Copper concentration of 2.9 ppb, USEPA Ambient Water Quality Criteria, was used for comparison to groundwater, the San Francisco Bay RWQCB uses the concentration 4.9 ppb, Basin Plan, 1996, page 3-9. This Copper concentration (4.9 ppb) is based on scientific studies performed in San Francisco Bay and is used by this region. Please modify the Copper concentration.
5. Although most of Treasure Island is currently paved, RWQCB would like to see unpaved scenarios when modeling groundwater. This will reflect worst case scenarios and represent a wider range of reuse scenarios.

**Specific Comments:**

6. Page 3-30, Media of concern, 3rd Paragraph: The exposure to groundwater was not evaluated in the BHHRA. Although RWQCB staff concurs that the groundwater at TI and YBI should not be evaluated for municipal or domestic uses (drinking water), the other beneficial uses of groundwater should be protected. The BHHRA may have to be expanded to address this concern. See general comment 2.
7. Page 3-31, Exposure Pathways, 4th paragraph: The Navy has taken the position not to consider the risks from the consumption of fish impacted by IR sites in the BHHRA at this time. The risk from this pathway is a data gap at this installation. It is unclear if this pathway will be addressed in the upcoming offshore ecological risk assessment or the next version of the BHHRA. Please clarify.
8. Page 3-39, Ecological Risk Assessment Problem Formulation: There are no terrestrial ecological concerns on Treasure Island because it is paved and urbanized. Is this assumption consistent with the reuse plan, if so please elaborate in this section.
9. Page 4-3, Identification of Potential ARARs: Please incorporate the following ARARs in this section.

CHEMICAL-SPECIFIC POTENTIAL STATE ARARs	
Requirements	Comments
Porter-Cologne Water Quality Control Act (Water Code), Section 13304	This section of the Water Code is applicable and authorizes the Regional Boards to require cleanup and abatement of discharges of waste into waters of the state or discharges to land that have or threaten to result in discharges to waters of the state. The goal of Section 13304 is to attain background for the cleanups, since Treasure Island is fill (background cannot be attained), the cleanup level must at least protect the beneficial uses of the water and comply with the plans and policies of the State and Regional Water Boards.
Water Quality Control Plan for the Regional Water Quality Control Board, San Francisco Bay Region (Water Code § 13240)	The Basin Plan describes the water basins in the Region, established beneficial uses of the ground and surface waters, establishes water quality objectives including narrative and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates statewide water quality control plans and policies.

ACTION-SPECIFIC POTENTIAL STATE ARARs	
Requirements	Comments
Porter-Cologne Water Quality Act as administered by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB)	Porter-Cologne delegates standard-setting authority to the RWQCBs. RWQCB emission standards are set on a case-by-case basis and apply to the treated waste-water to be injected.

Requirements	Comments
<p>Porter-Cologne Water Quality Act (WCA 13000 13806) as administered by the SWRCB and the RWQCB</p>	<p>Regulations pertain to land disposal unit design and construction standards that minimize dangers to the water of the state. Waste are classified as hazardous, designated, or non-hazardous, and must be disposed of accordingly. Regulations regarding water quality protection standards are left to the RWQCB. Standards are determined by RWQCBs on a case-by-case basis based on federal water quality standards and state action levels.</p>
<p>California Water Code, Division 7, Section 13000 to 13806 (Porter -Cologne Water Quality Control Act)</p>	<p>The Water Code authorizes the State and Regional Boards to establish Water Quality Control Plans beneficial uses and numerical and narrative standards to protect both the surface and ground water quality. Authorizes Regional Water Boards to issue permits for discharges to land or surface or ground water that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.</p>
<p>State Board Resolution No. 68-16 (Policy on Maintaining the High Quality of State Waters) (Water Code § 13140, Clean Water Act regulations 40 CFR § 131.12)</p>	<p>Resolution No. 68-16 (anti-degradation policy) has been incorporated into all Regional Board Basin Plans. Requires that quality of waters of the State that is better than needed to protect all beneficial uses be maintained. Requires cleanup to background water quality or to lowest concentrations technically and economically feasible to achieve. Beneficial uses must, at least, be protected.</p>

Requirements	Comments
<p>Title 23, Division 3, Chapter 15 of the California Code of Regulations (CCR) (Chapter 15)</p>	<p>Regulations pertaining to waste discharges to land which may threaten water quality. Also this Chapter establishes water quality protection standards including concentration limits for constituents of concern at background levels. Cleanup levels greater than background may only be approved if background is not economically or technically achievable. Cleanup levels above background must meet its applicable water quality standards, must be the lowest level technologically and economically achievable, and must consider toxicologic effects of pollutants</p>
<p>State Water Resources Control Board Resolution No. 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304) (Water Code § 13307)</p>	<p>Resolution 92-49 establishes policies and procedures for the oversight of investigations and cleanup and abatement activities resulting from discharges of waste which affect or threaten water quality.</p>
<p>Water Quality Control Plan for the Regional Water Quality Control Board, San Francisco Bay Region (Water Code § 13240)</p>	<p>The Basin Plan describes the water basins in the Region, established beneficial uses of the ground and surface waters, establishes water quality objectives including narrative and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates statewide water quality control plans and policies.</p>

- 10. Chapter 5, IR Site 01: Based on the review of this document and the review of Site 01: Medical Clinic Additional Characterization Final Field Work Plan Addendum, dated 12/94. RWQCB is satisfied that the source has been removed and the groundwater has not been adversely impacted by the site operations. RWQCB agrees with the No Further Action recommendation.
- 9. Chapter 6: IR Site 03: RWQCB agrees with the No Further Action recommendation.
- 10. Chapter 7: IR Site 05: Please clarify if there has been a gasoline release at this site after 1983. If so, please see general comment 3. RWQCB agrees with the



recommendations to re-evaluate this site when the groundwater modeling data and TPH toxicity data are available.

11. Chapter 8: IR site 7/10:

Page 8-25: How was the fate and transport of the contaminants in the catch basin evaluated. It is unclear in this report. It is unclear how the contamination in the catch basins fit into the conceptual model of the site. Please clarify

Figure 8-2 which side of building 335 are the catch basins located.

12. Chapter 9, IR site 08: Based on the results of the leachate sampling, RWQCB staff believes there are no groundwater concerns at this site. However, stormwater samples taken as part of the Phase I RI for this drainage area showed trace concentrations of pesticides. There could be a possible impact from surface runoff from this site to the bay. At this time RWQCB does not concur with the no Action recommendation, until the surface runoff scenario is further addressed.

13. Chapter 10, IR Site 09: Please clarify if there has been a gasoline release at this site after 1983. If so, please see general comment 3. RWQCB agrees with the recommendations to re-evaluate this site when the groundwater modeling data and TPH toxicity data are available.

14. Chapter 11, IR Site 11:

To fully characterize this site, coordination must occur between the Navy's UST program and the IR program and the Coast Guard. Analytical data is needed from the fuel line removal and tank removals to complete characterization of this site.

At a minimum the feasibility study should look at capping and containment of groundwater. RWQCB agrees with the recommendations to re-evaluate this site when the groundwater modeling data and TPH toxicity data are available, however additional site information is needed from the pending fuel line and tank actions at this site.

15. Chapter 12, IR Site 12: RWQCB agrees with the recommendations to look at the groundwater modeling, TPH toxicity and additional site characterization data when available and also to continue groundwater monitoring.

16. Chapter 13: IR Site 17: Have the AGTs been removed, it is not clearly stated in the text. Please clarify if there has been a gasoline release at this site after 1983. If so,

please see general comment 3. RWQCB agrees with the recommendations to re-evaluate this site when the groundwater modeling data and TPH toxicity data are available.

17. Chapter 14, IR Site 21: RWQCB cannot concur with the recommendation for no action for metals in groundwater. Groundwater modeling, to demonstrate what concentrations of metals are reaching the bay, must be completed before a decision can be made. RWQCB agrees with the recommendations to re-evaluate this site when the groundwater modeling data and TPH toxicity data are available.
18. Chapter 15, IR Site 24: Long term monitoring should include analysis of TPH, to monitor the potential commingling of plumes. RWQCB cannot concur with the recommendation for no action for metals in groundwater. Groundwater modeling, to demonstrate what concentrations of metals are reaching the bay must be completed first.
19. Chapter 16, Chapter 17, IR Site 28 & 29: It is stated in the text that the most probable pathway is contaminant migration with surface water runoff. Please provide more information as to how this pathway was evaluated for these two sites.

If you have any concerns, I can be reached at the San Francisco Bay Regional Water Quality Control Board at (510) 286-4267.

Sincerely,



Gina Kathuria, P.E.  
Project Manager