FINAL
NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD
MEETING SUMMARY

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

February 1, 2007

The following participants attended the meeting:

Co-Chairs:	
George Humphreys	Restoration Advisory Board (RAB) Community Co-chair
Thomas Macchiarella	Base Realignment and Closure (BRAC) Program Management Office (PMO) West, BRAC Environmental Coordinator (BEC), Navy Co-chair
Attendees:	
Janet Argyres	Bechtel
Barbara Baack	Alameda Naval Air Museum (ANAM)
Karen Barnes	Kleinfelder
Jim Barse	Community member
Doug Biggs	Alameda Point Collaborative (APC) Representative
Neil Coe	RAB
Tommie Jean Damrel	Tetra Tech EM Inc. (Tetra Tech)
Alona Davis	Sullivan International Group (Sullivan)
Michele Dermer	Bechtel
Nancy Gormley	City of Alameda Housing Authority
Gordon Jamieson	Tetra Tech EC Inc.
Joan Konrad	RAB
James Leach	RAB
Jim Lodeman	Catellus
Frank Matarrese	Alameda City Council
John McGuire	Shaw Environmental and Infrastructure, Inc. (Shaw)
Steve Peck	BRAC PMO-West Remedial Project Manager (RPM)
Kurt Peterson	RAB
Christy Smith	U.S. Fish and Wildlife Service (USFWS)

Dale Smith	RAB/Golden Gate Audubon Society
Jean Sweeney	RAB
Jim Sweeney	RAB
Michael John Torrey	RAB/Housing Authority of the City
Carol Trotter	Community Member
Marilyn York	ANAM

The meeting agenda is provided in Attachment A.

MEETING SUMMARY

I. Approval of Minutes

Mr. Humphreys called the meeting to order at 6:40 p.m.

Ms. Smith provided the following comment:

- Page 8 of 9, last paragraph, first sentence, the word "items" will be changed to "item."

Mr. Humphreys provided the following comment:

- Page 9 of 9, first paragraph, second and third sentences, the name "Featherston" will be corrected to read "Fetherston."

The minutes were approved as amended.

II. Co-Chair Announcements

Mr. Humphreys distributed the list of documents and correspondence the RAB received during January 2007 (Attachment B-1). Noteworthy documents include the site investigation (SI) report, data gap sampling for Installation Restoration (IR) Site 26, the final technical memorandum to supplement the administrative record for IR Site 28, and the Navy environmental program newsletter. Noteworthy correspondence included the review letter of the draft feasibility study (FS) report for IR Site 2 from Ms. Dot Lofstrom of the Department of Toxic Substances Control (DTSC). Mr. Humphreys noted that the DTSC review included a comment that the landfill cover should be 4 feet thick instead of 2 feet.

Mr. Humphreys said that Mr. Bert Morgan had an excused absence from the meeting.

Mr. Macchiarella distributed the list of significant Navy Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents planned for February and March 2007 (Attachment B-2).

Mr. Macchiarella followed up on a question that Mr. Humphreys asked during the December 2007 RAB meeting. The question concerned lead in the storm drains at Site 35. Two samples were collected from two different storm drains near the area of the lead removal action from the water towers. The concern was that lead in soils had migrated down the storm drain, so samples were collected at the request of the RAB. Lead was detected in the downgradient sample of the two samples at a concentration above the cleanup goal for soil. This detection of lead will be addressed in area of concern (AOC) 10, AOC 12, and possibly AOC 23. AOC 23 involves groundwater south of the sample location but is the closest AOC.

Mr. Macchiarella announced that the Navy interviewed Mr. Bill Fetherston about the historical radiological assessment (HRA). Any pertinent information that Mr. Fetherston provided about the historical use of radiological materials will be included in the next version of the HRA.

Mr. Macchiarella proposed that July 2007 be the summer month where there is no RAB meeting. The RAB members agreed that the RAB meeting in July 2007 would be canceled.

III. Six-Phase Heating Removal Action Update

Mr. Peck introduced Mr. McGuire, who began the presentation on the dense nonaqueous phase liquid (DNAPL) source removal at IR Sites 4 and 5. A handout of the presentation is included as Attachment B-3. Mr. Leach asked if the recent theft of copper involved this site. Mr. McGuire replied that the copper was not stolen from this site; instead, copper had been stolen from an Alameda city project. Mr. Peck noted that the Navy is deciding how to better secure the site. Mr. McGuire commented that a laser beam perimeter alarm system notifies on-call personnel if triggered.

Mr. McGuire identified Sites 4 and 5 on the location map on Slide 2. The first step in the six-phase heating (SPH) technology is dissipation of electrical energy in the subsurface through steel electrodes. The resistivity of soil and water heats the soil, and the heat volatilizes volatile organic compounds (VOCs) and generates steam. The heated gases and vapors are then recovered by a vacuum extraction system and are separated and collected using granular activated carbon (GAC).

An engineering evaluation/cost analysis (EE/CA) and an action memorandum were prepared for Site 5 in 2001. A removal action (RA) project plan (RAPP) was issued in February 2002, and an addendum to the plan was issued in December 2003. IR Site 5 is 18 acres and consists mainly of Building 5. The site is located 1,000 feet from San Francisco Bay, and the soil consists of artificial fill and layers of the bay sediment unit. Groundwater is between 4 and 7 feet below ground surface (bgs), with tidal influence up to 2 inches. The floor inside Building 5 is composed of about 6 to 8 inches of reinforced concrete.

There are two plumes of chlorinated volatile organic compounds (CVOC) at IR Site 5, Plume 5-1 and Plume 5-3, both with concentrations above 10,000 parts per billion (ppb). Plume 5-1 covers 15,000 square feet (ft^2) (100 feet by 150 feet) to 20 feet bgs. The SPH pilot test was completed in 2003. A DNAPL removal was successfully completed in 2004 at Plume 5-1. Plume 5-3 is within the Building 5 area and covers 33,000 ft^2 (170 feet by 260 feet) to 20 feet bgs. It is the current area of SPH operations for DNAPL removal. Slide 5 showed the two CVOC plumes at IR Site 5. Mr. McGuire identified Plumes 5-1 and 5-3 on the map.

DNAPL removal will occur in three phases. Each phase will cover 13,000 ft^2 of the plume down to 20 feet bgs with a target temperature of 90°C. There will be 3 to 4 months of operation for each phase. Thirty-five electrodes will be used for each phase, and the anticipated power input is 1.5 million kilowatt hours (kWhr). The vapor recovery system will draw vapor at a rate of 750 cubic feet per minute (cfm).

Slide 7 showed a map of the SPH layout at Plume 5-3. Mr. McGuire identified the areas of Phase I, II, and III on the map. Electrodes and groundwater monitoring wells are shown on the map. The current work is moving into Phase II. Mr. Peterson asked if work continues on Phase I during work on Phase II. Mr. McGuire replied that work will stop on Phase I before it begins on Phase II. Mr. Peterson asked if the various phases apply to different parts of the plume. Mr. McGuire replied that they apply to different parts of the plume. Mr. Peterson asked if contaminated groundwater might migrate back into the areas that have already been treated. Mr. McGuire replied that groundwater will be monitored to make sure contaminants to not migrate back into treated areas. Mr. Peck noted that the groundwater moves slowly. Mr. Peterson asked if Plume 5-1 was treated in three phases. Mr. McGuire replied that Plume 5-3 is two

and a half times the size of Plume 5-1. Ms. Sweeney asked Mr. McGuire if the size of the plume was anticipated. Mr. McGuire replied that the size of the plume has been known for many years and the extent of the plume has been reported in previous documents. He added that the size of the plume was anticipated because the building had been in place for some time and the groundwater has not migrated far. Mr. Peck commented that only the Phase I system was set up during the RAB tour of the area, so it may have seemed that a smaller area was treated because it was a subsection of the full plume. Mr. Sweeney asked if the ground is soil or concrete. Mr. McGuire replied that the area is concrete. Mr. Peterson asked if the concrete floor is intact. Mr. McGuire replied that it is. Mr. McGuire identified the following parts of the SPH system on the map: the power supply substation, the vapor-extraction system, and the treatment system.

Slide 8 showed a diagram of the sheet-pile electrodes. The depth of installation varies, and the electrodes are designed to penetrate into the bay sediment unit 6 to 12 inches. Each electrode consists of four sheet piles. Inside the building, the concrete was broken so the sheet piles could be driven in. An electrical connection is then welded to the sheet pile. The hole is then filled with fly ash slurry to make it easier and more cost-effective to remove the sheet piles in the future. When the sheet piles are removed, concrete will be used to fill the holes. Mr. Peterson commented that the sheet piles are large. Mr. McGuire also said that the fastest way to heat the groundwater is to use the largest sheet pile possible. Mr. Humphreys asked why the groundwater is not heated to the boiling point. Mr. McGuire replied that it is necessary to heat the groundwater to the temperature that will volatilize the compounds in the water, but not the water itself.

Phase I operations at Plume 5-3 began in August 2006 and were complete on February 1, 2007. The operations were extended to reach asymptotic mass removal. To date, 2.6 million kWhrs total power has been applied, and the total VOCs removed exceeds 200 pounds. There has been more than 99 percent reduction in contaminant concentrations. In addition, 90,000 gallons of condensate was treated and discharged. The current average internal temperature was 98°C. Mr. Peck commented that the efficiency of the system has been maximized. Mr. Peterson asked about the amount of power used for Plume 5-1 treatment. Mr. McGuire replied that it was about 1.5 million kWhrs. Slide 10 showed the temperature profiles at 12 feet bgs of the Phase I area in September 2006, November 2006, and January 2007. The temperature has increased throughout the plume over time.

Slide 11 showed a graph of total CVOC removal in groundwater. The average total CVOC concentration in the groundwater before SPH operations began was about 30,000 ppb. By October 2006, the concentration was 2,000 ppb, and in January 2007, the concentration was near 100 ppb. Ms. Sweeney asked if this technology is new and unusual and was attracting interest. Mr. McGuire replied that the U.S. Environmental Protection Agency (EPA) and even Australia's EPA have viewed the technology. Many heating projects have been implemented across the country, but not on the scale of this project, and it has also been successful. Mr. Peck commented that Alameda was used as a case study in recent reports on heating technology. Mr. Peterson asked about the concentration goal for the plume. Mr. McGuire replied that the goal was 10,000 ppb and had been reached by the October 2006 sample date. Mr. Peterson asked if any chemicals are more difficult to extract. Mr. McGuire replied that no issues have arisen with the target chemicals. Mr. Peck commented that the electricity costs for this technology are $1,300 per day. He added that the maximum efficiency has been reached when the concentration curve starts to flatten out.

Slide 12 showed a graph of cumulative mass removed and the average internal temperature. Mass removed was measured in pounds of VOCs removed. The recovery rate declines at about 80°C and it is expected that the rate will drop even farther.

The documents issued for IR Site 4 were similar to Site 5: the EE/CA, the AM, and the RAPP. Site 4 is 5 acres and includes Building 360. There were two CVOC plumes with concentrations above 10,000 ppb. Soil consists of artificial fill and Merritt Sand formation layers. The groundwater level is between 4 and 8 feet bgs, and tidal influence is negligible. The outdoor surface is weathered asphalt; inside Building 360 is a raised concrete floor over soil. Plume 4-1 is 38,000 ft^2 to 35 feet bgs. The Plume 4-1 pilot test was completed in 2003. Electrical resistance heating (ERH) operations for DNAPL removal are under way at Plume 4-2. Plume 4-2 is 35,000 ft^2 to a depth of 45 feet bgs. Slide 14 showed the location of Plume 4-2 and the treatment area on a map. The treatment area extends from the center of Building 360 to the edge of Building 163. Building 163 is historic and is occupied. The source of the contamination was the area at the eastern side of the plume.

Plume 4-2 is being treated through a subcontract with Thermal Remediation Services (TRS) Inc. The system is divided into five treatment regions corresponding to the various depths of the electrodes. There are 91 electrodes spaced approximately 20 feet apart, and vapor extraction wells are collocated with electrodes. There are 14 temperature monitoring points with thermocouples installed every 5 feet to the maximum depth. There are 17 groundwater monitoring wells to monitor system performance with a 2,000-kilowatt (kW) power control unit. There is a 500 cubic feet per meter (cfm) vapor containment, conditioning, and treatment system.

Slide 16 showed a map of the Plume 4-2 system layout. The treatment area extends from the center of Building 360 to the edge of Building 163. The map showed the five regions, the electrode and vapor recovery wells, and the temperature monitoring points.

Mr. Peterson asked if there is a plan to treat the area beneath Building 163. Mr. Macchiarella replied that another effort is under way for Building 163 under Operable Unit (OU)-2B. The OU-2B data gap work plan that will be described later in the meeting includes obtaining more data that will continue through the remedial investigation (RI), FS, and record of decision (ROD) process. This current work is a removal action that can be implemented at any stage of the process and has been undertaken before any long-term remedial action has been selected. If this removal action is successful, a remedial action may not be necessary. Mr. Peterson asked about the concentrations detected at the well closest to Building 163. Mr. McGuire replied that there has been a 50 percent reduction in contaminants thus far across the site. Mr. Peck commented that two rounds of soil vapor samples have been collected at Building 163. The results of the first round do not demonstrate a risk, and the second round of samples is still being analyzed.

Mr. McGuire commented that the surfaces outside of Building 360 are overlain with asphalt or concrete. The surface inside Building 360 is a raised concrete floor. Mr. Humphreys asked if the surface in Building 163 is also concrete. Mr. Macchiarella replied that it is likely concrete. Mr. Humphreys said that he was concerned that the heating nearby may be driving vapors up through the concrete into Building 163. Mr. McGuire commented that the vapor extraction wells draw vapors away from Building 163 and toward the treatment area. Mr. Peterson commented that he would like to see maps that show that the plume does not stop at the edge of Building 163. Mr. McGuire replied that drawings exist but show only the portion treated in this project.

Slide 17 showed a diagram of the temperature monitoring points and the electrode and vapor recovery wells for Region 1. The diagrams show the setup of these systems for concrete and areas where the concrete floor is raised. TRS uses electrodes that consist of a steel conductor pipe set with graphite backfill. The Plume 4-2 system began operation in late October 2006 with all 91 electrodes energized. The average groundwater temperature rose from 18°C to 67°C, with a maximum temperature reaching 120°C at 45 feet bgs. More than 100 pounds of VOCs have been captured by the vapor recovery system to date, with more than 50 percent reduction in concentrations of total VOCs in groundwater observed at

the location where the highest water temperature was recorded. Slide 19 showed a graph of the cumulative VOC mass recovered and the average groundwater temperature for Plume 4-2. The cumulative mass recovered is just above 100 pounds as of January 15, 2007. Ms. Sweeney asked about the progress of treatment. Mr. McGuire replied that the results of the groundwater sampling have been received and that 1 or 2 months of additional operation will be required. Mr. Biggs asked if the concentration of DNAPL is expected to rise once the ground cools. Mr. McGuire replied that there may be a slight increase. It was observed that levels did not rebound at Plume 5-1. Mr. Biggs asked about the time for the ground to cool. Mr. McGuire replied that it would cool in about a year and a half.

IV. EDC Parcel 17 Site Inspection Presentation

Ms. Dermer introduced Ms. Barnes, who began a presentation on the SI report for transfer parcel economic development conveyance (EDC) 17. A handout provided is included as Attachment B-5. The presentation included the following topics: SI objective and scope, site description, SI review process, screening criteria, data evaluation findings, human health risk evaluation, ecological evaluation, conclusions and recommendations, and schedule. The objective of the SI is to evaluate the current environmental conditions at EDC-17 to assess its suitability for transfer. The scope of the work is to evaluate five environmental baseline survey (EBS) parcels within EDC-17: EBS Parcels 163, 165, 166, 167, and 169.

Slide 4 showed a site location map; Ms. Barnes identified EDC-17 on the map. Slide 5 showed a map of the EBS parcels within EDC-17; Ms. Barnes identified the five EBS parcels on the map.

The EDC-17 is 17 acres and nearly 100 percent open space. The soil consists of fill from the surface to about 9 feet bgs. The depth to groundwater is between 4 and 8.5 feet bgs. Habitats at the site include barren and urban. The site is adjacent to IR Site 16 and corrective action areas (CAAs) 9A and 9B.

EDC-17 is currently used for recreation, including baseball fields, tennis courts, picnic areas, and an RV park at EBS Parcels 165, 166, 167, and 169. EBS Parcel 167 also includes a bowling alley. Industrial activities conducted on EDC-17 included aircraft parking, maintenance, and washdown. A tank-truck loading and unloading facility was located in the northwestern corner of EBS Parcel 165. A maintenance shop and sandblast shelter was located in former Building 402 in EBS Parcel 169. A drum, chemical, and material storage area was located in the north-central portion of EBS Parcel 169.

Slide 8 showed a site feature map of EDC-17. Ms. Barnes identified the former tank-truck loading facility, the maintenance shop, and the drum, chemical, and material storage area on the map. She also identified the fields, tennis courts, and the RV park area on the map. Mr. Peterson asked if EBS Parcel 169 is the asphalt area where cars are stored. Ms. Barnes identified the area on the map. She also pointed out where streets and paths are shown on the map.

The steps in completing the SI include reviewing historical documents; comparing existing data with screening criteria; calculating a screening-level cancer risk and hazard index (HI); conducting an ecological evaluation; and providing recommendations. Slide 10 showed a map of the sampling locations at EDC-17. Many sample locations are in the areas of the former drum, chemical, and materials storage. Samples were collected near the tank-truck loading and unloading area. No samples were collected near the sandblast shelter and only limited sampling occurred in other areas that are mostly recreational.

The screening criteria used for soil include environmental screening levels (ESLs) for total petroleum hydrocarbons (TPH); the Alameda Point specific screening criterion of 620 micrograms per kilogram (µg/kg) for benzo(a)pyrene [B(a)P] equivalent concentrations; residential and industrial preliminary remediation goals (PRGs) for other compounds (excluding TPH and B[a]P), and background levels as a

secondary screening for metals. The screening criteria used for groundwater include ESLs for TPH, maximum contaminant levels (MCLs) for other chemicals (excluding TPH), and background levels as a secondary screening for metals.

The data evaluation findings for soil included the following: all VOCs, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and metals were below the screening criteria. TPH was above the screening criteria in 4 of 22 samples in EBS Parcels 165 and 169. A TPH data gap was identified at EBS Parcel 165. The concentration of chlordane was found to exceed the screening level in one of four samples at EBS Parcel 169. The data evaluation findings for groundwater included the following: concentrations of all metals and TPH were below the screening criteria; one sample was found with methyl tertiary-butyl ether (MTBE) at a concentration above the screening criteria in EBS Parcel 169.

Slide 13 showed a map of the data evaluation findings. Ms. Barnes identified the locations where TPH and MTBE were found to exceed criteria. Ms. Sweeney asked why no samples were collected for analysis at the outfalls and the source of the water. Ms. Barnes replied that no samples are collected as part of the SI and that the objective is to review existing data. If data are collected outside of the transfer parcel, they are not presented in the SI, although data still may have been collected. A storm sewer was investigated and no contamination was found. Mr. Peterson said that he was concerned that only one sample was collected in the eastern area closest to the high school. Ms. Barnes commented that the Navy is also concerned, as will be discussed later in the presentation.

The risk is calculated using maximum concentrations for the human-health risk evaluation. The risk is compared with the following target risk levels: a cancer risk of $1x10^{-5}$ for PAHs in soil and $1x10^{-6}$ for incremental risk from soil (non-PAH) and incremental risk from groundwater; a non-cancer HI of 1, and the California-modified PRG for lead in soil and the lead action level for groundwater. The finding of the human-health risk evaluation for EBS Parcels 165, 166, and 167 was that risk was below target levels. Risk exceeded target levels for EBS Parcel 169. The incremental non-PAH cancer risk for soil at EBS Parcel 169 was $2x10^{-6}$, where chlordane was the risk driver. The incremental cancer risk for groundwater was $1x10^{-5}$, where the risk drivers were MTBE and trichloroethylene (TCE). The HI was below the target levels at EBS Parcels 165, 166, 167, and 169.

No sensitive habitats and no special-status species were identified in the ecological evaluation. No complete exposure pathways were identified for the barren habitat. Potentially complete pathways were identified for the urban habitat, however.

In conclusion, three AOCs were identified and recommended for further action. AOC 1 consists of the western portion of EBS Parcel 165, where there is a concern with TPH in soil. AOC 2 consists of the northern portion of EBS Parcel 169 and was identified because of a lack of sampling at the area of the former maintenance shop and sandblast shelter. AOC 3 consists of the eastern portion of EBS Parcel 169, where there is a concern with VOCs in groundwater. No further action is recommended for all other areas. Slide 18 showed a map of the AOCs at EDC-17. Ms. Barnes identified the three AOCs on the map. The boundaries of the AOCs do not reflect the extent of the contamination, but identify the areas that require further evaluation.

The draft SI report was submitted to the agencies on December 15, 2006. The comments are due from the agencies on February 15, 2007. The draft final SI report will be issued April 16, 2007, and the final version is scheduled for May 16, 2007.

Mr. Peterson asked why there is an AOC at the northern portion of EBS Parcel 169 if no samples were collected there. Ms. Barnes replied that the historical use of the area as a maintenance shop and a

sandblast shelter make it an AOC because no samples were collected. She added that the lack of staining in the area is one reason for the lack of sampling. Ms. Sweeney asked where the large aboveground storage tank (AST) is located and its contents. Mr. Macchiarella said that the tank is empty but that it was used to store aviation fuel. Mr. Macchiarella replied that the tank is not within the boundaries of EDC-17. Ms. Sweeney asked if it could be a source of contamination at EBS Parcel 163. Ms. Barnes said that the TPH in soil was caused by a tank that had previously been removed from that area and that the large tank southwest of the site was not the source. Mr. Peterson asked about the source of MTBE at the site. He commented that it must be recent because it was an additive used beginning in the 1970s and that it is found in the area where automobiles were stored. Ms. Barnes commented that she did not encounter any other possible sources of MTBE besides the drum and chemical storage, aircraft parking, and automobile parking,. Mr. Peterson asked about the location of the drum storage area on the map. Ms. Barnes replied that the notch in the triangle of EDC-17 is a CAA and that the drum and chemical storage area is just below the location on the map. Mr. Humphreys asked if that area is fenced off or is accessible to the public. Ms. Barnes replied that most of EDC-17 is accessible to the public. Mr. Humphreys noted that he had seen students walking toward EDC-17 and asked if anything in the accessible areas would be dangerous. Ms. Barnes replied that no items in the area would be dangerous. Ms. Argyres asked if the area is mostly paved. Ms. Barnes replied that about half of the area is paved. Mr. Matarrese asked about the location of the Hornets soccer field in relation to AOC 1. Ms. Barnes said she was not sure. Mr. Matarrese said that the soccer field is at the location of the former baseball field and that the map does not reflect the current configuration. He added that his two concerns are that the soccer field is downwind of TPH contamination in surface soil and that a shoreline park and trail will be developed along the lower east part of the map. Mr. Macchiarella commented that the environmental team at the Navy has not been informed by the city that a new project is under way in that area along the shoreline and that he does not see a concern there. He added that the Navy would review the existing data set in the area near the soccer field.

V. OU-1, 2A, and 2B Data Gaps Workplan Presentation

Mr. Peck introduced Mr. Jamieson, who began a presentation on the work plan for data gap sampling at OU-1, OU-2A, and OU-2B. A handout of the presentation is included as Attachment B-5. The presentation included the following components: purpose and objective; background; site descriptions; work plan approach; and proposed sampling program. The work plan was developed to address data gaps that were identified in the RI and FS previously completed for OU-1, OU-2A, and OU-2B. The purpose of the work plan is the following: refine the nature and extent of soil contamination, determine aquifer parameters, and refine the extent of the groundwater plumes. The objectives are to fill all data gaps for site characterization and to collect sufficient data for design.

Slide 5 showed the dates of the RI and FS reports for each OU. There was a site walk and meeting with the Base Realignment and Closure Cleanup Team (BCT) on June 19, 2006, and a meeting with the BCT in August 2006. The draft data gaps work plan was issued on November 3, 2006. Slide 7 showed a location map for the sites. Mr. Jamieson identified OU-1, OU-2A, and OU-2B on the map.

OU-1 includes Sites 6, 7, 8, 14, 15 and 16. Sites 14 and 15 data gaps are not addressed as part of this investigation. Mr. Jamieson identified Sites 6, 7, 8, 14, 15, and 16 in OU-1 on the map. Site 6 includes Building 40 and Building 41, the former aircraft intermediate maintenance facility. Site 7 is the former naval exchange service station, including Building 459, former Building 68-3 and the soil debris area. Site 8 includes Building 114, the former pesticide storage area; Site 16, the shipping container storage area (CANS) and former polychlorinated biphenyls (PCB) removal area; Building 608 solid waste management units (SWMUs) and underground storage tank (UST) 608-1; CANS 338A through 338H; and the PCB soil removal action area.

OU-2A includes Sites 9, 13, 19, 22, and 23. Mr. Jamieson identified Sites 9, 13, 19, 22, and 23 in OU-2A. Site 9 includes Building 351 and Building 410, the former industrial waste treatment plant (IWTP). Site 13 includes Building 397, the former aircraft overhaul facility; AOC 009; CAA 13; and open space at the western edge of the site. Site 19 is Yard D-13 hazardous waste storage yard. Site 22 is the former service station. Site 23 is Building 530, the former missile rework facility. Regional groundwater is also addressed under OU-2A.

OU-2B includes Sites 3, 4, 11, and 21. Slide 13 showed a location map for OU-1, OU-2A, and OU-2B. Mr. Jamieson identified Sites 3, 4, 11, and 21 on the map. Site 3 is the abandoned fuel storage area and CAA 3A, CAA 3B and CAA 3C. Site 3 also includes former Building 109, which was the gasoline truck loading area, and Building 112, the aircraft and ship repair and painting facility. Site 4 consists of the former aircraft engine facility (Building 360) and portions of CAA 3C, CAA 4A, CAA 4B, CAA 4C, and CAA 13. Site 4 also includes Building 372, the test engine facility; Building 163, the equipment maintenance area: and groundwater plumes associated with Building 360. Site 11 consists of Building 14, the former aircraft testing and repair facility, and includes former Building 118 and former Building 265. Building 118 was a flower and shoe shop, and Building 265was used for plant services. Site 21 includes Building 113, the overhaul and paint shop; Building 162, the ship and aircraft maintenance shop; Building 398, the turbine accessories shop; and regional groundwater.

The work plan divides the investigation into two areas. The first area is the soil and groundwater delineation, or data gap, sampling. The second area is the SWMUs sampling. Slide 18 showed a table of sample totals for the work plan, including unsaturated and saturated soil samples, Hydropunch (HP) samples, and well sampling. There are a total of 471 sample locations. The total number of well samples collected over four quarters is 1,188. The totals reflect initial sampling, without taking into account possible step-out or step-down samples that may be required.

The data gap sampling is divided into four categories: extent of soil contamination and impact on groundwater, groundwater plume definition, sampling beneath buildings, and sampling around sewers. Biased samples of unsaturated soils will be collected for areas where existing data indicate concentrations or preferred pathways for the data gap soil sampling. If no data exist, grid sampling will be performed. In the case of detections, step-out procedures will be followed to define the lateral extent of the contamination. A saturated soil sample will also be collected to assess impact to saturated soils, and a HP water sample will be collected to evaluate impact on groundwater at every soil sample location. Slide 21 showed a table of the numbers of data gap soil samples planned.

Biased samples will be collected based on known concentrations for data gap groundwater sampling. Two borings will be completed at each location: one to study lithology and to collect soil samples, and one to collect HP samples. Water samples will be collected using a bladder pump. The step-out criteria will be used to define the lateral extent of contamination sufficient for cleanup design, and step-down criteria will be used to define the vertical extent of contamination. Slide 23 showed a table of the total numbers of various data gap water samples planned. Ms. Smith asked why there are twice as many unsaturated soil samples as there are sample locations. Mr. Jamieson replied that one sample will be collected from a few inches below the ground surface, and one more will be collected just above the water table, which is at 5 to 8 feet bgs. More samples may be collected if contamination is visible.

Slide 24 showed a table of data gap sample totals for sampling beneath buildings. There are 107 sample locations. There will be 32 soil gas samples collected, 251 unsaturated soil samples, 84 saturated soil samples, and 84 HP samples. Slide 25 showed a table of data gap sample totals for sampling the sewers. There are 47 sample locations, with a saturated soil sample and an HP sample collected at each location. Mr. Barse asked if the sewers are storm or sanitary sewer lines. Mr. Jamieson replied that they are a mix of both.

There was a site walk with the regulators to identify which SWMUs need to be sampled. The objective is twofold. The first is to demonstrate in a report that samples were collected, so that in the future the sites can be closed under the Resource Conservation and Recovery Act (RCRA) program. The second is to remediate any SWMUs where contamination is found under the CERCLA program, which will also satisfy RCRA. A total of 104 SWMUs have been identified, 43 that will require no further action, 30 that will be covered under the TPH program, and 31 that have been identified for additional sampling. The SWMUs include the following: 18 oil-water separators (OWSs), 3 wash-down areas (WDs), 5 USTs or ASTs, 4 generator accumulation points (GAPs), and 1 AOC in OU-2A. Slide 28 showed a map of the SWMU locations. Slide 29 showed a table of proposed SWMU sample totals.

Samples will be analyzed based on historical soil and groundwater data and historical activity. Soil samples will be analyzed for VOCs, SVOCs, TPH, pesticides, PCBs, metals, total organic carbon (TOC), grain size, bulk density, and microbial parameters. Groundwater samples will be analyzed for VOCs, SVOCs, TPH, pesticides, PCBs, dissolved metals, natural attenuation parameters, and microbial parameters. The data gaps soil and groundwater data will be analyzed by EPA methods and will be validated. Slide 31 showed the total numbers of proposed samples. Working collectively with the regulatory agencies, real-time decisions will be made during the sampling events to determine if step-out or step-down samples are needed. The purpose is to fill all of the data gaps and not sample again in the future. Mr. Peterson asked if the RAB has access to the data gap proposed sampling plans. Mr. Peck replied that a copy of the work plan was issued to the RAB. Ms. Smith commented that only one copy was issued to the RAB, but there are several RAB members. She asked if samples would be analyzed in the field or if samples would be sent off-site to a qualified laboratory. Mr. Jamieson replied that the samples would be sent to a laboratory. Mr. Peck commented that the data would go through a data validation process. Ms. Smith commented that mobile laboratories sometimes report false readings.

Comments from the agencies on the work plan are due February 2007. The final work plan will be issued in May 2007, and data gap field activities are scheduled to begin in June 2007.

Mr. Peck said that the work plan for OU-2C has been issued and is 2 months ahead of the OU-1, OU-2A, and OU-2B work plan. The approach for both work plans is identical. Mr. Leach asked about the budget for analysis. Mr. Peck replied that it would be substantial. Mr. Humphreys commented that the RI for OU-2B identified a large plume with a high cancer risk. He asked if this plume was included in the work plan. Mr. Peck replied that the plume referenced is the DNAPL plume at Building 360. Mr. Humphreys replied he did not believe it was the DNAPL plume. Mr. Peck commented that the SPH project is addressing the highest concentration areas of the plume and that a treatability study is under way to consider other technologies to remediate the plume.

VI. BCT Activities

Mr. Macchiarella noted that he would give the BCT update because Ms. Anna-Marie Cook (EPA), Ms. Lofstrom (DTSC), and Mr. Erich Simon (Regional Water Quality Control Board) were unable to attend the meeting. The BCT met on the third Tuesday of January. The BCT discussed the same presentations that were shown at this RAB meeting. Mr. Peck met by telephone with the regulators on the OU-2C work plan. The Site 14 ROD was signed and finalized by all of the regulatory agencies. The Navy worked with the agencies to finalize the action memorandum for the time-critical removal action (TCRA) at Sites 1, 2, and 32. The action memorandum was signed by the Navy and issued on January 31, 2007. The next step is to continue working on the work plan.

VII. Community and RAB Comment Period

Ms. Smith referred to the January 2007 RAB handout of the planned new projects for 2007 and asked why a substantial amount of funding was devoted to radiological investigations for 2007.
Mr. Macchiarella replied that there are several line items for radiological removal. Mr. Humphreys noted the radiological removal projects at Sites 5 and 17 and the basewide survey. Mr. Macchiarella commented that the first line item for Site 5 and Site 17 was to start the project, and the second line item was to add funding. The Site 5 and Site 17 line item regarding the Army refers to disposal of radiological waste by the Army. Mr. Humphreys asked about the definition of MIPR. Mr. Macchiarella said he was uncertain. Mr. Humphreys asked if the radiological waste from Site 5 would be sent to US Ecology in Nevada. Mr. Macchiarella said that the disposal site for the radiological waste has not been identified. Mr. Humphreys commented that the sludge that was removed from Seaplane Lagoon and deposited at Site 2 may contain radium that was originally deposited into Seaplane Lagoon through the storm drains. He added that the sludge has never been analyzed, so by cleaning out the storm drains the Navy may not have removed all of the radium. Mr. Macchiarella commented that the sediment brought to Site 2 from Seaplane Lagoon was from the center, open area of the lagoon. The radium-226 in the lagoon was found in the corners. The storm drains are in the corner. Site 17 will address the sediment in the corners of the lagoon. Ms. Smith commented that the removal was in the harbor way and along the seawall, where there is a deep, square hole. The removal was not near the stormwater outfalls. Mr. Macchiarella commented that the Navy would more closely examine these issues for Site 2. Mr. Humphreys commented that there was no radiological survey performed in the wetlands area of Site 2.

The meeting adjourned at 8:40 pm.

ATTACHMENT A

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING AGENDA
February 1, 2007

(One Page)

RESTORATION ADVISORY BOARD

NAVAL AIR STATION, ALAMEDA

AGENDA

FEBRUARY 1, 2007, 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 - 6:40	**Approval of Minutes**	**Mr. George Humphreys**
6:40 - 6:50	**Co-Chair Announcements**	**Co-Chairs**
6:50 – 7:15	**Six Phase Heating Removal Action Update**	**Mr. Steve Peck**
7:15 – 7:35	**EDC Parcel 17 Site Inspection Presentation**	**Ms. Michelle Dermer**
7:35 – 8:05	**OU-1, 2A, and 2B Datagaps Workplan Presentation**	**Mr. Steve Peck & Mr. Gordon Jamieson**
8:05 – 8:15	**BCT Activities**	**Ms. Anna-Marie Cook**
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 January 2007, George Humphreys, RAB Community Co-Chair (1 page)

B-2 List of Navy CERCLA Program Documents planned for February/March 2007, Thomas Macchiarella, BRAC PMO West, BEC, Navy Co-chair (1 page)

B-3 Presentation on the DNAPL Source Removal at IR Sites 4 and 5, presented by Steve Peck, BRAC PMO West, and John McGuire, Shaw (10 pages)

B-4 Presentation on the Site Inspection Report for Transfer Parcel EDC-17, presented by Karen Barnes, Kleinfelder (13 pages)

B-5 Presentation on the Workplan for Data Gap Sampling at OU-1, 2A, and 2B, presented by Steve Peck, BRAC PMO West, and Gordon Jamieson, Tetra Tech EC Inc. (18 pages)

ATTACHMENT B-1

LIST OF REPORTS AND CORRESPONDENCE RECEIVED JANUARY 2007

(One Page)

Restoration Advisory Board
Reports and Correspondence Received
During January 2007

Reports:

1. January 10, 2007, "Site Investigation Report, Data Gap Sampling, Installation Restoration Site 26, Alameda Point, Alameda, California", prepared by Innovative Technical Solutions, Inc. for BRAC Program Management Office West.
2. January 15, 2007, "Final Technical Memorandum to Supplement the Administrative Record for Installation Restoration Site 28, Todd Shipyards", prepared by Sul Tech, a joint venture of Sullivan Consulting Group and Tetra Tech EM Inc. for BRAC Program Management Office West
3. "Alameda Point Focus", The Navy's Environmental Program Newsletter, Fall 2006/Winter 2007, Issue #5, BRAC PMO West..
4. January 25, 2007 (received January 31, 2007), "Draft Final, Spring 2006, Alameda Basewide Annual Groundwater Monitoring Report, Alameda Point, Alameda, California", prepared by Innovative Technical Solutions, Inc. for BRAC Program Management Office West.
5. January 25, 2007 (received January 31, 2007), "Draft Data Gap Sampling Work Plan IR Site 14, Alameda Point, Alameda, California", prepared by Innovative Technical Solutions, Inc. for BRAC Program Management Office West.
6. January 29, 2007 (received January 31, 2007), "Draft Workplan, Data Gap Sampling for Site 28, Alameda Point, Alameda, California", prepared by Innovative Technical Solutions Inc. for BRAC Program Management Office West.

Correspondence:

1. December 28, 2006 (received Jan. 6, 2007), "Review of Draft Feasibility Study Report, IR Site 2, West Beach Landfill and Wetlands, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. Thomas L. Macchiarella, BRAC Program Management Office West.
2. January 17, 2007, "Comments on the Draft Site Inspection Report for Transfer Parcel EDC-12, Alameda Point, Alameda, California", letter from Mr. Erich Simon, RWQCB, S. F. Bay Region, to Mr. Thomas L. Macchiarella, BRAC Program Management Office West.

ATTACHMENT B-2

LIST OF NAVY CERCLA PROGRAM DOCUMENTS
PLANNED FOR FEBRUARY/MARCH 2007

(One Page)

Alameda Point Restoration Advisory Board Meeting
February 1, 2007

Significant Navy CERCLA program documents planned for
February/March 2007

- **OU-2C Draft Final RI Workplan**
- **Site 28 Draft ROD**
- **Site 2 Draft Final FS**
- **Site 26 Preliminary Remedial Design**
- **Sites 20 & 24 Revised Draft RI Report**
- **Site 35 Draft Final RI/FS Report**
- **Site 1 Draft ROD**
- **OU-5/IR-02 Draft Final ROD**
- **Western Bayside & Breakwater Beach Site Inspection**
- **Site 26 Draft Final Design Sampling Report**
- **OU-1 Draft Final ROD**
- **EDC-12 Draft Final SI Report**
- **OU-5/IR-02 Draft Final Pre-Design Workplan**
- **PBC-1 Draft FOST**

ATTACHMENT B-3

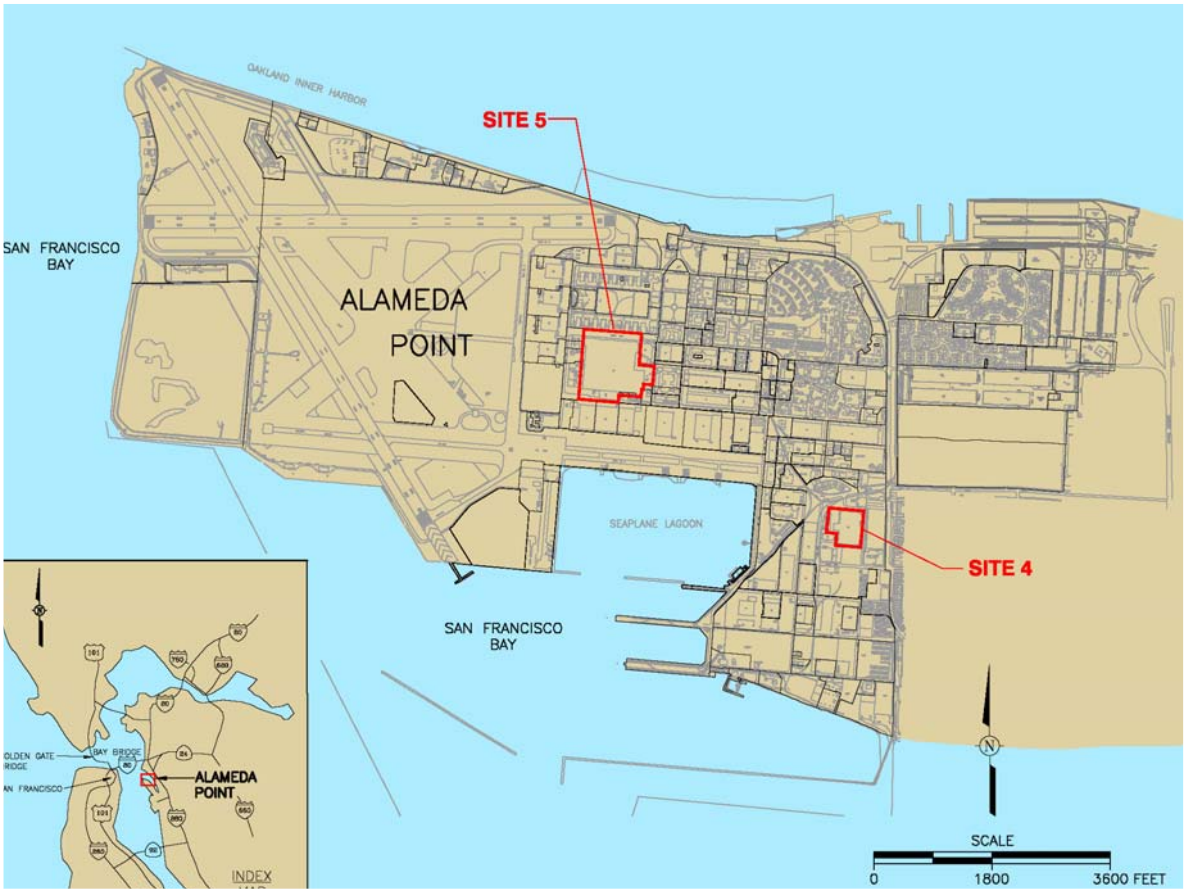
DNAPL SOURCE REMOVAL AT IR SITES 4 AND 5

(10 Pages)

BRAC
PMO WEST

PROJECT UPDATE
DNAPL Source Removal at IR Sites 4 and 5 Alameda Point, Alameda, California

February 1, 2007
Alameda RAB Meeting



Technology Introduction

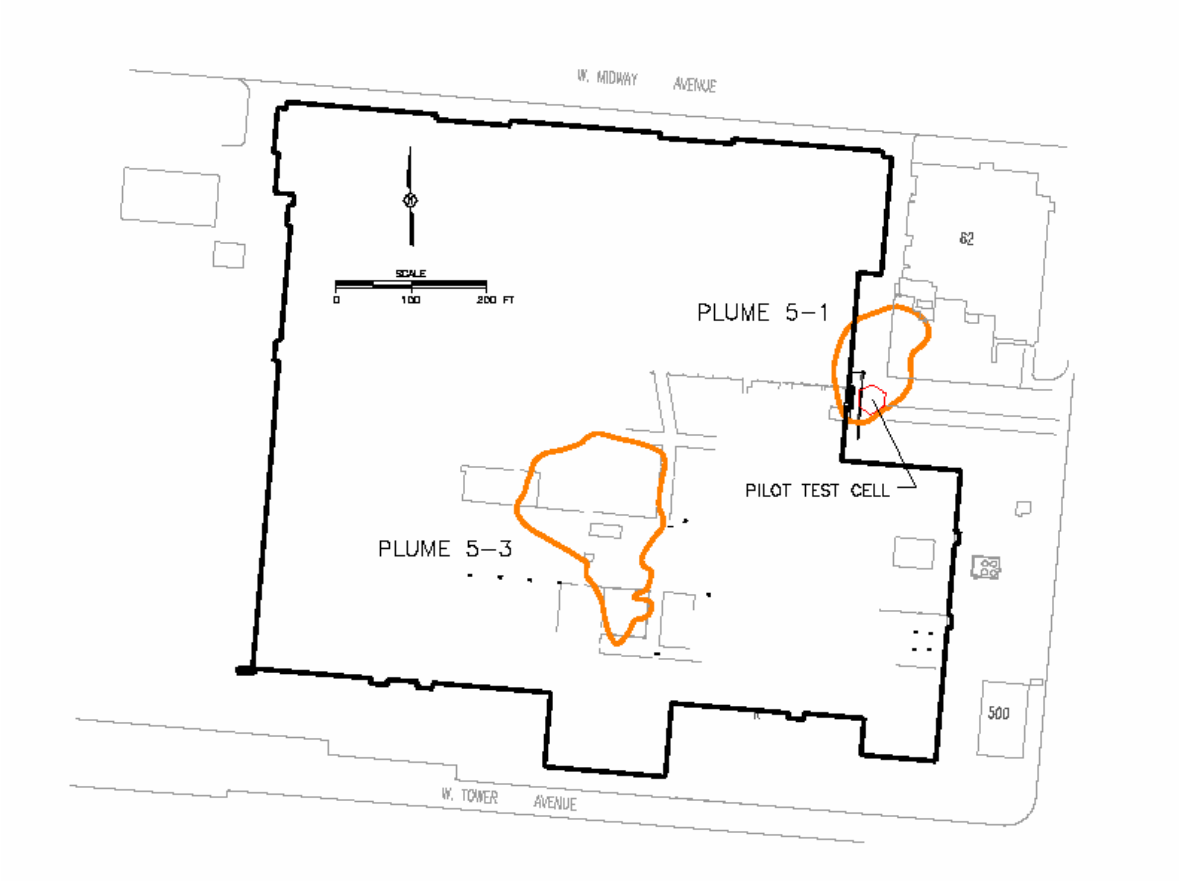
BRAC PMO WEST

- Power Dissipation in the subsurface through steel electrodes
- Resistivity of soil/water results in heating
- Heat volatilizes VOCs and generates steam
- Heated gases and vapors recovered by vacuum extraction
- Separation and collection with GAC

IR Site 5

BRAC PMO WEST

- IR Site 5, Alameda Point
  - EE/CA dated 1/5/2001
  - Action Memorandum dated 12/7/01
  - RAPP dated 2/8/2002, Addendum dated 12/17/2003
  - 18 acres, mainly Bldg 5
  - Two CVOC plumes greater than 10,000 ppb
  - 1,000 feet from San Francisco Bay
  - Artificial fill and Bay Sediment Unit layers
  - Groundwater between 4 and 7 ft bgs, tidal influence up to 2”
  - Concrete surface, 6-8”
- Plume 5-1
  - 15,000 ft^2, 100 ft by 150 ft, to 20 ft below ground surface (bgs)
  - SPH Pilot Test completed in 2003
  - DNAPL removal successfully completed in 2004
- Plume 5-3
  - 33,000 ft^2, 170 ft by 260 ft, to 20 ft bgs
  - Current area of SPH operations for DNAPL removal



SPH Operations at Plume 5-3

BRAC PMO WEST

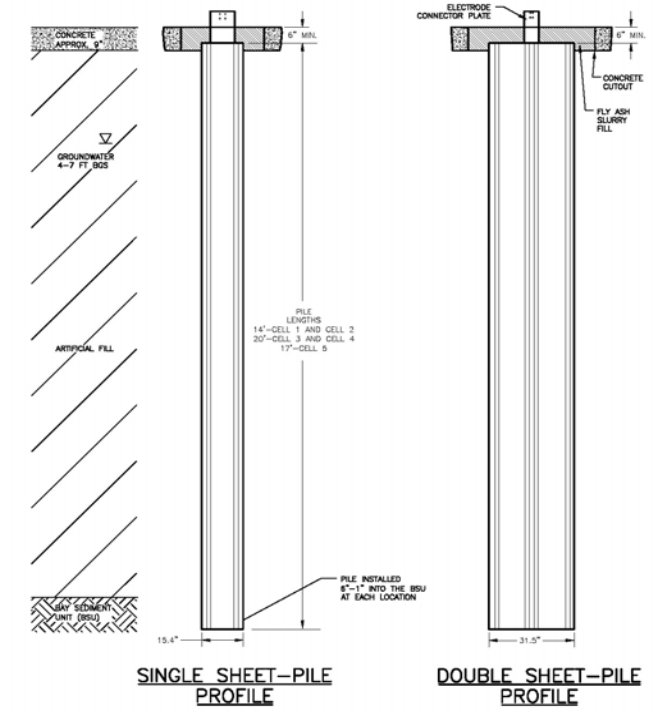
- DNAPL Removal in Three Phases
- Approximately 13,000 square feet each phase
- Depths to 20 feet
- Target Temperature: 90ºC
- 3 – 4 months operation per phase
- 750 cubic feet per minute (cfm) vapor recovery
- 35 electrodes per phase
- Approximately 1,500,000 kW-hrs per phase

SPH Layout at Plume 5-3

BRAC PMO WEST

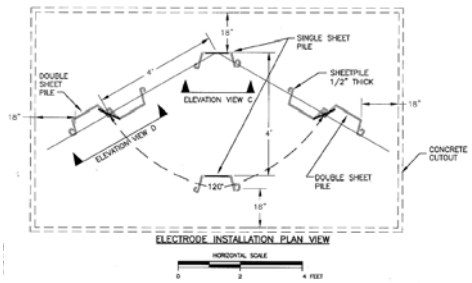
Sheet-pile Electrodes

BRAC PMO WEST

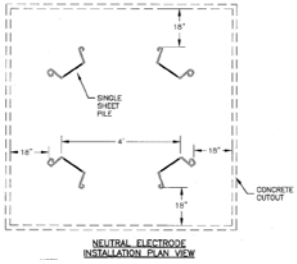


SINGLE SHEET–PILE PROFILE

DOUBLE SHEET–PILE PROFILE



A SINGLE "ELECTRODE" CONSISTS OF FOUR SHEET-PILES WIRED TOGETHER IN PARALLEL



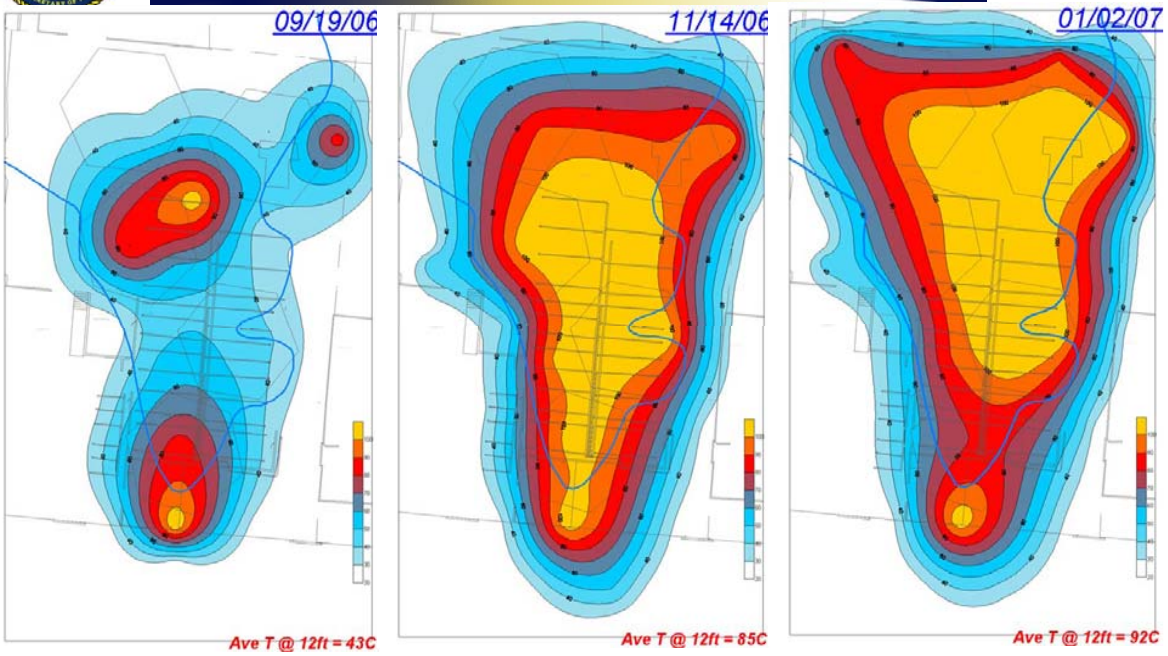
Phase I Operations

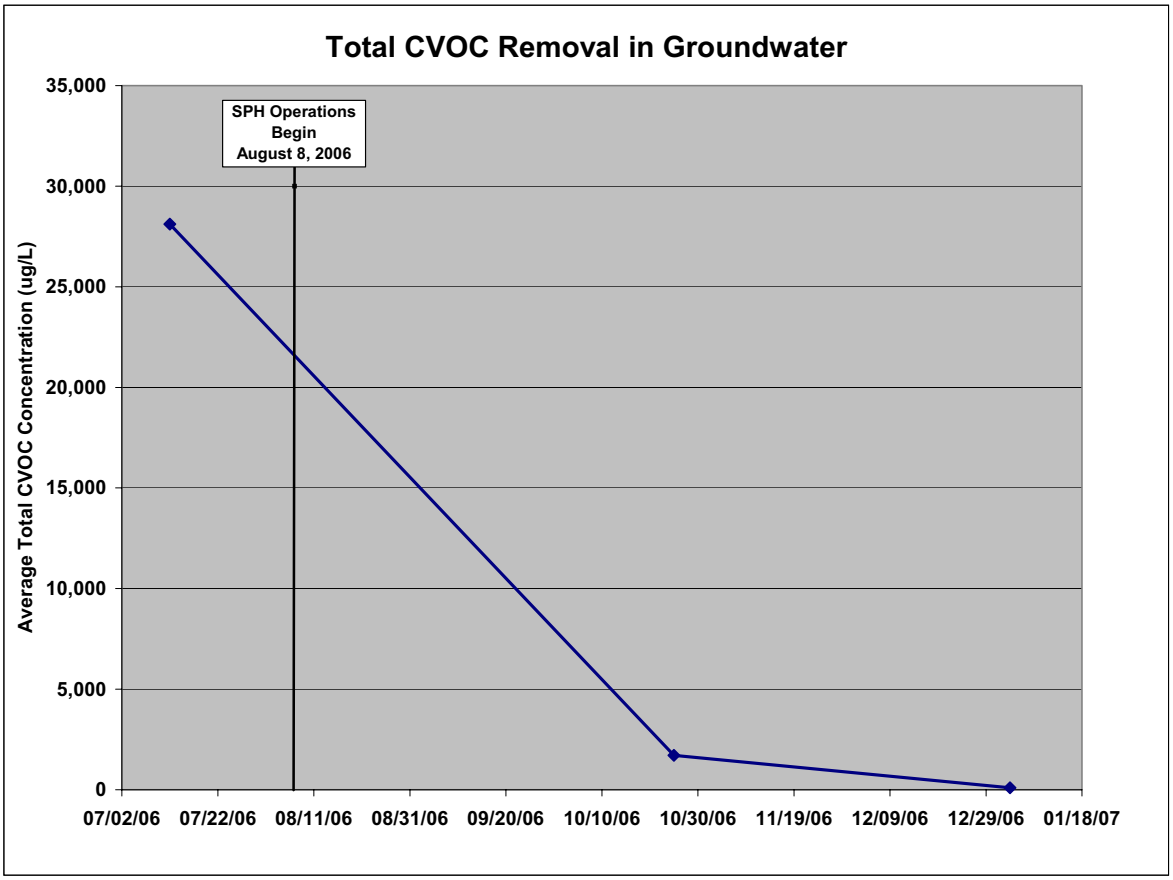
BRAC PMO WEST

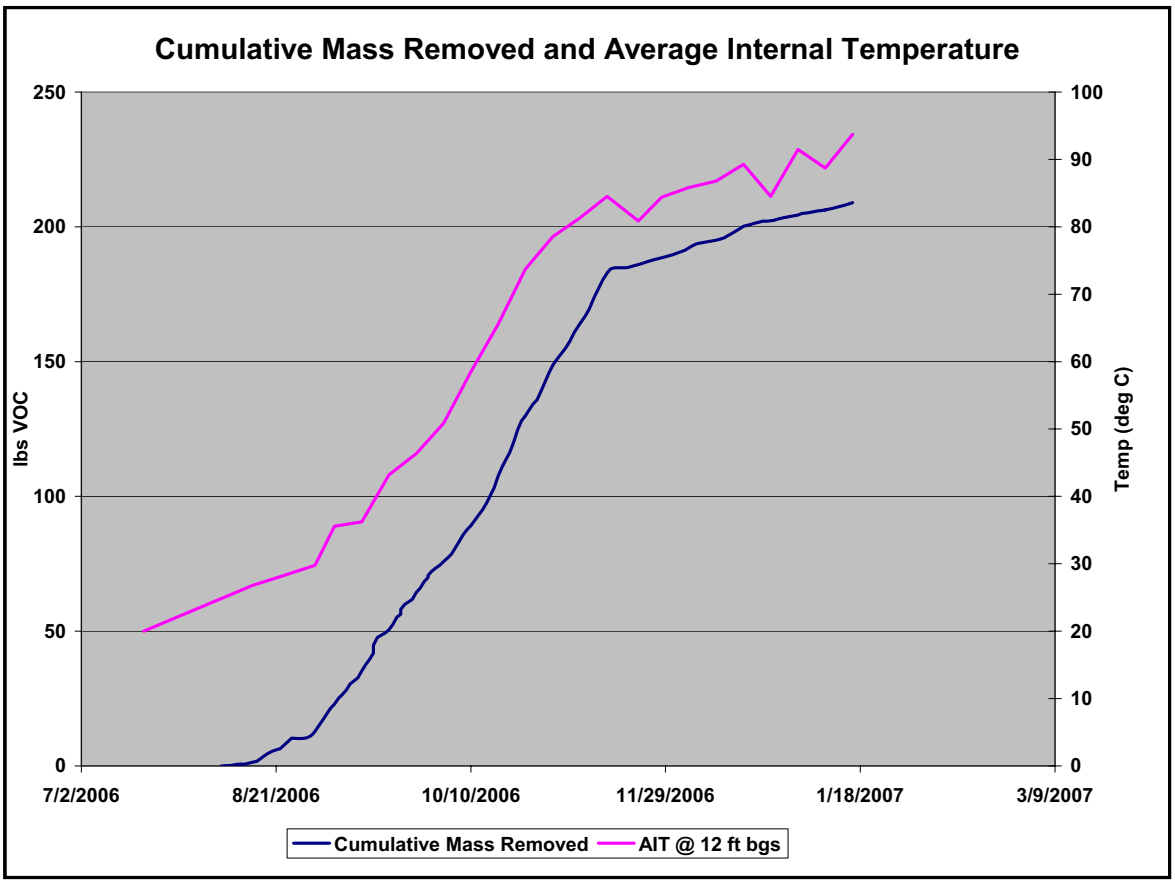
- Began heating 8/2006 to be completed 2/2007
- Operations extended to reach asymptotic mass removal
- Summary to date
  - 2,600,000 kWhr total power applied
  - 80 – 200 Volts, 200 – 500 A per Electrode
  - Total VOC removal greater than 200 lbs
  - >99% reduction in GW concentrations
  - 90,000 gallons of condensate treated and discharged
  - Initial Site Temperature of 20ºC
  - Current average internal temperature of 98ºC

Temperature Profiles @ 12 ft bgs

BRAC PMO WEST



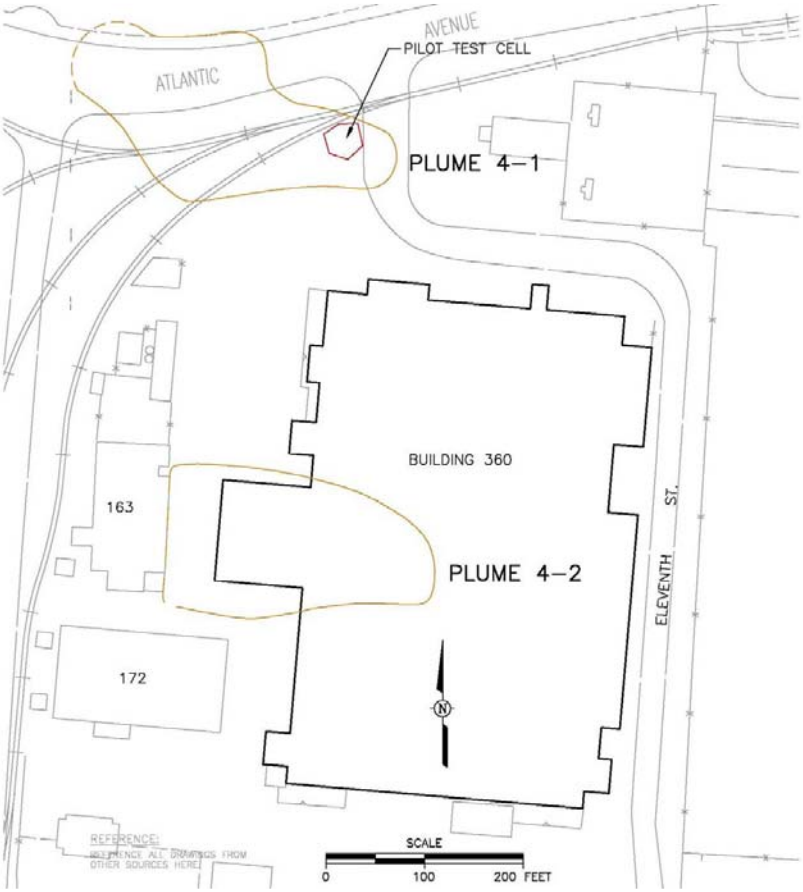

Total CVOC Removal in Groundwater
SPH Operations Begin August 8, 2006
Average Total CVOC Concentration (ug/L)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
07/02/06
07/22/06
08/11/06
08/31/06
09/20/06
10/10/06
10/30/06
11/19/06
12/09/06
12/29/06
01/18/07


Cumulative Mass Removed and Average Internal Temperature
lbs VOC
Temp (deg C)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
7/2/2006
8/21/2006
10/10/2006
11/29/2006
1/18/2007
3/9/2007
Cumulative Mass Removed
AIT @ 12 ft bgs

IR Site 4

BRAC PMO WEST

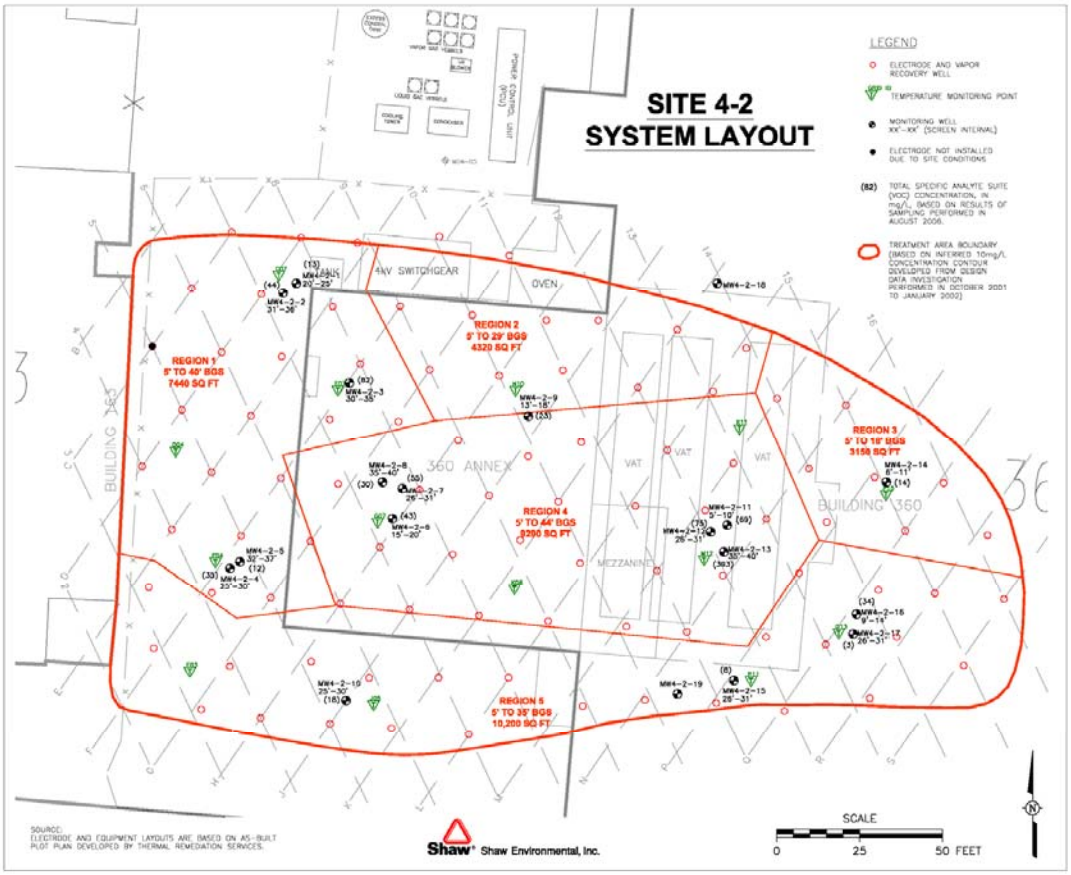
- IR Site 4, Alameda Point
  - EE/CA dated 1/5/2001
  - Action Memorandum dated 12/7/2001
  - RAPP dated 2/8/2002, Addendum dated 12/17/03
  - 5 acres, at Eastern Perimeter, includes Bldg 360
  - Two CVOC plumes greater than 10,000 ppb
  - Artificial Fill and Merritt San Formation layers, no intervening BSU
  - Groundwater between 4 and 8 ft bgs, negligible tidal influence
  - Surface
    - Outside - Weathered Asphalt
    - Inside Bldg 360 – Raised Concrete Floor over Soil
- Plume 4-1
  - 38,000 ft^2, 170 ft by 340 ft, to 35 ft bgs
  - Pilot test completed in 2003
- Plume 4-2
  - 35,000 ft^2, 150 ft by 270 ft, to 45 ft bgs
  - Current area of ERH operations for DNAPL removal

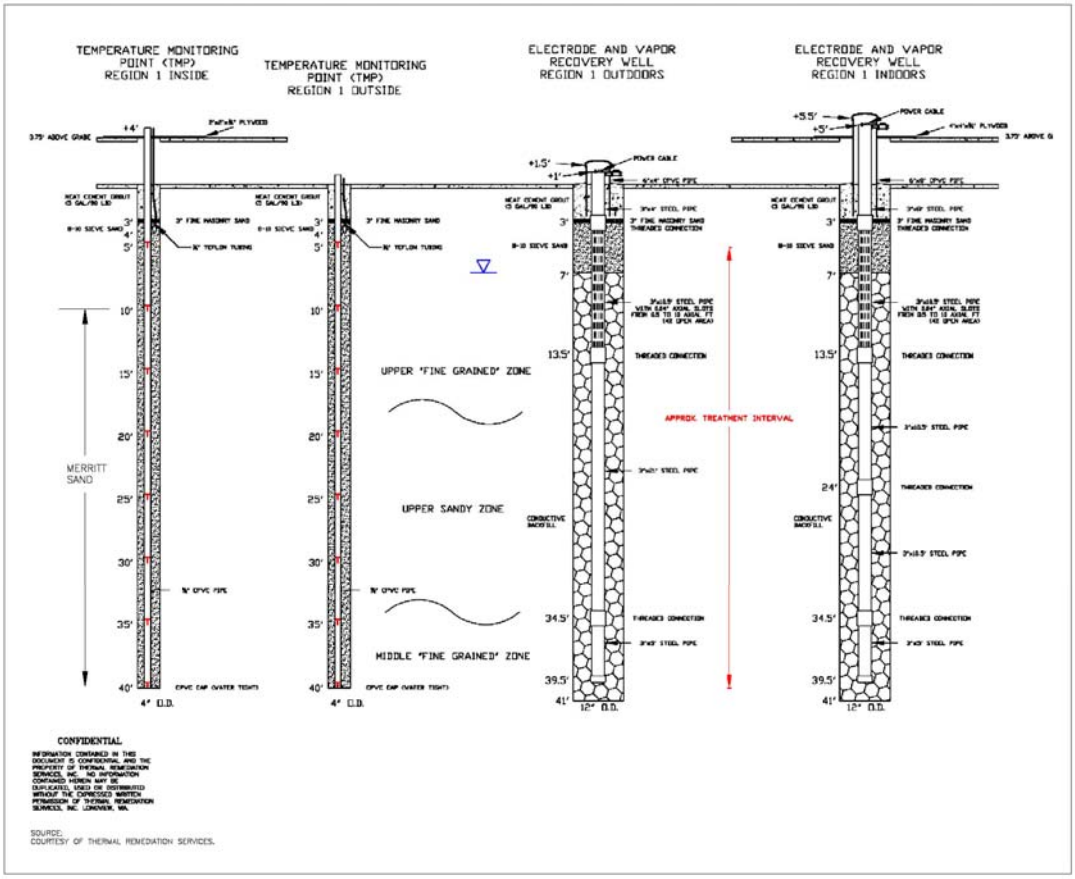


Plume 4-2 System Layout

BRAC PMO WEST

- Performed through subcontract with TRS
- Treatment of entire plume in one deployment
  - Divided area into 5 treatment regions based on treatment depths (20 to 45 feet)
  - 91 Electrodes spaced 20 feet apart, installed to treatment depths
  - Vapor Extraction Wells co-located with electrodes
  - 14 Temperature monitoring points with thermocouples installed every 5 feet to bottom
  - 17 Groundwater monitoring wells for system performance monitoring
- A 500 cfm vapor containment, conditioning, and treatment
- A 2,000 kW power control unit

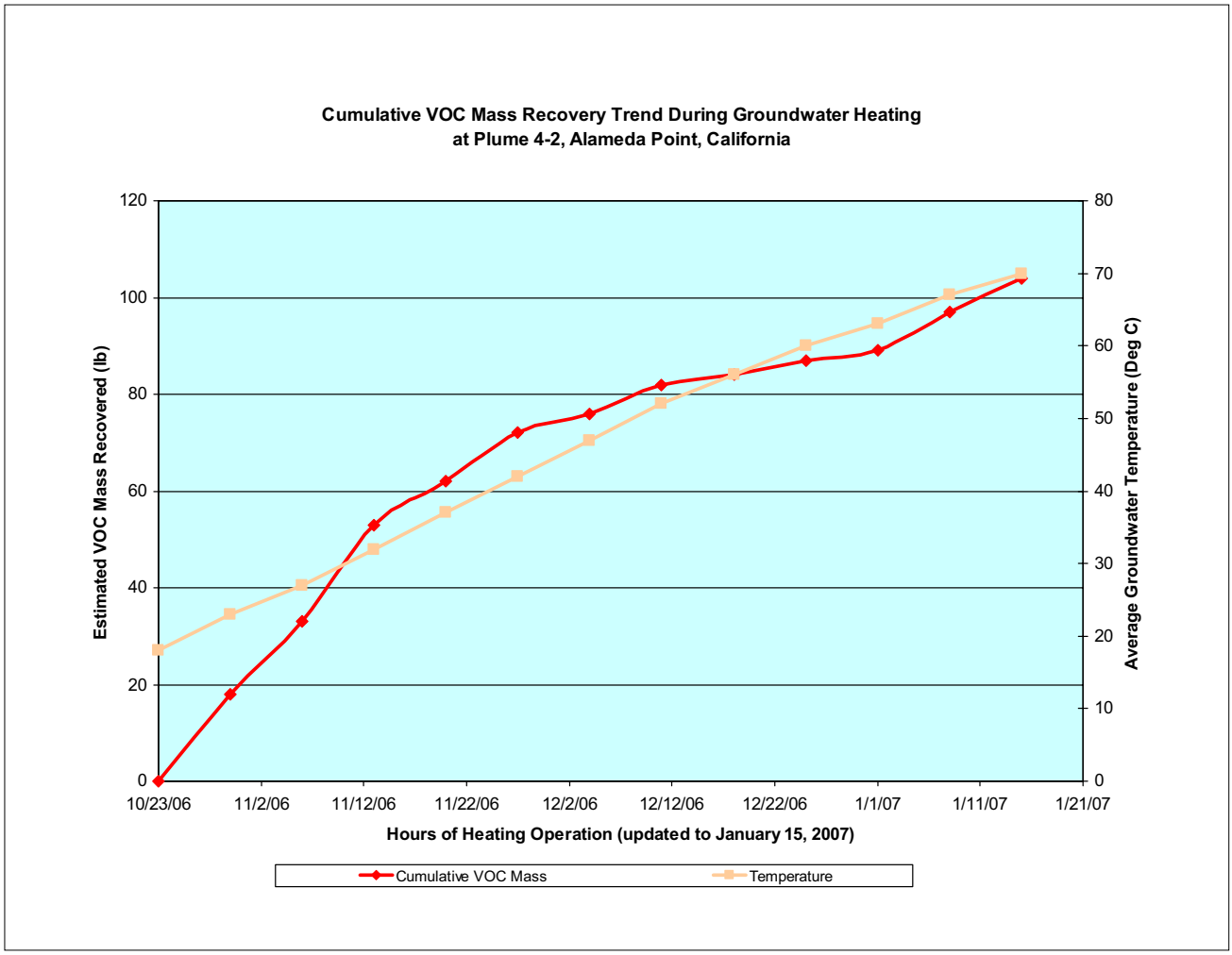




Plume 4-2 ERH System Performance

BRAC PMO WEST

- System operation began late October 2006 with all 91 electrodes energized
- Average groundwater temperature rose from 18°C to 67°C, with maximum temperature reaching 120°C (boiling) at ~45 feet below ground surface within former plating shop
- Over 100 pounds of VOC captured by the vapor recovery system to date
- Over 50% reduction in total VOC concentration in groundwater observed at the location where the highest water temperature was recorded


Cumulative VOC Mass Recovery Trend During Groundwater Heating
at Plume 4-2, Alameda Point, California
Estimated VOC Mass Recovered (lb)
Average Groundwater Temperature (Deg C)
120
100
80
60
40
20
0
80
70
60
50
40
30
20
10
0
10/23/06
11/2/06
11/12/06
11/22/06
12/2/06
12/12/06
12/22/06
1/1/07
1/11/07
1/21/07
Hours of Heating Operation (updated to January 15, 2007)
Cumulative VOC Mass
Temperature

ATTACHMENT B-4

SITE INSPECTION REPORT FOR TRANSFER PARCEL EDC-17

(13 Pages)

BRAC PMO

Site Inspection Report
Transfer Parcel
EDC-17
Alameda Point

Restoration Advisory Board Meeting
February 1, 2007

Richard Pribyl, Navy Project Manager
Karen Barnes, Kleinfelder (Bechtel team)

BRAC PMO

Topics

- SI objective and scope
- Site description
- SI review process
- Screening criteria
- Data evaluation findings
- Human-health risk evaluation
- Ecological evaluation
- Conclusions/Recommendations
- Schedule

BRAC PMO

SI Objective and Scope

Objective:

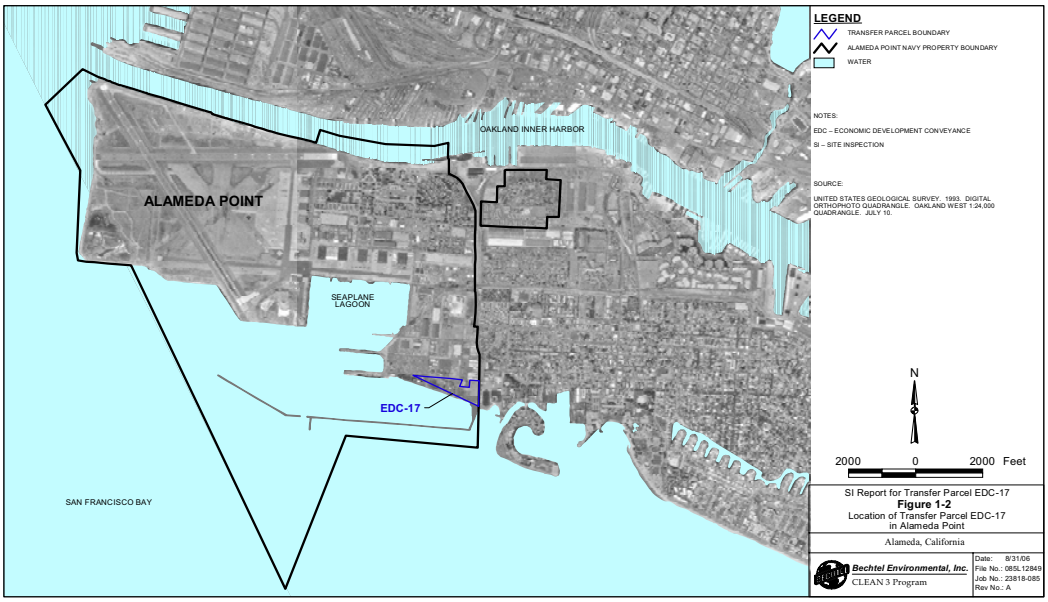
Evaluate current environmental conditions at Transfer Parcel EDC-17 to determine suitability for transfer.

Scope:

Evaluate 5 EBS parcels within Transfer Parcel EDC-17:
EBS Parcels 163, 165, 166, 167, and 169

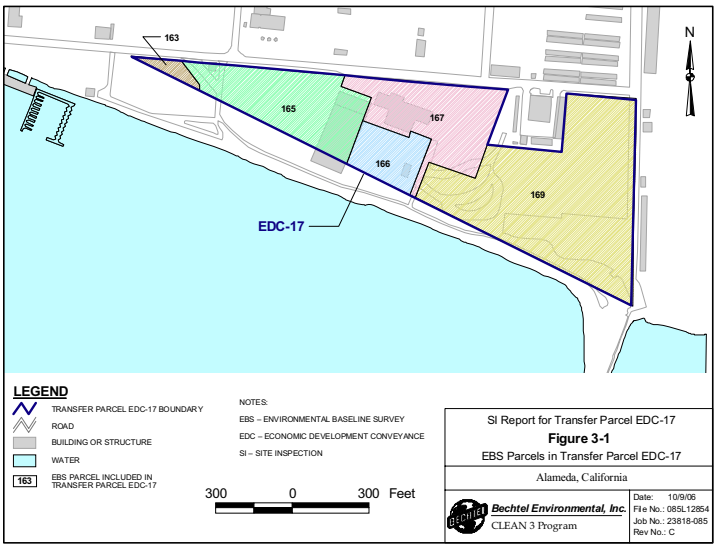
BRAC PMO

Site Location



BRAC PMO

EBS Parcels in Transfer Parcel EDC-17



BRAC PMO

Site Description and Features

- 17 acres: nearly 100 percent open space
- Fill: 0 to 9 feet bgs
- Depth to groundwater: 4 to 8.5 feet bgs
- Habitats: barren and urban
- Adjacent to IR Site 16 and CAAs 9A and 9B

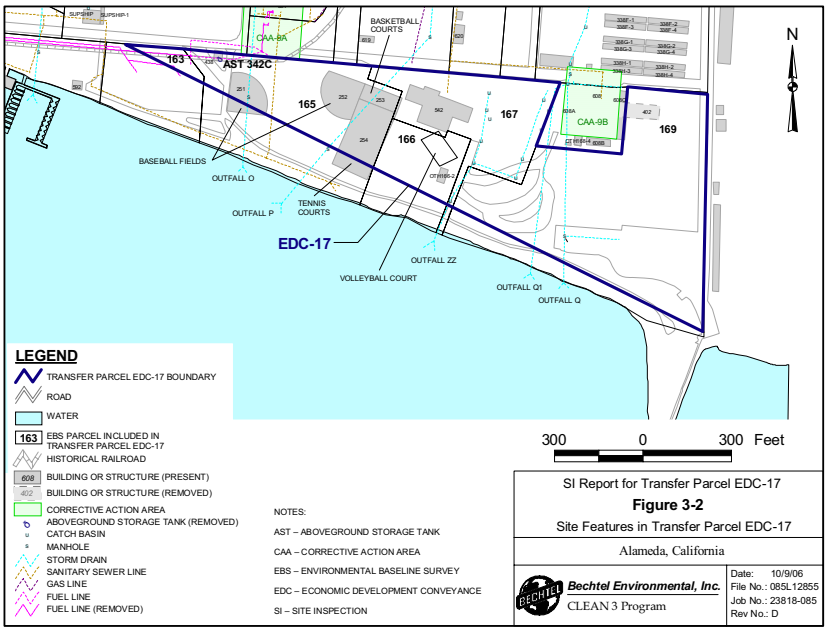
BRAC PMO

Site Use/History

- Recreational
  - Fields, courts, picnic areas, RV park (EBS Parcels 165, 166, 167, and 169)
  - Bowling alley (EBS Parcel 167)
- Industrial
  - Aircraft parking, maintenance, and washdown (all EBS parcels)
  - Tank-truck loading/unloading (NW corner of EBS Parcel 165)
  - Maintenance shop/sandblast shelter (former Building 402, EBS Parcel 169)
  - Drum, chemical, and material storage (north-central portion of EBS Parcel 169)

BRAC PMO

Site Features



BRAC PMO

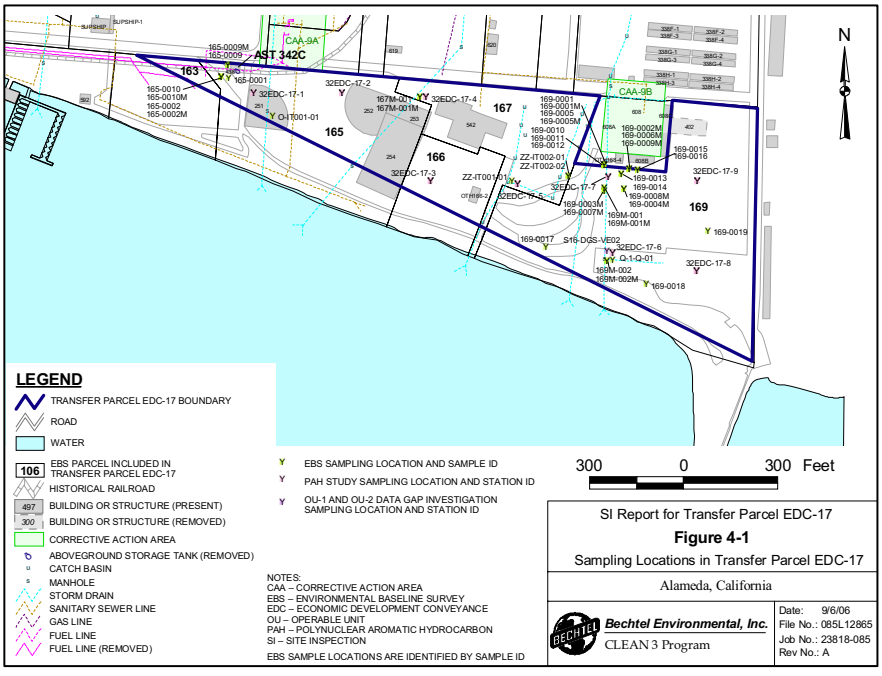
SI Review Process

SI Steps:

1. Review historic documents
2. Compare existing data with screening criteria
3. Calculate screening level cancer risk and HI
4. Conduct ecological evaluation
5. Provide recommendations

BRAC PMO

Sampling Locations in Transfer Parcel EDC-17



BRAC PMO

Screening Criteria

- Soil
  - ESLs: TPH
  - Screening criterion (620 µg/kg) for B(a)P equivalent concentrations
  - Residential and industrial PRGs (excluding TPH and B(a)P equivalent concentrations)
  - Background levels: secondary screening for metals
- Groundwater
  - ESLs for TPH
  - MCLs (excluding TPH)
  - Background levels: secondary screening for metals

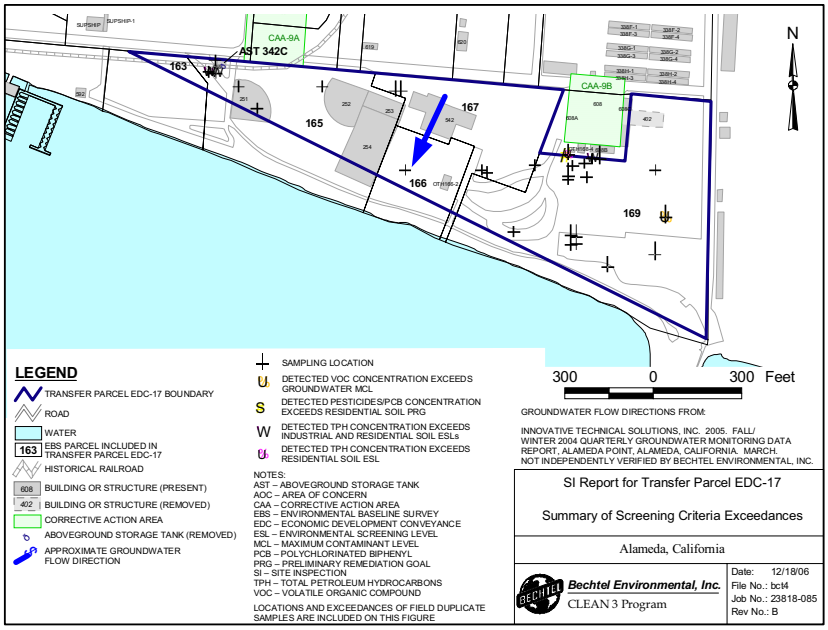
BRAC PMO

Data Evaluation Findings

- Soil
  - All VOCs, SVOCs, PAHs, metals < screening criteria
  - TPH > screening criteria in 4 of 22 samples (EBS Parcels 165 and 169)
  - TPH data gap at EBS Parcel 165
  - Chlordane > screening criteria in 1 of 4 samples (EBS Parcel 169)
- Groundwater
  - All metals and TPH < screening criteria
  - One sample with MTBE > screening criteria (EBS Parcel 169)

Data Evaluation Findings

BRAC PMO



BRAC PMO

Human-Health Risk Evaluation

Human-health risk evaluation:

- Calculated risk using maximum concentrations

Target Risk Levels:

- Cancer risk
  - 10^{-5} for PAHs in soil
  - 10^{-6} for incremental soil (non-PAH) and incremental groundwater
- Non-cancer risk
  - Hazard index of 1
- Lead
  - Soil: California-modified PRG
  - Groundwater: Action Level

BRAC PMO

Human-Health Risk Evaluation Findings

- EBS Parcels 165, 166, and 167 risk < target levels
- EBS Parcel 169: risk > target levels
  - Incremental non-PAH soil cancer risk: 2×10^{-6}
    - Risk driver: chlordane (individual risk of 1.3×10^{-6} based on one sample from 1994)
  - Incremental groundwater cancer risk: 1×10^{-5}
    - Risk drivers: MTBE and TCE
    - Single sample collected in 1994
- HI below target levels at EBS Parcels 165, 166, 167, and 169

BRAC PMO

Ecological Evaluation

- Habitats: barren and urban
  - No sensitive habitats
- Exposure pathways:
  - potentially complete exposure pathways for urban habitat
  - no complete exposure pathways for barren habitat
- No special-status species

Conclusions/ Recommendations EDC-17

BRAC PMO

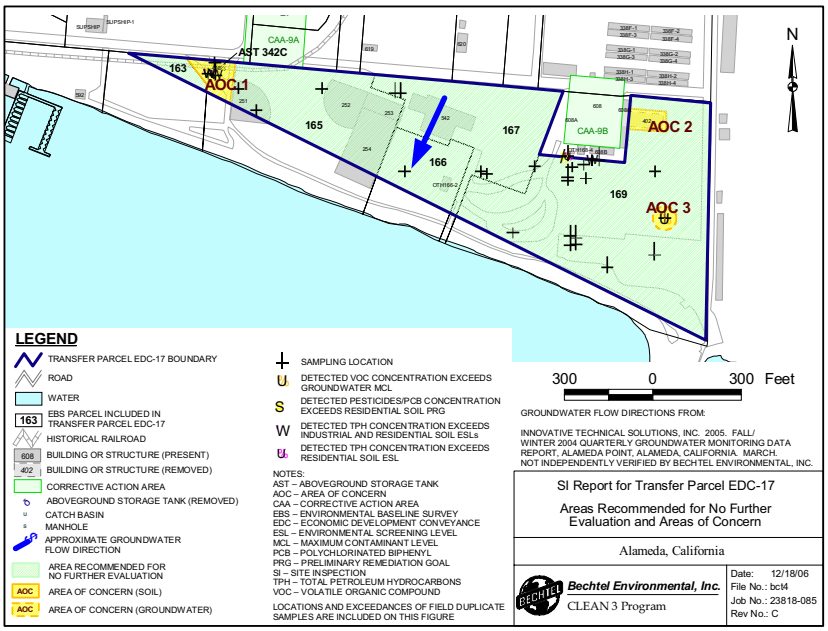
Areas recommended for further evaluation

- AOC 1: western portion of EBS Parcel 165
  - TPH in surface soil
- AOC 2: northern portion of EBS Parcel 169
  - Lack of samples at former maintenance shop and sandblast shelter
- AOC 3: Eastern portion of EBS Parcel 169
  - VOCs in groundwater

All remaining areas: no further evaluation recommended

BRAC PMO

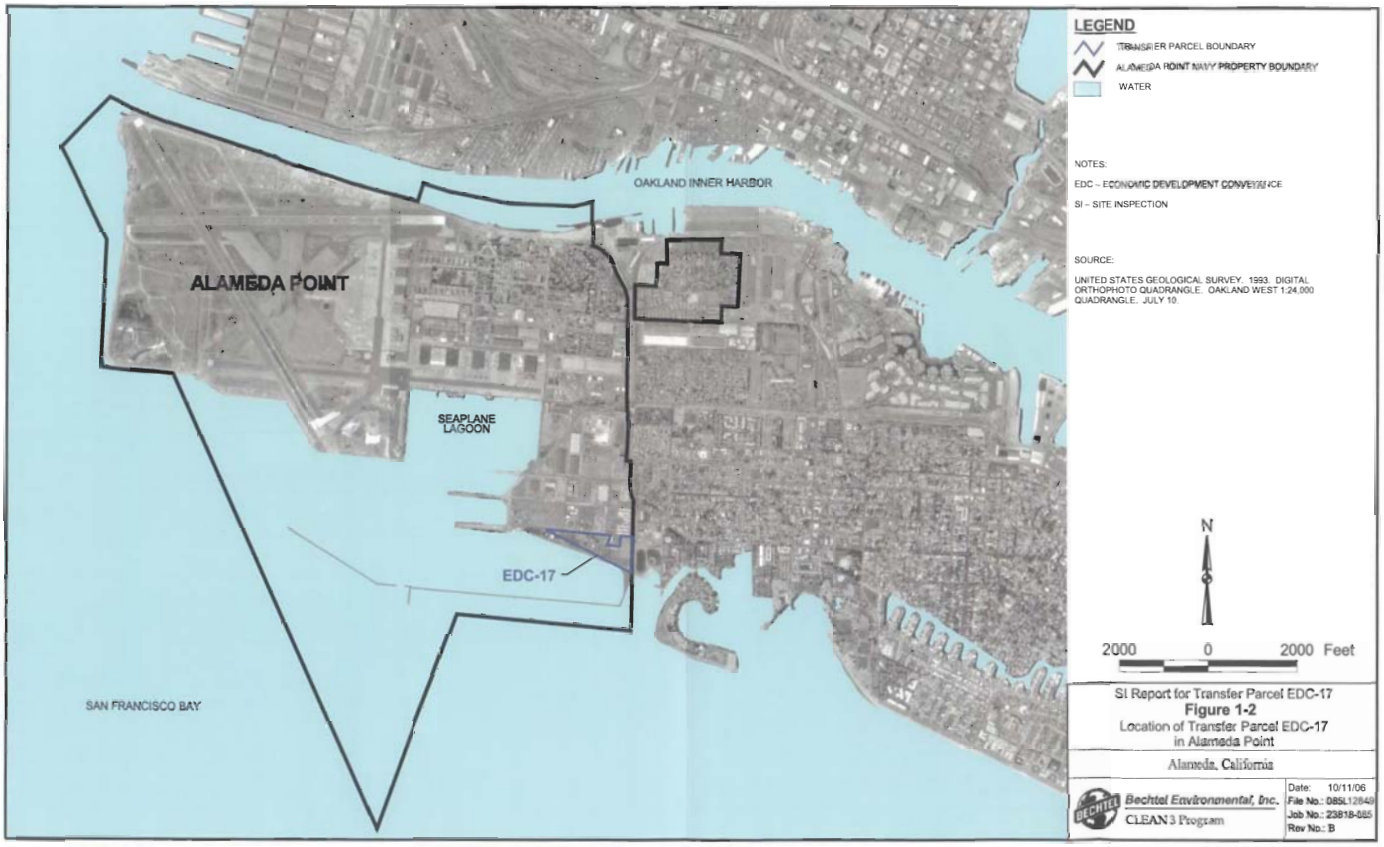
Conclusions/Recommendations EDC-17

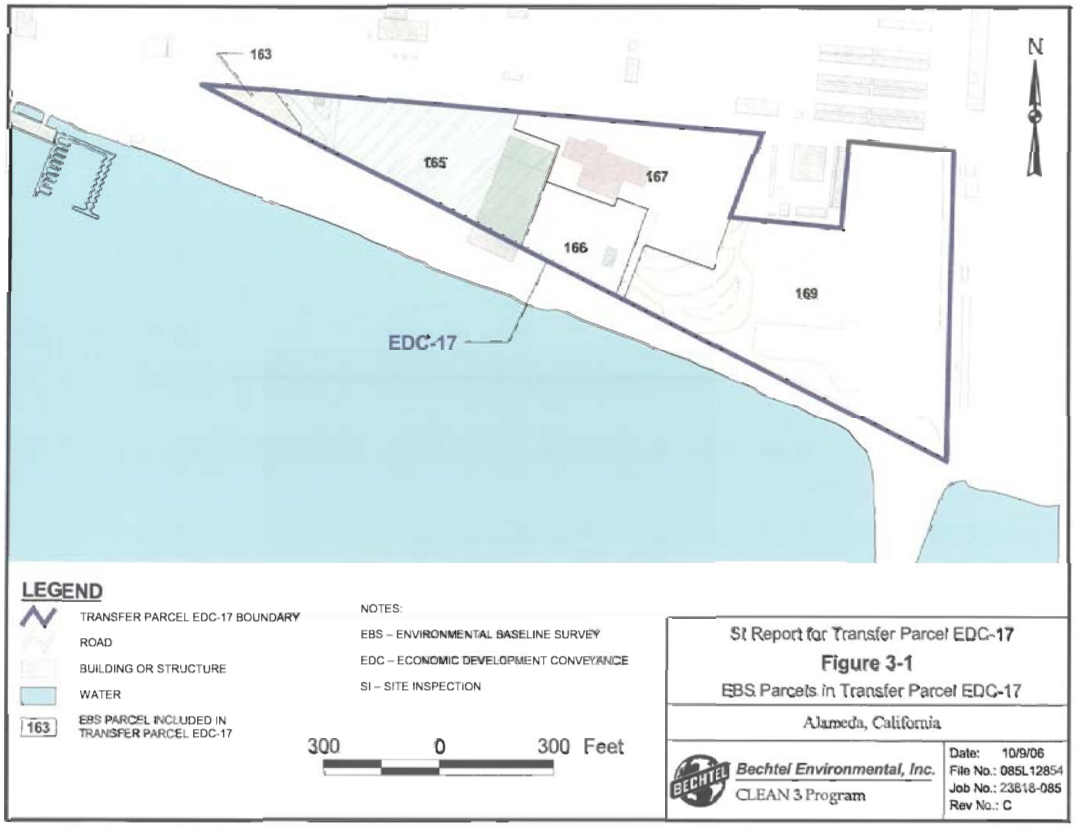


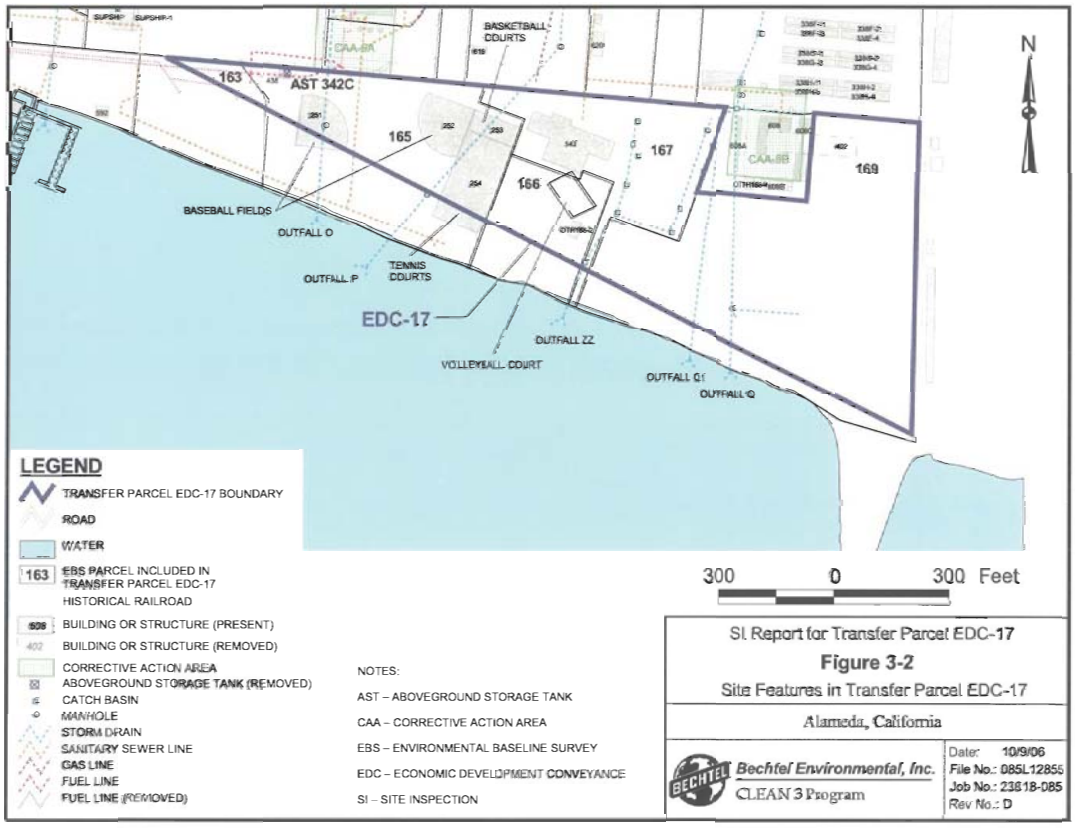
Schedule
EDC-17

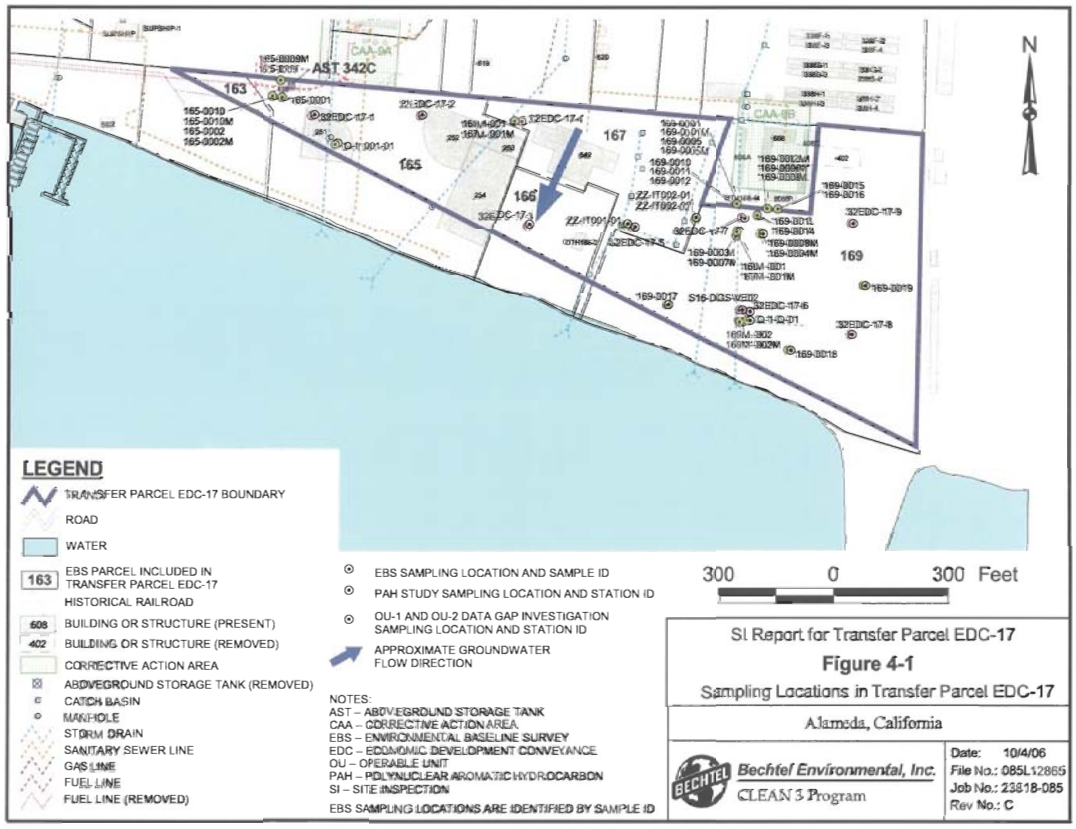
BRAC PMO

- December 15, 2006 – Draft report to Agencies ✓
- December 19, 2006 – Presentation to BCT ✓
- February 1, 2007 – Presentation to RAB ✓
- February 15, 2007 –Comments due
- April 16, 2007 – Draft Final Report
- May 16, 2007 – Final SI Report




163
165
167
166
169
EDC-17
N
LEGEND
TRANSFER PARCEL EDC-17 BOUNDARY
ROAD
BUILDING OR STRUCTURE
WATER
163 EBS PARCEL INCLUDED IN TRANSFER PARCEL EDC-17
NOTES:
EBS – ENVIRONMENTAL BASELINE SURVEY
EDC – ECONOMIC DEVELOPMENT CONVEYANCE
SI – SITE INSPECTION
300 0 300 Feet
SI Report for Transfer Parcel EDC-17
Figure 3-1
EBS Parcels in Transfer Parcel EDC-17
Alameda, California
Bechtel Environmental, Inc.
CLEAN 3 Program
Date: 10/9/06
File No.: 085L12854
Job No.: 23818-085
Rev No.: C


BASKETBALL COURTS
CAA-BK
163
AST 342C
165
167
166
169
CAA-BB
BASEBALL FIELDS
OUTFALL O
OUTFALL P
TENNIS COURTS
EDC-17
OUTFALL ZZ
VOLLEYBALL COURT
OUTFALL Q
N
300 0 300 Feet
LEGEND
TRANSFER PARCEL EDC-17 BOUNDARY
ROAD
WATER
163 EBS PARCEL INCLUDED IN TRANSFER PARCEL EDC-17
HISTORICAL RAILROAD
BUILDING OR STRUCTURE (PRESENT)
BUILDING OR STRUCTURE (REMOVED)
CORRECTIVE ACTION AREA
ABOVEGROUND STORAGE TANK (REMOVED)
CATCH BASIN
MANHOLE
STORM DRAIN
SANITARY SEWER LINE
GAS LINE
FUEL LINE
FUEL LINE (REMOVED)
NOTES:
AST – ABOVEGROUND STORAGE TANK
CAA – CORRECTIVE ACTION AREA
EBS – ENVIRONMENTAL BASELINE SURVEY
EDC – ECONOMIC DEVELOPMENT CONVEYANCE
SI – SITE INSPECTION
SI Report for Transfer Parcel EDC-17
Figure 3-2
Site Features in Transfer Parcel EDC-17
Alameda, California
Bechtel Environmental, Inc.
CLEAN 3 Program
Date: 10/9/06
File No.: 085L12855
Job No.: 23818-085
Rev No.: D



SI Report for Transfer Parcel EDC-17

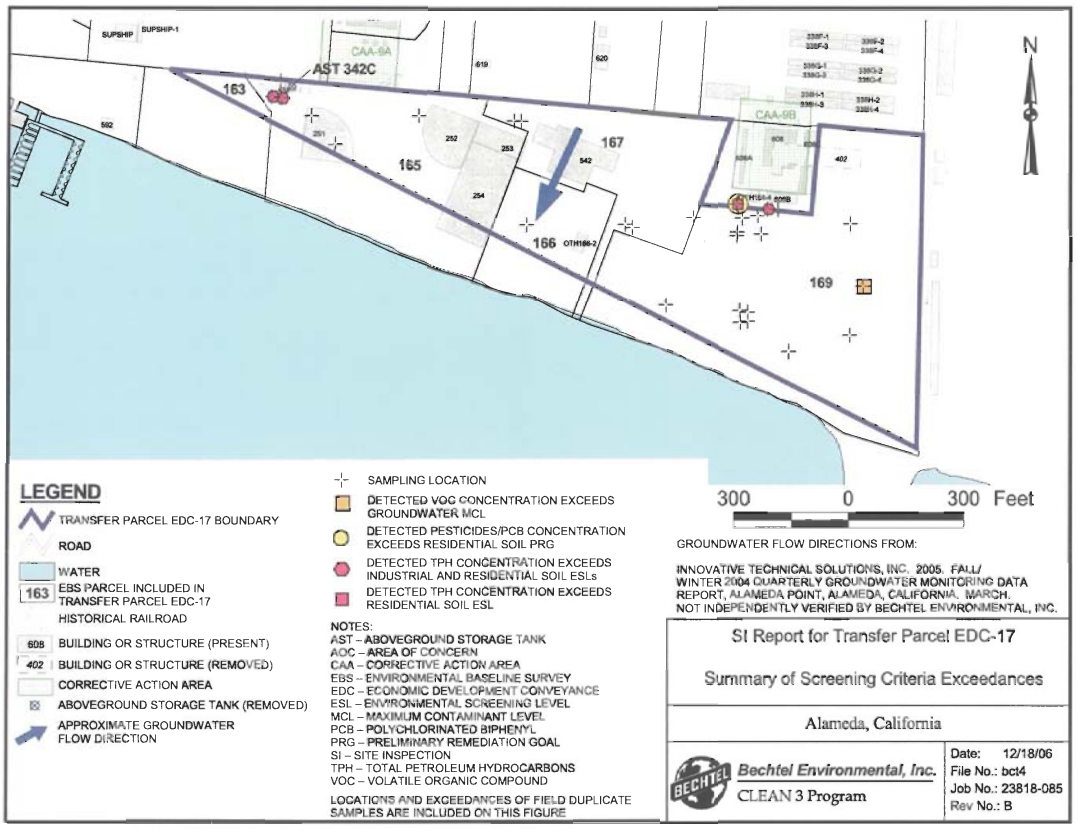
Figure 4-1

Sampling Locations in Transfer Parcel EDC-17

Alameda, California

Bechtel Environmental, Inc.
CLEAN 3 Program

Date: 10/4/06
File No.: 085L12865
Job No.: 23818-085
Rev No.: C



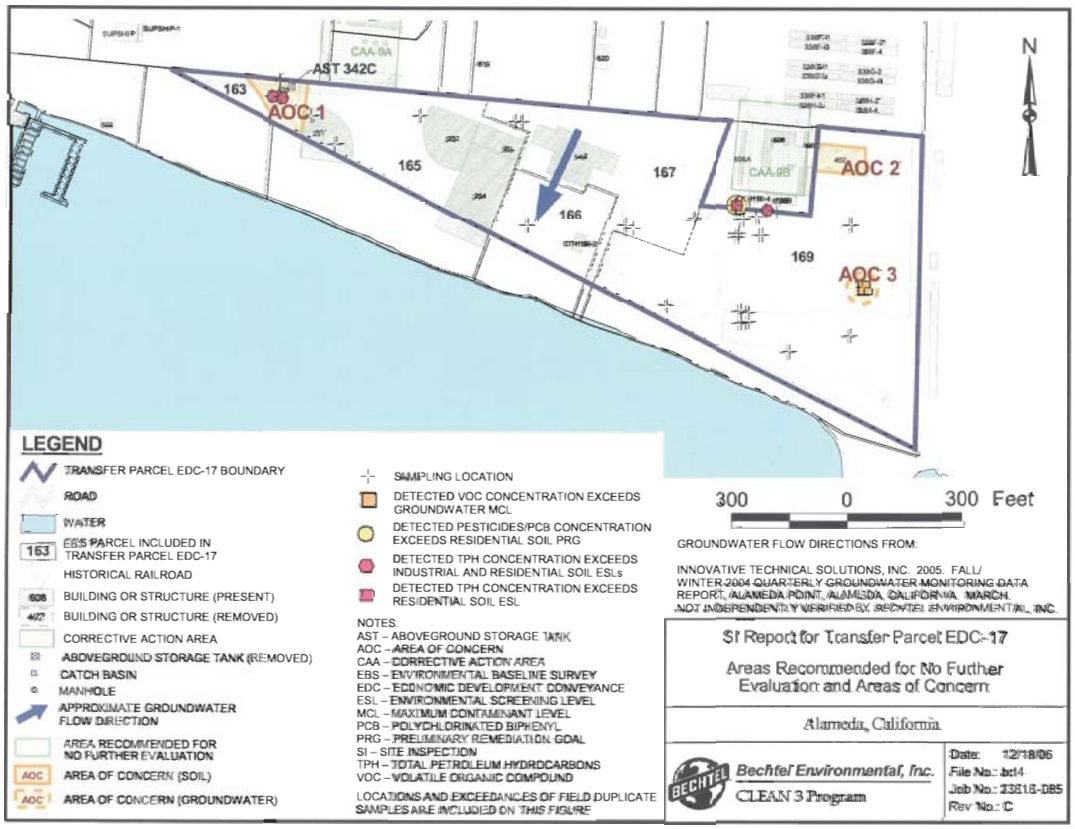
SI Report for Transfer Parcel EDC-17

Summary of Screening Criteria Exceedances

Alameda, California

Bechtel Environmental, Inc.
CLEAN 3 Program

Date: 12/18/06
File No.: bct4
Job No.: 23818-085
Rev No.: B


AST 342C
CAA-9A
CAA-9B
AOC-1
AOC 2
AOC 3
163
165
166
167
169
N
300 0 300 Feet
LEGEND
TRANSFER PARCEL EDC-17 BOUNDARY
ROAD
WATER
163 EBS PARCEL INCLUDED IN TRANSFER PARCEL EDC-17
HISTORICAL RAILROAD
608 BUILDING OR STRUCTURE (PRESENT)
402 BUILDING OR STRUCTURE (REMOVED)
CORRECTIVE ACTION AREA
ABOVEGROUND STORAGE TANK (REMOVED)
CATCH BASIN
MANHOLE
APPROXIMATE GROUNDWATER FLOW DIRECTION
AREA RECOMMENDED FOR NO FURTHER EVALUATION
AOC AREA OF CONCERN (SOIL)
AOC AREA OF CONCERN (GROUNDWATER)
SAMPLING LOCATION
DETECTED VOC CONCENTRATION EXCEEDS GROUNDWATER MCL
DETECTED PESTICIDES/PCB CONCENTRATION EXCEEDS RESIDENTIAL SOIL PRG
DETECTED TPH CONCENTRATION EXCEEDS INDUSTRIAL AND RESIDENTIAL SOIL ESLs
DETECTED TPH CONCENTRATION EXCEEDS RESIDENTIAL SOIL ESL
NOTES:
AST – ABOVEGROUND STORAGE TANK
AOC – AREA OF CONCERN
CAA – CORRECTIVE ACTION AREA
EBS – ENVIRONMENTAL BASELINE SURVEY
EDC – ECONOMIC DEVELOPMENT CONVEYANCE
ESL – ENVIRONMENTAL SCREENING LEVEL
MCL – MAXIMUM CONTAMINANT LEVEL
PCB – POLYCHLORINATED BIPHENYL
PRG – PRELIMINARY REMEDIATION GOAL
SI – SITE INSPECTION
TPH – TOTAL PETROLEUM HYDROCARBONS
VOC – VOLATILE ORGANIC COMPOUND
LOCATIONS AND EXCEEDANCES OF FIELD DUPLICATE SAMPLES ARE INCLUDED ON THIS FIGURE
GROUNDWATER FLOW DIRECTIONS FROM:
INNOVATIVE TECHNICAL SOLUTIONS, INC. 2005. FALL/WINTER 2004 QUARTERLY GROUNDWATER MONITORING DATA REPORT, ALAMEDA POINT, ALAMEDA, CALIFORNIA. MARCH.
NOT INDEPENDENTLY VERIFIED BY BECHTEL ENVIRONMENTAL, INC.
SI Report for Transfer Parcel EDC-17
Areas Recommended for No Further Evaluation and Areas of Concern
Alameda, California
Bechtel Environmental, Inc.
CLEAN 3 Program
Date: 12/18/06
File No.: bc14
Job No.: 23818-085
Rev No.: C

ATTACHMENT B-5

WORK PLAN FOR DATA GAP SAMPLING AT OU-1, OU-2A, AND OU-2B

(18 Pages)

Alameda Point

BRAC PMO WEST

Work Plan for Data Gap Sampling at Operable Units 1, 2A & 2B Alameda Point

RAB Presentation – Feb. 1, 2007

Steven Peck
Remedial Project Manager – BRAC PMO West

Gordon Jamieson
National Geosciences Discipline Leader – Tetra Tech EC, Inc.

Alameda Point

BRAC PMO WEST

Agenda

- Purpose and Objectives of Work Plan
- Background
- OU-1,2A and 2B Site Descriptions
- Work Plan Approach
- Proposed Sampling Program

Purpose and Objectives of Work Plan Introduction

BRAC PMO WEST

- Work plan developed to address data gaps identified in the Remedial Investigations and the Feasibility Studies previously performed at OU-1, OU-2A and OU-2B

Purpose and Objectives of Work Plan

BRAC PMO WEST

- Purpose
  - Refine nature & extent of soils contamination
  - Determine aquifer parameters
  - Refine extent of groundwater plumes
- Objectives
  - Fill All Data Gaps for Site Characterization
  - Collect Sufficient Data for Design

Background

BRAC PMO WEST

- Final OU-1 RI Report – November 2004
- Final OU-2A RI Report – April 2005
- Final OU-2B RI Report – August 2005

- Final OU-1 FS Report – September 2005
- Draft OU-2A FS Report – September 2005
- Draft OU-2B FS Report – October 2005

- Agencies identified additional data gaps

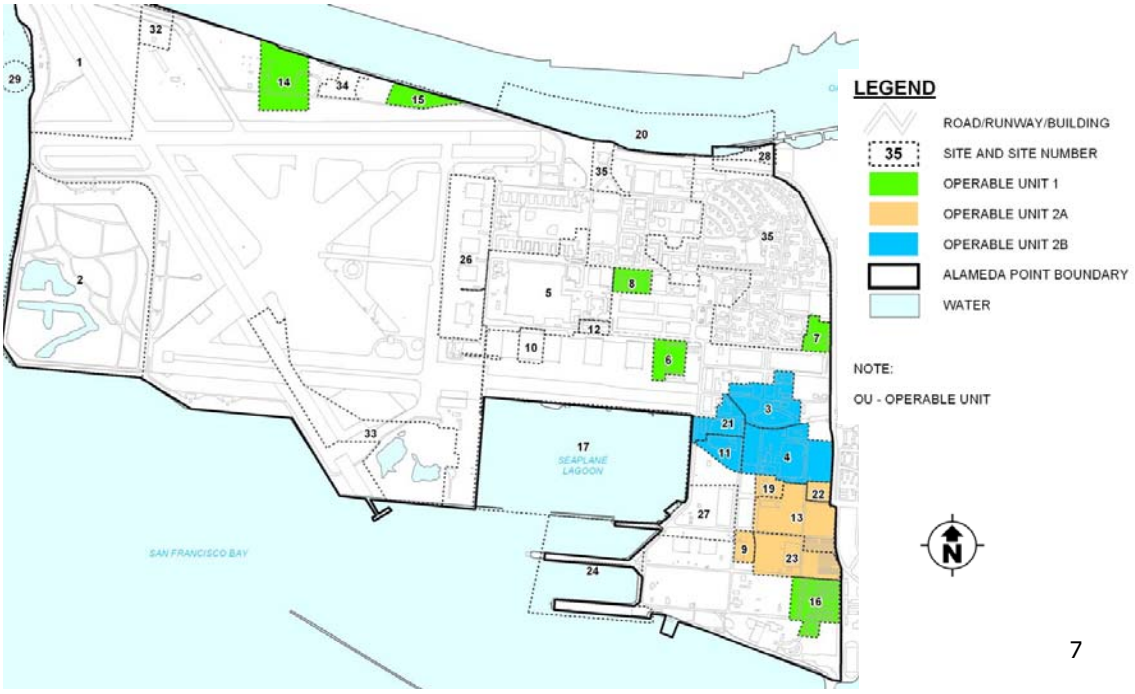
Background

BRAC PMO WEST

- Site walk and meetings with BCT – June 19, 2006
- Meeting with BCT – August 29, 2006
- Draft Data Gaps Sampling Work Plan – November 3, 2006

OU-1, 2A and 2B Location Map

BRAC PMO WEST



OU-1 Description

BRAC PMO WEST

- **Includes Sites 6, 7, 8, 14, 15 & 16**
  - **Sites 14 and 15 data gaps are not addressed as part of this investigation**
  - **Site 6 – Building 41 Former Aircraft Intermediate Maintenance Facility**
    - **Building 41**
    - **Building 40**

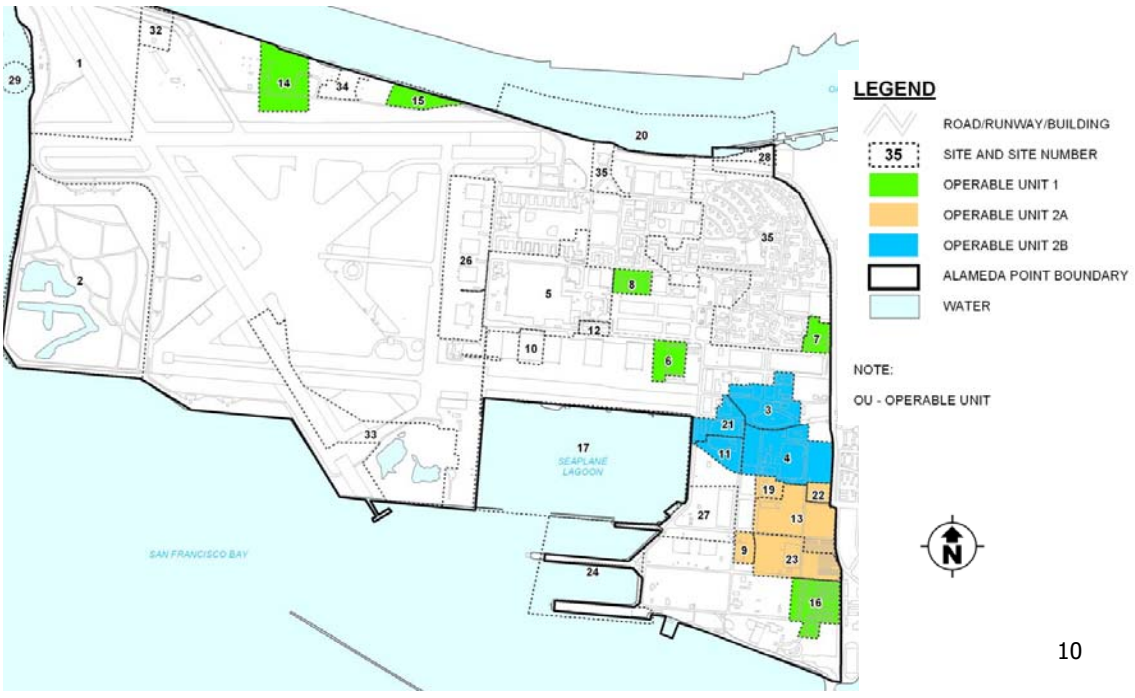
OU-1 Description

BRAC PMO WEST

- Site 7 – Former Naval Exchange Service Station Area
  - Building 459
  - Former Building 68-3
  - Soil Debris Area
- Site 8 – Building 114 Former Pesticide Storage Area
  - Building 114
  - Site 16 – CANS Area and Former PCB Removal Action Area
  - Building 608 SWMUs and UST 608-1
  - CANS 338A -338H
  - PCB Soil Removal Action Area

OU-1, 2A and 2B Location Map

BRAC PMO WEST



OU-2A Description

BRAC PMO WEST

- Sites 9, 13, 19, 22, & 23
  - Site 9 – Buildings 351 and 410; Former IWTP 410
    - Building 410
  - Site 13 – Building 397 Former Aircraft Overhaul Facility, AOC 009, and CAA 13
    - AOC 009 ASTs
    - Open space at western edge of site

OU-2A Description

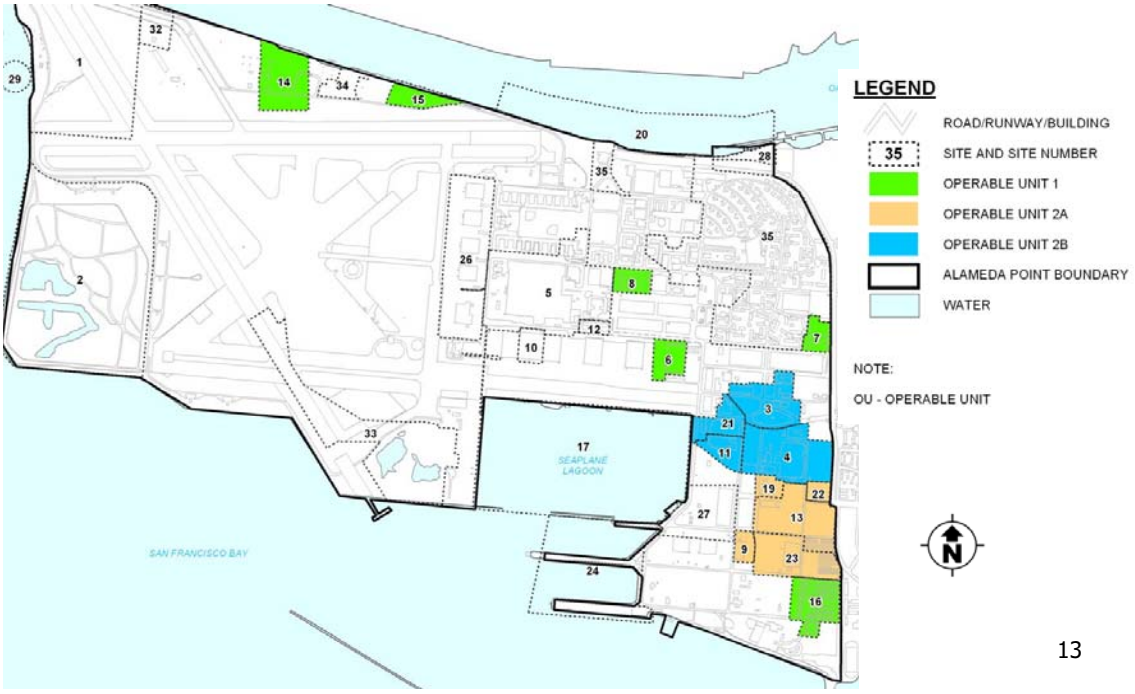
BRAC PMO WEST

- Site 19 –Yard D-13 Hazardous Waste Storage Yard
- Site 22 – Former Service Station
- Site 23 – Building 530 Former Missile Rework Facility

- Regional Groundwater

OU-1, 2A and 2B Location Map

BRAC PMO WEST



OU-2B Description

BRAC PMO WEST

- **Sites 3, 4, 11 & 21**
  - **Site 3 – Abandoned Fuel Storage Area and CAA 3A-3C**
    - **Former Building 109 – gasoline truck loading area**
    - **Building 112 – aircraft/ship repair and painting facility**

OU-2B Description

BRAC PMO WEST

- Site 4 – Building 360 Former Aircraft Engine Facility, and CAAs 3C, 4A-C, and 13
  - Building 372 – test engine facility
  - Building 163 – equipment maintenance
  - Building 360
  - Groundwater plumes
- Site 11 – Building 14 – Former Aircraft Testing and Repair Facility
  - Building 14
  - Former Building 118 – flower and shoe shop
  - Former Building 265 – plant services

OU-2B Description

BRAC PMO WEST

- Site 21 – Buildings 113, 162 and 398
  - Building 113 – overhaul and paint shop
  - Building 162 – ship/aircraft maintenance shop
  - Building 398 – turbine accessories shop

- Regional Groundwater

Work Plan Approach

BRAC PMO WEST

- **Divided into two areas of investigation**
- **Soil and Groundwater Plume Delineation Sampling (Data Gap Sampling)**
- **Solid Waste Management Unit Sampling (SWMUs)**

Program Sample Totals

BRAC PMO WEST

Number of Sample Locations	**471**
Number of Unsat Soil Samples	**1,068**
Number of Sat FWBZ Soil Samples	**478**
Number of Sat SWBZ Soil Samples	**36**
Number of HP FWBZ Water Samples	**533**
Number of HP SWBZ Water Samples	**69**
Number of Existing Wells Sampled	**209**
Number of New FWBZ Wells Installed & Sampled	**48**
Number of New SWBZ Wells Installed & Sampled	**40**

Notes: Total well samples (4 quarters) = 1,188
Total number of soil/HP samples could be 4x with step-outs

Data Gap Sampling

BRAC PMO WEST

- **Soil contamination extent & impact on groundwater**
- **Groundwater plume definition**
- **Beneath buildings**
- **Sewers**

Data Gap Soils

BRAC PMO WEST

- **Biased sampling of unsat soils -** existing data indicated concentrations or preferred pathways
- **Grid sampling of unsat soils -** no data exist, considering preferred pathways
- **Step-out procedures -** define lateral extent of detections > screening criteria
- **Saturated soil samples –** at every soil sample location to determine impact to sat soils
- **HydroPunch® water samples –** at every soil sample location to determine impact to groundwater

Data Gap Soil Samples

BRAC PMO WEST

Number of Sample Locations	154
Number of Unsat Soil Samples	452
Number of Sat Soil Samples	131
Number of HP Water Samples	131

Data Gap Groundwater

BRAC PMO WEST

- **Biased sampling** – based on known / implied groundwater concentrations
  - Two borings at each location
    - 1st to determine lithology & collect soil samples
    - 2nd to collect HydroPunch® samples
  - Water sample collected using a bladder pump
- **Step-out criteria** – define lateral extent sufficient for cleanup design
- **Step-down criteria** – define vertical extent sufficient for cleanup design

Data Gap Water Samples

BRAC PMO WEST

Number of Sample Locations	**74**
Number of Unsat Soil Samples	**132**
Number of Sat FWBZ Soil Samples	**131**
Number of Sat SWBZ Soil Samples	**36**
Number of HP FWBZ Water Samples	**188**
Number of HP SWBZ Water Samples	**69**
Number of Existing Wells Sampled	**209**
Number of New FWBZ Wells Installed & Sampled	**48**
Number of New SWBZ Wells Installed & Sampled	**40**

Note: Well samples are per quarter for 4 quarters

Data Gap Samples Beneath Buildings

BRAC PMO WEST

Number of Sample Locations	107
Number of Soil Gas Samples	32
Number of Unsat Soil Samples	251
Number of Sat Soil Samples	84
Number of HP Water Samples	84

Data Gap Sewer Samples

BRAC PMO WEST

Number of Sample Locations	47
Number of Unsat Soil Samples	0
Number of Sat Soil Samples	47
Number of HP Water Samples	47

SWMUs Introduction

BRAC PMO WEST

- 104 SWMUs identified
- 43 SWMUs requiring no further action
- 30 SWMUs covered by TPH Program
- 31 SWMUs identified for additional sampling

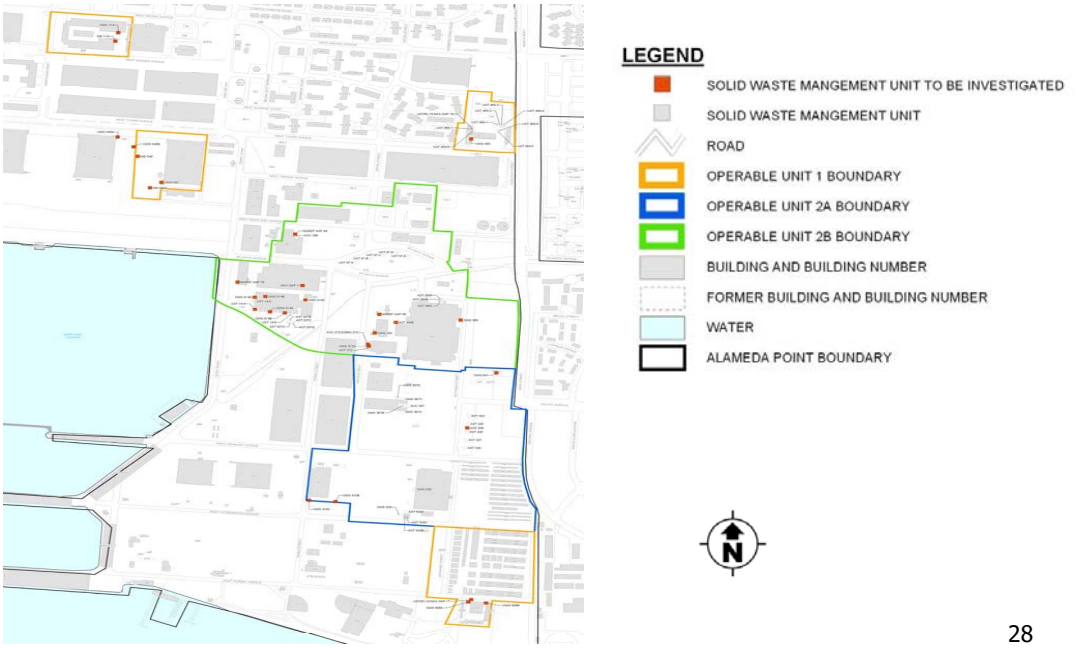
SWMUs

BRAC PMO WEST

- Oil-Water Separators (OWSs)
  - 18 total : 7 in OU-1; 3 in OU-2A; 8 in OU-2B
- Wash-Down Areas (WDs)
  - 3 total : all in OU-1
- Underground / Aboveground Storage Tanks (USTs/ASTs)
  - 5 total : 1 in OU-1; 4 in OU-2B
- Generator Accumulation Points (GAPs)
  - 4 total : all in OU-2B
- Area of Concern (AOC)
  - 1 in OU-2A

SMWUs Location

BRAC PMO WEST



Proposed SWMU Sampling

BRAC PMO WEST

Study Area	No. of Sites	No. of Locations	No. of Unsat Soil Samples	No. of Sat Soil Samples	No. of HP Water Samples
OWSs	18	30	60	30	30
USTs/ASTs	5	6	30	6	6
GAPs	4	4	12	4	4
WDs	3	41	123	41	41
AOCs	1	2	8	4	2
Totals	**31**	**89**	**233**	**85**	**83**

Analytical Data

BRAC PMO WEST

- **Sample analysis based on historical soil/groundwater data and historic activity**
  - Soil
    - VOCs (including MTBE), SVOCs (including 1,4-dioxane), TPH, Pesticides, PCBs, Metals, TOC, Grain Size, Bulk Density, Microbial Parameters
  - Groundwater
    - VOCs (including MTBE), SVOCs (including 1,4-dioxane), TPH, Pesticides, PCBs, Dissolved Metals, NA Parameters, Microbial Parameters
- **Data Gaps soil and groundwater data**
  - Analyzed by U.S. EPA Methods and subject to validation
  - Reporting limits less than screening criteria

Program Sample Totals

BRAC PMO WEST

Number of Sample Locations	471
Number of Unsat Soil Samples	1,068
Number of Sat FWBZ Soil Samples	478
Number of Sat SWBZ Soil Samples	36
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Notes: Total well samples (4 quarters) = 1,188
Total number of soil/HP samples could be 4x with step-outs

Field Real-time Decisions

BRAC PMO WEST

- **Purpose – to meet WP/SAP Objective**
  - ➢ **Fill all Data Gaps**
- **Approach – work collectively with agencies**
  - SWMU and Data Gap step-out soil and groundwater sampling

Next Steps

BRAC PMO WEST

- **Comments from agencies – February 2007**
- **Final Work Plan – May 2007**
- **Data Gaps Field Activities – June 2007**

Data Gaps Sampling Work Plan

BRAC PMO WEST

Questions?

CANS Area Soil Sampling

BRAC PMO WEST

CANS Area PCB Investigation

BRAC PMO WEST