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TREASURE ISLAND
SSIC NO. 5090.3.A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

August 21, 1995

Ernesto M. Galang
Western Division - Code T4A2EG
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-2402

Re: Interim Draft Final Phase II Ecological Risk Assessment Work Plan for Naval Station Treasure Island dated July 18, 1995

Dear Mr. Galang,

The U. S. Environmental Protection Agency (EPA) has received and reviewed the subject document. EPA's comments are enclosed.

If you have any questions, please call me at (415) 744-2383 or Clarence Callahan at (415) 744-2314.

Sincerely,

Rachel D. Simons

Rachel D. Simons
Remedial Project Manager
Federal Facilities Cleanup Office

Enclosures

cc: Jim Sullivan, NAVSTA TI
Mary Rose Cassa, DTSC
Michael Bessette, CRWQCB
Timo Allison, PRC
Clarence Callahan, EPA
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INTERIM DRAFT FINAL PHASE II
ECOLOGICAL RISK ASSESSMENT WORK PLAN FOR
NAVAL STATION TREASURE ISLAND (NSTI) DATED JULY 18, 1995

General Comments:

1. The cover letter for the subject document states that the approach in the work plan " ...varies considerably from the original approach proposed in the draft work plan...". This change in approach is stated to be based on the results of the Navy's proposal made at the April 24, 1995 BTAG meeting. Some changes in the work plan were expected from the April 24, 1995 meeting, for example the BTAG suggested that a case study be presented to "test" the Navy proposal. However, this work plan does not reflect the BTAG approach.

2. The following is an evaluation of the Navy's Approach as presented in the work plan and as reflected in Figure 7-1 Risk Characterization to Benthic Receptors.

The suggested process shown in Figure 7-1 is divided into three phases: 1) Chemical Screening Level Assessment; 2) Toxicity Evaluation; and 3) Further Investigation. This approach was revised in the NSTI Phase II Ecological Risk Assessment (ERA) meeting on August 15, 1995 and agreed upon by the Navy and the Regulators. The revised approach is presented in attached Figure A A BTAG Proposal for a Decision Tree for Setting Priorities at Navy Sites in the San Francisco Bay (see General Comment #3).

Phase 1: Chemical Screening Level Assessment

1a. Conduct Whole Sediment Chemistry

Whole sediment chemistry (WSC) is usually completed from two sampling depths, surface (0-6 inches) and subsurface (6 inches and greater). The surface samples are evaluated to determine the potential and actual impact to surface dwelling organisms and receptors. The subsurface samples are evaluated to ascertain the potential impact to surface receptors through migration or movement of contaminants from these deeper depths. For this proposal, WSC data are the first level evaluation for potential impact (risk) in this risk assessment process.

1b. Compare to Wetland Reuse Values

The first level comparison to Wetland Reuse Cover and Noncover Values (WCV) does not follow the acceptable criteria to estimate impact or potential risk to the natural resources. WCVs are not representative of benchmarks that define the potential impact or risk of contaminants in the subtidal environments nor the tidal

environments. These values are not derived in a sampling and analysis approach that is necessarily representative of the approach to determine biological or ecological risk. Although some of the "numbers" shown for the WCVs are derived from similar or the same bioassays as the San Francisco Bay Area EL-Lows/EL-Highs (Long and Markel 1992), the sampling strategy for deriving the WCVs is significantly different because the goals of the dredging and ecological risk assessment (ERA) programs are significantly different. If the Navy wants to use the WCVs for screening, they must document the source of the data for the WCVs by citations to evaluate their relevancy for the ERA application.

In the August 15, 1995 meeting, the Navy and the Regulators agreed to use the San Francisco Bay Area EL-Lows/EL-Highs values reported by Long and Markel (1992) in place of the WCVs.

As presented in the August 15, 1995 meeting, the Navy will compare NAS Alameda ERA data to both WCVs and San Francisco Bay Area EL-Lows/EL-Highs to evaluate the adequacy of these benchmarks. This comparison should include a "run" through each benchmark to characterize each chemical in each location so that we can evaluate the strategy that provides the highest level of protection i.e., the lowest risk. This evaluation should be presented to the Regulators for comment prior to the Phase II NSTI sampling.

1c. Conduct Leachate Test

The second level comparison shown in Figure 7-1 is the "leachate test", which is a standard of the dredging program not a procedure of the ERA process. The leachate test as proposed here is not appropriate for following reasons: 1) the purpose of this procedure is to evaluate an option for disposal, not to derive an estimate of impact as part of the risk assessment process; and 2) the collection and handling of the sample does not satisfy the requirements for evaluating the impact and resultant risk to receptors.

As discussed in the August 15, 1995 meeting, the leachate test will not be used for screening at NSTI, but will be further evaluated on 15-20 samples for possible future application.

Phase 2: Toxicity Evaluation

The toxicity evaluation phase shown in Figure 7-1 indicates a decision to one of two paths which are "Further Risk Analysis" or "Conduct Feasibility Study." The activities listed in the box for "Further Risk Analysis" includes some useful techniques, that if performed with a well thought out rationale could provide very important information for this evaluation. Bioassays and equilibrium chemistry at each level of exposure would be very helpful to interpret the results of the WSC tests and to guide us

through the risk assessment process for setting cleanup levels. Cleanup levels determined by the risk analysis activity need to be used in the feasibility study for evaluating the remedial alternatives. Therefore a feasibility study must be conducted after the risk analysis when cleanup levels have already been determined.

Phase 3: Further Investigation

The further investigation phase is not clear with regards to what is needed after having WSC, bioassays in addition to equilibrium chemistry, exposure modeling and risk quantification. Two of the three paths of the first decision point to "No Further Action" and "Conduct Feasibility Study" require no further information. The third path to "Cost Benefit Analysis" includes the decision that further information is needed. How will the Navy decide if more information is needed? What are the criteria will be used to direct the work to the three paths shown? Please clarify these decision points.

3. The following is a presentation of the BTAG's Approach which is shown in Figure A A BTAG Proposal for a Decision Tree for Setting Priorities at Navy Sites in the San Francisco Bay (see attached Figure A). The BTAG proposal is very similar to the approach agreed upon by the Navy and the Regulators in the August 15, 1995 meeting.

There are several approaches that would be appropriate for determining the extent of contamination at NSTI and for sediment testing to determine the actual impact and the potential risk (US EPA 1992). The Navy should evaluate the option of performing toxicity identification evaluations (TIE) tests to determine the source of toxicity with a limited number of tests from samples that represent the impacted areas (Ankley et al 1991).

Specific bioassays for evaluating bioaccumulation should be performed to supplement the toxicity testing. EPA recommends that any testing with sediments should follow the Bay Protection and Toxic Cleanup Program Quality Assurance Project Plan and utilize the species for this program. Some basic requirements of the testing includes the use of a "negative and positive" control for each bioassay and the use of good documentation and record keeping (Rick Schwartz personal communication).

Figure A A BTAG Proposal for a Decision Tree for Setting Priorities at Navy Sites in the San Francisco Bay

Phase 1: Chemical Evaluation/Screening

1a. Are Data Sufficient?

The first question to be addressed is, "Are the WSC data

sufficient in quality and quantity to make definitive decisions?" This question is addressed by an examination of the WSC data distribution for each contaminant, the detection limits attained, and whether or not the observed values meet the QAPP for the site.

1b. Compare to Benchmarks

When it is certain that the data set is adequate by further examination or sample collection, the data, i.e., sampling locations can be placed into one of three categories, below, above and between the San Francisco Bay Area EL-Lows/EL-Highs as reported by Long and Markel (1992) attached. Although these data (SF Bay EL-Lows) do not represent a no effects level, they should be sufficient for a screening of the sediment and storm water data set (Long and MacDonald 1992).

With this screening, the chemical risk drivers must also be identified, for example contaminants that are known to bioaccumulate. These are chemicals that if detected above the EL-low would automatically put a sampling site in the "Impact Assessment" category. These chemicals may include specific pesticides, PCBs and mercury. Other exceptions include specific chemicals such as nickel that are known to be high in the Bay Area because of soil type and historical activities. The use of the SF Bay Area EL-Lows/EL-Highs were agreed upon by the Navy and the Regulators in the August 15, 1995 meeting for use as screening benchmarks.

Above these Criteria.

If the comparison shows the site location summaries to be above the San Francisco Bay Area EL-High benchmarks, then the next course of action is to go to the "High Risk/Feasibility Study" box as the site/location is considered a high risk.

Options for cleanup as determined in the feasibility study must incorporate the endpoints of choice. The first assessment endpoint and possibly the most obvious is that of "reduced toxicity" and the second is "food chain integrity." Toxicity can be assessed using measurement endpoints such as "reproduction" which are set at a decision level to determine a non-significant toxicity i.e., NOAEL for single tests using a dilution series. Another strategy, using the amphipod tests and the pore water tests for toxicity evaluations include the difference between the impacted site and the reference area. The decision levels for this comparison would include the concentrations that are determined to produce a 20% difference between the test site and the reference site (Mearns et al 1986).

The bioaccumulation evaluation is a little more involved, requiring an evaluation of the uptake into *Macoma* or some other

bioassay organism compared to benchmarks that will not produce an effect in the site specific receptors for the particular contaminant (Lee et al 1993). Whatever strategy is adopted, the key component is the determination of a concentration (maximum) of the various chemical of potential concern (COPCs) that would not result in an impact to the receptors identified for the site.

Below these Criteria.

If the data is validated and are determined to be representative of the location, this pathway leads first to the "Low Risk/No Action" box and second to the development of a "Five Year Monitoring Plan".

Phase 2: Toxicity Evaluation

Impact Assessment (Between these Criteria)

For all of the data i.e., sites that are above the San Francisco Bay Area EL-Low values and below the San Francisco Bay Are EL-High values, bioassays would be performed to estimate the actual impact and uptake in samples collected from the impacted areas and the reference areas. The bioassays would in fact determine the maximum concentration that would not result in a significant impact. At the end of this effort, we would have developed relative concentrations that indicate levels that are protective of the appropriate receptors.

Phase 3: Feasibility, Remediation/Monitoring

Risk Characterization/Risk Management

The information gained from the bioassays would be an integral part of the effort to define or characterize the risk at Treasure Island. The distribution of COPCs across the site would be compared to the bioassay results to identify those area that are predicted to have a significant risk because of the contamination level. Those areas with high risk would move to the "High Risk/Feasibility Study" box. Those areas with low risk would move to the "Low Risk/No Action" box and then to the "Five Year Monitoring Plan" box. Factors that would determine the level of risk include the number of COPCs, the concentrations of the COPCs, the distribution of significant concentrations across the site, the number of receptors impacted, and the endpoints impacted.

Specific Comments:

1. **Section 1.1 The Ecological Risk Assessment Process at NAVSTA TI, page 2**

The second paragraph states that "This document is the work plan (WP) developed to implement the phase II activities at NAVSTA TI." To support this statement, please add the following sentence, "The approach is geared to bring sites to cleanup as quickly as possible when chemical analyses indicate that the sampling location fails to met screening criteria."

2. Section 2.11, Identification and Prioritization of Contaminants of Potential Concern, page 14

The "screening" process that was performed in the Phase I activities is questionable as many of the metals, SVOCs, and pesticides were eliminated as COPCs when the detection limits were not sufficient to evaluate the San Francisco Bay Area EL-Lows values reported by Long and Markel (1992). The Phase I data must be reevaluated before the Phase II data is collected. Chemicals that were originally screened out in Phase I should be reconsidered as COPCs with respect to the adequacy of the detection limits.

3. Section 6.0 Assessment and Measurement Endpoints, page 22

The first paragraph on this page states that the Regulators and the Navy "agreed that the terrestrial system on NAVSTA TI does not require further field investigation," and that "a qualitative evaluation of the terrestrial system was mutually agreed."

The Regulators agreed that a qualitative evaluation was appropriate for Treasure Island (TI) due to the limited habitat, but a quantitative evaluation was required for Yerba Buena Island (YBI). The quantitative assessment approach for terrestrial receptors outlined in Section 8.0 Characterization of Ecological Risk to Terrestrial Receptors: Screening Assessment should be carried out for YBI but not TI.

4. Section 6.2.1.1 Total Chemistry, page 25

In a letter from the Navy dated June 14, 1995, the Navy proposed using a modified CLP SVOA method for PAH analysis in order to meet the NOAA ER-L values for analytical detection limits. Please respond to EPA's questions about this method (see EPA memo dated June 27, 1995) and if this modified method will be used, document this in the text.

5. Section 11.3 Offshore Sediment Sampling, page 59

In the second paragraph of this section, the reference "PRC 1995" appears to be missing from the References at the end of the document. Please correct.

6. Section 11.3.1.3 Surface Sediment Analysis, page 61

As agreed to in the August 15, 1995 meeting, a only a few selected samples will be analyzed for VOCs at locations where VOC sources are suspected.

7. Figure 2-7 Phase I Sediment Sampling Locations and Results

Please indicate on this figure the units for the concentrations shown. This comment also applies to Figure 2-8 Phase I Stormwater Sampling Locations and Results . On Figure 2-7, replace the word "stormwater" with "sediment" under "Abbreviations".

8. Figure 2-9 Conceptual Ecological Model Treasure Island

On Figure 2-9, please state that the solid dot represents a complete exposure pathway. This comment also applies to Figure 2-10 Conceptual Ecological Model Yerba Buena Island.

9. Figure 5-3 Clipper Cove Skeet Range Sediment Sampling Locations

Although this figure is not very clear, it appears that no solid squares are shown on the figure indicating where "total lead, dissolved lead and PAH samples" will be collected. Please add these sampling point to the figure.

10. Table 7-1 Sediment Screening and Protective Criteria

It appears that the Wetland Creation Cover and Noncover values have been placed in the NOAA ER-L/ER-M values column. Please correct this mistake.

Also there is no chronic effects AWQC Marine value for copper. The acute AWQC Marine value for total PCBs is 10.

Citations.

Ankley, G.T., M.K. Schubauer-Berigan, J.R. Dierkes and M.T. Lukasewycz. 1991. Sediment Toxicity Identification Evaluation:Phase I (Characterization), Phase II (Identification) and Phase III (Confirmation) Modifications of Effluent Procedures. EPA/600/6-91/007 September.

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Lee, H., II, B.L. Boese, J. Pelletier, M. Winsor, D.T. Specht,

and R.C. Randall. 1993. Guidance Manual: Bedded Sediment Bioaccumulation Tests. EPA/600/R-93/183, 231 pp.

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Long, E.R. and D.D. MacDonald. 1992. National Status and Trends Approach. In: EPA823-R-92-006, Sediment Classification Methods Compendium, Office of Science and Technology, Washington, D.C. 20460, Chapter 14, 18pp.

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Wolfenden, J.D. and M.P. Carlin. 1992. Interim Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse. California Environmental Protection Agency, California Regional Water Quality Control Board, San Francisco Bay Region, Oakland CA 94612, 18pp.

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US EPA. 1993. Technical Basis for Deriving Sediment Quality Criteria for Nonionic Organic Contaminants for the Protection of Benthic Organisms by Using Equilibrium Partitioning. Office of Water (WH-553), EPA-822-R-93-011. Washington, DC 20460.

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US EPA. 1992. An SAB Report: Review of Sediment Criteria Development Methodology for Non-ionic Organic Contaminants. Science Advisory Board A-101. EPA-SAB-EPEC-93-002. Washington, D.C. 20460.

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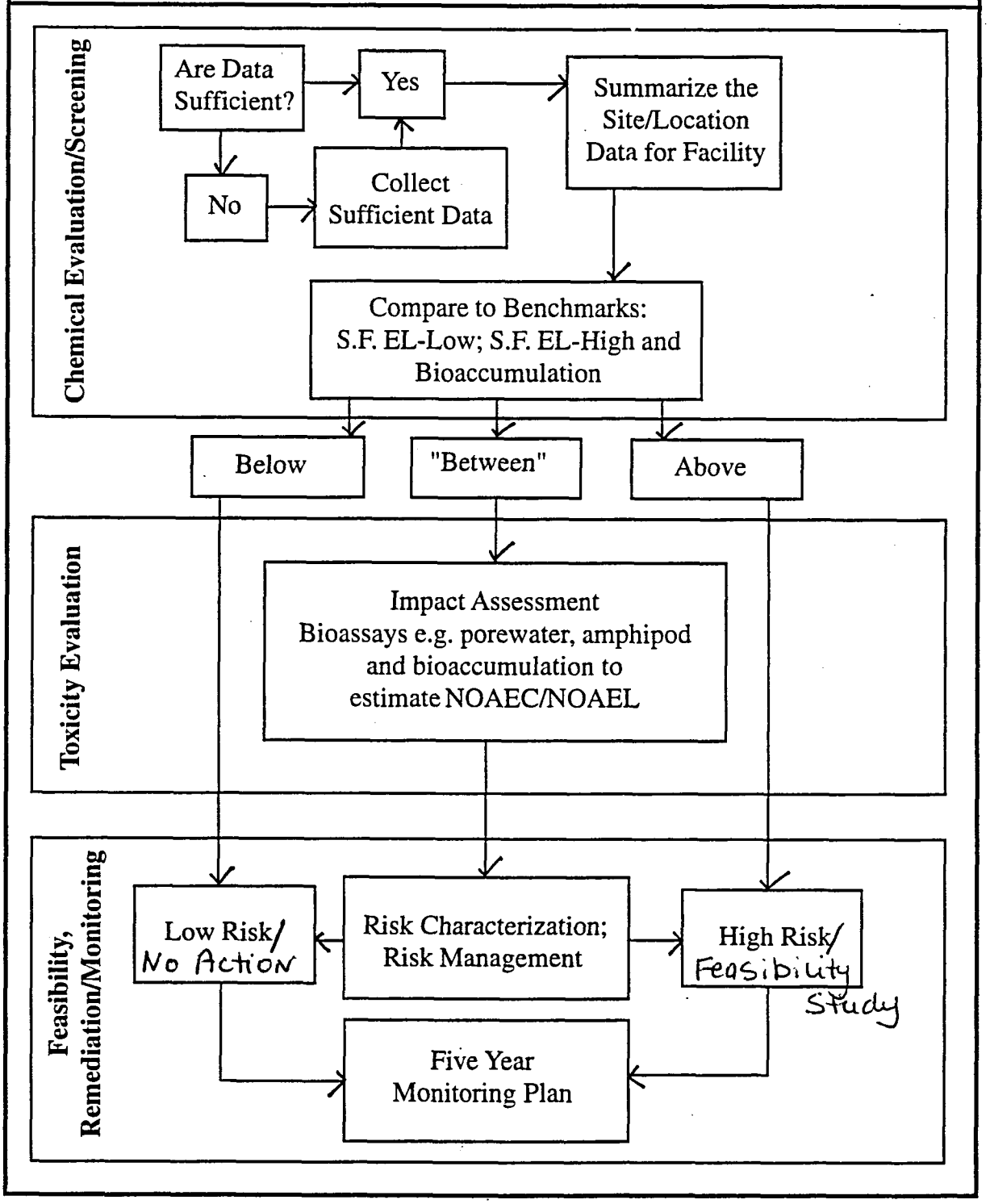
Figure A.

DRAFT

A BTAG PROPOSAL FOR A DECISION TREE FOR SETTING PRIORITIES AT NAVY SITES IN THE SAN FRANCISCO BAY



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