FINAL NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD MEETING SUMMARY

Building 1, Suite 140, Community Conference Room
Alameda Point
Alameda, California

February 4, 2003

ATTENDEES

See attached list.

MEETING SUMMARY

I. Approval of Minutes

Bert Morgan, Community Co-Chair, called the meeting to order at 6:38 p.m.

Mr. Morgan asked for comments on the January 7, 2003, Restoration Advisory Board (RAB) Meeting Minutes. The minutes were approved, with the following corrections:

- Mr. Morgan stated that on Page 1 of 5, comments were received on the December 3, 2002, RAB Meeting Minutes, not the November 5, 2002, RAB Meeting Minutes.

- Dale Smith stated that on Page 2, Section III, in the third paragraph, the phrase "...had not properly been prepared..." should be revised to "...had not been properly prepared..."

II. Co-Chair Announcements

Mike McClelland, Department of the Navy (Navy), Co-chair, made the following announcements.

Mr. McClelland introduced Mark Ripperda, U.S. Environmental Protection Agency (EPA), who will be standing in for Anna-Marie Cook during her maternity leave.

Mr. McClelland presented Michael John Torrey with a plaque from the Navy in gratitude for his service as Community Co-Chair of the Alameda Point RAB from January 2001 through December 2002.

The January 2003 mid-monthly mailing included the most recent revision of the Alameda Point Site Management Plan (SMP) and the Summary of Active Documents. The SMP includes the long-term schedule of deliverables for the installation and should be retained for future reference. The Navy will keep RAB members apprised of any updates to the schedules. The Summary of Active Documents includes upcoming deliverable and comment due dates; it will be updated monthly and included in each mid-monthly mailing.

To date, the Navy has received about $11 million (M) of the Fiscal Year (FY) 2003 funding, which they are in the process of distributing among various projects. So far, about $5 M has been assigned for the initiation of a time-critical removal action (TCRA) to address polynuclear aromatic hydrocarbon (PAH)-impacted soil at Economic Development Conveyance (EDC) 5.

The Navy has reconsidered its previously announced decision to conduct a TCRA at Site 7, because there are no immediate risks to human health at this site. Therefore, the need for any remedial action there will be determined under the regular timeframes that are specified pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act.

Final approval has been received for the Technical Assistance for Public Participation (TAPP) Grant. The next step in the process will be defining a scope of work for RAB contractors; Mr. McClelland expects that the TAPP Grant funds will be available in plenty of time for the RAB to obtain assistance with the technical reviews of upcoming documents.

Previously discussions about the possible need to conduct a TCRA at Site 31, the Woodstock Child Daycare Center, were resolved after further examination of the data, which indicated no need for an immediate removal action. All of the elevated PAHs concentrations occurred at depths of 4 feet or lower.

In response to Ms. Smith's inquiry at the January 7, 2003, RAB meeting, Mr. McClelland contacted Ron Plaseied, the Navy's Base Closure Manager, to determine the status of the property that is scheduled for Federal Agency-to-Agency transfer to the U.S. Fish and Wildlife Service (FWS) for reuse as a national wildlife refuge. The process of transferring the property between Federal Agencies has not been halted; negotiations are still taking place. Although this negotiation process is not directly under the purview of the RAB, there would be ample opportunity for public involvement following any formal decision not to transfer the property to FWS; this involvement could occur throughout the rescreening process for identifying new potential transfer recipients.

Various documents and correspondence were distributed to the RAB.

III. Operable Unit (OU)-3 (Site 1) Focus Group (FG) Update

George Humphreys presented the following summary of the OU-3 FG's comments on the OU-3 Feasibility Study (FS). Mr. Humphreys provided a handout of the FG's comments and his own comments, and Ms. Smith provide a handout of the Sierra Club's comments. The FG met with Rick Weissenborn on January 20, 2003, at Mr. Morgan's home to discuss their comments on the FS report. Professor Kent Udell from the University of California at Berkeley attended the meeting to assist with the technical aspects of the review. The FG identified five general areas of concern:

Performance of the funnel and gate (F&G) system

Professor Udell pointed out during the discussions at the FG meeting that the long-term performance of the F&G system could be problematic because the iron filings would require periodic (7-year intervals) replacement. In addition, continued aeration of the biosparger also would be necessary for the removal of benzene, toluene, and dechlorinated solvents. The 7 percent interest rate used in calculating the present value of future maintenance costs is too high. This value should be the difference between interest rate and inflation rate.

Hydraulics

Mr. Humphreys stated that Professor Udell thought the results of the hydraulic computer modeling were questionable, and that the expected rate of flow through the cap should be inversely proportional to its thickness. These comments led the FG to suspect flaws in the model's underlying assumptions. Mr. Humphreys noted that the proposed golf course drainage system to the east of Site 1 might influence groundwater flow within the landfill. Professor Udell noted that the organic plume appears to be directed toward the proposed beach area. In addition he also noted that the pilings and soil cement wall with rock columns may cause groundwater to flow around the end of the proposed structures.

Radiological contents of the waste cells

The FG does not feel that the radiological contents of the landfill have been adequately characterized. The investigation has focused on the perimeter and surfaces of the landfill, leaving the actual contents of the waste cells largely unexplored. The FG theorized that this approach might have been taken to avoid encountering any potential unexploded ordnance (UXO). Mr. Humphreys pointed out that the planned removal of radioactive material will reach a maximum depth of 20 inches below ground surface and is based on a cleanup criterion of 15,000 counts per minute. Mr. Humphreys feels that the cleanup criterion should be based on a number of counts per minute per area. A table is included in the FG handout, including Mr. Humphreys' comments showing examples of similar types of standards for surface contamination guidelines. Mr. Humphreys noted that the table is out of date and is intended only to illustrate the *type* of measurement; it is not provided as a guide for the measurements themselves as modern comparisons. Lastly, the estimated cost for removal and disposal of presumably lead-contaminated and low-level radioactive wastes ($60,000) seemed grossly inadequate.

Risks

Mr. Humphreys stated that, in addition to external exposure, the inhalation and ingestion pathways should be evaluated for risks associated with radiological contamination. In addition, because the possibility of using the dredge materials from the Seaplane Lagoon (SPL) is being evaluated, the cumulative risk of that material and the soil and groundwater at Site 1 should be evaluated together. Also, Mr. Humphreys stated that he feels it is important to evaluate the residential risk scenario because the half-life of radium is 1,600 years. In that amount of time, the use of the land could change any number of times, and potentially could include residential use. Ecological risks, including those associated with different levels of the food chain, should be evaluated. Mr. Humphreys stated that Ms. Smith had previously pointed out that sand boils could bring contaminants to the surface and introduce new risks.

Consideration of the excavation alternative

Some of the RAB members have suggested various forms of excavation as a potential remedy for the landfill. The Navy's primary argument has been that it would be prohibitively expensive, involving costs such as Class B protective gear for workers, in addition to the costs of the removal itself. The FG is requesting that the Navy reconsider evaluating excavation as an alternative rather than selecting capping as a presumptive remedy.

Jean Sweeney asked for clarification about what the dotted lines signified in Figure 2 in the packet Mr. Humphreys distributed. Mr. Humphreys clarified that the dotted lines represent objects or structures that are not yet in place, but are planned as part of the recommended

alternative in the FS report. The solid lines represent interpretations of actual structures or features present at Site 1.

Kevin Reilly asked if the possible emission of radon gas is a concern at the site. Mr. Humphreys stated that there has been some discussion about the potential for release of radon because radium degrades to radon. Furthermore, Mr. Humphreys stated that the decay of organic materials in the landfill could result in the release of other gases, such as methane gas; however, because of the advanced stage of the degradation process, there is probably little risk associated with the organic degradation processes. Most methane production has probably ceased to a considerable extent. Mr. Humphreys stated his concerns that cellular phone usage could detonate UXO that may be present in the area.

Bill Smith stated that, as is the case at many mixed waste sites, there does not appear to have been good communication between the radiological and hazardous waste investigations. The radiological waste is often addressed in the hazardous waste investigations by saying "it will be addressed in a later study."

Mr. Humphreys stated that Mr. Morgan noted that the report alluded to a trench that might contain radiological material. He also stated that the FG is requesting that the Navy pursue additional information on the trench, and commit to cleaning it up, if it is located.

IV. SPL (Site 17) Remedial Investigation (RI) Report

Michael Pound, the Navy's Deputy Chief Environmental Engineer, presented a summary of the findings from the Draft Seaplane Lagoon (SPL; Site 17) Remediation Investigation (RI), which was submitted to the BCT members on January 29, 2003. A handout of the slide presentation was provided to the meeting attendees. Mr. Pound started the meeting with a brief discussion of the historical background associated with SPL. He noted that the primary source of historical contamination at the lagoon was from industrial wastewater discharges through the storm drain system from the 1940s to 1975. The highest concentrations of chemicals of concern, including heavy metals, pesticides, radionuclides, and polychlorinated biphenyls (PCB), were found in the northwest and northeast corners of SPL at a depth of 4 inches to 2 feet below the sediment surface.

The four primary objectives of the SPL RI were to: (1) describe the nature and extent of the sediment contamination; (2) present the methods and results of the ecological risk assessment (ERA) and human health risk assessment (HHRA); (3) delineate areas that pose unacceptable risks to human health and the environment and therefore require further evaluation in a FS; and (4) propose preliminary remediation goals (PRG) for sediment that are protective of human and ecological receptors. To accomplish these objectives, the Sediment Work Group (SWG) used historical sediment data collected by PRC Environmental Management Inc./Tetra Tech EM Inc. (Tetra Tech), supplemented with additional field investigations where data gaps were determined. One data gap sampling effort was conducted to collect forage fish tissue samples to assess the effects of sediment contamination on prey fish species that have a high site affinity. Forage fish samples were from 20 to 5 cm in size. Once all of the data were collected, the human health and ecological risk assessments evaluated all available data to develop a preliminary feasibility footprint based on unacceptable risks.

The ERA was conducted following a two-tier process, in accordance with EPA and Navy guidance. In the first tier, a screening level ERA was conducted using conservative benchmarks

such as effects range - low (ERLs) and exposure assumptions based on receptors habitating the site for 100 percent of their lives. Theoretically, if a site passes this level of conservative screening, no further action is warranted and the conditions at the site are considered acceptable for all potential ecological receptors. However, if the screening level ERA (SLERA) indicates unacceptable risks based on these conservative assumptions, then a baseline ERA (BERA) would be performed, which involves the use of more site-specific criteria and refined assumptions.

The screening-level ERA consisted of three major components: (1) develop conceptual site model (CSM); (2) identify chemicals of potential ecological concern (COPECs); and (3) determine hazard quotients using conservative assumptions. The CSM is designed to determine the source of the contamination, transport mechanisms, and the routes of exposure in which potential receptors may come in contact with the contamination. The three groups of receptors and pathways include benthic invertebrates, (worms, shrimp, and clams), which are exposed through ingestion and direct contact with the sediment and fish (piscivorous/forage) and birds; which are exposed by ingesting of sediment and prey. All chemicals detected during the field investigation above effects range - median (ERM) benchmarks were considered COPECs including 20 inorganics, 59 organics, and radionuclides. Hazard quotients (HQs) were then evaluated for target species using conservative exposure assumptions. The target species represented the highest trophic level that would be exposed to the site contaminations; in this case, the birds. The individual bird species chosen were the scoter, juvenile and adult least terns, and the double-crested cormorant. HQs were estimated for each target species using maximum sediment and tissue (macoma and forage fish concentrations). The results of the SLERA indicated that HQs for cadmium, lead, and combined concentrations of dichlorodiphenyldichloroethane, dichlorodiphenyldichloroethene, and dichlorodipehenyltrichloroethane (total 4,4'-DDX), and total PCBs were greater than one (1) for all receptors. Although no significant risk was associated with exposure to radionuclides for any receptors, the HQs estimated using the maximum chemical concentrations indicated that a Tier 2 BERA was warranted.

The first step of the BERA was to refine the list of COPECs using a statistical comparison to ambient, or background, levels. Chemicals that were non-detects, or were not detected in fish tissue, were eliminated as COPECs after one half of the detection limits were compared to benchmark values. For each receptor group, potential effects were assessed using the available data. Only limited data was available to evaluate potential effects to benthic invertebrates. After careful evaluation of the available data, no relationship was found between toxicity of sediment to benthic invertebrates and sediment chemistry. It was suspected that confounding factors may have influenced the laboratory results and consequently, the Navy collected additional data from the same stations observing strict quality control protocols. Based on the new bioassay results, no acute toxicity was found at any of the stations and thus, it was concluded that there exists a low potential of risk to benthic community. For the piscivorous fish community, forage fish tissue concentrations were compared to literature-derived forage fish preliminary remediation goals (PRGs). Cadmium was the only compound considered to be a risk driver for fish, based on exceedances above the PRGs for forage fish; all other tissue concentrations were below their respective PRGs for forage fish protection. Results varied between the avian receptors after the exposure assumptions were refined. For the scoter, no HQ exceeded 1. For the cormorant, lead exceeded a HQ of 1; however, the level was comparable with ambient levels. For the least tern, HQs for total 4,4'DDX, cadmium, and total PCBs exceeded 1, based on forage fish tissue.

Mr. Humphreys and Ms. Smith asked if grebes were considered as a diving bird and if any dabbler birds such as the sandpiper were considered. Mr. Pound stated that the scoter is a diving

bird that forages in the subtidal area and primarily consumes molluscs and therefore is representative of such species. Mr. Humphreys pointed out that diving species are not necessarily representative of species that feed in shallow waters. Virginia Lau from Battelle explained that because SPL has limited attractive foraging habitat for these species (i.e., mudflats), the exposure to wading birds is minimal and anticipated to be much lower than for diving birds (such as scoters) or other higher-trophic-level birds (such as cormorants) that feed on forage fish. Even at low tide, the available mudflat area is minimal and isolated to the corners of the lagoon; therefore, a cleanup based on birds with a higher potential exposure was considered to be a more conservative approach.

In summary, the BERA indicated that there is a low potential for risks to benthic invertebrates. Cadmium was the only COPEC identified that poses a potential risk to forage fish. ERA results also indicated that there is minimal risk posed to benthic-feeding birds, such as the scoter, or to piscivorous birds such as the cormorant. The least tern appears to be the most sensitive avian receptor evaluated with HQs exceeding 1 for total 4.4'-DDX and total PCBs.

For the HHRA, only adult exposures were evaluated for the reasonable maximum exposure (RME) and central tendency exposure (CTE) scenarios. Human receptors were assumed to be exposed through direct contact with sediment, ingestion of shellfish, and ingestion of forage fish. Radionuclides were evaluated only for ingestion of sediment and external radiation (external radiation was defined as exposure to gamma radiation from distance sources). The evaluation of the ingestion of forage fish pathway was considered very conservative since forage fish tend to be in the range of 5 to 20 cm, which is below the legal size limit.

Mr. Humphreys asked if the sturgeon was evaluated because it is a bottom-feeder and typically has a long lifespan. Mr. Pound stated that the sturgeon was not evaluated. Ms. Smith asked if the leopard shark was evaluated because it is commonly fished in the San Francisco Bay area and generally has a small home range. Ms. Lau stated that sports fish were not evaluated for this assessment. However, sports fish were collected as part of the Hunters Point Validation Study and it was found that the body burdens in sports fish were much lower than those observed in forage fish. The outcome from that analysis was that risks from sports fish were similar to those experienced by recreational users at other sites of the Bay. Mr. Pound suggested continuing with the slides and revisiting this issue later in the presentation.

Two sets of toxicity values (US EPA toxicity values and combined US EPA and Department of Toxic Substance Control (DTSC) toxicity values) were used in the HHRA in accordance with SW DIV policy. The results from the exposure assessment and toxicity assessment were then integrated in the risk characterization.

Several graphs were then presented summarizing the risks estimated in the HHRA. The initial graphs presented a summary of the RME and CTE risks by pathway based on the different toxicity values. A summary of the hazard index for the RME and CTE scenarios was presented in the last graph by exposure pathway.

Based on the results of the HHRA, it was concluded that the total site risks at SPL were slightly higher than reference for the direct contact with sediment and ingestion of forage fish pathways. In addition, risks from direct contact with sediment were within EPA's risk management range, and risks from ingestion of shellfish were consistent with background risks. Risk drivers included arsenic, chromium, and total PCBs; however, both arsenic and chromium are naturally occurring and consistent with ambient levels. Risks from radionuclides are significantly (a full

order of magnitude) below EPA's cleanup level for CERCLA sites with radiological impacts.

The next phase of the RI process is to develop an FS footprint using the results from the HHRA and ERA. Based on the results of the ERA, a PRG for cadmium was developed for protection of young and adult forage fish while another set of PRGs for cadmium, total PCBs, and total 4,4'-DDX were calculated for the protection of least terns.

Mr. Torrey asked if the chemicals could potentially migrate to the Crown Royal Beach area. Mr. Pound stated that while it is not possible to say for certain that it could not happen, it is highly unlikely that COPECs in SPL would migrate such a distance. These chemicals tend to bind tightly to sediment; in addition, the highest concentrations are located well below the surface. Mr. Torrey asked if it would be possible that jellyfish could transport the chemicals. Mr. Pound stated that it would be highly unlikely.

Mr. Humphreys asked if the yachts that would presumably be traveling in and out of the SPL after it is redeveloped as a marina would increase the potential for the chemicals to migrate over long distances. Ms. Sweeney asked if the deeper sediments were well characterized given the need to dredged the lagoon to allow for the development of the marina. Ms. Lau stated that core sampling had been conducted at up to 10 feet in the lagoon and it is the Navy's understanding based on discussions with the ARRA that no additional dredging is required in the lagoon to allow for the redevelopment of the marina.

Mr. Smith asked what the standard protective levels are. Mr. Pound stated that generally a HI below 1 is acceptable and anything above 1 requires risk management decisions. PRGs are benchmarks that are back-calculated using a HI of 1.0 and represents acceptable soil concentrations using conservative assumption that are not likely to result in adverse effects. HI greater than 1, generally require a more full-scale site-specific risk assessment. Mr. Smith stated these risks levels for human health exposure were the highest he has seen in the Bay and asked the regulatory agencies if they likewise have the same conclusions. Mr. Pound responded that risks associated with HHRA were driven by PCBs, arsenic and chromium and that chromium and arsenic concentrations are similar to background levels (background was defined as areas not contaminated by Navy operations, such as Paradise Cove, Bay Farm Island, and Berkeley Pier). Mr. Ripperda stated that he will be evaluating the risks very closely, but has just received the RI. Andrew Dick added that the RI report was submitted as a draft document on January 29, 2003 and they are currently reviewing the report during the 60 days comment period.

Mr. Smith stated that he remembered a discussion about the possibility of conducting a joint cleanup with the Bay and asked if anyone had heard of any follow-up discussion. There was no response.

Mr. Smith also noted that he felt the results of the ERA and HHRA seemed surprising. Normally, he would expect that the ERA would indicate higher risks than would the HHRA. Mr. Smith stated that the Sierra Club would be scrutinizing the report closely, and in light of the appearance that the only meaningful PRGs were set by the least tern.

Ms. Smith noted that the brown pelican uses the area around the SPL as a night roosting site and is consider a special status species in California. She stated that this fact should be accounted for in the assessment. Mr. Pound noted that the double crested cormorant was evaluated for piscivorous birds and likely models the exposure that would be experienced by brown pelicans. In addition, pelicans are surface divers and do not consume bottom dwelling forage fish unlike

the cormorants.

Based on the ERA PRGs, a preliminary footprint for the FS was developed that encompass the areas of highest contamination, namely the northeast and northwest corners of the lagoon. The HHRA indicated that the only compound that potentially posed a risk at SPL was total PCBs. Removal of sediment along these areas based on the ecological footprint would effectively eliminate potential risks to human receptors through direct and indirect exposure pathways. In addition, Mr. Pound added that in the northwest quadrant of the footprint is driven by cadmium while the northeast quadrant is driven by DDXs.

Mr. Reilly asked what the ambient level for radium is, and Mr. Humphreys asked how the levels of radium in SPL compared to the levels of radium at Site 1. Mr. Pound stated that he did not know the background level of radium; however, the radium concentrations were below the benchmarks setup by the mining industry that was used to assess Site 1. Based on that information, it appears that the radium levels at SPL are below those being measured at Site 1.

Lea Loizos stated that the issues involved in the SPL RI are very complicated and there is evidently much interest by the RAB to continue the discussions. Therefore, it would be unlikely that all of their questions could be resolved in one meeting, so she asked if Ms. Lau and/or Mr. Pound could attend an FG meeting at a later date. Mr. Pound agreed that would be helpful.

Ms. Sweeney asked if it is dangerous for the least terns to be at SPL. Mr. Pound stated that RI did not find any evidence of acute toxicity and that the risks to the terns are attributable to long-term exposure only.

Mr. Humphreys asked if the effect of DDXs causes the softening of eggshells. Mr. Pound stated that it is.

Ms. Loizos asked if the drains that were the sources of the contamination in the SPL had been closed. Mr. McClelland stated that the industrial waste lines were disconnected from the storm drains years ago, although the storm drains are still in place. There are currently no industrial discharges coming through the drains and are only used for surface water runoff.

Mr. Humphreys asked if the lead that potentially entered the storm sewers at the water towers site in December 2002 had been sampled for at SPL. Mr. Pound stated that lead concentrations at SPL are representative of background levels.

IV. Community Relations Report (CRP) Overview

Steve Edde gave the following update on the CRP. The Draft CRP was released on December 23, 2002. Agency and public comments are due February 27, 2003. Mr. Edde is available for an FG meeting to discuss comments, and extra copies of the document will be made available to RAB members who have not received one. Last summer, a team was formed to prepare the updated draft; the team included Mr. Edde; Tracy Craig, Tetra Tech; Patricia Ryan, Public Participation Specialist for DTSC; and David Cooper, Public Participation Specialist for EPA. A series of interviews was conducted with a broad range of community members, and the data were compiled to form the basis of the new CRP. Ms. Sweeney asked what types of questions were asked in the interviews. Mr. Edde stated that the full list of questions and the summarized answers are included in the document, and that a more detailed discussion could be pursued at the FG meeting.

V. Base Realignment and Closure Cleanup Team (BCT) Activities

Marcia Liao, DTSC, provided the following information from the January 21, 2003, meeting of the BCT:

- The Navy provided an update on the status of the FY 03 funding.
- There was a status update for ongoing removal actions, including the removal at Site 7, which will no longer be a TCRA; the six-phase heating study at Sites 4 and 5, which will be promoted to full-scale at Site 5; and the chemical oxidation study at Sites 9, 11, 16, and 21. At Sites 9 and 16, the study will be brought to a full-scale level; however, it will be shut down at Sites 11 and 21.
- There was a brief discussion of the ERA approach at Site 28.

In addition, the BCT held a conference call to discuss the HHRA approach.

Mr. Reilly asked if there were any trends in the funding that could be discussed. Mr. Dick stated that controls for FY 03 are set at $19.7M, and to date, about $11M has been received. The Navy is currently working on distributing that money. So far, about $5M has been distributed to start work on a TCRA at EDC-5. The money was supposed to have been received earlier, but it arrived only last week.

Ms. Smith asked if there were any problems getting it last year. Mr. Dick responded that there were no problems in FY 02; all of the money for the year was awarded in the first and second quarters; however, the first of the money for FY 03 was received just last week. Ms. Smith asked if the Navy had requested less money this FY. Mr. Dick stated that they had not asked for less this year, but that the budgeting process is complicated and another request will be submitted in April 2003. McClelland clarified that the April submittal will be for FY 04 funding.
Ms. Sweeney asked how much money the Navy requested. Mr. Dick stated that he did not remember the exact amount of the Navy's request, but he estimated that it was around $40M.

VI. Property Transfer Update

Elizabeth Johnson, City of Alameda (City), gave the following update on the status of the early

transfer process. Ms. Johnson stated that the City is proposing early transfer, which means they are negotiating a cost to clean up the base and proposing that they will take over responsibility for conducting the remainder of the cleanup in exchange for the Navy giving them the negotiated amount of money. Theoretically, the cleanup will be accomplished in a more efficient manner. Government and EPA approval will be necessary. The City has established a steering committee to lay the groundwork for this process. Ms. Sweeney asked if the City would have to apply for the funds by the same process the Navy does after an amount of money has been agreed upon. Mr. McClelland clarified that the City will generate a cost estimate with their contractor and will approach the Navy with a proposal. The Navy will then review the proposal, compare it to their own projections, and assume that because remediation will be coupled with redevelopment, there should be a certain amount of cost savings built in. They will work with their management to consider the offer and determine if it is in their economic best interest to further pursue early transfer of the base.

Ms. Ryan stated that there must be a certain amount of public involvement, including fact sheets, notices, and so on, throughout this process.

Mr. Reilly asked about the City's role in the transfer of Federal property. Ms. Johnson stated that it is not entirely clear and that the City would like to discuss this issue further. Mr. Humphreys asked if the City would have priority over a private nonprofit agency. Ms. Johnson stated that it is not clear. Mr. McClelland stated that there is a screening process that property would go through and he is unsure who would have priority, but the process would be subject to national Environmental Policy Act guidance.

Ms. Loizos asked where the City is in the discussions and if they have proposed a cleanup cost yet. Ms. Johnson stated that they have not proposed a cost, but they have done due diligence and have developed lists of items needing further attention.

Ms. Smith asked if data gaps were identified during the due diligence process. Ms. Johnson stated that they were.

VII. Community and RAB Comment Period

Mr. Torrey stated that on February 20, 2003, the Economic Development Commission will hold a public workshop to discuss the Waterfront project, the Alameda Point project, and the Alameda Western Community Improvement project. One of the agenda items is an amendment to combine the three projects.

Mr. Torrey also stated that the Alameda Fire Department will be repairing and conducting testing of the air raid sirens the first Wednesday of each month. Community members who hear the sirens are requested to call the fire department and report their location.

Mr. Morgan introduced a guest, Neil Coe, who may periodically be joining the RAB.

The meeting was adjourned at 8:30 p.m.

ATTACHMENT A

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING AGENDA
FEBRUARY 4, 2003

(One Page)

RESTORATION ADVISORY BOARD

NAVAL AIR STATION, ALAMEDA

AGENDA

4 FEBRUARY, 2003 6:30 PM

ALAMEDA POINT – BUILDING 1 – SUITE 140

COMMUNITY CONFERENCE ROOM

(FROM PARKING LOT ON W MIDWAY AVE, ENTER THROUGH MIDDLE WING)

MEETING MINUTES AVAILABLE ONLINE AT:
WWW.EFDSW.NAVFAC.NAVY.MIL/ENVIRONMENTAL/ALAMEDAPOINT.HTM

TIME	SUBJECT	PRESENTER
6:30 - 6:35	Approval of Minutes	Bert Morgan
6:35 - 6:50	Co-Chair Announcements	Co-Chairs
6:50 - 7:10	OU-3 (Site 1) Focus Group Update	George Humphries
7:10 - 7:40	Seaplane Lagoon (Site 17) RI Report	Virginia Lau/Michael Pound
7:40 - 7:50	Community Relations Plan Overview	Steve Edde
7:50 - 8:00	BCT Activities	Marcia Liao
8:00 - 8:05	Property Transfer Update	Elizabeth Johnson
8:05 - 8:15	Community & RAB Comment Period	Community & RAB
	RAB Meeting Adjournment	
8:15 - 9:00	Informal Discussions with the BCT	

ATTACHMENT B

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING SIGN-IN SHEETS

(Four Pages)

ALAMEDA POINT
RESTORATION ADVISORY BOARD
Monthly Attendance Roster for 2003

Date: February 4, 2003

Please initial by your name

RAB MEMBERS	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Ingrid Baur												
Clem Burnap												
Ardella Dailey												
Nick DeBenedittis												
Douglas deHaan	X											
Tony Dover		X										
George Humphreys	X	X										
James D. Leach	X	X										
Jo-Lynne Lee												
Lea Loizos	X	X										
Bert Morgan	X	X										
Ken O' Donoghue												
Kurt Peterson												
Kevin Reilly	X	X										
Bill Smith		X										
Dale Smith	X	X										
Lyn Stirewalt												
Jean Sweeney	X	X										
Jim Sweeney	X	X										
Luann Tetirick	X											
Michael John Torrey	X	X										

COMMUNITY MEMBERS	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Neil Coe		X										
Debbie Collins	X											
Golden Gate Audubon Society												
Betsy P. Elgar												
Dana Kokubaun												
David Rheinheimer												
REGULATORY AND OTHER AGENCIES	**JAN**	**FEB**	**MARCH**	**APRIL**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**
Anna-Marie Cook (EPA)	X											
David Cooper (EPA)		X										
Merry Goodenough (USCG)												
Judy Huang (RWQCB)	X	X										
Elizabeth Johnson (City of Alameda)	X	X										
Marcia Liao (DTSC)	X	X										
Laurent Meillier (RWQCB)												
Mark Ripperda		X										
Patricia Ryan (DTSC)	X	X										
Sophia Serda (EPA)												
Michael Shields (USCG)	X	X										

U.S. NAVY	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Glenna Clark												
Andrew Dick	X	X										
Steve Edde		X										
Greg Lorton												
Mike McClelland	X	X										
Tom Pinard	X	X										
Rick Weissenborn	X											
TETRA TECH EMI	**JAN**	**FEB**	**MARCH**	**APRIL**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**
Courtney Colvin	X	X										
Tracy Craig												
Corinne Crawley												
Chris Fennessy												
Jim Helge												
Craig Hunter												
Marie Rainwater												
Leah Waller												
Heather Imgrund												

* Denotes excused absense

OTHER	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Janet Argyres-Bechtel												
Aidan Barry - APCP												
Bart Draper-Bechtel												
Lee Dodge - LFR												
Bill Howell - 3-D Environmental												
Rezsin Jaulus-Alameda Point Coll.	X											
Eric Johansen - Bechtel												
Bruce Marvin - IT, Aquifer Solutions												
Stephen Quayle-Bechtel												
Ron Rinehart, Pacific States												
Kent Udell	X											
Charlene Washington-EBCRC												

* Excused absence
** Attended but did not sign roster

ATTACHMENT C

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING HANDOUT MATERIALS

Restoration Advisory Board Focus Group Operable Unit-3 Meeting, 2003. Presented by George Humphreys, Vice-Community Co-Chair. January 20.

Comments on the Feasibility Study Report for Site 1 Disposal Area at Alameda Point, Alameda California, 2003. Sierra Club. Prepared by Bill Smith and Dale Smith. February 3.

Alameda Point Seaplane Lagoon Remedial Investigation Overview, 2003. Presented by Michael Pound, Department of the Navy, Deputy Chief Environmental Engineer, Naval Facilities, Southwest Division. February 4.

Restoration Advisory Board Focus Group Operable Unit-3 Meeting, 2003

(Nine Pages)

RAB Focus Group OU-3 Meeting

January

The Restoration Advisory Board (RAB) focus group met on Monday, 20, 2003 to discuss the "Revised Draft Feasibility Study Report" for Operable Unit -3. The meeting was held at Bert Morgan's home at 6 pm. The RAB members in attendance were Bert Morgan, Lea Loizos, Dale Smith, Bill Smith, Kevin Reilly and George Humphreys. In addition, Professor Kent Udell from U. C. Berkeley had reviewed the report and was in attendance. Later, the Navy's Remedial Project Manager, Rick Weissenborn, arrived and joined the discussion.

Bill Smith and Dale Smith had reviewed the report and provided draft written comments. George Humphreys also provided written comments.

After the focus group had read over the written comments, a lively and productive discussion ensued. The consensus was that, in general, the report was well-written and clearly presented the Navy's recommendations. However, there appear to be many unanswered questions and potential problems that the group identified.

Professor Udell pointed that what is being proposed by the Navy is not a permanent solution. Long-term performance of the iron bed in the "funnel and gate" treatment system has not been demonstrated. Periodic replacement of the iron filings would be required. This means the City periodically would have to dig up a portion of the golf course to replace the iron filings. The replacement interval would be 7 years or more. Continued aeration of the biosparger for the removal of benzene, toluene, and dechlorinated solvents also would be necessary.

Professor Udell noted that the 7 % interest rate used in calculating the present value of future periodic replacement of the iron appears too high. A higher assumed interest results in a lower present value.

A major deficiency of the remedial investigation is that radioactive and chemical contaminants are not adequately characterized. Thus, the long-term health risks of these constituents can't be adequately addressed. Most of the sampling and borings were taken around the perimeter and on the surface. rather than within the body of the waste cells. It was noted that the Navy's reticence to sample within the wastes was probably engendered by misgivings about drilling into buried unexploded ordnance.

The study considered seven alternatives, ranging from "no action" to an "engineered cap". (These alternatives were discussed by Rick Weissenborn at the January 7, 2003 RAB meeting.The recommended Alternative 2B-1, consists of surface remediation of lead and radiological contamination, a 2-ft thick cap of silty clay, and a funnel and gate treatment system for the contaminated groundwater plume. It includes a 24-ft wide soil cement wall with rock columns to seismically strengthen the bayside dike. (see Figures 1 and 2). The recommended alternative has a present value of$25.2 million, compared to $59,800 for "no action" and $47.6 million for the "engineered cap".

Some of the RAB members have suggested that some form of excavation of the cells be considered. This has included excavating the material and laying it out on the runways to facilitate separating out contaminated materials. It was pointed out by George Humphreys that tension structures supporting coated fabric tents may also be used to minimize public exposure to vapors and dust during excavation activities. Some felt the Navy's reluctance to consider "excavation" is based on capping as the "presumptive" remedy for landfills. Rick Weissenborn said that the Navy's desktop evaluation indicated that an excavation remedy would cost several hundred million dollars. He also pointed out that because of the presence of volatiles and semi-volatiles plus radioactivity, workers doing the sorting probably would have to work in Class B protective gear, thereby limiting production rates. It was noted by the RAB members that this not an ordinary municipal waste landfill, but one containing industrial-type wastes. Professor Udell pointed thatthis is really a "mixed waste" landfill, containing both radioactive and chemical hazardous wastes.Lea Loizos asked what the chances are of getting excavation looked at as far as costs are concerned.

The draft comments prepared by Bill Smith and Dale Smith were presented as "not for citation". Their revised comments may be available at the February 4, 2003 RAB meeting. If so, they will be submitted separately. Some of their questioms are similar to questions raised in George Humphreys' comments (attached)

Professor Udell thought that the results of the hydraulic computer modelling were questionable. He asked whether flow through the bottom of the landfill had been taken into consideration. Rick Weissenborn said that it had not. Also, Professor Udell noted that one would expect flow through the cap to be inversely proportional to thickness. The model showed that increasing the cap from 24-in. to 48-in. only reduced the water inflow by 50,000 gal/yr out of a 11,753,000 gal/yr total. Bill Smith asked whether the "young bay mud" was a continuous, uninterrupted layer separating the waste cells from the underlying Merritt Sand water-bearing zone.

Another question is whether forced air injection in the biosparger zone, coupled with the back and forth tidal flow, would cause oxidation of the iron filings in the funnel and gate system?

Dale Smith asked whether a seismic event might cause liquefaction and "sand boils"such as those caused by the Loma Prieta earthquake on Treasure Island? this could bring radioactivity and hazardous chemicals to the surface. What are the associated health risks?

Bert Morgan noted that the report refers to a trench containing radioactivity. Where is the trench and what are its dimemsions? What are the radioactivity levels of the material contained in this trench? Has a cleanup standard been established for this material and is the Navy committed to removing radiological materials above a pre-determined level? This assumes that cross-trenching reveals the existence of such a trench.

ALAMEDA POINT

ALAMEDA, CALIFORNIA

Recommended Geotechnical Alternative

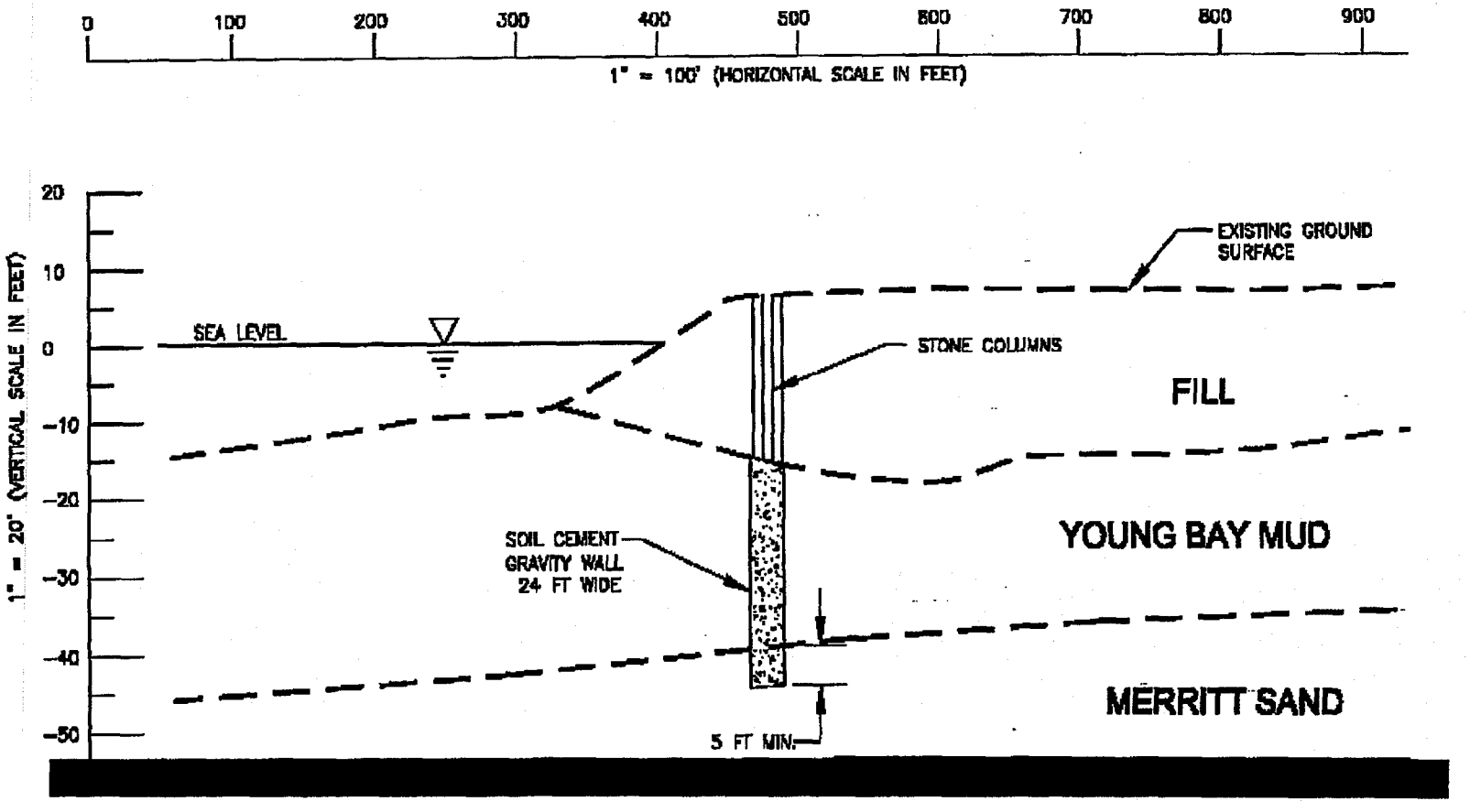

FIGURE-1

SCHEMATIC SKETCH OF OU-3 (SITE 1)
AND PROPOSED GOLF COURSE

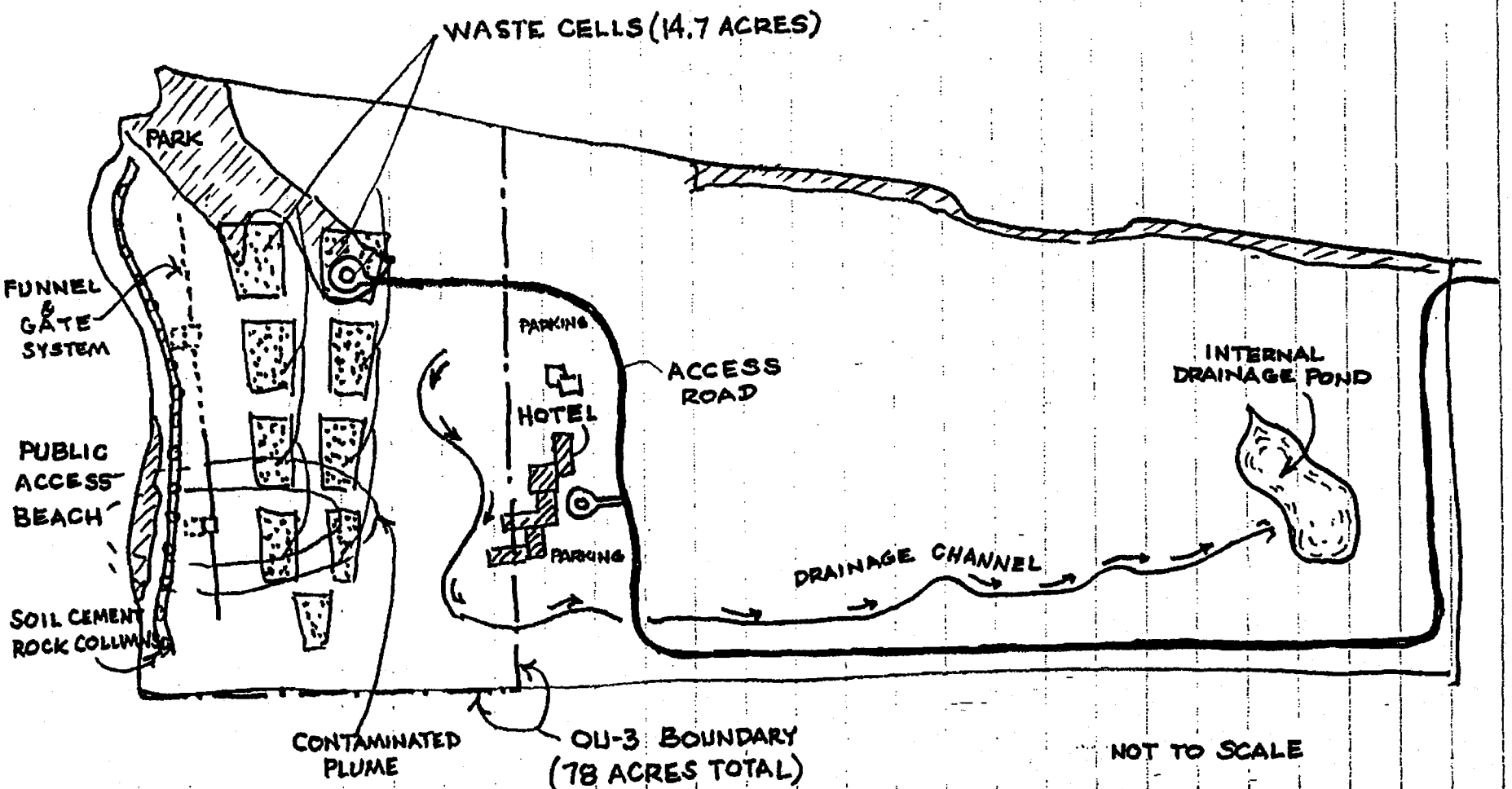

FIGURE - 2

From:
George Humphreys
February 3, 2003

Subject: Comments on "revised Draft Feasibility Study Report, Operable Unit-3. Site 1- 1943-1956 Disposal Area, Dec. 12, 2002, D. S. A 029.10145. Contract No. N68711-00-D-005, Delivery Order 29"

The following specific comments are offered:

1. The capital cost estimates in the Appendix allow only $60,000 for offsite transportation and disposal, presumably of lead-contaminated soil and low-level radioactive wastes. This appears grossly inadequate.

2. Although the recommended alternative speaks of "remediation of radiological contamination", closer perusal reveals that they are proposing only excavation of hot spots to a maximum depth of 20 inches (see pg. 4-10 of the report). Hot spots are locations exceeding 15,000 counts/min. The study identifies 1865 "radiological anomalies" in surface soils. Note that the present soil cover is 6 inches to 2.5 ft (see pg. 4-5), so the proposed maximum excavation depth does not address the bulk of the radioactive wastes which one would expect in the body of the wastes cells. Furthermore, the radioactive contamination is extensive and goes beyond the boundaries of the landfill cells (eg. M-002A is right next to the bay and M030 is east of the landfill cells). This suggests that radioactivity has been spread around by surface grading operations.

3. The criterion of 15,000 counts/min is meaningless because it doesn't say what the area of the source is. Furthermore, it confuses disintegrations per minute with counts per minute. Usually, the area is 100 cm^2 (Reference 1). The counts per minute has to be corrected for background, counting efficiency and geometric factors to obtain disintegrations. For example, if one had a surface source, half of the emissions would go down into the soil. If the detector subtended a solid angle comprising 20% of the remaining half-sphere, only 10% of the radiation would be directed toward the detector ($\frac{1}{2}$x 20% = 10%). Further, in the case of alpha and beta emissions, their short range means a lot of the radiation doesn't even reach the detector.Finally, not every emission entering

the the detector gets counted (the counting efficiency). Taking all these factors into account 15,000 counts/min/100cm^2 might correspond to 10 or 100 or more higher disintegrations/ min/ 100 cm^2.

4. The area of the contaminated groundwater plume appears to coincide with the planned location of the public access beach. (see Fig. ES-1 of the report and "Alameda" magazine pg. 34 and 35, Jan/Feb 2003 issue). In addition, to the concentration profiles for benzene and toluene shown on Figure 2-8, the highest measured radioactivity was at the M028 well cluster, near the public beach.

5. Residential risks were not evaluated because a "closed landfill" is not conducive to future residential use". Note, however, that radium -226 has a half-life of 1600 years. Who knows what use the land might have in that timeframe? One can contemplate that the proposed golf course might have a life of a hundred years. To illustrate the changes that occur over long periods, it is noteworthy that the level of water in the bay has risen an estimated 25 or 30 ft over the last 3500 years (ref. 2)One could reasonably expect the level of the bay to rise another 10-15 ft during the next 1600 years. Thus, reliance on administrative controls may not be effective to limit human and environmental exposure to radiation over the long periods required.

6. The proposed funnel and gate treatment system will do little or nothing to remove radioactivity from the contaminated plume flowing back and forth through the gate.

7. The report (pg. 4-10) proposes to screen and separate out radiological sources. However, the RAB has been told that there are radioactively contaminated paint brushes and rags present. These types of materials may have decomposed since the landfill closure and not be susceptible to separation by screening.

8. The highest radiation risk is stated on pg. 2-8 of the report to be due to external exposure (i.e. whole body direct radiation) from the radium isotopes. However, radium isotopes are alpha, beta and soft gamma emitters. Both alpha and beta particles have short ranges. Thus, it would be expected that direct radiation would not be much of a problem. However, if radium gets into the body the more energetic and damaging alphas can cause a lot of damage. The risk of bone and nasal tissue cancer due to ingestion and inhalation should be investigated. Also, the possible risk of these radium isotopes getting out of the body of the landfill into benthic (bottom-dwelling) organisms and concentrating in fish and diving ducks, and eventually entering the human food chain should be studied.

9. DOE Order 5400.5 (ref. 1), Chapter IV sets forth guidelines for the unrestricted release of facilities or equipment having residual radioactive material. The basic dose limit for exposure to residual radioactive material is 100 mrem per year above natural background exposure. For residual radionuclides in soil the generic guidelines for radium (Ra-226 and Ra-228) are:
   - 5 pCi/g, averaged over the first 15 cm of soil below the surface;and
   - 15 pCi/g, averaged over 15 cm soil layers more than 15 cm below the surface.

   The guidelines for surface contaminations of structure and equipment to be released for unrestricted use are presented in the attached table. Note that the values are given as disintegrations per minute per 100 cm^2.

10. Will the future golf course drainage system influence the groundwater flow within the landfill? Note that the proposed "internal drainage pond" for the golf course is east of the landfill. Water from the pond will have to be withdrawn and treated or discharged to prevent a buildup of salts in the irrigation water. Will water contaminated with chemicals, solvents and radioactivity be drawn eastward away from the "funnel and gate" treatment system?

11 No mention is made in the report about the proposed use of potentially contaminated sediment from the seaplane lagoon for contouring the golf course. Shouldn't the exposure risks from that material be added to that from the landfill?

References

1. U.S. Department of Energy Order 5400.5, "Radiation Protection of the Public and the Environment", February 8, 1990, change 2 January 7, 1993.

2. "Geologic History of the San Francisco Bay", Louderback, p. 87, in "Geologic Guidebook of the San Francisco Bay Counties", Bulletin 154, Division of Mines, (1951).

Surface Contamination Guidelines[1]

Radionuclides[2]	Allowable Total Residual Surface Contamination (dpm/100 cm²)[1] Average[3/4]	Maximum[4/5]	Removable[4/6]
Transuranics, I-125, I-129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231.	RESERVED	RESERVED	RESERVED
Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232.	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay product, alpha emitters.	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.[7]	5,000	15,000	1,000

1/ As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

2/ Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

3/ Measurements of average contamination should not be averaged over an area of more than 1 m^2. For objects of less surface area, the average should be derived for each such object.

4/ The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

5/ The maximum contamination level applies to an area of not more than 100 cm^2.

6/ The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

7/ This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

Comments on the Feasibility Study Report for Site 1 Disposal Area at Alameda Point, Alameda California, 2003. Sierra Club.

(Three Pages)

SIERRA CLUB
FOUNDED 1892

Northern Alameda County Regional Group
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2530 San Pablo Avenue, Suite I, Berkeley, CA 94702
510-848-0800 (voice) · 510-848-3383 (fax)

3 February 2003

Mr. Rick Weissenborn, Remedial Project Manager
Department of the Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego 92132

Comments on Feasibility Study Report for Site 1 Disposal Area at Alameda Point, Alameda California

General Comments

The remedial alternative recommended by the feasibility study is a good one with which to begin addressing the organic chemicals of concern at the site. A word of caution, though, only time, or better source characterization, will tell if the recommended alternative will successfully control the organics without source reduction.

The small risks the feasibility study reports that are posed by the organics do not appear to mandate the more extensive trenching that would be required to better characterize the source of the organics. Careful monitoring of concentration trends in groundwater over several decades may prove adequate to assess the sources.

The feasibility study is, however, severely deficient in addressing radionuclides. Why weren't cleanup levels for radionuclides set before evaluating remedies in a feasibility study? The study fails to include the information needed to justify the omission of metals and radionuclides from remedial action objectives and treatment goals. The Sierra Club will oppose transfer of the property to the City, even should the recommended alternative be implemented, until this deficiency is remedied. Depending on the responses to the questions below, the remedial design may also have to be altered.

The feasibility study does not clearly state that the contaminants downgradient of the funnel and gate system will be remediated. In such a passive system it is hard to see how this would occur. A more protective approad to the health of the bay would suggest using the pump and treat system; although it adds to the cost, it adds only 19% and guarantees the pollution will be removed.

It is not possible to tell if any remediation strategy will work, if the direction of groundwater flow is not known. It appears a comprehensive groundwater characterization has not been done for the Point or for the landfill area. This omission needs to be rectified.

The end receptors identified are terrestrial and are assumed to be consuming groundwater as drinking water. However, these are not the true end receptors. Aquatic species, especially benthic ones, are the true end receptors and a sampling plan needs to be developed and implemented around the landfill in all areas where it is adjacent to the bay.

1. How much above background were the radium samples that were detected in every groundwater monitoring well?
2. If groundwater radium levels are above background, what risks do they pose to flora and fauna?
3. What is the total amount of radium estimated to be present in the landfill and for how long will it continue to leach?
4. Will funneling much of the water in the first water bearing zone through the gate result in radium from the groundwater concentrating in Bay muds or flora and fauna?
5. Why weren't cleanup levels set for radionuclides before the feasibility study was performed? (Table A-1, last entry implies that cleanup standards for radionuclides will be set in the future.)
6. How far above background were the detected metals concentrations, including lead, in soil not only where they were found to be present at high concentrations, but in other areas as well?
7. Is the lower limit of debris in the landfill cells always underlain by a thick (minimum thickness of 1 foot) Bay Mud layer? Is the debris ever in hydraulic communication with the Merrit Sand or the Second Water Bearing Zone)?
8. Will the recommended funnel and gate capture and treat any water in the Second Water Bearing Zone?

An addendum to the feasibility study or letter included in the future proposed plan may be the administratively simplest method to formally respond to these comments.

Specific Comments

Page 2-3. Metals discussion wholly inadequate for both soil and groundwater. Please replace meaningless general statements that obscure the issues with specific comparisons to background or natural levels. For example replace "Metals occur in nature, and thus are not necessarily attributable to a specific source or compound." with "These metals (list them) occur at this site at concentrations below/near/significantly above background for soils/sediments/groundwater removed from manmade sources in the Bay.

Page 2-7. Do not combine chemical and radiological cancer risks with simple summations. The technical basis for this is hotly disputed as chemical and radiological cancers may involve independent mechanisms and any synergy between chemical and radiological exposures promoting cancer is likely to be non-linear.

Page 2-8. There is no mention of ecological risks in the intro to Section 2.3 titled "Human Health and Ecological Risk" and a discussion that completely fails to address ecological hazards posed by the ubiquitous radium.

Page 3-2. Why is protection by preventing exposure by inhalation not included as a remedial action objective along with dermal exposure? Would more stringent remedial objectives be required to protect against exposure via inhalation than exposure via dermal pathways?

Page 3-2. Why no remedial action objective for radium in groundwater, or for radium more than two feet bgs?

Page 4-8. The no action alternative is unacceptable to the Sierra Club. Other alternatives will be acceptable only if the questions posed here are adequately addressed. If metals or radium must be treated, the pump and treat alternative may be better as granular activated charcoal or ion exchange resins may be able to remove the metals from the groundwater.

Page 4-9. The 26 dump truck trips required to remove 255 cubic yards of bullet backstop material is reasonable. Should total truck trips exceed 10 per day for an extended period, we would encourage the Navy to remove the material by barge.

Page 4-9. Revise the statement "Radiological sources were statistically a rare occurrence and widely dispersed" by providing the percentage of samples in which radium was found or other detail clarifying what is meant by a "rare occurrence." The large numbers of radiological hits shown on Figure 3-2 convey the impression that radiological sources are a common occurrence, especially in the landfill cells.

4-11. Concur with the decision to use a monolithic cap with the recommended funnel and gate alternative, rather than an engineered cap. See little benefit in reducing vertical percolation through the landfill after tides and groundwater tables have been moving up and down it for 30 years. An engineered cap may be beneficial if metals make it necessary to pump and treat the groundwater - otherwise a heavy rainfall might overwhelm the ability of the pump and treat system to contain the contaminated groundwater.

4-12. Would appreciate a comparison of the expected lifetime of the cap with the expected lifetime of radium, its decay products, radon and any other radionuclides found or expected to be found at the site.

4-16. Recommend at least one long-term monitoring well per land fill cell as the contents of each cell likely differ. That would require immediate addition of three monitoring wells.

4-18. Strongly support providing regulators, in addition to the Navy, with unrestricted access to the site through dominant estate. Concerned about the EPA's role as support agency to the Navy as the Navy has an inherent conflict of interest in cleaning up the site.

Prepared by
Bill Smith and Dale Smith

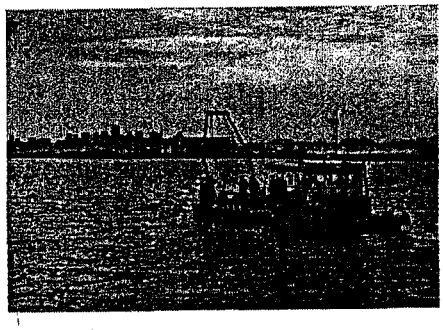
Alameda Point Seaplane Lagoon Remedial Investigation Overview, 2003

(Nine Pages)

Alameda Point
Seaplane Lagoon Remedial Investigation Overview

RAB Meeting

February 4, 2003



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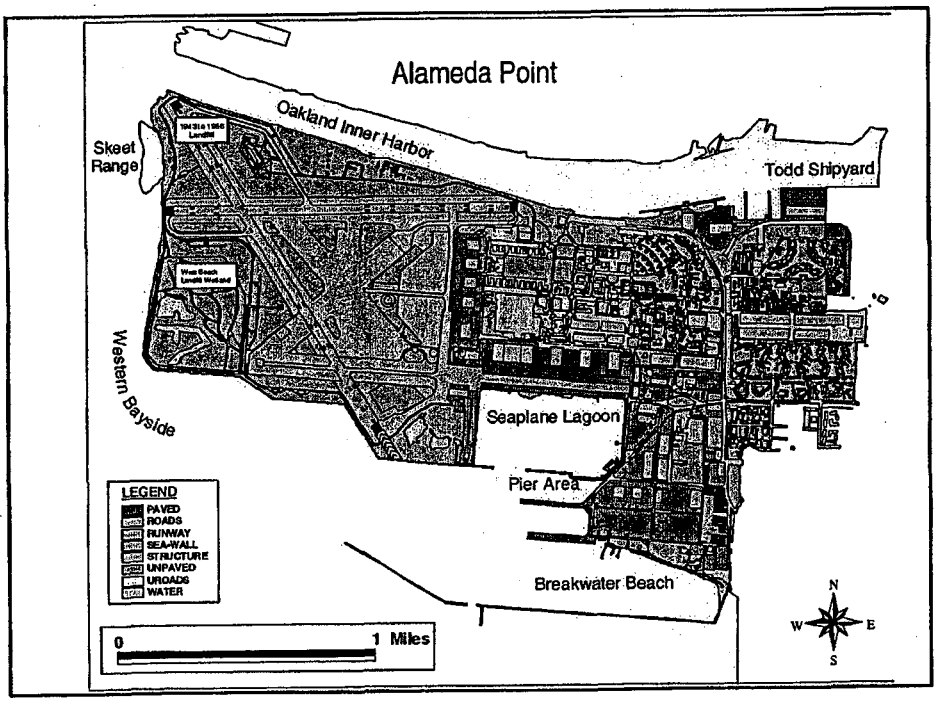
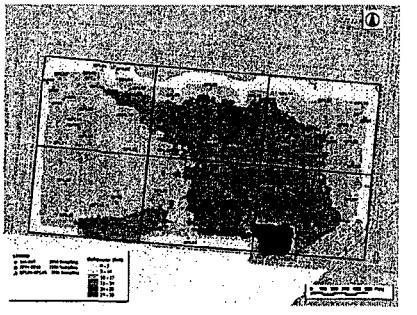


Seaplane Lagoon History

- Primarily source of historical contamination is through discharge of industrial wastewater via the storm drain system from 1940s to 1975
- Highest contamination found in the northeast and northwest corners of the lagoon at 4" to 2 feet below the sediment surface
- Contaminants of concern include heavy metals, pesticides, radionuclides, and PCBs



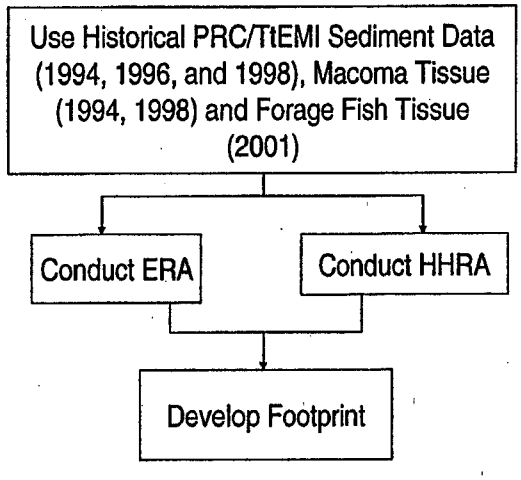
3

Objectives of RI

- Describe the nature and extent of sediment contamination
- Present the methods and results of the ecological and human health risk assessment
- Delineate areas that pose an unacceptable risk to human health and the environment and require evaluation in the Feasibility Study (FS)
- Propose preliminary remediation goals (PRGs) for sediment that are health-protective of human and ecological receptors

4

RI Methodology



5

Ecological Risk Assessment

In accordance with US EPA and Navy Guidance, the ERA was conducted following a two-tiered process:

- Screening-level ERA (SLERA) – screening based on conservative benchmarks (ERL) and exposure assumptions
- Baseline ERA (BERA) – use site-specific exposure assumptions and refined exposure concentrations

6

SLERA

- Develop Conceptual Site Model
  - Benthic invertebrates (e.g., worms, shrimp, clams) exposed through ingestion and direct contact with sediment
  - Fish and birds (benthic feeding and piscivorous) ingesting sediment and prey that comes in contact with COPECs at Seaplane Lagoon
- Identify COPECs
  - 20 inorganics and 59 organics identified based on comparisons to benchmarks (e.g., ERLs)
  - Radionuclides
- Determine Hazard Quotients Using Conservative Assumptions
  - Receptors include scoter, juvenile and adult least terns, and double-crested cormorants
  - Assumed ingestion of maximum sediment, macoma (clams) and forage fish tissue concentrations
  - Using ecological PRGs, cadmium, lead, total 4,4'-DDx, and total PCBs had HQs greater than 1.0 for all receptors
  - No significant risks associated with exposure to radionuclides

7

BERA

- Refine COPEC screen
  - Statistical comparisons to ambient levels
  - Nondetects and chemicals not detected in tissue were eliminated
- Assess Effects to Receptors
  - Benthic invertebrates community
    - No relationship was found between toxicity of sediment to benthic invertebrates and sediment chemistry
    - Low potential for risk to benthic community
  - Piscivorous fish community
    - Forage fish tissue concentrations compared to literature-derived forage fish PRGs
    - Cadmium was the only compound considered a risk driver to fish based on exceedances above forage fish PRGs
  - Avian community
    - Using refined exposure assumptions, range of SUF, and 95% UCL of the mean for chemical concentrations, risks to the receptor were recalculated
    - No HQ exceeded 1 for scoter
    - HQs >1 for cormorant, but concentrations at SPL were consistent with reference levels
    - HQs for total 4,4'-DDx, cadmium, and total PCBs are > 1 for least terns based on forage fish tissue

8

Summary of ERA

- Low potential risks to benthic invertebrates based on relevant bioassay studies
- Cadmium is the only COPEC that potentially poses risk to forage fish in Seaplane Lagoon
- Little risk is posed to benthic-feeding birds (surf scoter) or to piscivorous birds such as the cormorant based on the risk assessment.
- The least tern is the most sensitive avian receptor evaluated with HQ>1 for cadmium, total 4,4'-DDx and total PCBs.

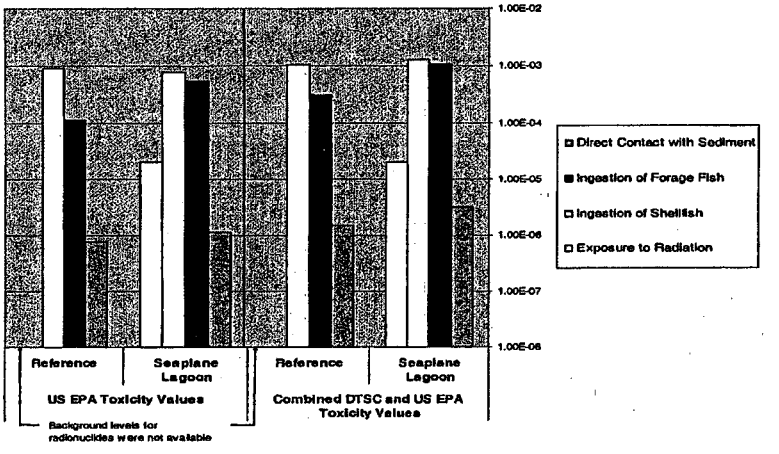
9

Human Health Risk Assessment

- Exposure Assessment
  - Adult only exposures for RME and CTE scenarios
  - Complete exposure pathways include direct contact with sediment, ingestion of shellfish, and ingestion of forage fish
  - For radionuclides, exposure through ingestion of sediment and external radiation
- Toxicity Assessment
  - US EPA Toxicity only
  - Combined US EPA and DTSC Toxicity Values
- Risk Characterization

10

Summary of RME Risk



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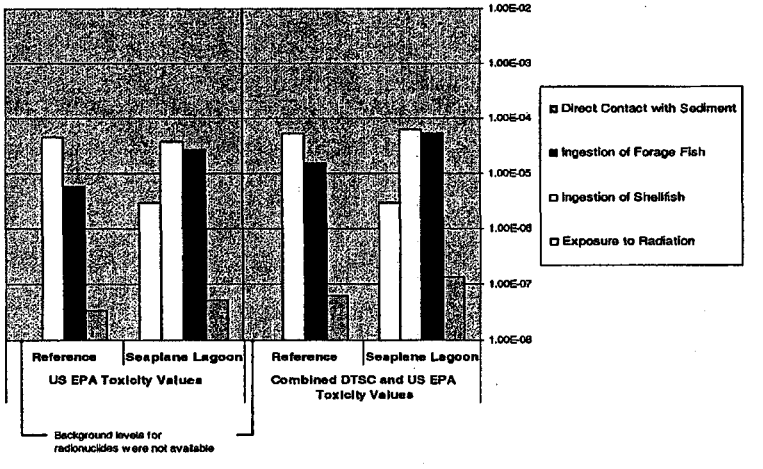
Summary of CTE Risks



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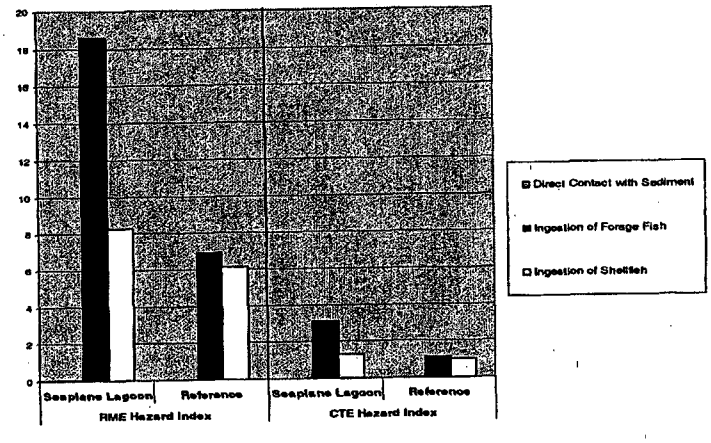
Summary of Hazard Index



Note: Hazard associated with direct contact with sediment is less than 1.0

13

Conclusions of HHRA

- Risks at SPL were slightly higher than reference for the direct contact and ingestion of forage fish pathway
- Risks from direct contact were within US EPA's risk management range (10^{-4} to 10^{-6})
- Risk from ingestion of shellfish were consistent with reference risks
- Risk drivers included arsenic, chromium, and total PCBs; however, both arsenic and chromium are naturally occurring and consistent with ambient levels.
- Risk from radionuclides are an order of magnitude below US EPA's Establishment of Cleanup Levels for CERCLA Site with Radioactive Contamination (3×10^{-4})

14

Development of Feasibility Footprint

- Ecological Footprint
  - Cadmium PRG developed for protection of young and adult forage fish
  - PRGs for cadmium, total PCBs, and total 4,4'-DDx were backcalculated to derive safe sediment concentration for protection of least terns.
- Proposed PRGs for Protection of Ecological Receptors

COPEC	PRGs (mg/kg dry wt)		
	Fish		Avian
	Young	Adults	TRV_{low}
Cadmium	81.85	200	24.40
DDx	NA	NA	0.13
PCBs	NA	NA	1.13

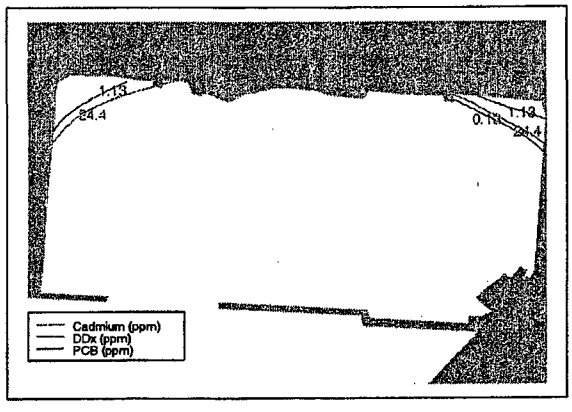
15

Development of Feasibility Footprint (cont'd)

- Human Health Footprint
  - Total PCBs was the only compound found elevated above ambient levels
  - Elimination of the areas proposed for the ecological footprint would effectively eliminate potential risks to human receptors via direct and indirect exposure pathways.

16

Proposed Remedial Footprint



PRGs of 24.4 mg/kg dry wt for Cd; 0.13 mg/kg DW for DDx; and 1.13 mg/kg DW for PCBs are proposed for the Feasibility Footprint

17

Questions???

18

TETRA TECH EM INC.

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Contract No. N68711-00-D-0005 Document Control No. TC . A021 . 10126

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Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

DATE: 08/12/03
DO: 021
LOCATION:
Alameda Point, Alameda, California

FROM: _____
Michael Wanta, Contract Manager

DOCUMENT TITLE AND DATE:
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