FINAL
NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD
MEETING SUMMARY

www.bracpmo.navy.mil
Building 1, Suite 140, Community Conference Center
Alameda Point
Alameda, California

June 5, 2008

The following participants attended the meeting:

Co-Chairs:	
George Humphreys	Restoration Advisory Board (RAB) Community Co-chair
John Kowalczyk	Base Realignment and Closure (BRAC) Program Management Office (PMO) West, Lead Remedial Project Manager (RPM) (acting Navy Co-chair)
Attendees:	
Janet Argyres	Bechtel Environmental (Bechtel)
Steve Bachofer	St. Mary's College
Doug Biggs	Alameda Point Collaborative (APC)
Dan Carroll	Kleinfelder
Anna-Marie Cook	U.S. Environmental Protection Agency (EPA)
Tommie Jean Damrel	Tetra Tech EM Inc. (Tetra Tech)
Frances Fadullon	BRAC PMO West RPM
Linda Henry	Brown and Caldwell
Fred Hoffman	RAB
John Kaiser	San Francisco Bay Regional Water Quality Control Board (Water Board)
Joan Konrad	RAB
Annette Kuz	Bechtel
James Leach	RAB
Dot Lofstrom	California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC)
Patrick Lynch	Community member
John McMillan	Shaw Environmental

Mary Parker	BRAC PMO West RPM
Kurt Peterson	RAB
Peter Russell	Russell Resources/Alameda Reuse and Redevelopment Authority (ARRA)
Bill Smith	Community member
Christy Smith	U.S. Fish and Wildlife Service (USFWS)
Dale Smith	RAB
Jean Sweeney	RAB
Jim Sweeney	RAB
Michael John Torrey	RAB
John West	Water Board
Jessica Woloshun	Sullivan International Group, Inc. (Sullivan)
Carolyn Yamane	Bechtel

The meeting agenda is provided in Attachment A.

MEETING SUMMARY

I. Approval of Previous RAB Meeting Minutes

Mr. Humphreys called the meeting to order at 6:33 p.m.

Mr. Humphreys provided the following comment:

- "Patrick Lynch" will be added to the list of attendees.

Ms. Dale Smith provided the following comments:

- Page 3 of 11, third paragraph, fourth sentence, "…but the Navy was still studying discussion with the grant recipient," will be revised to, "…but the Navy was still having discussions with the grant recipient."

- Page 7 of 11, fifth paragraph, third sentence, "Mr. Brooks responded that when the primary solvent (trichloroethylene) loses a chlorine atom and replaced by a hydrogen atom, it degrades to its daughter product (dichloroethylene)," will be revised to, "Mr. Brooks responded that when the primary solvent (trichloroethylene) loses a chlorine atom, which is replaced by a hydrogen atom, it degrades to its daughter product (dichloroethylene)."

Mrs. Sweeney provided the following comments:

- Page 5 of 11, second paragraph, third sentence, "Mrs. Sweeney asked whether the proposed alternatives included a detour for run-off into the ponds at IR Site 2 and on the side of the road where the soil cover is proposed," will be revised to, "Mrs. Sweeney asked whether the proposed alternatives included a detour for run-off into the ponds at IR Site 2."

- Page 9 of 11, second paragraph, second sentence, "Mr. Lynch said he raised the concern about 1,4-dioxane at IR Site 2 in the past and hoped it was analyzed," will be revised to, "Mr. Lynch said he raised the concern about 1,4-dioxane at IR Site 25 Estuary Park in the past and hoped it was analyzed."

The minutes were approved as modified.

II. Co-Chair Announcements

Mr. Humphreys announced that a revised agenda was distributed at this RAB meeting. He said the Installation Restoration (IR) Site 35 Proposed Plan (PP) presentation was added and the Operable Unit (OU)-5 Remedial Design presentation was deleted from the agenda. Ms. Lofstrom added the Alameda Landing project response to comments (RTCs) presentation in the BRAC Cleanup Team (BCT) update. Ms. Cook requested to postpone the presentation of the OU-2C remedial investigation (RI) until after the BCT update if time permitted. Mr. Humphreys agreed. Mr. Kowalczyk said the Navy does not usually change the agenda at the last minute without serious consideration. He said the Navy agreed it was important to discuss the PP for IR Site 35 because the public meeting was scheduled on June 10, 2008, and the public comment period was scheduled to end on June 28, 2008. Ms. Dale Smith said a discussion of proposed plans during the public comment period was appreciated. She said it was important for RAB members to provide comments on proposed plans during RAB meetings instead of as members of the public during public meetings.

Mr. Humphreys distributed his list of reports and correspondences received during May 2008 (Attachment B-1). Noteworthy documents include Item 5, the Final Summary of Exploratory Trenching Report, and Item 6, the PP for IR Site 35 (which was scheduled to be presented at this RAB meeting).

Mr. Humphreys discussed the site tour on May 31, 2008, and commented that the tour was disappointing. Mr. Humphreys read from the site tour invitation, "*We will stop and exit the vehicle, including IR Sites 1, 2, the least tern colony, and Seaplane Lagoon.*" Mr. Humphreys said the bus was uncomfortable and participants were not allowed to exit the bus because of the lack of health and safety equipment during the approximate 3-hour tour. He said they viewed IR Site 1 and IR Site 2 from about a mile away and did not visit the sites. Mr. Humphreys announced that the Navy was scheduling another site tour, which would include proper health and safety precautions for visitors. Mr. Kowalczyk said the Navy was disappointed that it had not met the participant's expectations for the site tour. However, the health and safety issues were valid, and he said the next site tour will be scheduled soon. The Navy has suggested

renting three or four minivans to drive on IR Sites 1 and 2. The Navy would request that visitors wear appropriate shoes for safety, and the tour would begin with a safety briefing to describe possible hazards on each site. He said the Navy would provide hard hats and other safety equipment if necessary. Mr. Kowalczyk also suggested scheduling the site tour instead of a RAB meeting in July 2008 if the Navy received consensus from RAB members. Ms. Konrad requested the site tour itinerary to be reviewed by the RAB before the next site tour. Mr. Kowalczyk said another itinerary and invitation will be sent to the RAB for the next site tour and a response list created. Ms. Dale Smith recalled a site tour of Building 5 with Shaw Environmental where no health and safety training or provisions were enforced despite the extremely poor, unsafe condition of the building. She said it was "odd" that the Navy only now enforced health and safety. Mr. Kowalczyk said the Navy had recently completed a removal action that included IR Sites 1 and 2 and information on radiological issues was discovered. He said the Navy is considering scanning the tires of the vehicles for radiological contamination for the next tour, as is currently done by the contractors working at IR Site 1. He said safety is a priority and that he was sorry that the previous site tour did not meet RAB expectations.

Mr. Humphreys said that BRAC Environmental Coordinator (BEC) Mr. Pat Brooks reported that a large quantity of municipal waste was excavated from IR Site 1 and moved to IR Site 2. Mr. Humphreys noted that this information was new and he was not sure if the comment was related to the area under the runway or the entire site. Mr. Humphreys noted the former BEC, Mr. Thomas Macchiarella, said IR Site 2 was previously a municipal landfill of "household" refuse collected around the base. Ms. Dale Smith said she did not recall Mr. Brooks describing the waste as municipal waste, but that he did not specifically characterize the waste. She said she believed that Mr. Brooks said the waste under the runway could not have been municipal because of its characteristics; therefore, industrial waste was likely deposited where the runway is located.

Mr. Leach said the only valid excuse for not allowing an operation to be viewed was that the Navy must have something to hide; otherwise, all sites should be open during an operation. If health and safety is an issue, proper provisions should be enforced. He said not much landfill material was discovered in the exploratory trenches and that many materials found in a landfill do not simply disintegrate. He said trenches were excavated on the edges of the assumed location of the landfill. He said it would have been more effective to excavate in what was believed to be the center of the landfill. Mr. Kowalczyk said the Navy expected to find more landfill materials and he cannot explain why it did not. He said it's possible that waste material was moved from Site 1 to Site 2 during construction of the Site 1 runways for the purpose of improving geotechnical integrity. Mrs. Sweeney asked if this idea was new, and Mr. Kowalczyk said it was a hypothesis based on the Navy's evolving knowledge of historical events on the sites and the evolving conceptual site model.

Mr. Humphreys noted the trenching and storm drain removal at Building 5 and questioned whether the Navy planned to sample for analysis of radium contamination in the duct work of the building. He commented that the Navy said it would collect samples for analysis of radium contamination in the duct work as well as the roof. Mr. Humphreys wanted to ensure that this information was included.

Mr. Humphreys mentioned that there was silt or blockage in the culvert at IR Site 2 and the Navy planned to design a new channel to provide access from the bay to the IR Site 2 ponds. Mr. Kowalczyk said the Navy contracted Tetra Tech, ECI, to water jet through the culvert (which allows sea water to travel to the North pond at IR Site 2). He said the culvert had been dry for the past weeks, and the contractor is trying to break through the blockage with the water jet. He said the Navy will replace the culvert if it cannot be cleared. Ms. Dale Smith asked about the bridge that the Navy had planned to build over the top of the culvert. Mr. Kowalczyk said a bridge would allow more water to pass through and may be considered in the overall remedial design for IR Site 2 in the future.

Mr. Humphreys said that, originally, a 500-acre wildlife sanctuary was planned at IR Site 2, but currently only 10 acres are proposed. He read from the executive summary of the site investigation for the federal-to-federal (FED) transfer parcels, *"Currently, a 10-acre portion of the transfer parcel FED-1A is identified as part of the California least tern sanctuary, which provides protective habitat for endangered species. Although, transfer parcels FED-1A, 2B, and 2C were previously proposed for reuse as a wildlife refuge, in 2006, the U.S. Department of Veterans Affairs (VA) formally requested a federal-to-federal property transfer of these parcels. At this time, the VA intended to construct and operate an outpatient clinic, long-term care facility, and a national cemetery on approximately 115 acres of the northern end of the transfer parcel FED-1A."* Mr. Humphreys noted that it appeared that the wildlife sanctuary was shrinking to about 10 acres.

Mr. Humphreys asked the RAB about rescheduling the July 2008 meeting and tour because it falls on the day before a holiday. Mrs. Sweeney requested that the next meeting occur after July 11. Mr. Humphreys tentatively scheduled July 17, 2008, at 6:30 p.m. for a brief RAB meeting and next site tour.

III. Proposed Plan IR Site 35

Ms. Fadullon began the PP presentation for IR Site 35 (Attachment B-2), explained the agenda (Slide 2), and described the overall purpose of the PP (Slide 3). She briefly described the site background information and site map (Slide 4) and previous removal actions (Slide 5). She said most Navy removal actions took place in 2002 and 2003. Ms Fadullon described the polycyclic aromatic hydrocarbons (PAH) removal action and said the removal locations were characterized by the shapes outlined in pink shown on Slide 4. Mr. Humphreys asked why the mustard-color outlines, IR Site 35 PAH Areas, were larger than the PAH removal locations. She said the mustard areas characterized the PAH sample locations and the pink areas characterized the removal of PAH locations in soil, which were the highest concentrations of PAHs and greatest likelihood for exposure. The removed concentrations of PAHs were compared with screening levels and warranted a removal action.

Ms. Fadullon noted the state and federal regulatory agencies involved in the PP, RI, and feasibility study (FS) (Slide 6). She said the RI/FS was completed on a condensed schedule because of the possibility of early property transfer. She described the content of the RI/FS on Slide 7. She described the RI sampling locations (Slide 8), which did not include the PAH

sampling locations because the PAH was a separate removal action. She described the RI results (Slide 9) and said 17 of the 23 study areas were suitable for no further action and suitable for unrestricted use; the remaining six study areas were carried forward to the FS. Ms. Fadullon described the contamination in each area (Slide 10) and the FS alternatives (Slide 11).

Ms. Fadullon introduced Mr. Dan Carroll (Kleinfelder) to continue the presentation.

Mr. Carroll described the sampling and results at Area of Concern (AOC) 3 (Slide 10). Mrs. Sweeney asked if the best remedy for AOC 3 is excavation. Mr. Carroll responded that excavation was one FS alternative and described each alternative on Slide 11. Ms. Dale Smith asked if heptachlor is bound to soil, and if that was the reason groundwater was not investigated in AOC 3. Mr. Carroll responded that binding to soil is a common tendency for pesticides, such as heptachlor, which is not likely to contaminate groundwater.

Mr. Carroll described AOC 10, the location of the former radio antenna tower, which was painted with lead-based paint and caused lead contamination in approximately the top 1 foot of soil (Slide 13). He said a removal action took place in 2002 and 2003. The proposed remediation goal for lead was 184 milligrams per kilogram (mg/kg) at AOC-10. Mrs. Sweeney asked why the earlier removal action did not remediate the entire area contaminated by lead. Mr. Carroll said that only unpaved areas were excavated during the removal action and the Navy decided to include the entire AOC 10, including the unpaved areas, in the RI/FS. Mr. Humphreys asked if samples were collected from under the buildings. Mr. Carroll responded that the black dots characterized the sample locations (Slide 13) and that samples were collected on the edge of the buildings, but not under the buildings. Mrs. Sweeney said that one of the early illustrations showed lead contamination in a sample collected inside the front door of one of the buildings. Mr. Carroll said that the site was considered fully investigated after the RI, and only the areas that still need to be cleaned up are shaded Areas A and B (Slide 13). He said the areas near the buildings do not need to be investigated.

Ms. Dale Smith asked about lead contamination tracked into the buildings. Mr. Carroll responded that there was no need to sample inside of the buildings. Mr. Humphreys asked if the tower was built before or after the buildings, and Mr. Carroll responded that the tower was built before the buildings. Mr. Peterson asked if shaded Areas A and B still needed to be cleaned up, and Mr. Carroll responded that Areas A and B still needed remediation. Mr. Peterson asked if Area B extended into the street. Mr. Carroll responded that Area B extended into about one-third of the street. Mr. Peterson asked why most of the samples were located on the edge of Area B, when only one sample was in the middle of Area A. Mr. Kowalczyk said the sidewalls of Area A will be investigated during the remedial action, in addition to confirmation sampling.

Mr. Carroll discussed AOC 12, the former location of Water Tank 33, also painted with lead-based paint and caused lead contamination in the soil (Slide 14). He described the FS alternatives and said there are six areas of contamination that still need to be cleaned up (Slide 15). Ms. Dale Smith referred to the picture of AOC 12 (Slide 14) and asked about the use of the old fence. Mr. Carroll responded that its purpose was not known.

Mr. Carroll described the comparative analysis (Slide 16) and noted the preferred alternative for AOCs 3, 10, and 12 was excavation and removal of the soil (Slide 17).

Mr. Carroll discussed the PAH Areas (Slide 18) and said more than 2,000 samples were collected and used in the RI/FS process. He discussed the comparative analysis (Slide 19) for the PAH areas and said the alternatives included a combination of institutional controls (ICs) and various types of excavation. He said the Navy's preferred remedy was no further action because PAH levels are within the risk management range and the area is suitable for unrestricted use. He said the PAH contamination was related to historical fill that was placed when the island was built and was not related to Navy activities or releases. However, the risks are within the risk management range (Slide 20).

Mr. Carroll discussed AOC 1, which was near a kitchen or commissary. He said the fenced, large oil-water separator (OWS) in the photograph (Slide 21) likely received flow from the kitchen. He said naphthalene was detected in groundwater at one sample location near the OWS at a concentration high enough to warrant further investigation in the RI/FS. He said the Navy opted to collect more samples in the area surrounding the naphthalene detection in December 2007. The purpose of this additional sample was to assist in the decision-making process. Mr. Carroll said six grab groundwater samples were collected at approximately 50 feet from the naphthalene detection in all directions (Slide 22). All the additional samples did not detect naphthalene. He showed the map (Slide 23) of the OWS and the one detection of naphthalene. Mr. Hoffman asked how the sample was collected, and Mr. Carroll said it was a grab groundwater sample from a boring. Mr. Hoffman asked if a sample was collected near or at the same location where the naphthalene was detected. Ms. Fadullon responded that, in hindsight, a confirmation sample should have been collected at the original location. Mr. Carroll said the regulatory agencies requested soil gas sampling in this area to confirm risk levels. Mrs. Sweeney asked if naphthalene was a byproduct of petroleum. Mr. Carroll said it was a constituent of diesel fuel and gasoline, but in this case, it was likely not from petroleum because a naphthalene detection is usually accompanied by other petroleum-based constituents. He said he was unsure of the source of naphthalene, but that it may have been used in the kitchen as a cleaner. Mr. Humphreys asked if the OWS was connected to something, such as a drain or water line. Ms. Yamane said it was believed that the OWS was a grease trap for the commissary, but its connection to a drain has not been confirmed. Mr. Carroll discussed the alternatives examined (Slide 23).

Mr. Carroll discussed AOC 23, including Building 13, where several samples detected vinyl chloride (Slide 24). He said vinyl chloride was detected in groundwater at concentrations slightly above the drinking water criterion, which is 0.5 parts per billion (ppb).

Mr. Torrey asked if the vinyl chloride contamination was in the drinking water supply. Mr. Carroll said that the groundwater in this area was not used in the drinking water supply; however, the Navy must clean up the groundwater in this area as if it were being used for drinking water. Mr. Torrey asked if animals were consuming the water and Mr. Carroll responded animals were not consuming the water.

Mr. Carroll described the additional sampling at AOC 23 (Slide 25). He showed the location of the new well (Slide 26) where there was only one detection of vinyl chloride, at 0.7 ppb, slightly above the drinking water criteria. Mr. Peterson said the map (Slide 25) did not show the original sample locations and asked where they were located. He suggested that all sample locations be shown on maps to visualize the relevance or logic of the newest sample locations.

Mr. Carroll described the comparison of groundwater alternatives for AOC 1 and AOC 23 (Slide 27). He said no action for groundwater is required at AOC 1 and AOC 23 because current conditions are protective of human health and the environment. He emphasized the importance of community involvement and explained the schedule (Slide 29). Mr. Bachofer asked about the status of ICs. Ms. Fadullon said the Marsh Crust Ordinance was currently in effect. Mrs. Sweeney asked about the difference between a grab groundwater sample and a groundwater sample from an installed monitoring well. Mr. Carroll said a grab groundwater sample is mixed with some soil, and a sample from an installed monitoring well is a sample from the entire water column. Mr. Carroll said it was better to base any decision on monitoring well samples because they are cleaner and more representative of the groundwater.

IV. BCT Update

Ms. Lofstrom presented the BCT update, which addressed Alameda Landing. She said DTSC signed the remedial action plan (RAP) for the Alameda Landing in early May 2008. She said the RAB comments on the RAP were reviewed and changes were made in response to one of Mr. Humphreys' comments before the RAP was signed. DTSC included a training requirement, especially for workers who might excavate to the bottom of the clean layer to the Marsh Crust marker fabric, and a requirement to contact the City of Alameda and review the site management plan before any type of work can proceed. She said this requirement was enforceable and that DTSC can perform spot inspections. She said the response to comments was approximately 18 to 20 pages long and was included as an appendix in the RAP. Ms. Lofstrom said the document was sent via e-mail June 4, 2008, and believed a hard copy was mailed the morning of June 5, 2008.

Ms. Lofstrom said a part of the project that is the proposed residential housing over the benzene-naphthalene plume, was not included in this RAP. She said the issue will be included in another RAP and there will be another chance to comment during the public meeting and comment period. Ms. Dale Smith asked about the process for the residential housing over the benzene-naphthalene plume. Ms. Lofstrom responded that the concern for groundwater was soil gas. Therefore, the area was investigated for soil, but the evaluation for soil gas was separated from groundwater and soil because of the need for additional sampling.

V. OU-2C Remedial Investigation

Ms. Parker introduced the OU-2C RI presentation (Attachment B-3) and discussed the agenda (Slide 2). She described the OU-2C site location on Slide 3 and site features on Slide 4. She described the purpose of the investigation: to further characterize the nature and extent of

contamination in soil and groundwater (Slide 5). She showed the sampling locations and described the sampling on Figure 1 (Slide 6).

Ms. Parker discussed the RI results for soil (Slide 7), showed a summary of volatile organic compounds (VOC) in soil on Figure 2 (Slide 8), and a summary of metals in soil on Figure 3 (Slides 9, 10, and 11). She discussed the RI results for groundwater (Slide 12). Mrs. Sweeney asked about the collocation of plumes. Ms. Parker responded that the dense nonaqueous phase liquid (DNAPL) plumes shown on Slide 13 were within the dissolved plumes shown on Slide 14.

Ms. Dale Smith asked if the 1-4 dioxane was surrounding the heavier and denser DNAPL plume. Ms. Parker responded that the DNAPL plumes were in various stages of remediation. Samples collected outside of the DNAPL plume and into the dissolved plume detected 1,4-dioxane. Ms. Lofstrom said 1,4-dioxane is sampled for analysis wherever there was a trichloroethene (TCE) plume. She said 1,4-dioxane does not readily degrade, and so it is ubiquitous. Mrs. Sweeney asked if the six-phase heating operation would remediate not only the DNAPL plume, but the larger dissolved plume as well. Ms. Parker said the six-phase heating would primarily remediate the DNAPL plume.

Ms. Parker introduced Dr. Linda Henry of Brown and Caldwell to continue the presentation. Dr. Henry described the conceptual site model on Figure 5 (Slide 15) and said the standard exposure pathways were included, except ingestion of groundwater. She said the only exposure pathway to groundwater was from vapors in indoor air.

Dr. Henry explained that OU-2C was divided into three exposure units (EU). She described EU-1, which included IR Sites 10 and 12. She said EU-2 encompassed Building 5 and was oddly shaped. Dr. Henry said a traditional risk assessment was conducted that grouped all the data. In addition, a complete risk assessment was conducted at every data point, called a point-by-point risk assessment. All of EU-2 and EU-3 were recommended for the FS because the risks in the two EUs were above agency guidelines. She said the majority of the area within EU-1 was recommended for no further action, except for a few locations that are recommended for the FS.

Dr. Henry described the human health risk assessment (HHRA) results for EU-1 in Figure 6 (Slide 16). She said EU-1 included two areas with risks about agency guidelines, which were called Local Area (LA)-1 and LA-2. When LA-1 and LA-2 were removed from the HHRA, the cancer risk and hazard dropped substantially; therefore, LA-1 and LA-2 are recommended for the FS. Ms. Dale Smith asked about the small, sliver-shaped piece of EU-1. Dr. Henry said it was an area with a drain line and is considered an additional part of the exposure unit.

Dr. Henry described the HHRA results for EU-2, which is located within the extent of Building 5. She said soil gas samples were collected by drilling into the floor inside the building. Risk was evaluated for future use of the area (without the building) and current use of the building and area (Slide 17). She said subslab soil gas data were the most reliable means to predict indoor vapor concentrations instead of vapor intrusion models with groundwater or soil. The risk was primarily associated with inhalation of VOCs in Building 5. Mr. Peterson asked if it was currently safe for an office worker inside of Building 5. Dr. Henry said yes, it is safe because the

risk for current workers is at or below the lowest agency guidelines, that is a cancer risk of 1 x 10^{-6} and a hazard index of 1. The current worker risk was evaluated using soil gas data and future resident and worker risks are based on soil and groundwater data. She said to be conservative; it is assumed that vapors released from the groundwater move through the soil without undergoing the natural degrading processes that normally occur. When the indoor air vapor concentrations are calculated with a groundwater model, the estimated risk is much higher than the risk that is based only on concentrations of soil gas in the indoor air; therefore, the model for indoor air vapors using groundwater data tends to overestimate the risk. The vapor concentrations for indoor air using soil gas data are more representative because they account for the natural degradation processes of VOCs in soil. Mr. Peterson commented that the column for "Receptors/Pathway" (Slide 17) was confusing and should specify the pathway that was used to evaluate risk. Mr. Peterson asked about the exposure pathway for a construction worker. Dr. Henry responded that the pathway involves excavating soil and exposures to outdoor air and dust every day for a year. She said, for example, this pathway assumed the construction worker was demolishing the slab. Dr. Henry further described the HHRA results for EU-3 (Slide 17), which is outside the Building 5.

Dr. Henry discussed the ecological risk assessment (ERA) on Slide 19. She said hypothetical terrestrial receptors and aquatic receptors were analyzed and there were no ecological issues.

Ms. Parker summarized the RI recommendations for EU-1 (Slide 20) and EU-2 and EU-3 soil (Slide 21) and groundwater (Slide 22). Ms. Dale Smith asked about chromium-6, and Ms. Parker responded there was only one location with significant risk for chromium-6.

Mr. Humphreys said that Mr. Brooks mentioned a survey of radium will be conducted in Building 5. Mr. Humphreys asked where this survey is incorporated in the remedial work. Ms. Parker said that this survey will be conducted separately. Ms. Cook said that the regulators will be requesting additional evaluation of metals in EU-3, the southern portion.

Mr. Hoffman commented that a groundwater elevation map would have been helpful, and Ms. Parker said a groundwater map is provided in Volume 1, Chapter 2 of the RI. Mr. Hoffman noted a groundwater "sink" near well MW-0506. Ms. Parker said the observation was accurate, and that she does not know what is causing the "sink". Mr. Hoffman said he was concerned that the monitoring well is forming a connection between the first water bearing zone (FWBZ) and the second water bearing zone (SWBZ). Ms. Yamane said they were not connected and that it was possible that the groundwater followed the drain line in that area. Mr. Hoffman said it was important to investigate whether the contaminants from the groundwater were flowing through the drain. Ms. Yamane said the site was sufficiently sampled and characterized. She said her team could not decide why there was a "sink" or "low" in that area. Mr. Carroll said the initial mobilization had begun for the removal action of the drain line, which extends from Building 5 to Seaplane Lagoon. He said radiological issues are the primary concern, but that samples will be analyzed for VOCs as well. He said the drain line will be removed by the end of the summer, confirmation samples will be collected, and a new drain line will be installed.

Mr. Hoffman said he was concerned with the DNAPL plume. Ms. Parker responded that she believed there would be additional work and that the DNAPL source area removal action was a separate project. Ms. Cook said the investigations were separated to organize the issues and data, but the Record of Decision (ROD) will synthesize the information.

VI. Community and RAB Comment Period

Mr. Lynch asked about the liquid turbidity waste treatment unit in Building 5 and why there are residues of hazardous waste 10 years after the unit was decommissioned.

Mr. Lynch commented about the presentation of IR Site 35 and hoped the contractor that removes the lead-contaminated sediment from the storm drain is not the same contractor who caused the lead to contaminate the storm drain.

Mr. Lynch said the ROD for Seaplane Lagoon was signed in 2006, but he believed there was a law requiring 15 months for the remedial action to begin and that the Navy was in violation of the requirement. He said the ROD indicated a removal of debris at Seaplane Lagoon, which should have occurred 17 months ago and started only 1 month ago.

Mr. Lynch said that the City of Alameda will be the first to build a new residential construction with subslab depressurization system. Mr. Lynch did not agree that the City of Alameda should be the first to use this type of system. Ms. Lofstrom said that Mr. Lynch requested an example where DTSC had approved a subslab depressurization system. Ms. Lofstrom said she found only examples where a lesser system was approved, because the subslab depressurization system was protective. Mr. Lynch said the city proposes to build homes on a landfill, with the landfill gases present. Ms. Lofstrom said she believed the City of Alameda might be the first with a subslab depressurization system in the State of California and she was proud of that accomplishment. Mr. Lynch asked if she would be proud when a child living in one of those homes contracts cancer. Ms. Lofstrom said she believed it was a protective remedy and she repeated that she was proud of the work being done. Mr. Smith asked if the subslab depressurization system would be more protective than the application of fill dirt, and Ms. Lofstrom said that the system would be more protective.

Mrs. Sweeney requested an update of the RAB contact list, including representatives from the Navy and regulatory agencies. Mr. Kowalczyk said the Navy would compile the list and distribute it.

Mr. Hoffman commented that he wants an answer for many of the questions that he asks, but said he was more interested in knowing that the Navy has detailed answers. He said on a few occasions, the Navy answered that it will provide an answer in the future, which did not satisfy him. He said a presenter should have the information available and able to answer all questions from a picture, map, or table. He said, for example, the Navy did not know what was connected to the OWS, which was important because it was a possible source of contamination.

VII. Meeting Adjournment

The meeting was adjourned at 9:13 p.m.

ATTACHMENT A

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING AGENDA
June 5, 2008

(1 page)

RESTORATION ADVISORY BOARD

NAVAL AIR STATION, ALAMEDA

AGENDA

JUNE 5, 2008, 6:30 PM

ALAMEDA POINT – BUILDING 1 – SUITE 140
COMMUNITY CONFERENCE ROOM
(FROM PARKING LOT ON W MIDWAY AVE, ENTER THROUGH MIDDLE WING)

TIME	SUBJECT	PRESENTER
6:30 - 6:45	Approval of Minutes	Mr. George Humphreys
6:45 - 7:00	Co-Chair Announcements	Co-Chairs
7:00 – 7:30	OU-2C Remedial Investigation	Mary Parker
7:30 – 8:00	Proposed Plan IR Site 35	Frances Fadullon
8:00 – 8:15	BCT Update	John West
8:15 – 8:30	Community & RAB Comment Period	Community & RAB
8:30	RAB Meeting Adjournment	

ATTACHMENT B

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING HANDOUT MATERIALS

B-1 List of Reports and Correspondence Received During May 2008. Distributed by Mr. George Humphreys, RAB Community Co-Chair (1 pages)

B-2 Proposed Plan for IR Site 35, presented by Ms. Frances Fadullon and Mr. Dan Carroll (15 pages)

B-3 OU-2 Remedial Investigation, presented by Ms. Mary Parker and Dr. Linda Henry (12 pages)

ATTACHMENT B-1

LIST OF REPORTS AND CORRESPONDENCE RECEIVED DURING MAY 2008

(1 pages)

Restoration Advisory Board
Documents and Correspondence
Received during May 2008

Documents

1. May 1, 2008, "Draft, SCAPS Laser Induced Fluorescence Tarry Refinery Waste Investigation Report, Alameda Point, Alameda, California", prepared by Richard Brady & Associates for BRAC Program Management Office West.
2. May 8, 2008, 2008, "Draft, Sampling and Analysis Plan for IR Site 14, Alameda Point, Alameda, California", prepared by Battelle Columbus and Innovative Technical Solutions, Inc. for BRAC Program Management Office West.
3. May 8, 2008, "Final, Remedial Investigation Report for Installation Restoration Site 34", prepared by SulTech, a joint venture of Sullivan Consulting Group and TetraTech EC, Inc. for BRAC Program Management Office West.
4. May 15, 2008, "Draft, In Situ Chemical Oxidation (ISCO) Pilot Test Data Evaluation Report, IR Site 26, Alameda Point, Alameda, California", prepared by Innovative Technical Solutions, Inc. for BRAC Program Management Office West.
5. May 21, 2008, "Final, Summary of Findings Exploratory Trenches, Revision 1", prepared by Tetra Tech EC, Inc. for BRAC Program Management Office West.
6. May 28, 2008, "Proposed Plans for IR Site 35, Former NAS Alameda", issued by BRAC Program Management Office West.

Correspondence

1. April 30, 2008 (Received May 1, 2008), "Review of Draft Final Remedial Design/Draft Removal Action Work Plan, Installation Restoration Site 26, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. Pat Brooks, BRAC Program Management Office West.
2. April 28, 2008 (Received May 3, 2008), "Review of the Draft Final Remedial Design/Remedial Action Work Plan, Volume1-Draft Final Remedial Design for IR Site 17, Seaplane Lagoon, Alameda Point, Alameda, California, Feb. 2008", letter from Ms. Xuan-Mai Tran, U. S. EPA Region IX, to Mr. George Patrick Brooks BRAC Program Management Office West.
3. May 7, 2008, "Review of Preliminary Remedial Design/Draft Remedial Action Work Plan Volume 1-Draft Final Remedial Design IR Site 17, Seaplane Lagoon, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.

ATTACHMENT B-2

PROPOSED PLAN FOR IR SITE 35

(15 pages)

Welcome

Proposed Plan for IR Site 35 Alameda Point

Frances Fadullon
Remedial Project Manager
BRAC Program Management Office
Dan Carroll
Kleinfelder

RAB Meeting, June 5, 2008

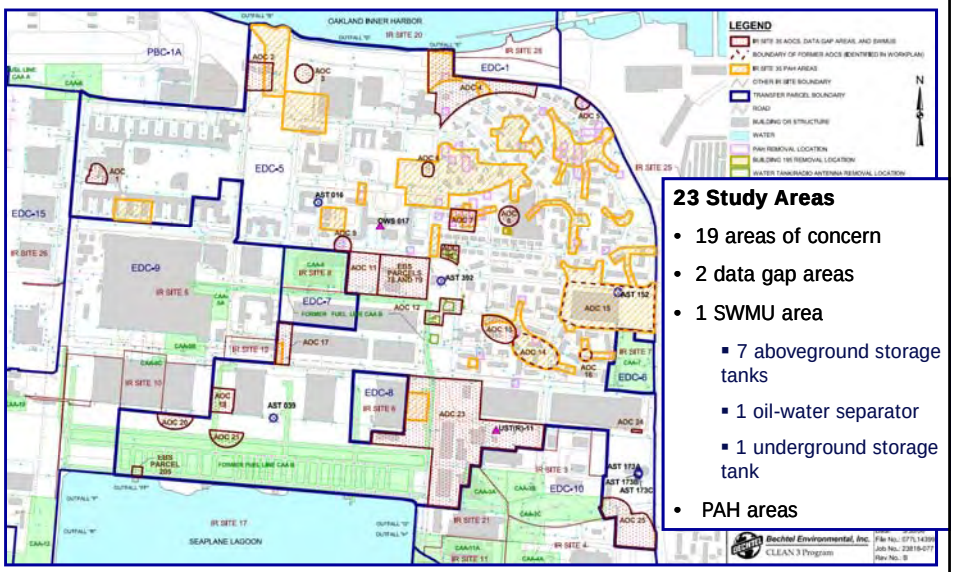
Agenda

- **Purpose**
- **Background Information**
- **Remedial Investigation/Feasibility Study (RI/FS) Summary**
- **Preferred Alternatives**
- **Community Involvement**

Purpose

- Summarize investigations and work to date
- Present the preferred alternatives
- Provide an opportunity for public input on the preferred alternative before the final remedy is selected.
- Inform the public that the federal and state regulatory agencies are working with the Navy and agree with the preferred alternatives

Background Information Site Map



Background Information
Previous Navy Removal Actions

- To protect the public and residents, the Navy completed a response action, removing over 7,600 tons of PAH-impacted soil from locations with the greatest likelihood for exposure and locations with the highest concentrations of PAHs across IR Site 35
- At Areas of Concern (AOCs) 10 and 12, approximately 1,620 cubic yards of lead-impacted soil were removed
- Removals were completed at unpaved areas

RI / FS Regulatory Agency Role

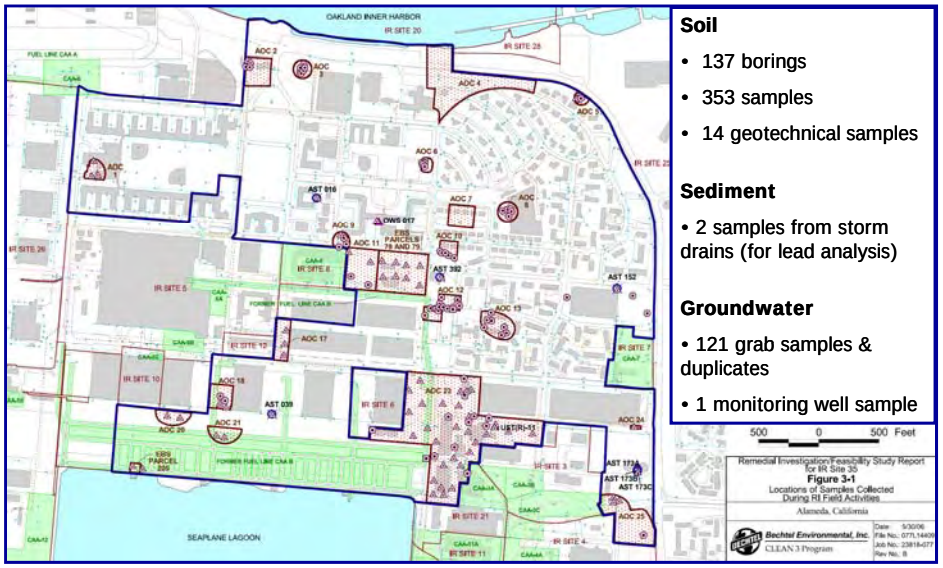
- State:
  - Department of Toxic Substances Control (DTSC)
  - Regional Water Quality Control Board (Water Board)
- Federal:
  - US Environmental Protection Agency (EPA)

RI / FS Content

Remedial Investigation / Feasibility Study Report (April 2007)

- **Evaluated data, characterized soil and groundwater**
- **Conducted baseline and post-removal risk assessments**
- **Proposed remedial action objectives / goals**
- **Provided alternatives for cleanup / management of soil and groundwater**
- **Compared the alternatives**

RI Sampling Locations



Soil

- 137 borings
- 353 samples
- 14 geotechnical samples

Sediment

- 2 samples from storm drains (for lead analysis)

Groundwater

- 121 grab samples & duplicates
- 1 monitoring well sample

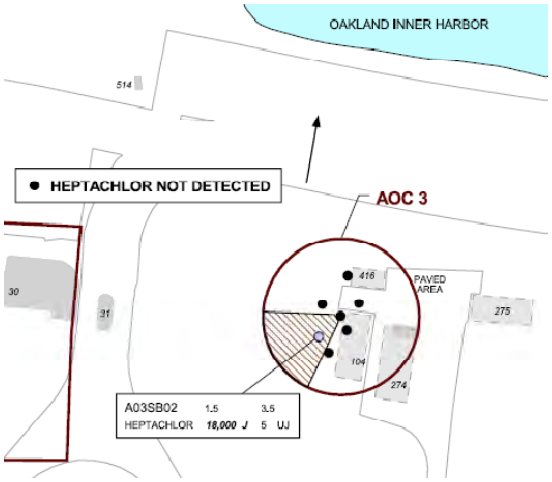
RI Findings

- **17 of 23 study areas: No Further Action based on Remedial Investigation results – suitable for unrestricted use**
  (AOCs 2, 4, 5, 6, 7, 8, 9, 13, 17, 18, 20, 21, 24, 25; AOC 11/EBS Parcels 78–79; EBS Parcel 205; and the SWMUs)
- **6 of 23 study areas were carried forward to the Feasibility Study, including:**
  - **Heptachlor in AOC 3 shallow soil – risk above risk management range**
  - **Lead at AOCs 10 and 12 in localized areas of shallow soil beyond previous lead removal action areas – risk above protective lead level under hardscape in a few areas**
  - **PAHs primarily located in northeastern portion of EDC-5 – risk within risk management range**
  - **Naphthalene in AOC 1 groundwater adjacent to an OWS – risk within risk management range**
  - **Vinyl chloride in AOC 23 groundwater slightly above the MCL**

AOC 3, Former Location of Building 274 (Currently a Restroom)

Historical storage and mixing of pesticides in area.
Heptachlor in soil at 1.5–2.0 feet bgs – 18 milligrams per kilogram (mg/kg) from one sample. Limited in extent and likely from a small spill.

AOC 3 - FS Alternatives



FS Alternatives

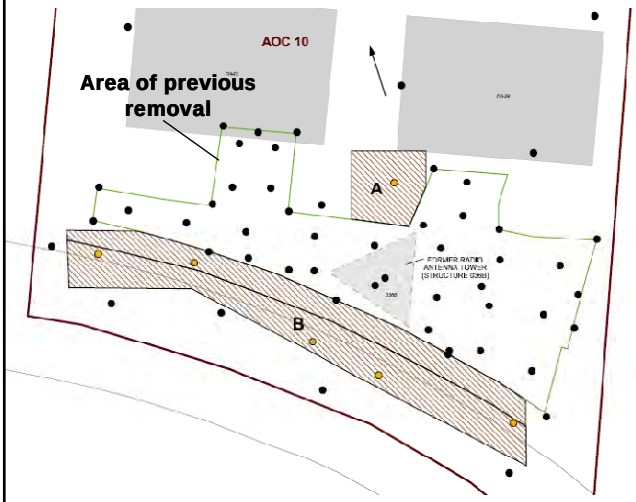
- **No action**
- **Cover and ICs**
- **Excavation and off-site disposal**

Proposed remediation goal for heptachlor: 110 micrograms per kilogram (µg/kg)

AOC 10, Former Radio Antenna Tower

Former lead removal action area (Navy non-time-critical removal action)
Lead in soil under pavement (up to 1.0 foot bgs – maximum 819 mg/kg)
Extent is defined and limited

AOC 10 - FS Alternatives

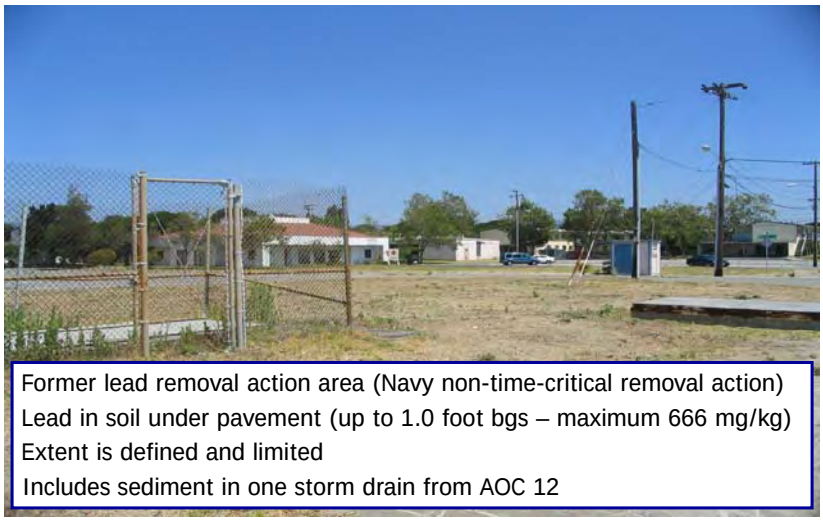


FS Alternatives

- **No action**
- **Cover and ICs**
- **Excavation and off-site disposal**

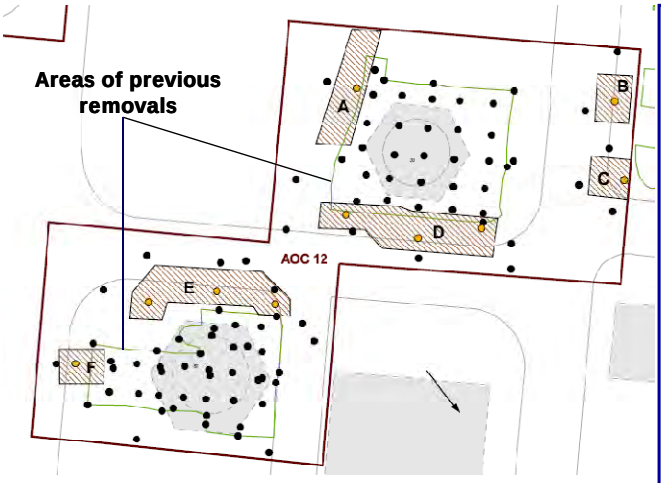
Proposed remediation goal for lead: 184 mg/kg

AOC 12, Former Location of Water Tank 33



Former lead removal action area (Navy non-time-critical removal action)
Lead in soil under pavement (up to 1.0 foot bgs – maximum 666 mg/kg)
Extent is defined and limited
Includes sediment in one storm drain from AOC 12

AOC 12 - FS Alternatives



FS Alternatives

- No action
- Cover and ICs
- Excavation and off-site disposal

Proposed remediation goal for lead: 184 mg/kg

Comparative Analysis, AOCs 3, 10, & 12

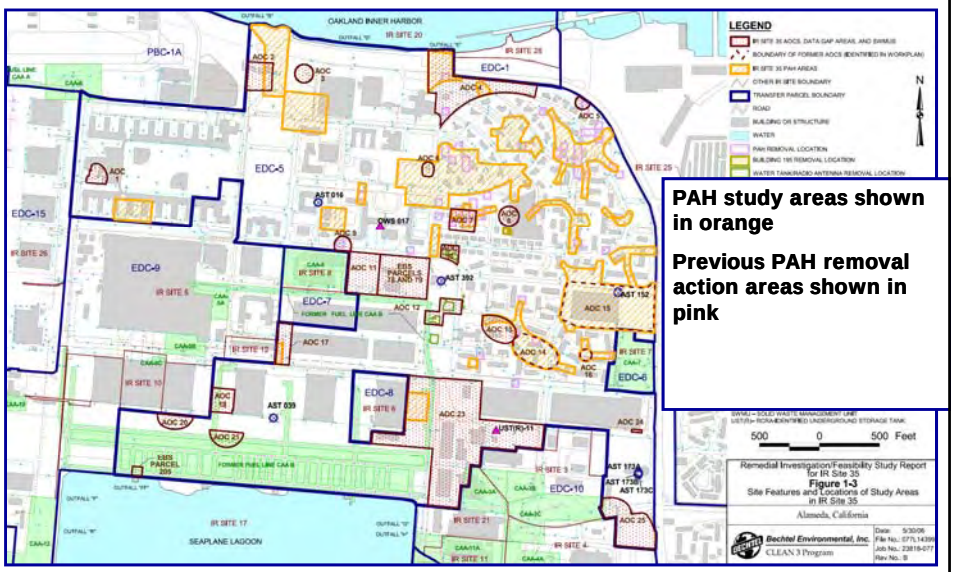
Comparative Analysis of Alternatives for Soil Specific to AOCs 3, 10, and 12

NCP Criteria	Alternatives					
	AOC 3-1 No Action	AOC 3-2 Soil Cover and ICs	AOC 3-3 Excavation and Off-Site Disposal	AOC 10/12-1 No Further Action	AOC 10/12-2 Limited Excavation, Cover, and ICs	AOC 10/12-3 Excavation and Off-Site Disposal
Overall protectiveness	No	Yes	Yes	No	Yes	Yes
Compliance with ARARs	NE	Yes	Yes	Yes	Yes	Yes
Long term effectiveness and permanence	NE	◑	●	○	◑	●
Reduction of toxicity, mobility, or volume through treatment	NE	○	◑	○	◑	◑
Short-term effectiveness	NE	◑	●	○	◑	●
Implementability	NE	◑	●	●	◑	●
Cost ($M)*	NE	◑	◑	●	○	◑
		0.37	0.40	0	0.61	0.55
State acceptance	The state of California agrees with the preferred remedies					
Community acceptance	To be evaluated after public comment period					

Preferred Alternative for Soil (AOCs 3, 10, & 12)

- Excavating and removing soil for off-site disposal
- Transporting excavated soil to an appropriate disposal facility
- Filling in with clean soil to allow unrestricted future use
- Soil impacts in these three areas are limited
- Vertical extent is known (no more than 2 feet deep)

PAH Areas



PAH study areas shown in orange

Previous PAH removal action areas shown in pink

Comparative Analysis PAHs in Soil

Comparative Analysis of Alternatives for Soil Specific to PAH Areas

NCP Criteria	Alternatives					
	PAH-1 No Further Action	PAH-2 ICs	PAH-3a Excavation in Unpaved Areas to 2 feet bgs and ICs	PAH-3b Excavation to 2 feet bgs and ICs	PAH-4a Excavation in Unpaved Areas to 4 feet bgs and ICs	PAH-4b Excavation to 4 feet bgs
Overall protectiveness	Yes	Yes	Yes	Yes	Yes	Yes
Compliance with ARARs	Yes	Yes	Yes	Yes	Yes	Yes
Long-term effectiveness and permanence	◑	◑	◑	◑	●	●
Reduction of toxicity, mobility, or volume through treatment	○	○	○	○	○	○
Short-term effectiveness	◑	◑	◑	◑	◑	○
Implementability	●	●	◑	◑	◑	◑
Cost ($M)*	●	◑	◑	◑	○	○
	0	0.24	0.39	0.55	2.0	2.5
State acceptance	The state of California agrees with the preferred remedies					
Community acceptance	To be evaluated after public comment period					

Note:
*based on net present value

Alternatives AOC 3-3, AOC 10/12-3, and PAH-1 are the Preferred Alternatives for soil

NE - not evaluated because it did not meet threshold criteria
M - millions

Relative Performance:
○ = low
◑ = medium
● = high

Preferred Alternative for Soil (PAH Areas)

- **No further action is required**
- **PAHs are associated with historical fill placed prior to the Navy obtaining the property and is not related to a Navy release**
- **PAH-related risks are at the lower end of the risk management range and the site is suitable for unrestricted use**

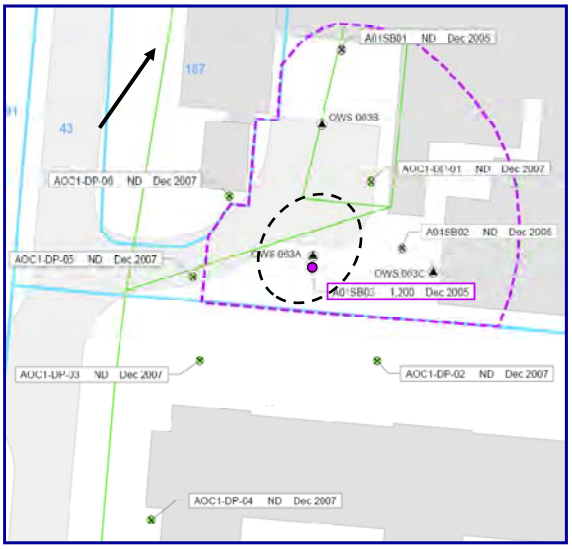
AOC 1

Naphthalene in groundwater at one location near oil-water separator

Additional Investigation at AOC 1

- **In 2005 RI sampling, one of three groundwater samples contained naphthalene**
- **In December 2007, the Navy collected additional groundwater data**
  - **Purpose was to provide information for use in remedy selection**
  - **Six "grab" groundwater samples were collected about 50 feet from previous detection, in all four directions**
  - **Naphthalene not detected (ND) in any of the six 2007 samples**

AOC 1 – FS Alternatives



FS Alternatives

- **No action**
- **MNA and ICs**
- **Source removal, enhanced ISB, ICs**
- **ISCO and ICs**

groundwater flow direction

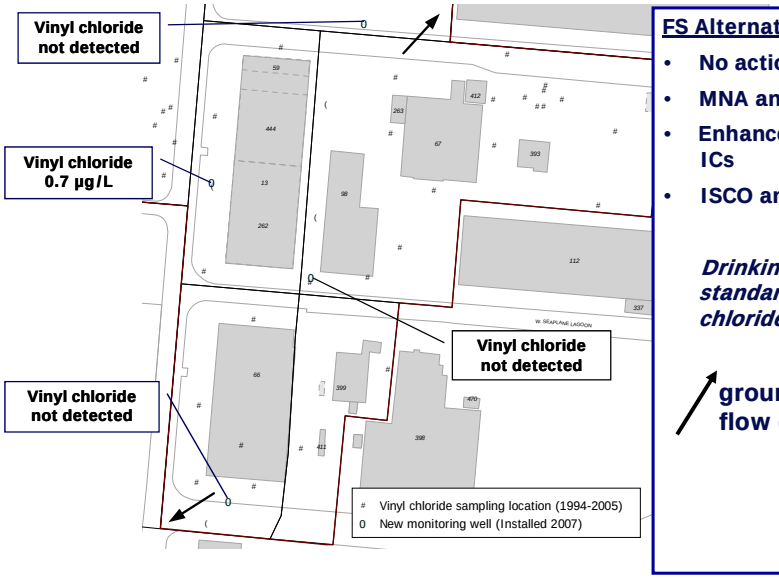
AOC 23, Building 13 (Western Side)

Vinyl chloride was detected in groundwater slightly above drinking water criteria

Additional Investigation at AOC 23

- In 2005 RI sampling, 4 of 65 groundwater samples contained vinyl chloride above drinking water standards
- In December 2007, the Navy installed and sampled four new monitoring wells to collect additional groundwater data
  - Purpose was to provide information for remedy selection
  - Samples from three new wells contained no vinyl chloride
  - Samples from one new well contained 0.7 µg/L, slightly above the 0.5 µg/L criterion

AOC 23 – FS Alternatives



FS Alternatives

- No action
- MNA and ICs
- Enhanced ISB and ICs
- ISCO and ICs

Drinking water standard for vinyl chloride is 0.5 µg/L

groundwater flow direction

Comparison of Groundwater Alternatives AOCs 1 & 23

Comparative Analysis of Alternatives for Groundwater for AOCs 1 and 23

NCP Criteria	Alternatives						
	AOC 1-1 No Action	AOC 1-2 MNA and ICs	AOC 1-3 Source Removal, Enhanced Aerobic ISB, and ICs	AOC 1-5 ISCO and ICs	AOC 23-1 No Action	AOC 23-2 MNA and ICs	AOC 23-4 ISCO and ICs
Overall protectiveness	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compliance with ARARs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Long-term effectiveness and permanence	◑	◑	●	●	◑	◑	●
Reduction of toxicity, mobility, or volume through treatment	○	◑	●	●	○	◑	●
Short-term effectiveness	◑	◑	◑	◑	◑	◑	◑
Implementability	●	●	◑	◑	●	●	◑
Cost ($M)*	●	◑	○	◑	●	◑	○
	0	0.44	0.88	0.50	0	0.50	0.85
State acceptance	The state of California agrees with the preferred remedies						
Community acceptance	To be evaluated after public comment period						

Note:
*based on net present value

Alternatives AOC 1-1 and AOC 23-1 are the Preferred Alternatives for groundwater

M - millions

Relative Performance:
○ = low
◑ = medium
● = high

Preferred Alternatives for Groundwater (AOCs 1 & 23)

- **No action is required for groundwater**
- **Current conditions are protective of human health and the environment**

Community Involvement

- Public meeting June 10, 2008 at 6 p.m.
- End of public comment period June 28, 2008
- Monthly RAB meetings first Thursday of each month
- Information Repository – Room 240 in this building

Questions and Discussion

Questions

ATTACHMENT B-3

OU-2C REMEDIAL INVESTIGATION

(12 pages)

Welcome

Draft RI Report – Revision 1
Operable Unit 2C
Alameda Point

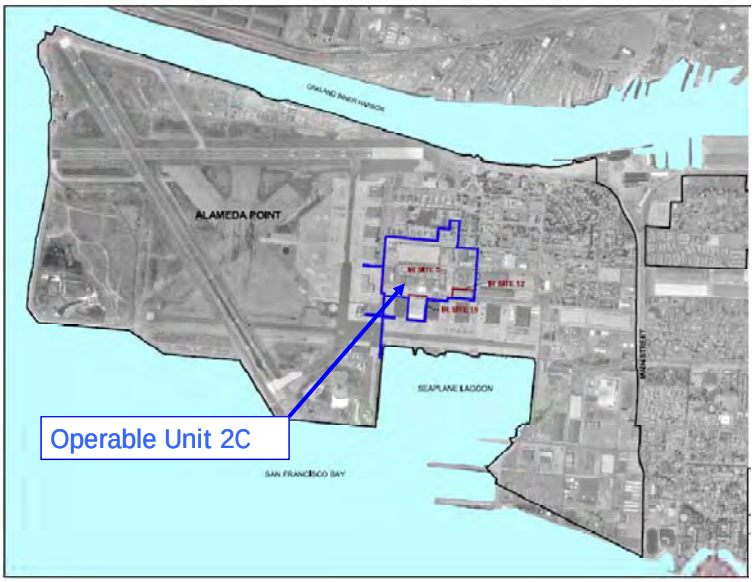
RAB Meeting
June 5, 2008

Mary Parker - Navy Project Manager
Dr. Linda Henry - Brown and Caldwell

Agenda

- **Site Description**
- **Purpose**
- **Remedial Investigation (RI) Findings**
- **Risk Results**
- **RI Recommendations**
- **Discussion**

Site Location



OU-2C Site Features

Building 5 – IR Site 5

- Includes IR Sites 5, 10, and 12
- Most of the buildings were constructed in the 1940s
- Activities supported naval operations and aircraft maintenance and repair
- Building 2 (eastern end) is location of former dry cleaning operations

Building 400 – IR Site 10

Building 2 – IR Site 5

4

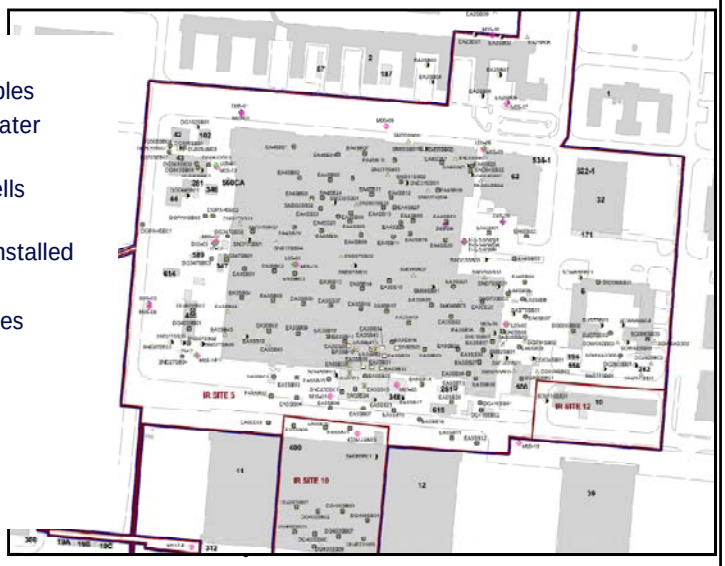
Purpose

- **OU-2C Supplemental Sampling Objectives**
  - Conduct supplemental RI sampling to assess potential risk to human health and the environment
  - Fill data gaps and complete the characterization of the nature and extent of contamination in soil and groundwater, including:
    - 22 Solid Waste Management Units (SWMUs) sampled
    - Data gap samples at 13 buildings

5

Supplemental Sampling Locations – Figure 1

- 208 borings
  - 441 soil samples
  - 139 groundwater samples
- 15 monitoring wells installed
- 16 piezometers installed
- 29 wells sampled
- 87 soil gas samples analyzed
- tidal study
- aquifer testing



RI Findings - Soil

- **Primarily volatile organic compounds (VOCs) and metals at Site 5**
- **Total petroleum hydrocarbon (TPH) is minimal except in petroleum corrective action areas (CAAs)**
- **Other soil results:**
  - **Average benzo(a)pyrene-equivalent (BaP) concentrations below Alameda Point screening level**

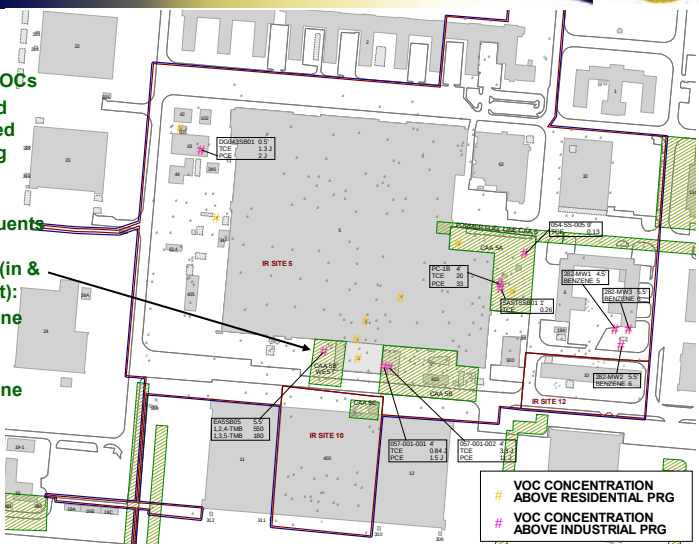
VOCs in Soil – Figure 2

Limited distribution of VOCs

Solvents and fuel-related compounds identified above risk screening values

New fuel-related constituents identified above comparison criteria (in & next to CAA 5B West):

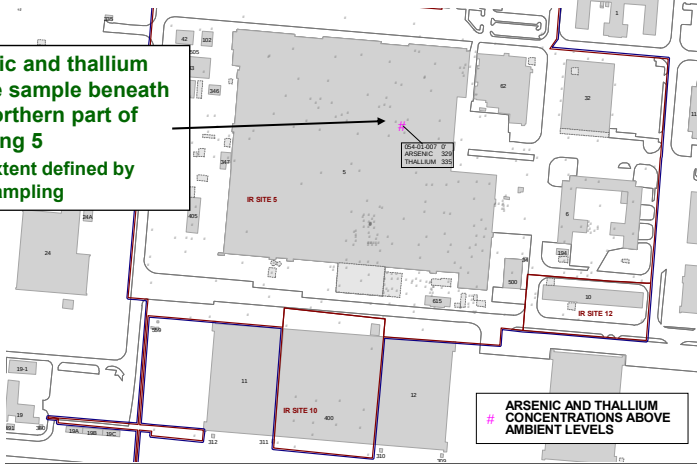
- **1,2,4-trimethylbenzene (max of 550 mg/kg; PRG 52 mg/kg)**
- **1,3,5-trimethylbenzene (max of 180 mg/kg; PRG 21 mg/kg)**



Metals in Soil – Figure 3

OU-2C metals data indicate metals in soil are representative of ambient conditions except for:

Arsenic and thallium in one sample beneath the northern part of Building 5
- extent defined by sampling



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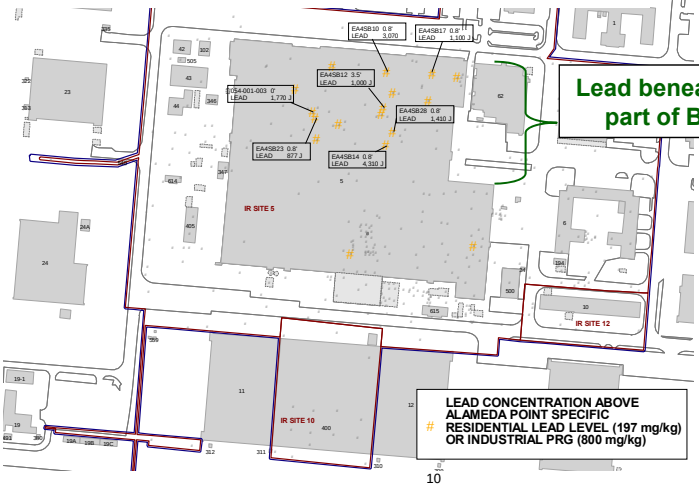
Metals in Soil – Figure 3

OU-2C metals data indicate metals in soil are representative of ambient conditions except for:

Lead beneath northern part of Building 5



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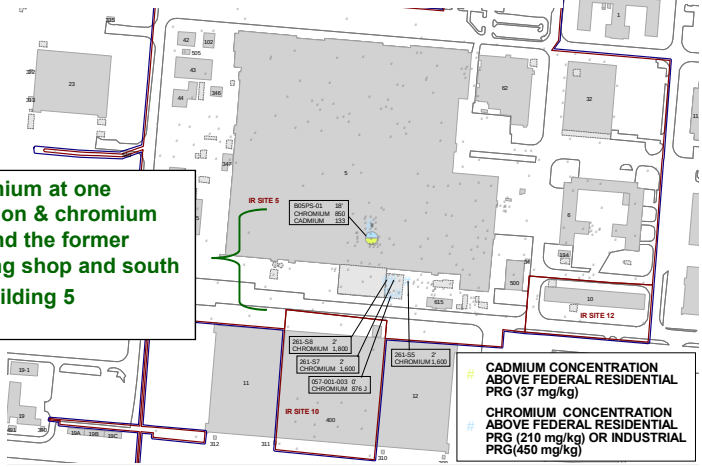
Metals in Soil – Figure 3

OU-2C metals data indicate metals in soil are representative of ambient conditions except for:

Cadmium at one location & chromium around the former plating shop and south of Building 5



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RI Findings - Groundwater

- **Primarily chlorinated VOCs at Site 5 (Figure 4)**
  - 4 historically identified high concentration (DNAPL) areas: Plume 5-1, Plume 5-2, Plume 5-3, and Plume 5-4
  - 2 dissolved plumes: Building 5 and Building 2
- **To a lesser degree**
  - 1,4-dioxane (co-located with Building 5 dissolved plume)
  - TPH (mostly in CAAs)
  - Localized metals related to Building 5
    - Cadmium - concentrations are relatively low (max. 12 µg/L)
    - Hexavalent chromium - 2007 max. 26 µg/L
    - Nickel - concentrations above comparison criteria are defined and limited in extent (max. 194 µg/L)

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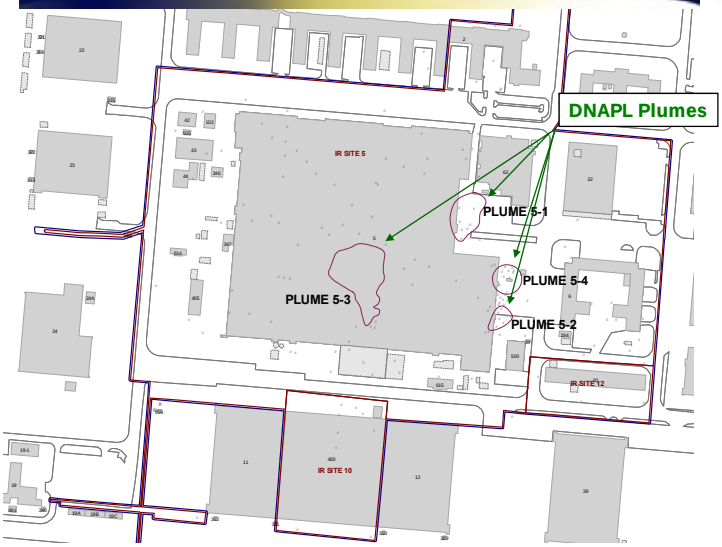
Buildings 5 and 2 Chlorinated VOC Groundwater Plumes – Figure 4



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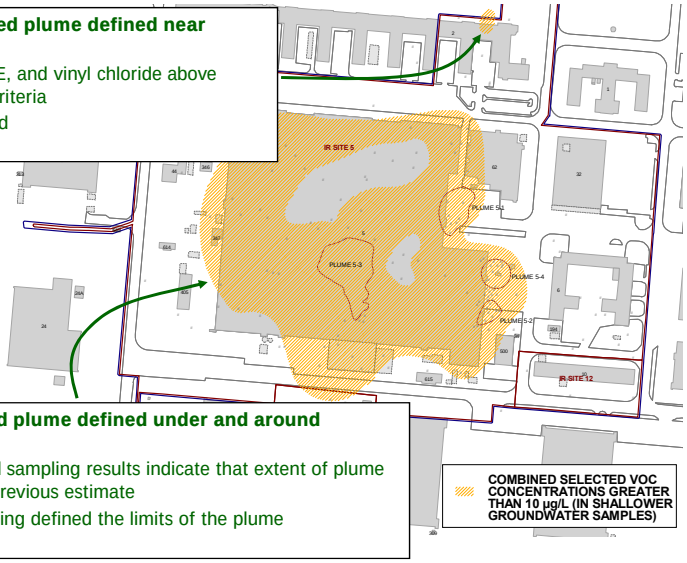
Buildings 5 and 2 Chlorinated VOC Groundwater Plumes – Figure 4

Smaller dissolved plume defined near Building 2

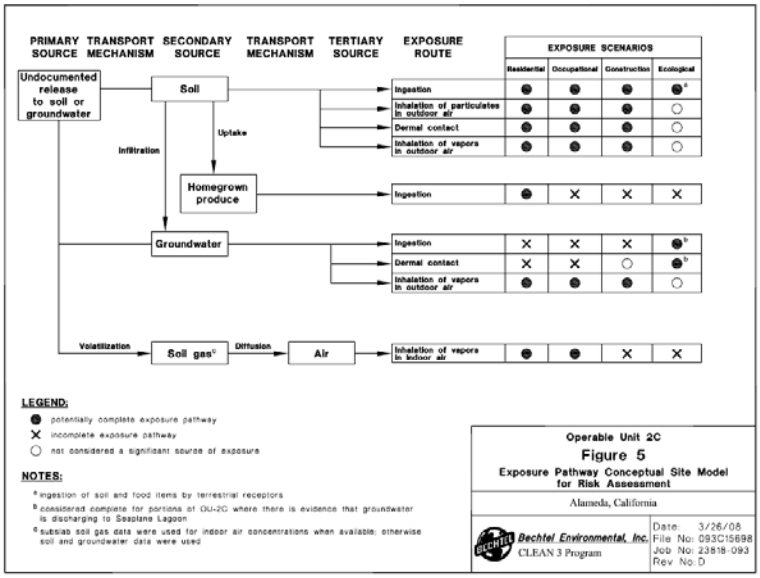
- Only 1,2-DCE, and vinyl chloride above comparison criteria
- Extent defined



Larger dissolved plume defined under and around Building 5

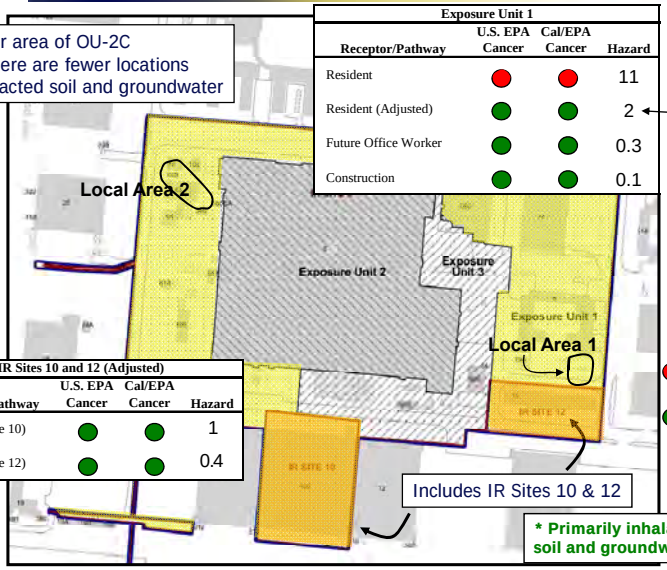
- Supplemental sampling results indicate that extent of plume is similar to previous estimate
- Recent sampling defined the limits of the plume

Conceptual Site Model – Figure 5



HHRA Exposure Units – Exposure Unit 1 Figure 6

Perimeter area of OU-2C where there are fewer locations with impacted soil and groundwater



Exposure Unit 1

Receptor/Pathway	U.S. EPA Cancer	Cal/EPA Cancer	Hazard
Resident	🔴	🔴	11
Resident (Adjusted)	🟢	🟢	2
Future Office Worker	🟢	🟢	0.3
Construction	🟢	🟢	0.1

No individual hazard values >1

IR Sites 10 and 12 (Adjusted)

Receptor/Pathway	U.S. EPA Cancer	Cal/EPA Cancer	Hazard
Resident (Site 10)	🟢	🟢	1
Resident (Site 12)	🟢	🟢	0.4

Includes IR Sites 10 & 12

Risk Management Range*

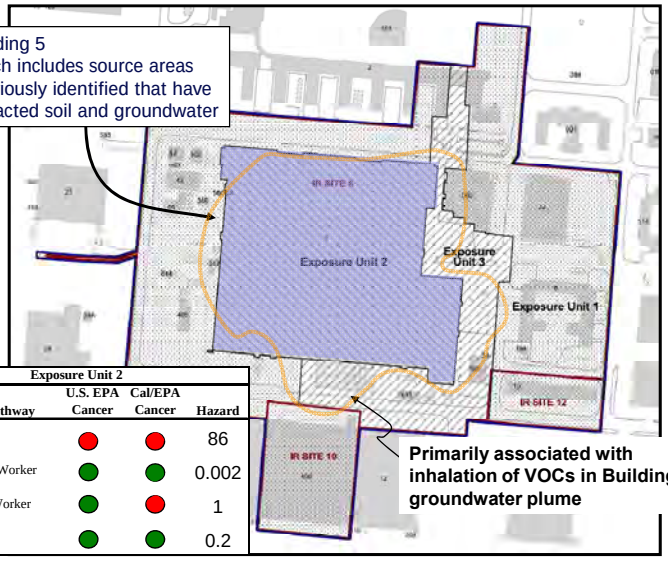
🔴 >10^{-4} (above)

🟢 ≤ 10^{-4} (within or below)

* Primarily inhalation of VOCs from soil and groundwater

HHRA Exposure Units – Exposure Unit 2
Figure 7

Building 5
which includes source areas previously identified that have impacted soil and groundwater



Exposure Unit 2			
Receptor/Pathway	U.S. EPA Cancer	Cal/EPA Cancer	Hazard
Resident	🔴	🔴	86
Current Office Worker	🟢	🟢	0.002
Future Office Worker	🟢	🔴	1
Construction	🟢	🟢	0.2

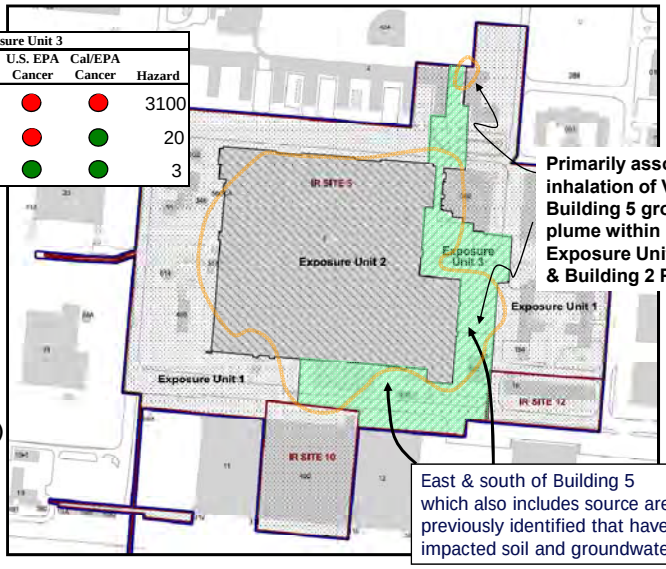
Primarily associated with inhalation of VOCs in Building 5 groundwater plume

Risk Management Range

- 🔴 >10^{-4} (above)
- 🟢 ≤ 10^{-4} (within or below)

HHRA Exposure Units – Exposure Unit 3
Figure 8

Exposure Unit 3			
Receptor/Pathway	U.S. EPA Cancer	Cal/EPA Cancer	Hazard
Resident	🔴	🔴	3100
Future Office Worker	🔴	🟢	20
Construction	🟢	🟢	3



Primarily associated with inhalation of VOCs in Building 5 groundwater plume within Exposure Unit 3 & Building 2 Plume

Risk Management Range

- 🔴 >10^{-4} (above)
- 🟢 ≤ 10^{-4} (within or below)

East & south of Building 5
which also includes source areas previously identified that have impacted soil and groundwater

Ecological Risk Assessment - ERA

- **A screening-level ERA was performed**
  - Hypothetical terrestrial receptors
    - No ecological issues because urban and barren habitat occurs at OU-2C and this is not expected to change
  - Aquatic receptors (if chemicals in groundwater reach the surface water)
    - No ecological issues because concentrations of metals are ambient (metals are primary chemicals of concern for ecological risk assessment)

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RI Recommendations

- **Exposure Unit 1 (includes IR Sites 10 and 12)**
  - A Feasibility Study to further evaluate VOCs in Local Area 2 (around Building 43)
  - Local Area 1 will be addressed under the Petroleum Program (in the vicinity of the former fuel fueling station)
  - No action for Exposure Unit 1 outside of the Local Areas 1 and 2
  - No action for IR Sites 10 and 12

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RI Recommendations

- **Exposure Units 2 & 3**
  - A Feasibility Study to further evaluate soil:
    - Exposure Unit 2
      - Co-located arsenic and thallium, and lead concentrations in soil beneath the northern portion of Building 5
    - Exposure Unit 3
      - VOCs in soil east and south of Building 5 and naphthalene in soil south of Building 5

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RI Recommendations

- **Exposure Units 2 & 3**
  - A Feasibility Study to further evaluate groundwater:
    - Exposure Units 2 & 3
      - VOCs in groundwater associated with the Building 5 dissolved groundwater plume
      - VOC concentrations in groundwater that may be indicative of DNAPL
        - » historical concentrations were significantly reduced by removal actions and a treatability study, but some high concentrations remain
    - Exposure Unit 3
      - VOCs (vinyl chloride) in the Building 2 dissolved plume

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Discussion