Public Information Materials

7/28/04
Restoration Advisory Board Meeting
70th Meeting
Held at Irvine City Hall
Irvine, CA

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 7/28/04 RAB meeting – 70th meeting.
- *Meeting Minutes from the May 26, 2004 RAB meeting – 69th Meeting.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (July 2004-July 2005).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro RAB Membership Roster (revised July 2004).
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- Internet Access – Environmental Web Sites.
- Internet Access – U.S. EPA Federal Register Environmental Documents – Endangered and Threatened Wildlife and Plants Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp.
- One-Page Glossary of Technical Terms.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Defense – Institutional Controls, Spring 1997.
- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
- Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
- U.S. EPA Fact Sheet – A Citizen's Guide to Natural Attenuation, October 1996.
- Brochure – Commonly Asked Questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
- U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
- U.S. EPA Fact Sheet – Perchlorate Update, March 2002.
- Environmental Data Quality Handout – Response to RAB Inquiry, September 2003.
- News Article from the *New York Times* News Service – "Toxic agents are not always a hazard" by Jane E. Brody, dated July 21, 2004.
- 2004 Navy and Marine Corps Restoration Advisory Board Training Workshop – Salt Lake City – 23 July 2004 (handout containing transcription and notes from the workshop, provided to all attendees at the close of the workshop) Items included - "RAB in a Nutshell Postings," "Parking Lot Issues from Opening Session," "Summary Notes from Installation Open Forum," "Transcribed Notes from Community Open Forum," and "Break-Out Session: Input from Community."
- *Presentation* – Navy and Marine Corps Restoration Advisory Board Training Workshop Held in Salt Lake City, presented by Andy Piszkin, BRAC Environmental Coordinator, at the July 28, 2004 Restoration Advisory Board Meeting for Former MCAS El Toro.
- *Presentation* – Indoor Air Risk Evaluation IRP sites 16 and 24, presented by Karnig Ohannessian, Remedial Project Manager, at the July 28, 2004 Restoration Advisory Board Meeting for Former MCAS El Toro.

* Mailed to all RAB meeting mailer recipients on 7/14/04.

Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)

- No Items Submitted

Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)

- Cal-EPA, Department of Toxic Substances Control (DTSC) – Comments on Additional Proposed Sampling Strategy for the Temporary Accumulation Area (TAA) Site 651B, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated June 23, 2004).
- Cal-EPA, DTSC – Response to Comments for RCRA Corrective Action Complete Determination & RCRA Facility Boundary Modification, dated July 2004.
- Cal-EPA, DTSC – Approval of Addendum Closure Report for the Temporary Accumulation Area (TAA) Site 31A Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated July 12, 2004).
- Cal-EPA, DTSC – Site Assessment Workplan for Solid Waste Management Unit (SWMU) 72 Site, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated July 14, 2004).
- Cal-EPA, DTSC – Concurrence on Finding of Suitability to Transfer (Parcel IV and Portions of Parcels I, II, and III) Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: John Scandura, Chief, Office of Military Facilities, Southern California Operations Branch, DTSC (letter dated July 22, 2004).
- Cal-EPA, DTSC – Concurrence on Finding of Suitability to Lease for Carve-Outs within Parcels I, II, and III, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated July 23, 2004).
- Cal-EPA, DTSC – Corrective Action Complete Determination and Boundary Modification for the Sale Parcels at the Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Barbara Coler, Chief, Permitting and Corrective Action Division, Hazardous Waste Management Program, Remedial Project Manager, DTSC (letter dated July 23, 2004).

California Regional Water Quality Control Board (RWQCB), Santa Ana Region

- No Items Submitted

RAB Subcommittee Handouts and Letters *(generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)*

- No Items Submitted

Additional Information Submitted – 7/28/04 RAB Meeting

- No Items Submitted

MCAS El Toro
Restoration Advisory Board

Irvine City Hall
Conference and Training Center
One Civic Center Plaza, Irvine

July 28, 2004
6:30 - 9:00 p.m.
70th RAB Meeting

RAB Subcommittee Meeting
5:00-6:00 p.m., Room L-104

AGENDA

RAB members that are unable to attend please call either Andy Piszkin, Marine Corps/Navy RAB Co-Chair at (949) 726-5398 or (619) 532-0784 -or- Bob Woodings, RAB Community Co-Chair at (949) 461-3481.

Question and Answer (Q&A) Ground Rules

- ***Q&A follows individual presentations; time designated for presentations includes Q&A time.***
- ***"Open Q&A" session (environmental topics) is at the end of the New Business segment.***
- ***After adjournment, Marine Corps/Navy representatives are available to answer more questions.***

Welcome/Introductions/Agenda Review (6:30-6:40) — Andy Piszkin, *Marine Corps/Navy RAB Co-Chair*

Old Business (6:40-7:15)

Approval of 5/26/04 Minutes *(6:40-6:45)* — Bob Woodings, *RAB Community Co-Chair*

Announcements/Review of Action Items *(6:45-7:00)* — Andy Piszkin & Bob Woodings
- Irvine Desalter Project Update

Subcommittee Meeting Report *(7:00-7:10)* — Marcia Rudolph, *RAB Subcommittee Chair*

Follow-up Announcements/Responses/Q&A *(7:10-7:25)* — Andy Piszkin

New Business (7:25-8:50)

Regulatory Agency Comment Update *(7:25-7:40)*
Federal and State Regulatory Oversight of Environmental Restoration and Cleanup at MCAS El Toro

Federal Rep	*State Rep*
Nicole Moutoux	Tayseer Mahmoud
U.S. EPA	*Cal/EPA DTSC*

- Dept. of Navy National RAB Co-Chair Training Workshop – *(7:40-8:05)* — Andy Piszkin
  - Overview and highlights from the RAB Co-Chair Training Workshop for Community and Navy Installation Co-Chairs held July 23-25, 2004 in Salt Lake City, Utah.

BREAK – 10 minutes

- Indoor Air Risk Assessment for Installation Restoration Program Sites 16 and 24 – *(8:15-8:40)* — Karnig Ohannessian, *Navy/SWDIV*
  - Health-risk assessment to evaluate potential exposure to indoor air vapors that could accumulate in buildings constructed at these sites.

Open Q&A (Environmental Topics) *(8:40-8:50)* — Andy Piszkin

Meeting Summary & Closing (8:50-9:00) — Andy Piszkin & Bob Woodings

Meeting Evaluation & Topic Suggestions for Future Meetings

PUBLIC NOTICE

MARINE CORPS AIR STATION EL TORO

Restoration Advisory Board Meeting

Restoration Advisory Board (RAB) meetings provide community members and the general public a first-hand opportunity to learn more about the environmental cleanup of former MCAS El Toro. Project managers from the Navy and the regulatory agencies make presentations and are available to answer your questions. Since 1994, concerned citizens and government representatives have been regularly meeting to discuss the environmental cleanup program. Your input is encouraged and appreciated.

70th Meeting
Wednesday, July 28, 2004 – 6:30-9:00 p.m.

Irvine City Hall, Conference and Training Center
One Civic Center Plaza, Irvine

This RAB/Public meeting will feature the following presentations specific to MCAS El Toro:

- **Dept. of Navy National RAB Co-Chair Training Workshop**
  Overview and highlights from the RAB Co-Chair Training Workshop for Community and Navy Installation Co-Chairs held July 23-25, 2004 in Salt Lake City, Utah.
- **Indoor Air Risk Assessment for Installation Restoration Program Sites 16 and 24**
  Health-risk assessment to evaluate potential exposure to indoor air vapors that could accumulate in buildings constructed at these sites.

For more information about Environmental Programs at MCAS El Toro, please contact:
Base Realignment and Closure, Mr. Andy Piszkin, BRAC Environmental Coordinator, 7040 Trabuco Road, Irvine, CA 92618 – (949) 726-5398 or (619) 532-0784

MARINE CORPS AIR STATION EL TORO

RESTORATION ADVISORY BOARD MEETING

May 26, 2004

MEETING MINUTES

The 69th Restoration Advisory Board (RAB) meeting for Marine Corps Air Station (MCAS) El Toro was held Wednesday, May 26, 2004 at the Irvine City Hall. The meeting began at 6:37 p.m. These minutes summarize the discussions and presentations from the RAB meeting.

WELCOME, INTRODUCTIONS, AGENDA REVIEW

Mr. Andy Piszkin, BRAC Environmental Coordinator (BEC) for MCAS El Toro and Marine Corps RAB Co-Chair, asked Ms. Marcia Rudolph, RAB Subcommittee Chair, to lead the Pledge of Allegiance. He then asked for self-introductions and reviewed the agenda for tonight's meeting.

Mr. Bob Woodings, RAB Community Co-Chair announced that he received calls from RAB Members Mr. Peter Hersh and Mr. Fred Meier, and Mr. Len Allen, a regular RAB meeting attendee, that they would not be able to attend this evening's RAB meeting.

Review and Approval of the March 31, 2004 RAB Meeting Minutes

Mr. Woodings asked for any changes or comments prior to approval of the March 31, 2004 RAB meeting minutes. The minutes were approved without amendment. Mr. Woodings added that he appreciates the public notice that is included as part of the RAB mailer.

Announcements

- Mr. Piszkin stated that there are approximately 26 to 28 regular MCAS El Toro RAB meeting attendees of which about one third are RAB members, including the Navy and regulatory agencies. There are also three regular community attendees who are not RAB members, including Mr. Larry Laven.
- Mr. Piszkin explained that the July RAB meeting that falls in the middle of summer usually has the lowest attendance of the year and he would like the RAB to consider skipping that meeting if there is not much interest. He asked that RAB attendees get back to him with feedback on this proposal.
- Mr. Piszkin said that a schedule of MCAS El Toro RAB meeting dates through July 2005 is available on the information table. He explained that there has been discussion of holding the RAB meetings quarterly rather than bi-monthly. Ms. Rudolph responded that she feels that it is too soon to reduce the frequency of the RAB meetings.
- Mr. Piszkin explained that there is a handout on the information table listing all the MCAS El Toro project representatives along with information on the Administrative Record File at

MCAS El Toro and Information Repository at the Heritage Park Regional Library. The Finding of Suitability to Transfer (FOST) and Finding of Suitability to Lease (FOSL) are available for review at both the Administrative Record File and the Information Repository.

- Mr. Piszkin stated that there is a handout on the information table with a website listing for a 42-page document that proposes endangered species habitat for the Riverside fairy shrimp. He noted the habitat area proposed includes Installation Restoration Program (IRP) Site 1 at MCAS El Toro.
- Mr. Piszkin explained that the draft RAB Rule was issued by the Department of Defense and copies were forwarded to the MCAS El Toro RAB Community Co-Chair and the RAB Subcommittee Chair. The final RAB Rule, however, has not yet been published in the Federal Register.
- Mr. Piszkin said that that the co-chairs of all the RABs nationwide have been invited to a RAB workshop to be held July 23-25, 2004 in Salt Lake City, Utah. He believes the Department of Defense will be paying for transportation and lodging for the workshop. If there are issues or comments that any RAB member or meeting attendee would like addressed at the workshop, please check with the Community Co-Chair and provide that information to the designated workshop attendee.
- Mr. Piszkin stated that there was a RAB Subcommittee request for a map listing all the locations of contaminants identified at MCAS El Toro. He discussed that request with the Navy's Real Estate Group, and it has been determined that there is no process available for producing such a map. However, the eventual new owners of former station property will have access to all the documents, including the Environmental Baseline Survey which covers the locations of concern at MCAS El Toro. Those documents can be reviewed before activities are conducted on former station property.
- Mr. Piszkin said that the latest MCAS El Toro FOST is out for public review, which is scheduled to end on June 17, 2004. A previous public review period for the draft FOST took place in April 2003. The Navy will then be developing the responses to comments, but any comments related to station closure may not receive responses. The FOST is scheduled to be signed by the Commander of the Southwest Division, Naval Facilities Engineering Command at the end of July 2004.
- Mr. Piszkin stated that the draft Community Relations Plan is scheduled to go to the regulatory agencies for review in June 2004.
- Mr. Piszkin explained that he had committed to providing via e-mail the radiological data on the Agua Chinon Wash to the RAB Community Co-Chair and the RAB Subcommittee Chair. The data, however, has to be reviewed by the Navy's Radiological Affairs Support Office (RASO) for quality control purposes, so it is not yet available for release. The report is scheduled for distribution in July 2004 and the data will be provided at that time.
- Mr. Piszkin said that the Navy has been very diligent in evaluating radiological concerns. There was a locker in Building 860 that was used to store smoke detectors; the locker had a radiological sticker on it. The Navy did a full survey and completed a Radiological Release Report for the locker, concluding that there are no radiological issues.

- Mr. Piszkin provided a summary of the recent, ongoing environmental restoration activities at MCAS El Toro Installation Restoration Program sites:
  - Site 1, Explosives Ordnance Disposal (EOD) Range – Mr. Gordon Brown will provide a presentation later this evening on Site 1.
  - Site 2 and 17, Magazine Road and Communication Station Landfills – The draft final remedial design for the landfills is scheduled for submittal for regulatory agency review on June 22, 2004. After the remedial design is finalized, construction of the landfill caps will begin.
  - Sites 3 and 5, Original and Perimeter Road Landfills – The draft final Pre-Design Investigation Technical Memorandum associated with additional soil gas sampling is scheduled for submittal for regulatory agency review in June 2004.
  - Sites 8 and 12, Defense Reutilization and Marketing Office (DRMO) and Sludge Drying Beds and Site 11, Transformer Storage Area – A draft Action Memorandum for an Interim Action at Sites 8 and 12 is scheduled to go to the regulatory agencies in June 2004. The draft final Remedial design Work Plan for Site 11 is also scheduled for regulatory agencies review in June 2004. Field activities for Site 11 will be handled at the same time as the field activities for Sites 8 and 12.
  - Site 16, Crash Crew Pit No. 2 (Fire Fighting Pit) – Installation of new monitoring wells is scheduled for July and August 2004. The draft final Remedial Design/Remedial Action Work Plan is scheduled for submittal to the regulatory agencies in June 2004. The final Site Assessment Report that covers petroleum issues in soil (at 150 feet below ground surface [bgs]) at Site 16 is scheduled for submittal to the regulatory agencies in July 2004.
  - Sites 18 and 24, VOC Plume and Source Area – Mr. Steve Malloy, RAB member and Irvine Ranch Water District, Senior Project Engineer, gave a presentation on the status of proposals for replacement wells for well ET-2 earlier this evening (see page 7). The draft 90-Percent Design Submittal for Site 18 (off-station plume) is scheduled to go to the regulatory agencies on September 7, 2004. The Navy's 90-Percent Design Submittal for the Site 24 VOC Source Area (on-station plume) is scheduled to go to the regulatory agencies on June 2, 2004.
  - Compliance Program – The Navy continues to receive no further action letters from the regulatory agencies on the compliance program sites, including aerial photo anomalies, underground storage tanks, accumulation storage areas, etc.

RAB Subcommittee Meeting Report, Ms. Marcia Rudolph, RAB Subcommittee Chair

Ms. Rudolph reviewed the key points discussed in the RAB Subcommittee meeting:

- The RAB Subcommittee would like to know if a new owner is required to purchase leased property if the leased property is located within a property parcel previously purchased, or is there a right of refusal.
- The RAB Subcommittee would like to know how reuse issues for the Urban Park relate to reuse issues for FOSL property.

- The RAB Subcommittee would like clarification on whether the carve-out areas include buffer zones.
- The RAB Subcommittee would like an overlay of the IRP sites over a map of MCAS El Toro.
- The RAB Subcommittee requested information on:
  - Documentation of the process for property to move from the FOSL to a FOST for transfer.
  - The process for property owners to get authorization to connect with a road system or other infrastructure over property that is leased or under different ownership, and who will be in charge of making decisions on those authorizations.
  - How the Navy will deal with reuse at FOSL sites?
  - What is the combined acreage of the FOSL sites?
  - When MCAS El Toro property is sold, how will funds from these sales be used?
  - What is the status of coastal sage and gnatcatcher habitat issues associated with Sites 2 and 17?

Navy Responses to Subcommittee Comments

Mr. Piszkin said that when a party purchases property at MCAS El Toro there is an agreement to also purchase the associated FOSL property documented in the Lease in Furtherance of Conveyance. The Government Services Administration is handling the MCAS El Toro property sale as the Navy's real estate agent. That agency has contracted with a company to assist with a due diligence process that ensures that bidders will have a chance to review and fully understand the agreements associated with bids for former station property.

Mr. Piszkin said that the issues related to FOSL property in the Urban Park are similar to the infrastructure issues. He explained that development on FOSL property such as building a ball field or installing utilities would require Navy and regulatory agency approval. There are no specific details on what can and cannot be done on the property, but there are three main requirements for approval of projects:

- Construction activities cannot degrade the environmental condition of the property.
- People using the property cannot be exposed to contaminants (e.g. cannot extract groundwater if such water is under investigation or known to be contaminated).
- Use of the property cannot interfere with the Navy's requirement to investigate and/or cleanup property.

Mr. Piszkin explained that all the carve-out areas include buffer zones. There are approximately 950 acres included in the FOSL areas.

Mr. Piszkin said there is not a current overlay of all the IRP sites. In the FOST, however, a number of maps that specifically depict the IRP sites and locations of concern are included in the document. He explained that the FOST figures have undergone detailed regulatory agency review, so those are the best available maps of the IRP sites. Ms. Content Arnold, Navy Lead Remedial Project Manager,

added that the figures section of the document contains maps that show the IRP sites, but each map depicts a focused portion of the station.

Discussion

A RAB attendee asked where the three main leased property restrictions are documented. Ms. Arnold replied that the FOSL documents restrictions for each carve-out area. In addition, the Lease in Furtherance of Conveyance, which is similar to a lease for a residence, lists the restrictions that must be followed. She explained that there is a process that uses a Lease Revision Request Form for requesting that restrictions be lifted. The Lease Revision Request Form is reviewed by Navy real estate personnel and the regulatory agencies; all parties have to agree that it is appropriate to remove the restrictions. If a decision is made not to lift the restrictions, then the Navy will work with the requestor to reach an acceptable alternative solution.

Mr. Greg Hurley, RAB member, asked who would be responsible for the cost of removing contamination if a tenant wants to address contaminated soil on leased property to run utility lines. Mr. Piszkin replied that he doubts that a tenant would want to take personal responsibility for cleaning up contamination, but that is a legal and real estate issue, so he is not sure of the answer. He stated that his tentative response, however, is that the tenant would have to wait until the Navy's remedial actions are complete, or the design may have to be modified to go around that property. The timing for property to be available for development will likely be an important factor with bidders. It is the Navy's responsibility to complete investigation, cleanup and documentation of property with regulatory agency oversight, and the Navy has been prioritizing the locations of concern at MCAS El Toro to clear as much property as possible for the new owners. Ms. Nicole Moutoux, U.S. EPA Project Manager, added that the question of whether a developer would pay to cleanup an area would have to be negotiated with the developer.

Mr. Piszkin explained that there are going to be more FOSTs in the future as property becomes ready for transfer. More than 95 percent of the sites, documented as no further action, did not require any cleanup action as there was not a level of contamination that required any action. The FOST documents what activities occurred for the property to go from a lease to being suitable for transfer. The FOST will go through regulatory agency review, and then the property will be transferred to a new owner.

Mr. Jerry Werner, RAB member, asked what role the City of Irvine will play in the upcoming auction. Mr. Piszkin replied that the Navy will not be transferring any property to the City of Irvine. The City of Irvine will, however, have zoning requirements that the new owners will have to follow.

Mr. Piszkin stated that the funds are to be placed into the BRAC fund, and the Department of Defense under the BRAC program will decide where the revenue from the auction of the former MCAS El Toro property gets applied. He indicated that he would ask Mr. Dean Gould, Base Closure Manager for MCAS El Toro, specifically where the land sale revenue goes. Mr. Hurley stated that to ensure that the communities are fully protected, he would like the Navy to consider holding funds from the auction in an escrow account to be used to remediate any large amounts of contamination that might be discovered at MCAS El Toro in later years.

NEW BUSINESS

♦ Regulatory Agency Comment Update

Nicole Moutoux, Project Manager, U.S. Environmental Protection Agency (U.S. EPA) Region IX

Ms. Moutoux stated that during April 2004 the regulatory agencies were focused on reviewing the MCAS El Toro FOST and FOSL. She explained that she feels confident that the text has been revised to make both documents as easy to ready as possible, and that all regulatory agency issues have been incorporated.

Ms. Moutoux explained that there are four U.S. EPA letters available on the information table this evening. The first letter covers the draft Site 16 Site Assessment Report, which documents a remedial investigation for petroleum hydrocarbons in soil at Site 16. The Site 16 remedial design primarily addresses trichloroethene (TCE), an industrial solvent present in soil, but there are also petroleum hydrocarbons in soil that need to be addressed. The site assessment primarily evaluated the remaining petroleum hydrocarbon concentrations in soil at Site 16 and whether TCE and petroleum hydrocarbons are intermingled. She said that she was also looking for clarification on the Navy's plans to integrate cleanup of the residual petroleum hydrocarbon contamination into the Site 16 Remedial design under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) program. There will be additional investigation at Site 16 and there will be soil vapor extraction wells installed to remove the petroleum hydrocarbons and residual TCE in soil.

Ms. Moutoux stated that the second letter covers the pond area at IRP Site 1, the former Explosive Ordnance Disposal (EOD) Range. She explained that it is her understanding that the Sampling and Analysis Plan for Site 1 is close to being finalized. There are a few clarifications that the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and U.S. EPA were asking for in the evaluation of any environmental impacts to the endangered Riverside fairy shrimp present in the pond area. After the sampling and analysis plan is finalized, the Navy will be able collect samples at the pond.

Ms. Moutoux said that the remaining two U.S. EPA letters are responses to schedule extension requests submitted by the Navy. One letter requests an extension on the final Remedial design for Landfill Sites 2 and 17. The extension is necessary so that the Navy can pull together all the documents that have been produced for Sites 2 and 17 over the years. She explained that U.S. EPA has asked that the Navy provide a response to comments document that pertains to all appropriate documents pertaining to Sites 2 and 17. The Navy also needs additional time to address the most recent issues that the Regional Water Quality Control Board (RWQCB) raised regarding hydraulic conductivity, compaction, and vegetation to support the coastal sage scrub habitat on the landfill caps. The final remedial design for Sites 2 and 17 is scheduled for submittal at the end of June 2004.

The second extension request is for the Sites 18 and 24 remedial design. The extension is needed for the Navy to address some of the regulatory agency concerns regarding soil vapor extraction and the long-term monitoring system included in the remedial design. The Navy also needs time to address the problem the Irvine Ranch Water District had in finding a suitable well site. The schedule extension for the remedial design is not expected to delay the remedial action schedule.

Tayseer Mahmoud, Project Manager, Cal/EPA Dept. of Toxic Substances Control (DTSC)

Mr. Mahmoud stated he placed six letters on the information table this evening. The first letter covers the Proposed Sampling Strategy for Temporary Accumulation Area (TAA) Site 7. DTSC concurs with the Navy's proposal for six additional soil samples at three locations to analyze for volatile organic compounds and metals at TAA Site 7. The second letter covers DTSC's review of the Closure Report for TAA 744 and concurrence with the Navy's proposal for no further action based on the results of confirmation soil sampling. In another letter DTSC approved the Summary Report for TAA 462.

Mr. Mahmoud said that DTSC reviewed the draft final Technical Memorandum Summary Report for Aerial Photograph Anomaly (APHO) 46 and Miscellaneous Area (MSC) R2 that summarizes the results of 11 soil borings collected from six locations and seven additional soil samples collected as requested by DTSC. DTSC concurs with the Navy's recommendation for no further investigation at APHO 46 and MSC R2. The Closure Report for Potential Release Location 400 was reviewed and DTSC concurs with no further action based on a geophysical survey and testing for polychlorinated biphenyls (PCBs) due to a transformer found in the area.

DTSC reviewed the Site Assessment Report for Site 16. Mr. Mahmoud explained that the Site Assessment Report summarized the results of 79 soil samples collected at the site and recommended soil vapor extraction to remove total petroleum hydrocarbons (TPH) contamination to reduce migration to groundwater. DTSC concurred with the proposed soil vapor extraction remedy, but recommended optimizing the remedy by also treating soils from that are at a dept of 110 to 160 feet below ground surface. There is also a letter forwarding the Navy from California Department of Fish and Game containing comments on draft final Sampling and Analysis Plan, Amendment No. 1, for Site 1.

- **Irvine Desalter Project Update, Steve Malloy, Senior Project Engineer, Irvine Ranch Water District (IRWD)**

Mr. Malloy said that the plume of tricloroethene (TCE) present in groundwater that originates on-station at MCAS El Toro that has migrated off-station and is beneath the Woodbridge community in Irvine. The TCE plume will be addressed through installation of a series of wells along the I-5 freeway; those wells are not associated with the drinking water supply. Three drinking water wells have already been drilled in Irvine, a well near the Jeffrey Road onramp onto I-5 South, a well at Irvine High School, and a well at Heritage Park. He said that an existing The Irvine Company (TIC) irrigation well will also be used with drinking water wells that will all be tied into one system.

Mr. Malloy stated that the IRWD planned to use two wells to remediate the off-station portion of the TCE plume. The first well, ET-1, is an existing well located at the intersection of Jeffrey Road and Irvine Center Drive. There was also a proposed well location (well ET-2) in the Woodbridge community near the North Lake Beach Club. The Woodbridge Homeowners Association had signed an agreement for that well location, but that agreement fell through once homeowners were informed by their association of its location. A lack of communication by the

Woodbridge Homeowners Association and its Board regarding the locations of the wells resulted in the voicing of substantial opposition. The homeowners were concerned that the well would constitute a toxic waste dump and there was no way to convince residents otherwise and that their opinions were based on a lack of information.

Mr. Malloy explained that other potential well sites were investigated, primarily at parks and school districts sites. A decision was proposed, however, to use two existing wells - well 78, a below ground well located near the intersection of Warner Avenue and Culver Drive, and well 113, a TIC irrigation well that is underneath the sidewalk next to Marie Calendar's at the intersection of Irvine Center Drive and Culver Drive. Wells 78 and 113 are located in areas where the TCE concentration is about 1 to 2 micrograms per liter (µg/L), which is below the 5 µg/L action level that requires cleanup. The two wells would be tied into an existing irrigation pipeline that supplies reclaimed water for irrigation in the greenbelts. He stated that groundwater from well ET-1, where the TCE concentrations are higher, would be put through an air stripper that removes TCE from the groundwater. The vapors from the air stripper are run through a granular activated carbon system to remove the TCE.

Mr. Malloy explained that the Navy will be installing some wells on-station to extract the groundwater that has the highest TCE concentrations. IRWD has purchased some property from The Irvine Company that is located at the boundary of MCAS El Toro. That property will be the point where the Navy transfers the on-station groundwater to IRWD for treatment. Firstly, that groundwater water will be treated using an air stripper that will reduce TCE to non-detectable levels. Secondly, the treated groundwater will be reinjected into the deeper aquifer.

Mr. Malloy stated that IRWD is conducting preliminary investigations and computer modeling to determine how the on-station plans will work. The main concern is where groundwater would go once reinjected into the deeper aquifer. He explained that the modeling is done using a grid system. The grid areas are smaller on-station where the TCE concentrations are higher. As the TCE concentrations decrease off-station larger grids are used.

Mr. Malloy said that the original plan was for well ET-1 to run 6 months out of the year because the reclaimed water used for irrigation is mostly in demand during the summer months. The plan has since changed because IRWD obtained the San Jaquin Reservoir in Newport Beach where reclaimed water can now be stored. Therefore, well ET-1 can be pumped for 10 months out of the year and the extracted water can be stored in the reservoir and a lot more water can be extracted. Specifically, more water can be pumped from well ET-1 which controls the main body of the plume; and more water can be extracted downgradient from wells 78 and 113 which control the head of the plume. The modeling reflects these changes and shows that treated water reinjected into the principal aquifer would end up at well ET-1 where it would be extracted and put through the air stripper a second time. This modification to the project would still meet the intent of the Sites 18 and 24 Record of Decision, whereby the plume would be contained while cleaning up the groundwater. He indicated that the modeling is scheduled to be completed in mid-June 2004, with the results submitted to the BCT shortly thereafter.

Mr. Malloy explained that wells 78 and 113 will be replacing well ET-2, but will be able to pump a lot more water. The plan was for well ET-2 to pump about 700 gallons per minute (gpm), but wells 78 and 113 combined will be able to pump up to 1,900 gpm, and there is now room to store that additional water in the reservoir. Dr. Michael Brown, consultant to the City of Irvine, asked if the off-station wells go down to the deeper aquifer. Mr. Malloy responded that all the off-station wells go down to 1,000 feet below ground surface (bgs) and are screened

below 400 feet bgs, while the on-station wells go down 100 to 200 feet bgs. He explained that the TCE plume is in the shallow aquifer on station, but migrates into the deeper aquifer, down to about 500 to 1,000 feet bgs off-station.

- **Proposed Resource Conservation and Recovery Act (RCRA) Corrective Action Complete Determination and RCRA Facility Boundary Modification, Tayseer Mahmoud, Remedial Project Manager, Cal/EPA, DTSC**

Mr. Mahmoud explained that MCAS El Toro had a Resource Conservation and Recovery Act (RCRA) permit. To officially recognize that all hazardous waste activity has been constituted and cleanup completed, DTSC has to prepare a Corrective Action Complete Determination and Facility Boundary Modification. He stated that a hazardous waste facility is defined as any facility that treats, stores, recycles, or disposes of hazardous waste. Corrective action is required because MCAS El Toro had a RCRA permit in the past and is required as a hazardous waste facility to cleanup contamination that is a result of past practices. A RCRA Corrective Action Determination officially recognizes that all hazardous wastes and constituent contamination has been cleaned up. He stated that under RCRA, the State of California, through DTSC, is obligated to enforce the RCRA hazardous waste control law on behalf of the people of California pursuant to the California Health and Safety Code Division 4, Chapter 6.5. He said that on August 1, 1992, U.S. EPA granted authorization for DTSC to administer the hazardous waste management program in California in lieu of the federal RCRA program.

Mr. Mahmoud stated that on November 14, 1980, MCAS El Toro submitted a Part A Application for a RCRA permit. The RCRA permit was issued on June 30, 1986 and renewed in 1993. DTSC accepted Closure Certification for hazardous waste storage from MCAS El Toro and terminated the permit on March 8, 1996. The RCRA permit for MCAS El Toro expired on its own term in August 2003.

Mr. Mahmoud said that the RCRA corrective action requirement, however, still applies at MCAS El Toro until DTSC has determined that all hazardous waste has been cleaned up. RCRA corrective action applies to hazardous waste constituents for releases at a site, to solid waste management units (SWMUs), and to hazardous waste management units. The hazardous waste management units are what the RCRA permit was initially issued for, which at MCAS El Toro was the hazardous waste storage units that have already received closure certification when the permit was terminated in 1986.

Mr. Mahmoud explained that a SWMU is any unit at a hazardous waste management facility from which hazardous waste constituents might migrate, irrespective of whether the units were intended for management of waste, including but not limited to containers, tanks, surface impoundments, land treatment units, landfills, incinerators, and underground injection wells. He explained that the RCRA Corrective Action process mirrors the CERCLA response process, except that CERCLA cannot be used as legal authority for petroleum releases. The major goals of both the RCRA and CERCLA process are:

- Protect human health and the environment
- Include the public in the decision-making process
- Attain effective cleanup standards

Mr. Mahmoud stated that both RCRA and CERLCA are overseen by DTSC, RWQCB and U.S. EPA. The Underground Storage Tank (UST)/Aboveground Storage Tank (AST) cleanup programs are overseen by the RWQCB and the Orange County Health Care Agency.

Mr. Mahmoud explained that to start the RCRA Corrective Action process, a RCRA Facility Assessment was prepared for MCAS El Toro in 1993 with an addendum in 1996. The RCRA Facility Assessment collected existing information on contaminant releases and identified releases or suspected releases that required further information. There were a total of 480 SWMUs identified at MCAS El Toro. To date, a total of 880 locations of concern have been identified at MCAS El Toro, including APHOs, PCB transformers, pesticide storage areas, USTs and ASTs.

Mr. Mahmoud said that a Corrective Action Complete Determination for MCAS El Toro would be based on completion of investigation and cleanup of hazardous waste and constituent areas conducted under several programs. The DTSC determination would have no effect upon the MCAS El Toro National Priorities List site designation. He explained that not all of MCAS El Toro has been cleaned up, and the Navy will retain ownership of some areas of the station (approximately 998 acres) that are not currently suitable for transfer. The RCRA Corrective Action would still apply to property that is not being transferred.

Mr. Mahmoud stated that for DTSC to comply with the California Environmental Quality Act (CEQA), a draft Notice of Exemption has been prepared for MCAS El Toro. DTSC has determined that the proposed RCRA Corrective Action Complete Determination for the FOST parcels and the changes to the Former MCAS El Toro boundaries will not have a significant impact on the environment. The draft Notice of Exemption for MCAS El Toro is out for public comment and is available for review at the Information Repository and Administrative Record. The basis for proposing the Notice of Exemption for the FOST for former MCAS El Toro is as follows:

1. The decision is administrative in nature and the project does not involve any physical activities such as movement of hazardous waste. The cleanup was conducted under the regulatory oversight of DTSC, U.S. EPA, RWQCB and the Orange County Health Care Agency.

2. The entire MCAS El Toro is listed on the Hazardous Waste Substances Site List and on the Cal-sites List. However, for the FOST parcels, all environmental studies and remedial actions necessary to protect human health and the environment have been taken.

Mr. Mahmoud said that the public is encouraged to comment on the draft final FOST prepared by the Navy and on DTSC's proposed RCRA Corrective Action Complete Determination and RCRA Facility Boundary Modification during the public comment period from May 3 through June 17, 2004. Any comments on DTSC's proposed RCRA Corrective Action Complete Determination or Facility Boundary Modification can be sent to Mr. Mahmoud. Comments on the draft final FOST can be sent to Mr. Piszkin.

- **Installation Restoration Program (IRP) Explosive Ordnance Disposal Range (Site 1) Remedial Investigation Activities and Schedule, Mr. Gordon Brown, Remedial Project Manager, SWDIV**

Mr. Brown explained that the Navy is proposing an interim action to get Site 1 field activities started as soon as possible to further delineate the perchlorate plume and address contamination. Mr. Brown said that Ms. Moutoux sent an e-mail that stated the regulatory agencies still had concerns regarding delineation of the perchlorate plume both horizontally and vertically. On that basis, the Navy is in the process of producing a Work Plan for an Aquifer Test and Treatability Study to further delineate the perchlorate plume at Site 1. The Navy decided to separate activities and submitted a field change order to the BCT, which is the third field change order for Site 1. The change order proposes that upgradient from the plume, to avoid any potential contamination getting into the deeper aquifer, the Navy would drill a deep boring using a drilling method that extracts a continuous core sample. He explained that to date, the Navy does not have any deep borings for Site 1. The intent of the continuous core sample is to determine the depth to the deeper aquifer, to determine if there is perchlorate contamination in the deeper aquifer, and obtain information on stratigraphy, lithology and hydrogeology at Site 1.

Mr. Brown explained that in response to Ms. Moutoux's e-mail, the Navy decided to drill additional wells in the area where perchlorate concentrations are the highest. There is already going to be a drilling rig on site that will be installing a well between Sites 1 and 2, so the effort to install additional wells would be minimal. He stated that at the BCT meeting held earlier today, the regulatory agencies requested that the Navy also install a well near the pond where the Riverside fairy shrimp are located. The Navy already has wells installed upgradient and downgradient of the pond.

Mr. Brown stated that historically, the perchlorate concentrations from Colorado River water have been about 6 µg/L. In some areas of Site 1, where there are 200 to 300 µg/L of perchlorate, there is no question that there is a slug of contamination present. He explained that the location of the perchlorate plume at Site 1 is very consistent with where Explosive Ordnance Disposal (EOD) training took place just above the plume, so the source area appears to be well defined.

Mr. Brown said that Mr. Hurley had asked what investment the Navy has in addressing environmental problems. A good answer is that anything that can be done in advance to address contamination saves considerable amounts of money in the long term for remediation and monitoring. Therefore, it is in the Navy's best interests to address the perchlorate contamination at Site 1 as quickly as possible and save taxpayer money.

Mr. Brown stated that the general opinion is that if there is a preferential pathway between Sites 1 and Site 2, it is very narrow. The Navy is going to drill a series of wells perpendicular to the groundwater gradient to determine if there is in fact a preferential pathway for groundwater containing perchlorate.

The Navy is in the process of producing Revision 2 to Field Change Order 3 to incorporate regulatory agency comments provided at today's BCT meeting. Mr. Brown said that the Navy is

then asking the regulatory agencies for rapid review and turnaround of the change order. He explained that Earth Tech, the Navy's contractor, is ready to mobilize, so the Navy wants to get into the field as soon as possible to install the monitoring wells. Samples will then be collected and data will be incorporated into documents for the Aquifer Test and the Treatability Study and the data will be used to determine an appropriate approach for addressing the perchlorate plume at Site 1. The Navy will evaluate both *in-situ* (groundwater treatment below the surface) and *ex-situ* (groundwater extraction and aboveground treatment) alternatives for potential treatment of the perchlorate plume. He provided the following schedule for Site 1 activities:

- Field Change #3, Revision 2 to be issued in June 2004
- BCT concurrence on Field Change #3, Revision 2 anticipated by the end of June 2004
- Monitoring well installation and sampling activities in July 2004
- Perchlorate groundwater sampling results available in August 2004

Mr. Brown explained that the Navy has installed wells in three tiers (Tier 1 – January 2002, Tier II – January-April 2002, Tier III-A – May 2002 and Tier III-B – January-February 2003), but has still not fully delineated the perchlorate plume. The upcoming field activities will consolidate previous efforts, provide a baseline on all the wells and provide data to fully delineate the plume. This will position the Navy to produce the Remedial Investigation report based on the sampling results and the Feasibility Study to determine the most viable technologies to address the perchlorate plume.

Discussion

Ms. Rudolph asked if the upgradient sampling for the perchlorate plume would actually be off-station. Mr. Brown replied that the upgradient sampling would be on-station within the site boundaries.

Dr. Michael Brown, consultant to the City of Irvine, asked what technologies are being considered to remediate the perchlorate contamination. Mr. Brown responded that the Navy is looking at all factors and considering all remedial technologies, so nothing has been officially ruled out at this point. Mr. Crispin Wanyoike, Project Manager from Earth Tech, added that both *in-situ* and *ex-situ* technologies are under consideration with ion exchange and aerobic and anaerobic biodegradation among the technologies being evaluated. The plan also includes groundwater extraction to perform studies to determine how long it will take for the perchlorate to biodegrade, and what kind of amendments would be necessary to stimulate biodegradation. He explained that the aquifer test will provide data to determine how much water can be extracted and how fast constituents injected into the aquifer would move through the groundwater. Mr. Brown added that partitioning would also be tested in terms of determining the porosity for a filter or reverse osmosis system, and if the groundwater chemistry would plug up a filtration system. As data is gathered, technologies will be narrowed down and the Navy, along with the BCT, will make decisions on the preferred technologies.

Mr. Daniel Yi, reporter from the *Los Angeles Times*, asked if science suggests where perchlorate comes from if it is not from rocket fuel or munitions. He added that there have been some perchlorate detections in Orange County Water District wells and asked where that perchlorate came from. Mr. Brown responded that Colorado River water was placed in infiltration ponds (used for recharging groundwater sources) in various locations throughout Orange County and has infiltrated into the shallow groundwater. He explained that regarding the source of perchlorate in Colorado River water, he has a recollection of a major accident or spill that initially dumped perchlorate into

the Colorado River. There is a Chilean fertilizer with higher perchlorate concentrations that was used throughout the United States and that has also contributed to perchlorate contamination in groundwater.

Dr. Brown asked if the BCT had decided on a remediation level for perchlorate at Site 1. Mr. Brown replied that the main goal at the moment is to get into the field to take steps to define the perchlorate location and levels in groundwater at Site 1. Therefore, an exit strategy, based on either a risk assessment or a promulgated standard, is not being considered at this time. Ms. Moutoux added that at some point the Navy will submit that remedial action at Site 1 is complete, and it will depend on whether a perchlorate standard has been promulgated at that point in time.

Mr. Larry Laven, RAB attendee, asked if perchlorate is heavier than water and if it's biodegradable. Mr. Brown replied that perchlorate is considerably heavier than water and is highly soluble; it does not bind with soil so it moves quickly through soil into groundwater. He explained that during the soil analysis for Site 1, perchlorate was encountered at depth, which indicates that nature over time is flushing it down through the soil into the groundwater. Perchlorate does biodegrade, but very slowly. Mr. Laven asked if perchlorate is synthetic. Mr. Brown responded that it is mostly synthetic, used in munitions and propellants, but does occur in nature. Ray Ouellette, RAB attendee, further explained that perchlorate is a salt similar to sodium chloride. Ms. Moutoux added that there was a RAB presentation on perchlorate a few months ago. Mr. Bob Coleman, Navy CLEAN/Bechtel, Community Relations, stated that there is a handout on the information table that explains perchlorate. Mr. Laven said that perchlorate appears to be a dangerous chemical because it affects the thyroid. Ms. Moutoux responded that there is some disagreement on the health affects and that is why it is taking so long to promulgate a health-based cleanup level.

Ms. Mary Aileen Matheis, RAB member and IRWD Board member, stated that there was no detectable level of perchlorate in groundwater in Orange County. Mr. Brown responded that in a good portion of the groundwater in Orange County there is probably perchlorate at about 6 µg/L. Ms. Matheis explained that with a reporter from the *Los Angeles Times* attending this evening's RAB meeting she wants to ensure that the newspaper does not report that there is a problem with perchlorate in groundwater throughout Orange County. Mr. Brown stated that the proposed promulgated standard for perchlorate, which is a health-based standard, is 6 µg/L, so that level would not lead to the need for public health advisories. Mr. Piszkin explained that the perchlorate level in Orange County groundwater meets all drinking water standards, and all local drinking water supplies continue to be totally safe and perchlorate-free. He added that in Orange County, the Chilean fertilizer may have contributed to perchlorate contamination as this area was heavily agricultural for many years.

Mr. Piszkin explained that perchlorate has not been identified as causing cancer. Perchlorate does not build up in the body but is readily flushed out. The National Academy of Sciences at the request of U.S. EPA has been evaluating all the available perchlorate data, including affects on sensitive segments of the population like children.

♦ **Open Q & A -- Environmental Topics**

Mr. Piszkin stated that it looks like the majority opinion is to have the next RAB meeting in July 2004. Ms. Rudolph suggested pushing the meeting back to August 2004. Mr. Coleman responded that there is not a room reservation for an August 2004 RAB meeting.

Ms. Rudolph said that she has copies of the FOST and FOSL and those can be checked out to make copies. Mr. Piszkin added that the FOST and FOSL can be reviewed at the MCAS El Toro IR at the Heritage Park Library in Irvine, and there are copies available at the AR at MCAS El Toro as well.

MEETING EVALUATION AND FUTURE TOPICS

Meeting evaluation by RAB members:

RAB members did not provide any feedback on this meeting.

Suggestions for future presentation topics include:

- Update on coastal sage habitat preservation at Sites 2 and 17
- Update on Anomaly Area 3
- Update on the California gnatcather and coastal sage issues
- Update on perchlorate issues
- Summary of the RAB workshop in Salt Lake City

Mr. Piszkin explained that the FOST is scheduled to be signed the last week in July 2004, which is too early to prepare and make a presentation at the next RAB meeting.

Mr. Piszkin added that the number of meeting attendees at each RAB meeting can also be included at the end of the meeting minutes. Mr. Coleman stated that the RAB schedule will be included at the end of the meeting minutes.

Upcoming RAB Meeting, and Subcommittee Meeting

The next RAB meeting will be held from 6:30 to 9 p.m., July 28, 2004 in the regular meeting location, Irvine City Hall, Conference and Training Center (CTC), One Civic Center Plaza, Irvine. A RAB Subcommittee meeting will be held from 5 to 6 p.m., the same evening in Room L-104 at Irvine City Hall.

Recent RAB Subcommittee Meetings

The most recent RAB Subcommittee meeting was held Wednesday, May 26, 2004, in Room L-104, Irvine City Hall, before tonight's RAB meeting.

RAB Meeting Adjournment – March 31, 2004 Meeting

The 69th meeting of the MCAS El Toro Restoration Advisory Board was adjourned at 8:52 p.m.

5/26/04 RAB Meeting Attendance:

TOTAL PEOPLE IN ATTENDANCE	TOTAL PEOPLE ON SIGN-IN SHEET	TOTAL RAB MEMBERS PRESENT	TOTAL RAB AGENCY MEMBERS PRESENT	TOTAL RAB COMMUNITY MEMBERS PRESENT	TOTAL EXCUSED ABSENCES RAB MEMBERS	EXCUSED ABSENCES – AGENCY RAB/ COMMUNITY RAB
29 (Includes two regular attendees that are not RAB members.)	26	10	7	4	3	1/2

RAB and Subcommittee Meeting Schedule

RAB and Subcommittee Meeting Dates	RAB Meeting Conference and Training Center (CTC) 6:30 – 9:00 p.m.	Subcommittee Meeting Room L-104 5:00 – 6:00 p.m.
Wed, July 28, 2004	CTC	Room L-104
Wed., September 29, 2004	CTC	Room L-104
Wed., December 1, 2004	CTC	Room L-104
Wed., January 26, 2005	CTC	Room L-104
Wed., March 30, 2005	CTC	Room L-104
Wed., May 25, 2005	CTC	Room L-104
Wed., July 27, 2005	CTC	Room L-104

Additional Date Reserved: Wed., April 27, 2005

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 5/26/04 RAB meeting – 69th meeting.
- *Meeting Minutes from the March 31, 2004 RAB meeting – 68th Meeting.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (July 2004-July 2005).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro RAB Membership Roster.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- Internet Access – Environmental Web Sites.
- Internet Access – U.S. EPA Federal Register Environmental Documents – Endangered and Threatened Wildlife and Plants Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp.
- One-Page Glossary of Technical Terms.
- Draft Revised Proposed RAB Rule, January 2004, from the Department of Defense.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Defense – Institutional Controls, Spring 1997.

- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
- Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
- Department of Defense – Management Guidance for the Defense Environmental Restoration Program, September 2001 & DoD Guidance on Improving Public Involvement in Environmental Cleanup at Closing Bases, December 1997.
- U.S. EPA Fact Sheet – A Citizen's Guide to Natural Attenuation, October 1996.
- Brochure – Commonly Asked Questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
- U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
- U.S. EPA Fact Sheet – Perchlorate Update, March 2002.
- Environmental Data Quality Handout – Response to RAB Inquiry, September 2003.
- Irvine Ranch Water District (IRWD) – PowerPoint Presentation to the MCAS El Toro RAB at the 5/26/04 Meeting – Irvine Desalter Project Update, presented by Steve Malloy, Senior Project Engineer, IRWD.
- *Presentation* - MCAS El Toro RAB Meeting, May 26, 2004, RCRA Corrective Action Complete Determination & RCRA Facility Boundary Modification for Marine Corps Air Station El Toro, presented by Tayseer Mahmoud, Project Manager, Dept. of Toxic Substances Control.
- *Presentation* – MCAS El Toro RAB Meeting, May 26, 2004, IRP Site 1 Perchlorate Investigation Update, presented by Gordon Brown, SWDIV Remedial Project Manager, and Crispin Wanyoike, Earth Tech, Inc..
- Public Notice – MCAS El Toro, Finding of Suitability for Transfer (FOST) and Proposed RCRA Corrective Action Complete Determination and RCRA Facility Boundary Modification.
- Notice of Proposed RCRA Corrective Action Complete Determination and RCRA Facility Boundary Modification Former MCAS El Toro, Orange County California, prepared by Dept. of Toxic Substances Control.

* Mailed to all RAB meeting mailer recipients on 5/20/04.

Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)

- U.S. EPA, Concurrence – Federal Facility Agreement Schedule Extension Request, Operable Unit (OU-1), Installation Restoration Program (IRP) Sites 18 and 24, Remedial design Documents, Former Marine Corps Air Station, El Toro, dated April 16, 2004 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Project Manager, Federal Facilities Cleanup Branch, U.S. EPA (letter dated April 22, 2004).
- U.S. EPA, Extension Request Concurrence – Extension Request to Federal Facility Agreement Schedule for OU-2B, Landfill Sites 2 and 17, Former MCAS El Toro, dated April 26, 2004 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Project Manager, Federal Facilities Cleanup Branch, U.S. EPA (letter dated May 4, 2004).
- U.S. EPA, Comments – Draft Site Assessment Report, IRP Site 16, Former Marine Corps Air Station, El Toro, dated March 30, 2004 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Project Manager, Federal Facilities Cleanup Branch, U.S. EPA (letter dated May 13, 2004).
- U.S. EPA, Comments – EPA Comments on Draft Sampling and Field Analysis Plan, Amendment No. 1, Phase II Remedial Investigation IRP Site 1, Former Marine Corps Air Station, El Toro, dated March 2004 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Project Manager, Federal Facilities Cleanup Branch, U.S. EPA (letter dated May 19, 2004).

Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)

- Cal-EPA, Department of Toxic Substances Control (DTSC) – Approval of Closure Report for Former Pesticide Storage Area MSX P1, Unit 1, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated March 30, 2004).
- Cal-EPA, DTSC – Approval of Summary Report for Temporary Accumulation Area (TAA) 462, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated April 6, 2004).
- Cal-EPA, DTSC – Approval of Summary Report for Temporary Accumulation Area (TAA) 744, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated April 7, 2004).
- Cal-EPA, DTSC – Comments on Site Assessment Report for IRP Site 16, Crash Crew Pit Number 2, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated May 14, 2004).
- Cal-EPA, DTSC – Concurrence with No Further Action – Draft Final Technical Memorandum Report for APHO 46 and MSC R2, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated May 17, 2004).
- Cal-EPA, DTSC – Comments on Proposed Sampling Strategy for the Temporary Accumulation Area (TAA) Site 7, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated May 21, 2004).
- Cal-EPA, DTSC – Comments on Draft Final Sampling and Analysis Plan, Amendment No. 1, Phase II Remedial Investigation IRP Site 1, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated May 24, 2004).

California Regional Water Quality Control Board (RWQCB), Santa Ana Region

- No Items Submitted

RAB Subcommittee Handouts and Letters *(generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)*

- No Items Submitted

Additional Information Submitted – 5/26/04 RAB Meeting

- No Items Submitted

Copies of all past RAB meeting minutes and handouts are available at the MCAS El Toro Information Repository, located at the Heritage Park Regional Library in Irvine. The address is 14361 Yale Avenue, Irvine; the telephone number is (949) 551-7151. Library hours are Monday through Thursday, 10 am to 9 p.m.; Friday and Saturday, 10 am to 5 p.m.; Sunday 12 p.m. to 5 p.m.

Internet Sites – see next page

Internet Sites

Navy and Marine Corps Internet Access
Naval Facilities Engineering Command, Southwest Division, Environmental Web Sites
(includes RAB meeting minutes):

www.efdsw.navfac.navy.mil/environmental/envhome.htm

www.efdsw.navfac.navy.mil/environmental/ElToro.htm

Department of Defense – Environmental Cleanup Home Page Web Site:

http://www.dtic.mil/envirodod/

U.S. EPA:

www.epa.gov (this is the homepage)

www.epa.gov/superfund (site for Superfund)

www.epa.gov/ncea (site for National Center for Environmental Assessment)

www.epa.gov/federalregister (site for Federal Register Environmental Documents)

www.epa.gov/fedrgstr/EPA-IMPACT/2004/April/Day-27/i9203.htm (site for Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Riverside fairy shrimp)

Cal/EPA:

www.calepa.ca.gov (this is the homepage)

www.dtsc.ca.gov (site for Department of Toxic Substances Control)

www.swrcb.ca.gov/ (site for Santa Ana Regional Water Quality Control Board)

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
May 26, 2004

RAB MEMBER SIGN-IN SHEET

Name	Signature	Name	Signature
Bell, Richard		Marquis, Suzanne	
Broderick, John		Matheis, Mary Aileen	
Crompton, Chris		Meier, Fred J.	✱ Excused
Herndon, Roy		Olquin, Richard	
Hersh, Peter	✱ Excused	Piszkin, Andy – Co-Chair	
Hurley, Greg		Reavis, Gail	
Jung, Dan		Rudolph, Marcia	
Mahmoud, Tayseer		Sharp, Steven	
Malloy, Steve	✓ Present - forgot to sign-in on RAB Member Sheet	Werner, Jerry	
Moutoux, Nicole		Woodings, Bob – Co-Chair	
Marquis, Roland		Zweifel, Donald E.	

✱ EAB = Excused Absence

✓ = Present, forgot to sign-in on RAB member sheet, signed other sheet

New Attendees will be added to the MCAS El Toro Mailing List.

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
May 26, 2004

NON-RAB MEMBER SIGN-IN SHEET
Other Attendees, Guests

NAME *PLEASE PRINT CLEARLY*	*AFFILIATION*	*COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]*	*PHONE* *FAX*	*INTERESTED IN RAB MEMBERSHIP?*
Larry Laven	Member of the Public	913 S. Trident #6 St Anaheim Calif. 92804	714 776 1932	NO
Frank Cheng	DTSC			
Angela Williams	Bechtel	—	—	—
MICHAEL BROWN	CITY OF IRVINE			
Dhananjay Rawal	ECS	24282 Sunnybrook CIR Lake Forest CA 92630	949-413-6486 949-770-2331	NO
MAX FAN	ACCORD ENGINEERING	3741 SUR AVE IRVINE, CA 92606	714-241-7200	

m:/rabmisc/gensign.doc

PLEASE PRINT CLEARLY AND PROVIDE COMPLETE INFORMATION

New Attendees will be added to the MCAS El Toro Mailing List.

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
May 26, 2004

NON-RAB MEMBER SIGN-IN SHEET
Other Attendees, Guests

NAME *PLEASE PRINT CLEARLY*	*AFFILIATION*	*COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]*	*PHONE FAX*	*INTERESTED IN RAB MEMBERSHIP?*
Karnig Ohannessian	Navy	1230 Columbia St #870 San Diego 92101	619-532-0796 619-532-0780	—
Crispin Wampoike	Earth Tech	300 Oceangate Suite 700 Long Beach CA 90802	562 951-2057	—
Rmy Ouellette	Resident of Mission Viejo		(949) 261-1577	—
Tom O'Malley	ETRPA		949-7246393	
Gordon Brown	Navy		619 532-0791	—
Content P. Arnold	Navy		619 532 0790	

PLEASE PRINT CLEARLY AND PROVIDE COMPLETE INFORMATION

New Attendees will be added to the MCAS El Toro Mailing List.

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
May 26, 2004

NON-RAB MEMBER SIGN-IN SHEET
Other Attendees, Guests

NAME *PLEASE PRINT CLEARLY*	*AFFILIATION*	*COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]*	*PHONE FAX*	*INTERESTED IN RAB MEMBERSHIP?*
JOE AMARANTE JUAN RODRIGUEZ	COMPUTER SURPLUS " "	2855 PINE CREEK AVE D-121 COSTA MESA, CA. 92626	714-418 6829 "	?
Bob Coleman	Ray CLEAN Bechtel/Brown Caldwell	—	—	—

m:/rabmisc/gensign.doc

PLEASE PRINT CLEARLY AND PROVIDE COMPLETE INFORMATION

MCAS El Toro -- Meeting Schedule
Restoration Advisory Board (RAB)
Full RAB and RAB Subcommittee Meetings

July 2004 – July 2005

All RAB meetings are open to the public.

RAB Meetings: The Conference and Training Center (CTC) at Irvine City Hall has been reserved for RAB meetings (full RAB) on the last Wednesday of the month, dates are listed below. **Time: 6:30 – 9:00 p.m.**

RAB Subcommittee Meetings: Subcommittee meetings are held on the *SAME DAY* as the full RAB meeting from 5 to 6:00 p.m. in a smaller room. Conference Room L-104, next to the Council Chambers has been reserved. **General Meeting Time: 5:00 – 6:00 p.m. (Room is available from 4:30 to 6:30 p.m.)**

RAB and Subcommittee Meeting Dates	RAB Meeting Room – Conference and Training Center (CTC) 6:30 – 9:00 p.m.	Subcommittee Meeting Room – Room L-104 5:00 – 6:00 p.m.
Wed, July 28, 2004	CTC	Room L-104
Wed., September 29, 2004	CTC	Room L-104
Wed., December 1, 2004*	CTC	Room L-104
Wed., January 26, 2005	CTC	Room L-104
Wed., March 30, 2005	CTC	Room L-104
Wed., May 25, 2005	CTC	Room L-104
Wed., July 27, 2005	CTC	Room L-104

Additional Date Reserved: Wed., April 27, 2005

* Traditionally when Thanksgiving falls on the last week of November, the RAB meeting has been held the first week of December. (In Nov. 2004, the last Wednesday of the month is the day before Thanksgiving.)

MARINE CORPS AIR STATION EL TORO
Installation Restoration Program
Restoration Advisory Board Mission Statement and Operating Procedures

This "Marine Corps Air Station (MCAS) El Toro, Installation Restoration Program, Restoration Advisory Board (RAB), Mission Statement and Operating Procedures," replaces the Revised Version dated January 31, 1996. This revised document contains a new section on the RAB Subcommittee, which replaces the old section. The new section is based on modifications made and approved by a majority vote of the RAB members present at the April 21, 1999 RAB meeting with further refinements made at the May 26, 1999 RAB meeting. Modifications incorporated resulted in revising the subcommittee structure so there is now only one RAB subcommittee. (Note: the original Mission Statement document was dated and signed on February 28, 1995.)

The Restoration Advisory Board (RAB) mission statement and operating procedures, herein referred to as "the mission statement and operating procedures", is entered into by the following parties; U. S. Marine Corps (USMC); U. S. Environmental Protection Agency (USEPA), Region 9; California Department of Toxic Substances Control (DTSC), Region 4; and the RAB. Marine Corps Air Station (MCAS) El Toro has developed a Community Relations Plan (CRP) which outlines the community involvement program. The RAB supplements the community involvement effort. A copy of the CPP is available at the information repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714.

I. Mission Statement of the RAB

a. The mission of the RAB is to promote community awareness and obtain timely constructive community review and comment on proposed environmental restoration actions to accelerate the cleanup and property transfer of MCAS El Toro. The RAB serves as a forum for the presentation of comments and recommendations to USMC, Remedial Project Managers (RPMS) of USEPA, and DTSC.

II. Basis and Authority for this Mission Statement and Operating Procedures

a. This mission statement and these operating procedures are consistent with the Department of Defense (DoD), USEPA Restoration Advisory Board Implementation Guidelines of September 27, 1994, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986, particularly Sections 120 (a), 120 (f), 121 (f), and 10 U.S.C. 2705, enacted by Section 211 of SARA, and September 9, 1993, DoD policy letter entitled, "Fast Track Cleanup at Closing Installations".

III. Operating Procedures

A. Membership

1. All RAB members must reside in or serve communities within Orange County.

2. Members shall serve without compensation. All expenses incidental to travel and review inputs shall be borne by the respective members or their organization.

3. If a member fails to attend two consecutive meetings without contacting the RAB, or at least one of the RAB co-chairs, or fulfill member responsibilities including involvement in a subcommittee, the RAB co-chairs may ask the member to resign.

4. Members unable to continue to fully participate shall submit their resignation in writing to either of the RAB co-chairs.

5. Total membership in the RAB shall not exceed 50 members.

6. Applications for RAB membership vacancies shall take place as such vacancies occur. Applications will be reviewed and approved by the Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), USEPA, and DTSC along with consultation with the RAB community co-chair. Candidates will be notified of their selection in a timely manner.

7. Each RAB community member is considered equal whatever their position in the community, and has equal rights and responsibilities.

RAB Membership Responsibilities

a. Actively participate in a subcommittee and review, evaluate, and comment on technical documents and other material related to installation cleanup, all assigned tasks are to be completed within the designated deadline date.

b. Attend all RAB meetings.

c. Report to organized groups to which they may belong or represent, and to serve as a mediator for information to and from the community.

d. Serve in a voluntary capacity.

B. RAB Structure

1. The RAB shall be co-chaired by the MCAS El Toro BEC, and a community co-chair member. The BEC shall preside over the orderly administration of membership business.

2. A community co-chair will be selected by a majority vote of the RAB community members in attendance. Elected officials and government agency staff members of any legally constituted MCAS El Toro reuse groups are excluded from holding the community co-chair position. The community co-chair will be selected annually on the anniversary of the effective date of the agreement.

Community Co-Chair Responsibilities

a. Assure those community issues and concerns related to the environmental restoration/cleanup program are brought to the table.

b. Assist the USMC in assuring that technical information is communicated in understandable terms.

c. Coordinate with the BEC to prepare and distribute an agenda prior to each RAB meeting, and for the review and distribution of meeting minutes.

d. Assist subcommittees in coordinating and establishing meeting times/locations.

e. The community co-chair may be replaced by a majority vote of the RAB community members present at the meeting in which a vote is undertaken.

3. The RAB shall meet quarterly. More frequent meetings may be held if deemed necessary by the RAB co-chairs. The BEC will facilitate in the arrangement of the meetings and notify members of the time and location.

4. Agenda items will be compiled by the RAB co-chairs. Suggested topics should be given to the BEC or community co-chair no later than two (2) weeks prior to the meeting. The BEC shall be responsible for providing written notification to all RAB members of the upcoming agenda and supporting documents, at least two (2) weeks prior to the date, time, and place of scheduled RAB meeting.

5. The BEC shall be responsible for recording and distribution of meeting minutes. Also, the BEC shall collect a written list of attendees at each meeting, which will be incorporated into the meeting minutes. For quarterly meetings, the minutes will be distributed 30 days prior to the following meeting. For more frequent meetings, the minutes will be distributed as soon as possible.

6. A copy of the RAB meeting minutes will be sent to all RAB members. Supporting documents will be available for public review in the information repository and other repositories as identified.

7. RAB members will be asked to review and comment on various environmental restoration documents. Written comments may be submitted individually by a member, or by the RAB as a whole. Written comments will be submitted to the community co-chair on the subject documents within the schedule as provided for regulatory agency comments. The community

co-chair will consolidate comments from RAB members and provide all comments received to the BEC. The BEC will ensure that a written response is provided to the RAB in a timely manner.

RAB Subcommittee

8. On April 21, 1999, the RAB concurred that only one subcommittee is necessary to provide a concentrated focus on environmental cleanup issues. Therefore, the existing relevant subcommittees envisioned in the original "Mission Statement and Operating Procedures" dated February 28, 1995, have been dissolved, and incorporated into one subcommittee.

a. Membership on the subcommittee will be comprised of volunteers from the RAB, or may be selected by the BEC and the community co-chair.

b. The regular bimonthly RAB subcommittee meeting will continue to be scheduled for the last Wednesday of the month alternating with the regular meeting of the full RAB held at Irvine City Hall, Conference and Training Center, Irvine, California.

c. The subcommittee will set their own agendas and meetings and will be open to the public. The subcommittee chair will notify the BEC and community co-chair of all meeting times and places including additional subcommittee meetings other than the regularly scheduled bimonthly subcommittee meeting.

d. The subcommittee will elect a chair. The subcommittee membership may dismiss a subcommittee chair by a majority vote. Subcommittee chair removal is determined at the meeting where removal is addressed by majority vote of the RAB members present.

e. Membership on the subcommittee will include the RAB community co-chair.

f. Subcommittee status will be reviewed annually, in May, to determine if changes are needed or the continued existence is required.

g. The RAB subcommittee may establish ad hoc subcommittees for specific issues and purposes that would focus efforts on a short-term basis.

h. The subcommittee may request the participation, involvement, and advice of regulatory agency members.

9. MCAS El Toro has established an information repository for public documents relating to restoration activities at MCAS El Toro. The repository is located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714. RAB members, as well as the general public, are authorized access to any documents, studies or information, which have been placed in the repository or distributed at RAB meetings. The community co-chair will be provided one (1) copy of all draft documents. The subcommittee will be provided up to seven (7) copies of draft documents.

IV. Effective Date and Amendments

a. The effective date of this mission statement and operating procedures shall be the date that the last signatory signs this mission statement and operating procedures.

b. This mission statement and operating procedures may be amended by a majority vote of the RAB members present. Amendments must be consistent with the MCAS El Toro Federal Facility Agreement (FFA), and the statues stated in Part 11 of the mission statement and operating procedures, (Basis and Authority for this Mission Statement and Operating Procedures).

V. Terms and Conditions

a. The terms and conditions of this RAB mission statement and operating procedures, and DONs endorsement thereof, shall not be construed to create any legally enforceable rights, claims or remedies against DON or commitments or obligations on the part of DON, and shall be construed in a manner that is consistent with CERCLA, 10 U.S.C. Section 2705, and 40 CFR Part 300.

VI. Termination

a. This mission statement and operating procedures will be terminated upon completion of requirements as stated in the FFA. However, after implementation of the final remedial design, it may be terminated earlier upon a majority vote of the RAB membership.

VII. Signatories to the Membership Mission Statement and Operating Procedures

IN WITNESS WHEREOF, we have set our hand this _____ day of _____ 1995.

_____
MCAS El Toro BRAC Environmental Coordinator

_____
RAB Community Co-Chair

_____
U. S. Environmental Protection Agency RPM

California Department of Toxic Substances Control RPM

The original "Mission Statement and Operating Procedures", dated February 28, 1995, is on file at Marine Corps Air Station (MCAS) El Toro, Environment and Safety. It was signed by Mr. Joseph Joyce, Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), Ms. Marcia Rudolph, Restoration Advisory Board (RAB), Community Co-chair, Ms. Bonnie Arthur, Environmental Protection Agency (EPA), Remedial Project Manager, and Mr. Juan Jimenez, Department of Toxic Substances Control (DTSC), Remedial Project Manager.

Shown below is an excerpt from the original "Mission Statement and Operating Procedures", dated February 28, 1995 with signatures of the above-mentioned individuals.

VII. Signatories to the Membership Mission Statement and Operating Procedures

IN WITNESS WHEREOF, we have set our hand this 28th day of FEBRUARY, 1995

MCAS El Toro BRAC Environmental Coordinator

RAB Community Co-Chair

U.S. Environmental Protection Agency RPM

California Department of Toxic Substances Control RPM

MEMBERSHIP APPLICATION

RESTORATION ADVISORY BOARD

MARINE CORPS AIR STATION EL TORO

Conditions for Membership:

Restoration Advisory Board (RAB) members are expected to serve a two-year term and attend all RAB meetings or designate an alternate. The alternate must be jointly approved by the Department of Defense and Community Co-Chairpersons. Members who miss three or more consecutive meetings may be asked to resign. Duties and responsibilities will include reviewing and commenting on technical documents and activities associated with the environmental restoration at the former Marine Corps Air Station El Toro. Members will be expected to be available to community members and groups to facilitate the exchange of information and/or concerns between the community and the RAB.

RAB membership priority will be given to local residents that are impacted/affected by the closure of the installation. The number of RAB members may be limited.

* *

NAME: _____

ADDRESS: _____
Street Apt # City Zip

PHONE: ( )_____ ( )_____ Fax: ( )_____

GROUP AFFILIATION: _____

1. Briefly state why you would like to be considered for membership on the Restoration Advisory Board (RAB)

_____

_____

_____

_____

(Continued on back side)

2. What has been your experience working as a member of a diverse group with common goals?

_____

_____

_____

3. Please indicate if you are interested in being considered for the Community Co-Chairperson position on the RAB by checking the box below:

☐ Yes, I would like to be considered.

4. Are you willing to serve a 2-year term as a member of this RAB?

☐ Yes, I am willing to serve a 2-year term as a member of this RAB.

5. By submitting this signed application, you are aware of the time commitment which this appointment will require for you.

6. By submitting this signed application, you willingly agree to work cooperatively with other members of the committee to ensure efficient use of time for addressing community issues related to environmental restoration of the facility.

PRIVACY ACT STATEMENT: The personal information requested on this form is being collected in order to determine interest in and qualification for membership on the Restoration Advisory Board. The information will be reviewed by a selection panel and will be retained in a file at BRAC Environmental Coordinator's Office at MCAS El Toro. The information will not be disseminated. Providing information on this form is voluntary.

_____ _____

Applicant Signature Date

Please return your completed application to:

Andy Piszkin
BRAC Environmental Coordinator
Base Realignment & Closure,Environmental Division
MCAS El Toro
7040 Trabuco Road
Irvine, CA 92618

FAX – (949) 726-6586

REVISED – July 2004

MCAS EL TORO

Restoration Advisory Board - Membership Roster

Richard Bell — Daytime (714) 841-7809
MWD of Orange County
P.O. Box 20895
Fountain Valley, CA 92728
Group Affiliation: Community Member, Metropolitan Water District

John Broderick — Daytime (909) 782–4494
Santa Ana Regional Water Quality Control Board — FAX (909) 781-6288
3737 Main Street, Suite 500
Riverside, CA 92501-3338

+Michael S. Brown, Phd — Daytime (805) 898-0980
850 Cathedral Vista Lane — FAX (805) 898-0087
Santa Barbara, CA 93110
Group Affiliation: Technical Consultant to City of Irvine

+Tim Chauvel — Daytime (714) 484-5487
Public Participation Specialist — FAX (714) 484-5329
Cal-EPA/Dept. of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

+Viola Cooper (SFD-3) — Daytime (800) 231-3075 or
Community Involvement Coordinator — (415) 972-3243
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Chris Crompton — Daytime (714) 567-6360
10852 Douglass Road — FAX (714) 567-6340
Anaheim, CA 92806
Group Affiliation: County of Orange, Environmental Management Agency

Roy Herndon — Daytime (714) 378-3260
10500 Ellis Avenue — Home (714) 551-5415
Fountain Valley, CA 92708–8300 — FAX (714) 378-3373
Group Affiliation: Orange County Water District

REVISED – July 2004

Peter Hersh
24152 Las Naranjas Drive
Laguna Niguel, CA 92677
Phone: (949) 495-5066
Group Affiliation: Community Member

Gregory F. Hurley, Esq.
GT
18300 Von Karmen, Suite 850
Irvine, CA 92612
Daytime (949) 252-8801
FAX (949) 252-8805
Group Affiliation: Community Member

Dan Jung
P.O. Box 19575
Irvine, CA 92606
Daytime (949) 724-6424
FAX (949) 724-6045
Group Affiliation: City of Irvine, Director of Strategic Programs, City Manager's Office

Tayseer Mahmoud
Office of Military Affairs
Cal-EPA/Dept. of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630
Daytime (714) 484-5419
FAX (714) 484-5437

Steve Malloy
15600 Sand Canyon Avenue
Irvine, CA 92618
Daytime (949) 453–3370
FAX (949) 453–0228
Group Affiliation: Irvine Ranch Water District

Roland Marquis
24971 Owens Lake Circle
Lake Forest, CA 92630
Daytime (714) 821-2911
FAX (714) 821-2112
Home (949) 699-2713
Group Affiliation: Community Member

Suzanne Marquis
24971 Owens Lake Circle
Lake Forest, CA 92630
Daytime (714) 821-2911
FAX (714) 821-2112
Home (949) 699-2713
Group Affiliation: Community Member

Mary Aileen Matheis
73 Nighthawk
Irvine, CA 92604
Daytime (949) 474-7368
Home (949) 551–0567
Group Affiliation: Board Member of Irvine Ranch Water District

Fred J. Meier
1517 E. Beechwood Street
Santa Ana, CA 92705
Daytime (714) 550–7551
Home (714) 547–1450
FAX (714) 550–7551
Group Affiliation: Community Member, American Society of Civil Engineers, Life Member Committee, Infrastructure Advisory Committee

Nicole Moutoux (SFD-H-8) — Daytime (415) 972-3012
U. S. Environmental Protection Agency — FAX (415) 947-3518
Region 9
75 Hawthorne Street
San Francisco, CA 94105

RAB Marine Corps/Navy Co-Chair

Andy Piszkin — El Toro (949) 726-5398
BRAC Environmental Coordinator — FAX (949) 726-6586
Base Realignment and Closure, Environmental Div.
P.O. Box 51718 — San Diego (619) 532-0784
Irvine, CA 92619-1718 — FAX (619) 532-0780

Gail Reavis — Daytime (949) 461-0020
21281 Astoria — FAX (949) 461-0064
Mission Viejo, CA 92692
Group Affiliation: Community Member, President, Palmia Anti-airport Coalition, City Councilperson for Mission Viejo

Marcia Rudolph — Daytime (949) 770-9555
24922 Muirlands #139 — Home (949) 830–9816
Lake Forest, CA 92630 — FAX (949) 830–4698
Group Affiliation: Community Member, City Councilperson for Lake Forest

Steven Sharp — Daytime (714) 667-3623
2009 East Edinger Avenue — FAX (714) 972-0749
Santa Ana, CA 92705
Group Affiliation: Environmental Health Division, Orange County Health Care Agency

Jerry B. Werner — Daytime (949) 859–1322
2391 Via Mariposa #1D — Home (949) 859–1322
Laguna Woods, CA 92637
Group Affiliation: Community Member, Laguna Woods/Leisure World

RAB Community Co-Chair *(re-elected on 1/28/04, 2nd one-year term)*

Bob Woodings — Daytime (949) 461-3481
25550 Commercecentre Drive, Suite 100 — FAX (949) 461-3512
Lake Forest, CA 92630
Group Affiliation: Director of Public Works, City of Lake Forest

Donald E. Zweifel — Home (714) 993-4085
386 Hawaii Way — FAX (714) 993-4085
Placentia, CA 92870
Group Affiliation: Community Member, Exec. Dir., Gulf & Vietnam Vets Historical Assn.

+ Not RAB member but included on RAB member list.

MCAS El Toro

Installation Restoration Program

MAILING LIST REQUEST COUPON

If you would like to be on the mailing list to receive information about environmental restoration activities at MCAS El Toro, please complete the coupon below. You may mail or fax it, or use the e-mail option. If you chose to send you mailing list request via e-mail, please include the information requested in the coupon.

Base Realignment and Closure
Attn: Ms. Marge Flesch
7040 Trabuco Road
Irvine, CA 92618

FAX – (949) 726-6586

E-mail – fleschmm@efdsw.navfac.navy.mil

☐ Add me to the MCAS El Toro Installation Restoration Program mailing list.

☐ Send me information on Restoration Advisory Board membership.

Name _____

Street _____

City _____ **State** _____ **Zip Code** _____

Affiliation (optional) _____

Telephone _____

MCAS El Toro Installation Restoration Program

BRAC Cleanup Team (BCT) Members* and Key Project Representatives

Lead Agency

Mr. Andy Piszkin*
BRAC Environmental Coordinator
Base Realignment and Closure
Environmental Division
MCAS El Toro
7040 Trabuco Road
Irvine, CA 92618
(949) 726-5398 or (619) 532-0784
frank.piszkin@navy.mil (new email address)

♦ ♦ ♦

For More Information

Administrative Record (AR): the collection of reports and documents used in the selection of cleanup or environmental management alternatives. Anyone is welcome to review AR file documents at MCAS El Toro, BRAC Office, N. 7th Street, Building 83. **To schedule an appointment call Ms. Marge Flesch at (949) 726-5398, Monday-Thursday, 7:00 a.m. to 3:00 p.m.**

Information Repository (IR): copies of reports, documents and other environmental information are available for public review.

Heritage Park Regional Library
14361 Yale Avenue, Irvine, CA
(949) 551-7151
Monday-Thursday – 10 am-9 pm
Friday-Saturday – 10 am-5 pm
Sunday – 12 pm-5 pm

Federal Representatives

Ms. Nicole Moutoux*
Project Manager
U.S. EPA Region IX
75 Hawthorne Street (SFD-H-8)
San Francisco, CA 94105
(415) 972-3012
moutoux.nicole@epamail.epa.gov

Ms. Viola Cooper
Community Involvement Coordinator
Superfund Division
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
U.S. EPA, Region IX
(415) 972-3243 or (800) 231-3075
cooper.viola@epamail.epa.gov

Restoration Advisory Board Point-of-Contacts

Mr. Bob Woodings
RAB Community Co-Chair
(949) 461-3481
bwoodings@ci.lake-forest.ca.us

Ms. Marcia Rudolph
RAB Subcommittee Chair
(949) 830-9816
Rudolphm@earthlink.net

State Representatives

Mr. Tayseer Mahmoud*
Project Manager, Cal/EPA Dept. of Toxic Substances Control (DTSC)
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5419
tmahmoud@dtsc.ca.gov

Mr. John Broderick*
Project Manger, Cal/EPA Regional Water Quality Control Board (RWQCB)
3737 Main Street, Suite 500
Riverside, CA 92501-3338
(909) 782-4494
jbroderic@rb8.swrcb.ca.gov

Mr. Tim Chauvel
Public Participation Specialist, Cal/EPA
Dept. of Toxic Substances Control (DTSC)
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5487
tchauvel@dtsc.ca.gov

Revised – March. 2004

Internet Access
Environmental Web Sites

Southwest Division Naval Facilities Engineering Command Web Site:

http://www.efdsw.navfac.navy.mil/environmental/envhome.htm

Department of Defense - Environmental Web Page:

http://www.dtic.mil/envirodod/

U.S. EPA:

www.epa.gov (homepage)
www.epa.gov/superfund/ (Superfund)
www.epa.gov/ncea (National Center for Environmental Assessment)
www.epa.gov/federalregister (Federal Register Environmental Documents)

Cal/EPA:

www.calepa.ca.gov (homepage)
www.dtsc.ca.gov (Department of Toxic Substances Control)
www.dhs.ca.gov (Department of Health Services)
www.swrcb.ca.gov/ (Santa Ana Regional Water Quality Control Board)

U.S. EPA

Federal Register Environmental Documents

Endangered and Threatened Wildlife and Plants
Proposed Designation of Critical Habitat for the
Riverside Fairy Shrimp

Visit the web site below:

www.epa.gov/fedrgstr/EPA-IMPACT/2004/April/Day-27/i9203.htm

This web site contains a 42-page document that proposes critical habitat area in Los Angeles, Orange, Riverside, San Diego and Ventura Counties.

Glossary of Technical Terms

Air Stripping: A treatment technology that transforms VOCs in groundwater to gas for removal and treatment.

Aquifer: A particular zone or layer of rock or soil below the earth's surface through which groundwater moves in sufficient quantity to serve as a source of water.

Cleanup Goals: Chemical concentration levels that are the goals of the remedial action. Once the cleanup goals have been achieved, the remedy is considered protective of human health and the environment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Commonly known as the Superfund. This law authorizes EPA to respond to past hazardous waste problems that may endanger public health and the environment. CERCLA was authorized and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Domestic Use: Use of water for drinking, cooking, and bathing.

Downgradient: Groundwater that is downstream of an area of soil or groundwater contamination.

Extraction Wells: Wells used to pump groundwater to the surface for treatment or for use.

Feasibility Study (FS): An analysis of cleanup or remedial alternatives to evaluate their effectiveness and to enable selection of a preferred alternative.

Federal Facility Agreement: A voluntary agreement entered into by the Navy, U.S. EPA, and Cal-EPA (Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB)) establishing an overall framework for how the investigation and cleanup of MCAS El Toro is to be conducted.

Groundwater: Underground water that fills pores in soil or openings in rocks.

Infiltration: Process by which dissolved chemical constituents are carried by water through the soil.

Intermediate Zone: A generally low permeability layer that separates that shallow groundwater unit from the principal aquifer at MCAS El Toro.

Maximum Contaminant Levels (MCLs): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.

Maximum Contaminant Level Goal: A non-enforceable concentration of a drinking-water contaminant, set at a level at which no known adverse effects on human health occur.

Monitored Natural Attenuation: Refers to the routine sampling and testing of groundwater to assess the cleanup effectiveness of natural attenuation processes.

Monitoring Well: Wells drilled at specific locations either on or near a hazardous waste site, for the purpose of determining direction of groundwater flow, types and concentrations of contaminants present, or vertical or horizontal extent of contamination.

Natural Attenuation: The process by which a compound is reduced in concentration over time, through adsorption, degradation, dilution, and/or transformation.

Nitrates: Compounds containing nitrogen which dissolve in water and may have harmful effects on humans and animals. Nitrates are commonly used in fertilizers.

Operable Unit (OU): Term for each of a number of separate activities undertaken as part of a Superfund site cleanup.

Plume: A three-dimensional zone within the groundwater aquifer containing contaminants that generally move in the direction of, and with, groundwater flow.

Principal Aquifer: The main (regional) water-bearing aquifer in the vicinity of MCAS El Toro.

Rebound: The tendency of soil gas concentrations to increase after SVE is turned off.

Record of Decision (ROD): A public document that explains what cleanup alternative will be used at a specific NPL site. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Remedial Action (RA): The actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a Superfund site.

Remedial Design (RD): The design of the selected cleanup alternative for a Superfund site.

Remedial Investigation (RI): One of the two major studies that must be completed before a decision can be made about how to clean up a Superfund site. (The FS is the second major study.) The RI is designed to determine the nature and extent of contamination at the site.

Shallow Groundwater Unit: The shallowest water-bearing zone beneath MCAS El Toro.

Soil Gas: Gas found in soil pore space. In contaminated areas, soil gas may include VOCs.

Soil Vapor Extraction (SVE): A process whereby contaminated soil gas is brought to the surface for treatment.

Trichloroethene (TCE): A volatile organic compound that has been widely used as an industrial solvent. TCE is a colorless, odorless liquid that, when inhaled or ingested in large amounts, can cause irritation of the nose, throat, and eyes, nausea, blurry vision, or dermatitis. EPA has classified TCE as a "probable human carcinogen."

Total Dissolved Solids (TDS): Used to reflect salinity of groundwater.

Upgradient: Groundwater that is upstream of an area of soil or groundwater contamination.

Volatile Organic Compound (VOC): An organic (carbon containing) compound that evaporates readily at room temperature. VOCs are commonly used in dry cleaning, metal plating, and machinery degreasing operations.

Water Quality Standards: State-adopted and U.S. EPA-approved ambient standards for water bodies. The standards cover the use of the water body and the water quality criteria which must be met to protect the designated use or uses.

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
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IN REPLY REFER TO

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From: Chief of Naval Operations

To: Distribution

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA) STATUTORY FIVE-YEAR REVIEWS, NOVEMBER 2001

Ref: (a) Navy/Marine Corps Installation Restoration Manual (Feb 97)

Encl: (1) Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Statutory Five-year Reviews, November, 2001

1. Enclosure (1) establishes procedures for conducting five-year reviews, facilitates consistency of five-year reviews across the Navy/Marine Corps, clarifies current policy, and delineates roles and responsibilities of various entities in conducting or supporting five-year reviews.

2. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that remedial actions resulting in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to assure protection of human health and the environment, regardless of the National Priorities List (NPL) status of the site or installation.

3. This policy has been coordinated and concurred with by the Marine Corps.

4. This policy will be included in the next revision to reference (a). It will also be available on the N45 website (http://web.dandp.com/n45/index.html) under Environmental Restoration/Training, References.

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA) STATUTORY FIVE-YEAR REVIEWS

5. Questions or comments concerning this policy should be directed to Mr. Geoffrey D. Cullison, CNO N453D, 2211 So. Clark St., Arlington, VA 22202-3735, (703) 602-5329 (DSN 332-5329), cullison.geoffrey@hq.navy.mil.

R. T. Nolan
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Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Statutory Five-year Reviews November 2001

Ref: EPA Comprehensive Five-Year Review Guidance, June 2001, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, §1.3.1

1. Statutory requirements:

a. The statutory requirement for five-year review was added to CERCLA as part of the Superfund Amendments and Reauthorization Act of 1986 (SARA). A five-year review is required when **both** of the following conditions are met, whether the site is on the National Priorities List (NPL) or not:

1) Upon completion of the remedial actions at a site, hazardous substances, pollutants, or contaminants will remain above levels that allow for unlimited use and unrestricted exposure. For example, if a site is restricted to industrial use because hazardous substances, pollutants, or contaminants remain above levels that allow for unlimited use and unrestricted exposure, five-year reviews must be conducted.

2) The Record of Decision (ROD) or Decision Document (DD) for the site was signed on or after October 17, 1986 (the effective date of SARA).

b. CERCLA §121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five-years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

c. The National Contingency Plan (NCP), 42 U.S.C. § 9621(c), implementing regulations, 40 C.F.R. Part 300.430(f)(4)(ii), provide:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

d. Consistent with Executive Order 12580, the Secretary of Defense is responsible for ensuring that five-year reviews are conducted at all qualifying Department of Defense (DoD) cleanup sites.

e ... . EPA classifies five-year review as either "statutory" or "policy" depending on whether it is required by statute or conducted as a matter of EPA policy. In particular, EPA views five-year reviews conducted of RODS issued before October 17, 1986 as being conducted as a matter of policy because the five-year review requirement didn't became law until that date. Statutory five-year reviews are required by law and will be conducted by the Navy/Marine Corps at any site meeting the requirements of the law. We generally do not conduct policy five-year reviews.

2. Definitions:

a. For purpose of this policy, "site" means a location on an installation's property where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located where, upon completion of the remedial action, hazardous substances, pollutants, or contaminants will remain at the site above levels that allow for unlimited use and unrestricted exposure. This includes areas off the installation where contamination may have migrated. For purpose of this policy, "site" also means Operable Unit.

b. "Unlimited use" and "unrestricted exposure" mean that there are no restrictions on the potential use of land or other natural resources.

3. Purpose of a five-year review:

a. The purpose of a five-year review is not to reconsider decisions made during the selection of the remedy, as specified in the ROD, but to evaluate the implementation and performance of the selected remedy.

b. Where a site has a remedial action that is still in the Remedial Action-Construction (RA-C) phase or the Remedial Action-Operations (RA-O) phase, a five-year review should confirm that immediate threats have been addressed and that the remedy will be protective when complete.

c. Where a site is in the Long Term Management (LTMgt) phase, the five-year review should confirm whether the selected remedy remains protective.

d. When the five-year review indicates that the remedy is not performing as designed, the report should recommend actions to improve performance.

4. NPL status: The continuing presence of hazardous substances, pollutants, or contaminants above levels that allow for unlimited use and unrestricted exposure under CERCLA establishes the requirement for a five-year review, not the NPL status of the installation. Reference (a) states that EPA will delete an installation from the NPL when deletion criteria have been satisfied and that an installation will not be kept on the NPL solely because it is subject to five-year reviews. If the installation has been deleted or is in the process of being deleted, the five-year review report should address the status of any deletion action.

5. Resource Conservation and Recovery Act (RCRA) response: Five-year reviews are not required if cleanup of a site is addressed under RCRA corrective action. In cases where both RCRA and CERCLA authorities are used to address different sites on an installation, a five-year review is only required for those portions of the installation being addressed under CERCLA that meet the criteria for five-year reviews. When a RCRA action is included as a portion of a ROD or DD or other CERCLA decision document, the RCRA action should be included in the five-year review.

6. Interim remedial action: By itself, an interim remedial action at a site does not start the clock for a five year review of that site; it is treated like any other remedial action for the purpose of five-year reviews. An interim remedial action triggers the five-year review clock if it meets any of the criteria outlined in paragraph 1. above. For instance, if an alternate water supply is installed but hazardous substances, pollutants, or contaminants remain onsite above levels that allow for unlimited use and unrestricted exposure, a review is required by statute. A subsequent action may then reduce the hazardous substances, pollutants, or contaminants to levels allowing unlimited use and unrestricted exposure. Remedial actions are those actions consistent with a permanent remedy taken instead of, or in addition to, removal action.

7. Five-year review "trigger":

a. In keeping with the requirements of CERCLA §121(c) and the NCP, initiation of the selected remedial action that will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure after the remedial action is complete is the "trigger" that starts the five-year review clock. For most Navy/Marine Corps sites, this "trigger" is the onsite mobilization for commencement of the RA-C phase.

b. The first site on an installation that triggers the five-year review clock triggers the five year review clock for the entire installation, or that portion of the installation addressed under the ROD or DD.

c. Where the selected remedy will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure but will not require a RA-C phase, such as monitored natural attenuation using existing wells and/or institutional controls, the remedy start date is the ROD or DD signature date and therefore is also the trigger for the five-year review clock.

8. Five-year review due dates:

a. The five-year review report for a site is to be completed and signed within five years of the trigger date for that site. Subsequent five-year reviews should be signed no later than five-years after the signature date of the previous five-year review reports.

b. Because the regulators do not have a statutory role in the conduct of five-year reviews, it will be up to Navy/Marine Corps to enforce the five-year review dates. To assist the field in tracking five-year review dates, there is a field in NORM that allows management to track these dates.

9. Results of a five-year review: The results of the five-year review are presented in a five-year review report.

a. The five-year review report should;

1) clearly state whether the remedy is or is expected to be protective,

2) document any deficiencies identified during the review, and

3) recommend specific actions to ensure that a remedy will be or will continue to be protective.

b. Where necessary, five-year review reports should include descriptions of follow-up actions needed to achieve, or to continue to ensure, protectiveness. Along with these recommendations, the report should list a timetable for performing the actions and the parties responsible for implementation.

c. If it is determined that cleanup levels or remedial action objectives cannot be achieved through the remedial action, the recommendations may suggest the type of decision process (e.g., ROD or DD, ROD or DD Amendment, Explanation of Significant Differences (ESD)) needed to evaluate or make changes to the remedy, cleanup levels, or remedial action objectives.

d. For sites that are still in the RA-O phase (pre-Response complete) where evaluation and optimization of the remedial action operations are performed routinely, most information for the five-year review should be readily available.

10. Review and Signature: Pursuant to the delegations of authority in sections 2(d) and 11(g) of Executive Order 12580, and DoD Instruction 4715.7 of 22 April, 1996, Department of the Navy (DON) is the approval authority for CERCLA five-year reviews conducted at sites under its jurisdiction, custody or control.

a. Five-year reviews completed with ER,N or BRAC funds will be signed by the Commanding Officer of the supporting EFD/A.

b. Five-year reviews completed with installation funds will be signed by the installation Commanding Officer/Commanding General or a designee of the Regional Environmental Coordinator.

c. Regulatory agencies have no statutory review authority in five-year reviews conducted by DON in its Lead Agent authority except where some past DON Federal Facility Agreements (FFAs) have included five-year review reports as enforceable primary documents. Future FFAs and Federal Facility-State Remediation Agreements (FFSRAs) are not to include five-year review reports as either primary or secondary documents. However, five-year reviews may be submitted to the appropriate regulators for their review and comment as a matter of partnering.

11. Keeping the community informed:

a. Because the five-year review addresses the status and protectiveness of a remedy, it should be used to communicate this information to the community. If the Restoration Advisory Board (RAB) is still active at the installation, preparation for and conduct of the five-year review should be an agenda item at each RAB meeting conducted while the five-year review is underway. Where necessary, additional RAB meetings should be held to ensure the community is kept up to date on progress and results of the five-year review. If the RAB is inactive or has disbanded, the installation shall determine the most effective approach to informing the community based on the level of community interest. At a minimum, community involvement activities during the five-year review should include notifying the community that the five-year review will be conducted, notifying the community that the five-year review has been completed, and providing the results of the review to the local site repository.

b. The installation Public Affairs Officer can recommend appropriate methods of communication (e.g., public notices, fact sheets) for notifying the public.

c. Upon completion of the five-year review and Five-Year Review Report, a brief summary of the report should be made available to the stakeholders. The summary should include a short description of the remedial action, any deficiencies, recommendations and follow-up actions that are directly related to protectiveness of the remedy, and the determination(s) of whether the remedy is or is expected to be protective of human health and the environment. The summary should also provide the location of the site information repository and/or where a copy of the complete report can be obtained, and provide the date of the next five-year review or notify the community when five-year reviews will no longer be necessary.

e. Five year reviews are not Administrative Record material and are not to be included therein. However, the RPM should ensure that the signed five-year review report is placed in the site information repository.

12. Discontinuing five-year reviews:

a. There is no statutory provision for the discontinuation of statutory reviews. However, EPA acknowledges in reference (a) that five-year reviews may no longer be needed when no hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure, reference (a), paragraph 1.2.4. The basis for this finding should be documented in the final Five-Year Review report.

b. If a ROD or DD states that a five-year review will be performed, but prior to conducting the first review the EFD/EFA determines that no review is required, this finding should be recorded in a major document subject to public comment, such as a Proposed Plan or a Notice of Intent to Delete.

Office of the Deputy Under Secretary
of Defense
(Environmental Security)

BRAC Environmental Program Fact Sheet
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Spring 1997

INSTITUTIONAL CONTROLS
What they are and how they are used

WHAT IS AN INSTITUTIONAL CONTROL?

The purpose of this fact sheet is to provide an overview of Institutional Controls (IC) and how they are used. A separate fact sheet is being developed on establishing and maintaining ICs as part of an environmental cleanup remedy decision. That fact sheet will also be available on the Department of Defense (DoD) BRAC Environmental homepage at *http://www.dtic.mil/envirodod/envbrac.html.*

- ICs have a long history as a tool in property law and their use in a non-environmental context is quite common. An example of an IC in a non-environmental context is a prohibition against having a television reception satellite dish in a planned community.
- An IC is a legal or institutional mechanism that limits access to or use of property, or warns of a hazard. An IC can be imposed by the property owner, such as use restrictions contained in a deed or by a government, such as a zoning restriction.

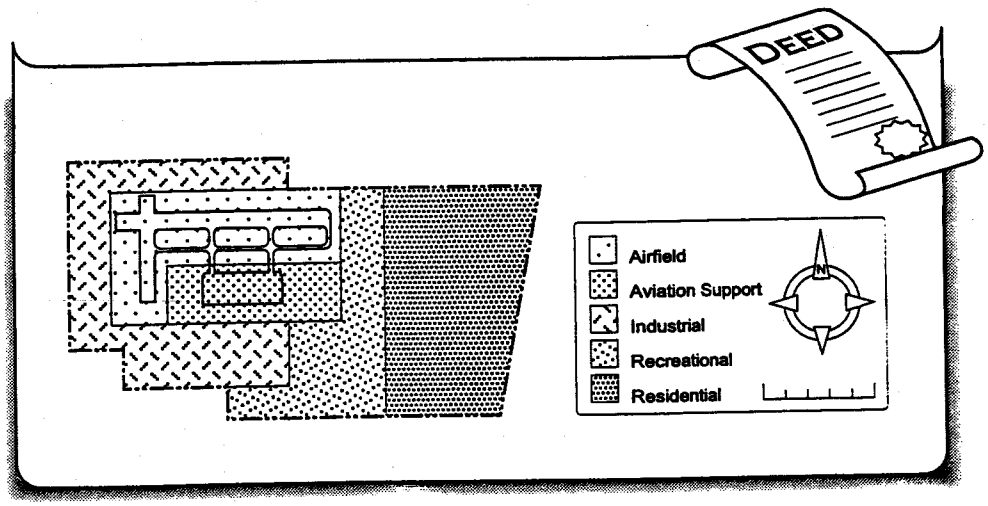
USES OF INSTITUTIONAL CONTROLS IN ENVIRONMENTAL CLEANUP

- ICs are used to ensure protection of human health and the environment.
- ICs are used to protect ongoing remedial activities and to ensure viability of the remedy.
- ICs are specifically provided for by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP).
- DoD has used and will use ICs in remedial activities during cleanup and as part of a final remedy.

TYPES OF INSTITUTIONAL CONTROLS

ICs fall into two categories:

- Proprietary controls
- Governmental controls



WHAT IS A PROPRIETARY CONTROL?

- A proprietary control is a private contractual mechanism contained in

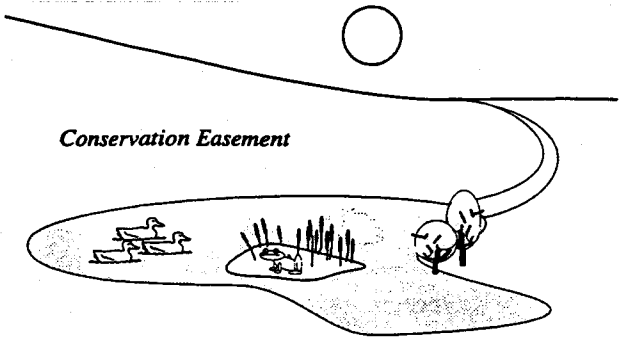
the deed or other document transferring the property.

- Proprietary controls involve the placement of restrictions on land through the use of easements, covenants, and reversionary interests. Easements, covenants, and reversionary interests are nonpossessory interests. Nonpossessory interests give their holders the right to use or restrict the use of land, but not to possess it.

- State law varies on the application and enforcement of such restrictions.

What is an Easement?

- An easement allows the holder to use the land of another, or to restrict the uses of the land. For example, a conservation easement restricts the owner to uses that are compatible with conservation of the environment or scenery.



Conservation Easement

- If the owner violates the easement, the holder may bring suit to restrain the owner.

- An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, benefits by having beach access through your land.

- An easement "in gross" benefits an individual or company. For example, allowing the utility company to come on your land to lay a gas line. The utility company, the holder of the easement, benefits by having use of the land to lay the gas line.

- An affirmative easement allows the holder to use another's land in a way that, without the easement, would be unlawful-- for example, allowing a use that would otherwise be a trespass.

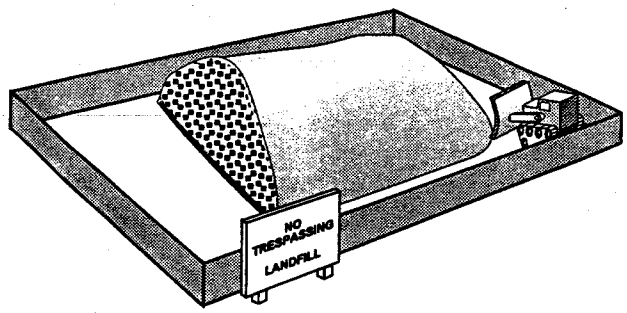
- A negative easement prohibits a lawful use of land — for example, creating a restriction on the type and amount of development on land.

What is a Covenant?

- A covenant is a promise that certain actions have been taken, will be taken, or may not be taken.

- Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners.

- An affirmative covenant is a promise that the owner will do something that the owner might not otherwise be obligated to do -- for example, maintaining a fence on the property that surrounds a landfill.

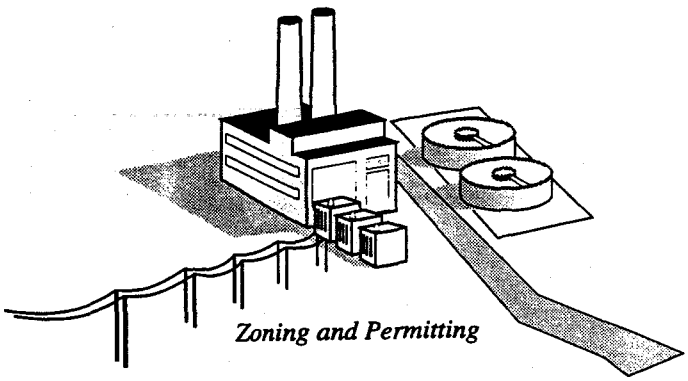


- A negative covenant is a promise that an owner will not do something that the owner is otherwise free to do -- for example, restricting the use of groundwater on the land.

What is a Reversionary Interest?

- A reversionary interest places a condition on the transferee's right to own and occupy the land. If the condition is violated, the property is returned to the original owner or the owner's successors.

- Each owner in the chain of title must comply with conditions placed on the property. If a condition is violated the property can revert to the original owner, even if there have been several transfers in the chain of title.



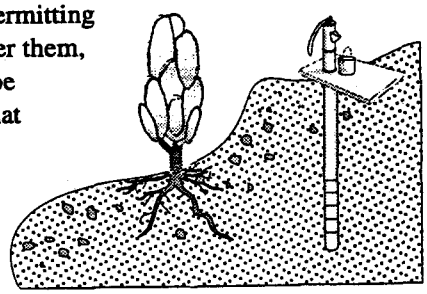
Zoning and Permitting

WHAT IS A GOVERNMENTAL CONTROL?

- Governmental controls are restrictions that are within the traditional police powers of state and local governments to impose and enforce.
- Permit programs and planning and zoning limits on land use are examples of governmental controls.

What are possible governmental controls?

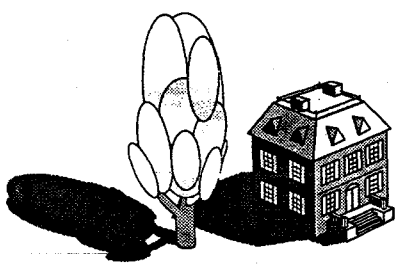
- **Zoning**— Use restrictions imposed through the local zoning or land use planning authority. Such restrictions can limit access and prohibit disturbance of the remedy. Zoning authority does not exist in every jurisdiction.
- **Siting restrictions** — Control land use in areas subject to natural hazards, such as earthquakes, fires, or floods. Such restrictions are created through statutory authority to require that states implement and enforce certain land use controls as well through local ordinances.
- **Groundwater restrictions**— Specific classification systems used to protect the quality of or use of ground water. These systems operate through a state well permitting system. Under them, criteria may be established that must be met before a use permit or construction is allowed.



Examples of the Application of Institutional Controls

Historic Preservation at U.S. Customs House, Boston

In 1987, the Custom House in Boston was deemed excess and the General Services Administration (GSA), through special legislation, sold it to the Boston Redevelopment Authority. At the time of the sale, the GSA placed an historic preservation covenant in the deed to protect the exterior architectural and structural integrity of the building. The Boston Redevelopment Authority wanted to resell the Custom House to a developer that planned to connect it by a skyway to a building half a block away. When GSA refused to remove the historic covenant, the deal fell through. Several years later, the Marriott Corporation proposed a plan to buy the Custom House and create an urban park between the Marriott at the Wharf and the Custom House. Under the plan, the building will retain its historic appearance and will be used as one of Marriott's time-share properties.



Examples of the Application of Institutional Controls

Limiting Subsurface Use at Former Minuteman Missile Silos

With the end of the Cold War, the Department of Defense announced the retirement of the Force Minuteman missile system in North and South Dakota and Missouri. As allowed by the Strategic Arms Reduction Treaty, the Air Force, after extensive technical analysis and public comment, determined that dismantlement of the missile facilities would be accomplished by imploding the structures, capturing the contamination within the concrete structures; capping each structure with a combination of three feet of soil and a thick plastic liner; and contouring the landscape at an additional depth of seven feet above the facility. The Air Force also determined that CERCLA 120(h) applied to the transfer of these facilities to non-federal entities. The Air Force and the U.S. Environmental Protection Agency (EPA) found a sensible approach to address environmental issues, which was formalized in an agreement between the two agencies. The agreement calls for the GSA in disposing the property to notify federal and state regulators when the property is transferred; provide prior notice to and obtain the approval of federal and state regulators for any construction or other activity that would affect the underground facility or groundwater monitoring wells; and place restrictions in the deed of conveyance to prohibit future property owners from installing water wells or otherwise physically penetrating beneath the surface of the site below two feet. The Air Force and regulators also were provided with rights of access. The ICs are in place for the disposal of these missile sites in North and South Dakota and Missouri.

Other Sources of Information

1. John Pendergrass, *Use of Institutional Controls as Part of a Superfund Remedy: Lessons from Other Programs*, 26 ELR 10219 (March 1996).

2. Report of the Future Land Use Working Group to the Defense Environmental Response Task Force, *Types of Institutional Controls,* (May 1996), available on DoD BRAC environmental homepage at *http://www.dtic.mil/envirodod/envbrac.html.*

3. Report to the Future Land Use Working Group to the Defense Environmental Response Task Force, *Making Institutional Controls Effective,* (September 1996) available on DoD BRAC environmental homepage at *http://www.dtic.mil/envirodod/envbrac.html.*

NOTICE

We welcome and invite your comments on this fact sheet, as we seek ways to improve the information provided. Please send comments to the following address:

OADUSD (Environmental Cleanup)
Attn: Fast-track Cleanup
3400 Defense Pentagon
Washington, D.C. 20301-3400.

February 1998

A Guide to Establishing Institutional Controls at Closing Military Installations

About This Guide

This guide supplements the land use matrix developed under the February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" by helping to ensure the compatibility between the selected land use and the selected remedy. The land use matrix is intended as a tool to build consensus among Base Realignment and Closure (BRAC) cleanup teams (BCTs), local redevelopment authorities (LRAs), restoration advisory boards (RABs), and other community members, as well as to identify and resolve the complex restoration and reuse issues at closing installations. This guide further explains land use restrictions, namely institutional controls (ICs), that may be associated with a restoration and reuse alternative. This guide is intended to:

- facilitate, early in the process, discussions among stakeholders to enhance understanding of ICs, i.e., what they are and how they might be used as part of a proposed remedy alternative in the BRAC cleanup program;
- act as a planning tool and checklist to assist stakeholders in considering a selected remedy which does in fact include the use of ICs; and
- provide a framework for building cooperation among the stakeholders in the establishment and maintenance of ICs.

ICs are mechanisms that protect property users and the public from existing site contamination that continues to be present during the use of a site.

For a particular restoration and reuse alternative, the stakeholders may identify the need for ICs. This guide assumes that the LRA will take the environmental condition of property into account in development of its reuse plan, and that use restrictions will be included in the remedy decision arrived at through the remedy selection process. In this guide, ICs are taken to be mechanisms that protect property users and the public from existing contamination that continues to be present during the use of a site. A more detailed explanation of ICs is presented in the BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How They Are Used* (see "Where to Learn More," page 8). There may be other ICs associated with the property but not related directly to an environmental response action, such as historic and cultural preservation, access for utility maintenance, or ecological concerns, e.g., wetlands and wildlife protection.

Conflict can arise among stakeholders during the process of identifying and evaluating restoration and reuse alternatives. A detailed discussion of conflict resolution techniques can be found in the July 1996 document entitled *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (see "Where to Learn More," page 8). That guide provides techniques for forming and maintaining an effective problem-finding, problem-solving team. By applying the techniques described, the parties involved in establishing and maintaining ICs can identify common issues and maximize the effectiveness of the tools available to each.

What Is the Role of Institutional Controls in the Remedy Selection Process?

The potential need for ICs is identified when stakeholders develop the land use matrix recommended in the BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations*. When various restoration and reuse alternatives are being developed, the first question to be asked is:

Does this alternative require some sort of control or limit on use of the property?

If the answer to that question is "yes," then this guide should be used to evaluate how an IC would be established. Considering the pros and cons of establishing and maintaining ICs should be an integral part of the decision-making process in the selection of a restoration action. When ICs are used, they are a vital part of the remedy and must be maintained to protect human health and the environment. ICs are legal mechanisms, such as deed restrictions, and may be coupled with physical controls, such as signs posted at the site or fences. The control or notice mechanism will vary depending on the nature of the contamination, its location, the targeted land use, the structures located on the site, and the length of time for which the use is restricted.

During remedy selection, the nature and extent of specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property.

Once remedy alternatives, including ICs, have been identified, the remedy selection process is applied to evaluate the alternative as a whole, including any ICs involved. For example, using the process under the National Contingency Plan (NCP) for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the BCT will develop a proposal on which the public and regulatory agencies will be invited to comment — both in writing and at a public meeting. A response to those comments will be prepared, and a response action selected. Throughout the remedy selection process, the ICs will be evaluated in the same manner as all other components of a potential remedy, as required by statute and Executive Order 12580. Stakeholders need to seriously consider and discuss all aspects of establishing, maintaining, and funding ICs as part of a remedy.

Two situations commonly occur in which ICs play an important role: (1) to protect the integrity of an engineering control intended to contain contamination, reduce its mobility, and minimize exposure, such as a landfill cap, and (2) to limit the exposure of individuals to residual contamination by limiting the reuse activities associated with that portion of the installation.

The information collected during the Remedial Investigation is used to determine if contamination is present and to characterize the site. In some cases, removing all contamination to allow unrestricted use of property may be very costly, the technology may be unavailable, or the time required to remediate and transfer the property may be prohibitive considering the community's reuse requirements for planned reuse and timing of property transfer.

The preferred remedy, protective of human health and the environment, sometimes requires that contaminants not be disturbed, leaving them in place. For example, the excavation of landfills can actually increase the risk to human health and the environment, in the short term, by exposing toxic contamination. One approach to reducing the long-term risk associated with such contamination left in place is to limit the uses to which that property will be put. The limit may be broad — for example, no residential occupancy — or it may be specific — for example, any activity involving the disturbance of soil must be approved in advance and any excavated soil must be disposed of properly.

During the remedy selection, the nature and extent of the specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property. Although the final details, such as engineering plans, zoning plans, and certain longer-term ICs such as deed restrictions, will not be determined until the Remedial Design is developed, the Feasibility Study (FS) should provide as clear a description as possible of the nature of the anticipated restrictions. Another important element of the FS is the anticipated duration of the restriction. If the

restriction is limited to a relatively short period during the actual remediation, it will have a very different impact on reuse than a restriction that is anticipated to last for a longer period of time. Such a longer-term restriction, for example, might be a restriction on groundwater use until treatment or attenuation has reduced contaminant levels to below health-based standards or a restriction on surface use over a landfill cap.

The proposed plan outlines the preferred remedial alternative and summarizes the other alternatives considered in the FS. The proposed plan should be written in a manner that can be easily understood by the public. A clear statement of the restrictions associated with the proposed action should be included to allow the public to be fully informed about the proposed action and implications of using ICs if they are a part of that action. The remedy selection process under CERCLA and the Environmental Protection Agency's (EPA) position on the use of ICs are described in the National Contingency Plan (NCP) (40 CFR Part 300.430(a)(1)(iii)) and its preamble (55 FR 8706). Under the NCP, community acceptance is one of the nine criteria for selecting a CERCLA remedy. While community acceptance is an essential ingredient in making the final remedy selection, it is not always possible to accomplish all the community's goals. It is the Department of Defense's (DoD) responsibility to make the final remedy selection in accordance with applicable laws and requirements and to ensure that it will be protective of human health and the environment, as well as be compatible with, to the extent reasonably practicable, community reuse plans. This final remedy selection is formalized through the Record of Decision (ROD), which will be compatible with any ICs that may be implemented at the site.

When the Selected Response Includes Institutional Controls

Form a Team

When a selected response includes ICs, the team members (see box) involved in developing the future land use and evaluating the response should work together to establish and maintain the selected ICs. Requirements for establishment and maintenance of ICs vary from site to site and are dependent on the real property and environmental cleanup laws and regulations of that jurisdiction. Cooperation, therefore, is essential to achieve success. That success depends on building a team that will be effective in using the tools available at that site and in that location.

Team members already should be a part of the process through their participation in groups such as those listed in the box below. Key members of these existing entities (although others may be consulted as necessary) should be part of the team developing a plan for the success of ICs at that site. It is important to build a team that works together to ensure the success of the response action and the effective reuse of the land.

The Team

Team Member	Potential Role in Establishing and Maintaining ICs
BRAC Cleanup Team	Identify the remaining contamination and associated risks at a site that requires ICs
Local Redevelopment Authority	Identify the intended use of the site consistent with the environmental condition of property that may require ICs; may assist in the establishment of ICs
Community Stakeholders (including the RAB)	Provide input and recommendations on establishing and maintaining ICs
Base Transition Coordinator	Facilitate the coordination of information on property reuse and transfer with cleanup activities, including establishment of ICs
Real Estate Attorney/Environmental Attorney	Develop deed language for restrictions; may assist in developing other ICs
Federal, State, and Local Government Officials	Establish, monitor or enforce ICs
Identified Holders of Property Interest	Maintain a use of the site that is consistent with ICs

Establish Cooperation

uch success will be easier to achieve when the following commitments are made:

- The team makes a commitment to the success of ICs
- The team develops the skills needed to work together well
- Throughout the process, all team members make a commitment to open communication
- The team members maintain mutual trust, honor, and respect
- The team members accept responsibility, make decisions, take risks, and resolve issues
- The team makes decisions through consensus
- The team develops creative solutions and applies them to all problems
- The team maintains agreed-upon processes for resolving disagreements or disputes
- The team evaluates progress and recognizes successes

The Task of the Team

his guide identifies issues that may be relevant to any number of response actions. It does not suggest how to resolve pecific issues, but offers tools that the team may find useful. It is up to the team establishing the ICs to develop and imple- nent a plan that uses these and other tools and the resources available to them at that site to create an effective remedy.

Checklist of Issues and Tools To Be Considered When Establishing and Maintaining ICs

The following questions should be asked when DoD and stakeholders discuss how to establish and maintain ICs.

2. *What are the ICs meant to accomplish?*

What types of reuse are possible, given the environmental condition of property and/or the planned remedial activities? For example:

TYPE(S) OF REUSE ALLOWED

- ☐ Residential
  - ☐ *Housing* ☐ *Daycare* ☐ *Hospitals* ☐ *Schools* ☐ *Other*
- ☐ Commercial
- ☐ Industrial
- ☐ Recreation
- ☐ Agricultural
- ☐ Other

What are the activities that must be restricted? For example:

SPECIFIC RESTRICTIONS

- ☐ Uses of ground and surface water
  - ☐ Prohibitions against drinking the water
  - ☐ Prohibitions against use of groundwater from existing wells
  - ☐ Prohibitions against any other use of the water (e.g., irrigation, watering livestock, or recreational uses, including fishing)
  - ☐ Restrictions to maintain the integrity of monitoring and reinjection wells
  - ☐ Other
- ☐ Use of soils
  - ☐ Prohibitions against excavation, construction, drilling, or disturbance of the soil (e.g., well installation that may connect an uncontaminated aquifer with a contaminated aquifer, or maintaining landfill cap)
  - ☐ Restrictions governing depth of excavation
  - ☐ Other
- ☐ Other ICs not directly related to the environmental response
  - ☐ Restrictions preserving historic or cultural areas
  - ☐ Restrictions protecting wildlife or wetlands
  - ☐ Restrictions governing access to the property (e.g., utility maintenance)

Q. What are the techniques and tools available to establish and maintain ICs?

TECHNIQUES: METHODS FOR ACCOMPLISHING THE GOALS OF THE ICs

- ☐ *Layering:* Layering means the use of a strategy to combine mutually reinforcing controls, for example, a combination of deed restrictions, physical barriers, and notice can expand the number of parties involved and strengthen the network that maintains the remedy and protects human health and the environment. Many tools can be used at the same time and at various levels to accomplish that result. Different team members may have methods available to them that enhance maintenance of the remedy.
- ☐ *Notice:* Providing notice that controls exist at a site is essential to maintain those controls and ensure that users of the property abide by them. The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.

The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.

TOOLS: SPECIFIC ACTIONS THAT CAN BE USED TO IMPLEMENT THESE TWO TECHNIQUES

- ☐ *Deed Language:* Language in the deed is a good method of providing notice and generally will be an important part of any IC plan. The legal instrument and language used should be tailored to the requirements and processes that are best suited to the jurisdiction. The instrument, which may be separate from the deed, may be a covenant or easement or some other form of property right; however, before relying on any such right, the legality and enforceability of such a right in the jurisdiction must be determined. The legal instrument should provide a

stand-alone explanation of the restrictions and should cite the portions of the administrative record, regulations, and transfer documents that are relevant to establishing the restrictions. Language providing notice and describing the restrictions may also be included in the transfer documents.

Depending on state law, which may vary, and depending on the intentions of the parties to the original transaction and third parties who hold an interest in the land, deed language can be structured to give enforcement rights to the previous owner and to those third parties. Deed restrictions implementing ICs should be structured to run with the land — in other words, to remain in force despite changes in ownership; for example, by stating that the restrictions benefit the surrounding property and benefit the general public, or by stating that the parties intend the ICs to run with the land and bind future parties. State laws vary and the enforceability of deed restrictions should be considered carefully in structuring deed language. The more stakeholders that have authority to enforce a deed restriction, the more effective it will be as a method of control. In spite of any legal limits on the enforceability of deed language, a deed restriction is an important form of notice.

- ☐ *Records and Community Involvement:* Other available methods of providing notice include the administrative record for the response action; local records like planning and zoning maps and subdivision plats; and similar state records and registries. Means of community education such as public meetings, recurring notices in newspapers, and signs and fences also provide notice.

- ☐ *Federal, state, and local laws and regulations:* Statutory authority under CERCLA and the Resource Conservation and Recovery Act (RCRA) may provide Federal and state regulators direct legal authority to protect human health and the environment, prevent releases, or control site activities. State and local governments may also play a role through already existing legal frameworks or regulatory programs such as permitting the use of land, monitoring public health through public health statutes, authorizing zoning and land use plans, passing ordinances, and acting under established statewide environmental programs. Such legal avenues can be integrated into an IC plan and provide notice that activities at the site in question are restricted.

- ☐ *Inspections:* There may be inspections of the affected property associated with the selected remedy, generally as part of the remedy's operation and maintenance. Even though these inspections may not be intended for the purpose of monitoring an IC, they may provide an opportunity to assess activities at the site. For example, an inspection of monitoring wells may also provide an opportunity to establish compliance with an IC restricting excavation. Other existing inspection routines associated with regulatory programs not related to the remediation may also protect the site in question. While such inspections should not be confused with the ICs themselves, they can be used to assist in the maintenance of ICs. Such existing programs can be integrated into an IC plan in association with or in addition to the state and local laws and regulations listed above. The state and Federal members of the BCT may give the appropriate section or branch of the environmental regulatory agency or other pertinent agency notice of the IC or deed restriction by adding the organization's representative to the finding of suitability to transfer distribution list. In addition, the Federal government is required to review a remedy at least every five years, where contamination remains in place. Where ICs are part of the remedy, such reviews should include verification that the ICs are still in place and effective.

    - ☐ Remedy-specific environmental inspections (generally part of operation and maintenance of a remedy)
        - ☐ Inspections to ensure the integrity of the landfill cap
        - ☐ Inspections of the leachate treatment system
        - ☐ Inspections of the water treatment system
        - ☐ Other inspections required for operation and maintenance

- ☐ Other Federal, state, and local government inspections not directly related to the environmental response
  - ☐ Restrictions preserving historic or cultural areas
  - ☐ Restrictions protecting wildlife or wetlands
  - ☐ Restrictions governing access to the property (e.g., utility maintenance)
  - ☐ Restrictions concerning health
  - ☐ Restrictions concerning building standards
  - ☐ Other

Q. What are the responsibilities to maintain and ensure the effectiveness of ICs?

As a network for establishing an IC is created, it is also appropriate and necessary to discuss the associated responsibilities for maintaining its effectiveness. As previously noted, there are numerous existing statutory frameworks and regulatory programs at the Federal, state, and local levels that provide the authority to maintain the integrity of the remedy requirements. Stakeholders may need to discuss resources that are available or might be needed for certain ICs. They also need to discuss how long-term responsibilities for IC implementation at the site will be coordinated among team members.

- ☐ Statutory authority to enforce RCRA and CERCLA
- ☐ State and local, general or site-specific enforcement authorities that can be applied
  - ☐ Property laws
  - ☐ Permitting programs
  - ☐ Zoning
  - ☐ Other laws or ordinances
- ☐ Funding maintenance of the IC
- ☐ Long-term coordination responsibilities

Q. How is an IC modified or terminated?

ICs may also be modified or terminated over time. It is therefore useful to discuss what time frames, if known, and what procedures may be necessary for accomplishing these tasks. Due to the site-specific nature of IC plans, procedures for modifications to ICs may vary depending on that plan.

- ☐ Length of time ICs are needed
- ☐ Legal steps to remove or modify each IC
- ☐ Organizations that may be involved with modification or termination:
  - ☐ Federal government
  - ☐ Local court
  - ☐ State government
  - ☐ Landowner
  - ☐ State court
  - ☐ Adjacent landowner
  - ☐ Local government
  - ☐ Previous landowner

Where to Learn More

Further information on this and other BRAC issues can be found by reading:

- DoD's Future Land Use Policy: *Responsibility for Additional Environmental Cleanup after Transfer of Real Property* (July 1997)
- BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How Are They Used* (Spring 1997)
- BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations* (February 1996)
- *Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer* (Fall 1996)
- *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (July 1996)

Or by contacting:

Office of the Assistant Deputy Under Secretary of Defense
(Environmental Cleanup)
Attn: Fast-Track Cleanup
3400 Defense Pentagon
Washington, D.C. 20301-3400

Or by looking on the World Wide Web at:
http://www.dtic.mil/envirodod/envbrac.html

For additional information about selection of response actions, see the following EPA Office of Solid Waste and Emergency Response (OSWER) documents:

- Land Use in CERCLA Remedy Selection Process, OSWER Publication Number PB95-963234\NDZ (June 1995)
- Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER Publication Number 9355.0-30 (April 1991)
- A Guide to Selecting Superfund Remedial Actions, OSWER Publication Number 9355.0-27FS (April 1990)

These are available on the World Wide Web at:
http://www.epa.gov/epa/oswer

The *Guide to Establishing Institutional Controls at Closing Military Installations* was prepared with input from an inter-agency work group made up of representatives of the Office of the Secretary of Defense, the DoD Components, the U.S. EPA, the General Services Administration, the California EPA, the National Association of Attorneys General, the International City/County Management Association, the National Association of Installation Developers, and others. This guide is not a formal statement of DoD policy, but is meant to assist in the establishment and maintenance of ICs at BRAC properties.

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3010

ACQUISITION AND TECHNOLOGY

JUL 25 1997

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY
(INSTALLATIONS, LOGISTICS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(MANPOWER, RESERVE AFFAIRS, INSTALLATIONS AND ENVIRONMENT)
DEPUTY UNDER SECRETARY OF DEFENSE
(ENVIRONMENTAL SECURITY)
DEPUTY UNDER SECRETARY OF DEFENSE
(INDUSTRIAL AFFAIRS AND INSTALLATIONS)
DIRECTOR, DEFENSE LOGISTICS AGENCY (D)

SUBJECT: Responsibility for Additional Environmental Cleanup after Transfer of Real Property

The purpose of the attached policy is to describe the circumstances under which DoD would perform additional cleanup on DoD property that is transferred by deed to any person or entity outside the federal government. This policy is applicable to real property under DoD control that is to be transferred outside the federal government, and is effective immediately. For property that is transferred pursuant to section 120(h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9620(h)(3)(C)), this policy applies after the termination of the deferral period.

DoD continues to be committed to a remedy selection process that provides for full protection of human health and the environment, even after property has been transferred by DoD. The Deputy Under Secretary of Defense (Environmental Security) will issue separately any specific guidance needed to implement this policy. This policy should be read to be compatible with and does not supersede other related DoD polices, and is to be incorporated in the next revision of the appropriate DoD Instruction. I ask for your support in implementing this policy and working with communities so that they can make informed decisions in developing their redevelopment plans.

R. Noel Longuemare
Acting Under Secretary of Defense
(Acquisition and Technology)

Attachment

DoD Policy on Responsibility for Additional Environmental Cleanup After Transfer of Real Property

Background. This policy is instituted within the framework established by land use planning practices and land use planning authorities possessed by communities, and the environmental restoration process established by statute and regulation. The land use planning and environmental restoration processes – two separate processes – are interdependent. Land use planners need to know the environmental condition of property in order to make plans for the future use of the land. Similarly, knowledge of land use plans is needed in order to ensure that environmental restoration efforts are focused on making the property available when needed by the community and that remedy selection is compatible with land use. This policy does not supplant either process, but seeks to integrate the two by emphasizing the need to integrate land use planning assumptions into the cleanup, and to notify the community of the finality of the cleanup decisions and limited circumstances under which DoD would be responsible for additional cleanup after transfer.

Cleanup Process. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9601 et seq.) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR 300) establish the requirements and procedures for the cleanup of sites that have been contaminated by releases of hazardous substances. CERCLA, furthermore, requires that a deed for federally owned property being transferred outside the government contain a covenant that all remedial action necessary to protect human health and the environment has been taken, and that the United States shall conduct any additional remedial action "found to be necessary" after transfer. Within the established restoration process, it is DoD's responsibility, in conjunction with regulatory agencies, to select cleanup levels and remedies that are protective of human health and the environment. The environmental restoration process also calls for public participation, so that the decisions made by DoD and the regulatory agencies have the benefit of community input.

Land Use Assumptions in Cleanup Process. Under the NCP, future land use assumptions are developed and considered when performing the baseline risk assessment, developing remedial action alternatives, and selecting a remedy. The NCP permits other-than-residential land use assumptions to be considered when selecting cleanup levels and remedies, so long as selected remedies are protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) further amplified the role of future land use assumptions in the remedy selection process in its May 25, 1995, "Land Use in the CERCLA Remedy Selection Process" directive (OSWER Directive No. 9355.7-04).

Development of Land Use Plans. By law, the local community has been given principal responsibility for reuse planning for surplus DoD property being made available at Base Realignment and Closure (BRAC) installations. That reuse planning and implementation authority is vested in the Local Redevelopment Authority (LRA) described in the DoD Base Reuse Implementation Manual (DoD 4165.66-M). The DoD Base Reuse Implementation Manual calls for the LRA to develop the community redevelopment plan to reflect the long term needs of the community. A part of the redevelopment plan is a "land use plan" that identifies the proposed land use for given portions of the surplus DoD property. The DoD is committed to working with local land use planning authorities, local government officials, and the public to develop realistic assumptions concerning the future use of property that will be transferred by DoD. The DoD will act on the expectation that the community land use plan developed by the LRA reflects the long-range regional needs of the community.

Use of Land Use Assumptions in the Cleanup Process. DoD environmental restoration efforts for properties that are to be transferred out of federal control will attempt, to the extent reasonably practicable, to facilitate the land use and redevelopment needs stated by the community in plans approved prior to the remedy selection decision. For BRAC properties, the LRA's redevelopment plan, specifically the land use plan, typically will be the basis for the land use assumptions DoD will consider during the remedy selection process. For non-BRAC property transfers, DoD environmental restoration efforts will be similarly guided by community input on land use, as provided by the local government land use planning agency. In the unlikely event that no community land use plan is available at the time a remedy selection decision requiring a land use assumption must be made, DoD will consider a range of reasonably likely future land uses in the remedy selection process. The existing land use, the current zoning classification (if zoned by a local government), unique property attributes, and the current land use of the surrounding area all may serve as useful indicators in determining likely future land uses. These likely future land uses then may be used for remedy selection decisions which will be made by DoD (in conjunction with regulatory agencies) in accordance with CERCLA and the NCP.

DoD's expectation is that the community at-large, and in particular the land use planning agency, will take the environmental condition of the property, planned remedial activities, and technology and resource constraints into consideration in developing their reuse plan. The February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" provides a useful tool for considering various possible land uses and remedy alternatives, so that cost and time implications for both processes can be examined and integrated. Obviously, early development of community consensus and publication of the land use plan by the LRA or the land planning agency will provide the stability and focus for DoD cleanup efforts.

Applicable guidelines in EPA's May 25, 1995, "Land Use in the CERCLA Remedy Selection Process" Directive should be used in developing cleanup decisions using land use assumptions. For a remedy that will require restrictions on future use of the land, the proposed plan and record of decision (ROD) or other decision documents must identify the future land use assumption that was used to develop the remedy, specific land use restrictions necessitated by the selected remedy, and possible mechanisms for implementing and enforcing those use restrictions. Examples of implementation and enforcement mechanisms include deed restrictions, easements, inspection or monitoring, and zoning. The community and local government should be involved throughout the development of those implementation and enforcement mechanisms. Those mechanisms must also be valid within the jurisdiction where the property is located.

Enforcement of Land Use Restrictions. The DoD Component disposal agent will ensure that transfer documents for real property being transferred out of federal control reflect the use restrictions and enforcement mechanisms specified in the remedy decision document. The transfer document should also include a description of the assumed land use used in developing the remedy and the remedy decision. This information required in the transfer documents should be provided in the environmental Finding Of Suitability to Transfer (FOST) prepared for the transfer. The DoD Component disposal agent will also ensure that appropriate institutional controls and other implementation and enforcement mechanisms, appropriate to the jurisdiction where the property is located, are either in-place prior to the transfer or will be put in place by the transferee as a condition of the transfer. If it becomes evident to the DoD Component that a deed restriction or other institutional control is not being followed, the DoD Component will attempt to ensure that appropriate actions are taken to enforce the deed restriction.

The DoD expects the transferee and subsequent owners to abide by restrictions stated in the transfer documents. The DoD will reserve the right to enforce deed restrictions and other institutional controls, and the disposal agent will ensure that such language is also included in the transfer documents. If DoD becomes aware of action or inaction by any future owner that will cause or threaten to cause a

release or cause the remedy not to perform effectively, DoD also reserves the right to perform such additional cleanup necessary to protect human health and the environment and then to recover costs of such cleanup from that owner under the terms of the transfer document or other authority.

Circumstances Under Which DoD Would Return to do Additional Cleanup. A determination may be made in the future that the selected remedy is no longer protective of human health and the environment because the remedy failed to perform as expected, or because an institutional control has proven to be ineffective, or because there has been a subsequent discovery of additional contamination attributable to DoD activities. This determination may be made by DoD as a part of the remedy review process, or could be a regulatory determination that the remedy has failed to meet remediation objectives. In these situations, the responsible DoD Component disposing of the surplus property will, consistent with CERCLA Section 120(h), perform such additional cleanup as is both necessary to remedy the problem and consistent with the future land use assumptions used to determine the original remedy. Additionally, after the transfer of property from DoD, applicable regulatory requirements may be revised to reflect new scientific or health data and the remedy put in place by DoD may be determined to be no longer protective of human health and the environment. In that circumstance, DoD will likewise, consistent with CERCLA Section 120(h), return to perform such additional cleanup as would be generally required by regulatory agencies of any responsible party in a similar situation. Also note that DoD has the right to seek cost recovery or contribution from other parties for additional cleanup required for contamination determined not to have resulted from DoD operations.

Circumstance Under Which DoD Would Not Return to do Additional Cleanup. Where additional remedial action is required only to facilitate a use prohibited by deed restriction or other appropriate institutional control, DoD will neither perform nor pay for such additional remedial action. It is DoD's position that such additional remedial action is not "necessary" within the meaning of CERCLA Section120(h)(3). Moreover, DoD's obligation to indemnify transferees of closing base property under Section 330 (of the Fiscal Year 1993 Defense Authorization Act) would not be applicable to any claim arising from any use of the property prohibited by an enforceable deed restriction or other appropriate institutional control.

Changes to Land Use Restrictions after Transfer. Deed restrictions or other institutional controls put in place to ensure the protectiveness of the remedy may need to be revised if a remedy has performed as expected and cleanup objectives have been meet. For example, the specified groundwater cleanup levels have been reached after a period of time. In such a case, the DoD Component disposing of the surplus property will initiate action to revise the deed restrictions or other institutional controls, as appropriate.

DoD will also work cooperatively with any transferee of property that is interested in revising or removing deed restrictions in order to facilitate a broader range of land uses. Before DoD could support revision or removal, however, the transferee would need to demonstrate to DoD and the regulators, through additional study and/or remedial action undertaken and paid for by the transferee, that a broader range of land uses may be undertaken consistent with the continued protection of human health and the environment. The DoD Component, if appropriate, may require the transferee to provide a performance bond or other type of financial surety for ensuring the performance of the additional remedial action. The transferee will need to apply to the DoD Component disposal agent for revision or removal of deed restrictions or other institutional controls. Effective immediately, the process for requesting the removal of such restrictions by a transferee should be specified by the disposal agent in the documents transferring property from DoD.

Making those revisions or changes will be considered by DoD to be an amendment of the remedy decision document. Such an amendment will follow the NCP process and require the participation by DoD and regulatory agencies, as well as appropriate public input.

Disclosure by DoD on Using Future Land Use in Remedy Selection. A very important part of this policy is that the community be informed of DoD's intent to consider land use expectations in the remedy selection process. At a minimum, disclosure shall be made to the Restoration Advisory Board (or other similar community group), the LRA (if BRAC) or other local land use planning authority, and regulatory agencies. The disclosure to the community for a specific site shall clearly communicate the basis for the decision to consider land use, any institutional controls to be relied upon, and the finality of the remedy selection decision, including this policy. In addition, any public notification ordinarily made as part of the environmental restoration process shall include a full disclosure of the assumed land use used in developing the remedy selected.

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United States Environmental Protection Agency | Office of Solid Waste and Emergency Response (5102G) | EPA 542-F-96-015 October 1996

EPA A Citizen's Guide to Natural Attenuation

Technology Innovation Office | Technology Fact Sheet

What is natural attenuation?

Natural attenuation makes use of natural processes to contain the spread of contamination from chemical spills and reduce the concentration and amount of pollutants at contaminated sites. Natural attenuation—also referred to as *intrinsic remediation, bioattenuation,* or *intrinsic bioremediation*—is an *in situ* treatment method. This means that environmental contaminants are left in place while natural attenuation works on them. Natural attenuation is often used as one part of a site cleanup that also includes the control or removal of the source of the contamination.

How does natural attenuation work?

The processes contributing to natural attenuation are typically acting at many sites, but at varying rates and degrees of effectiveness, depending on the types of contaminants present, and the physical, chemical and biological characteristics of the soil and ground water. Natural attenuation processes are often categorized as *destructive* or *non-destructive.* Destructive processes destroy the contaminant. Non-destructive processes do not destroy the contaminant but cause a reduction in contaminant concentrations.

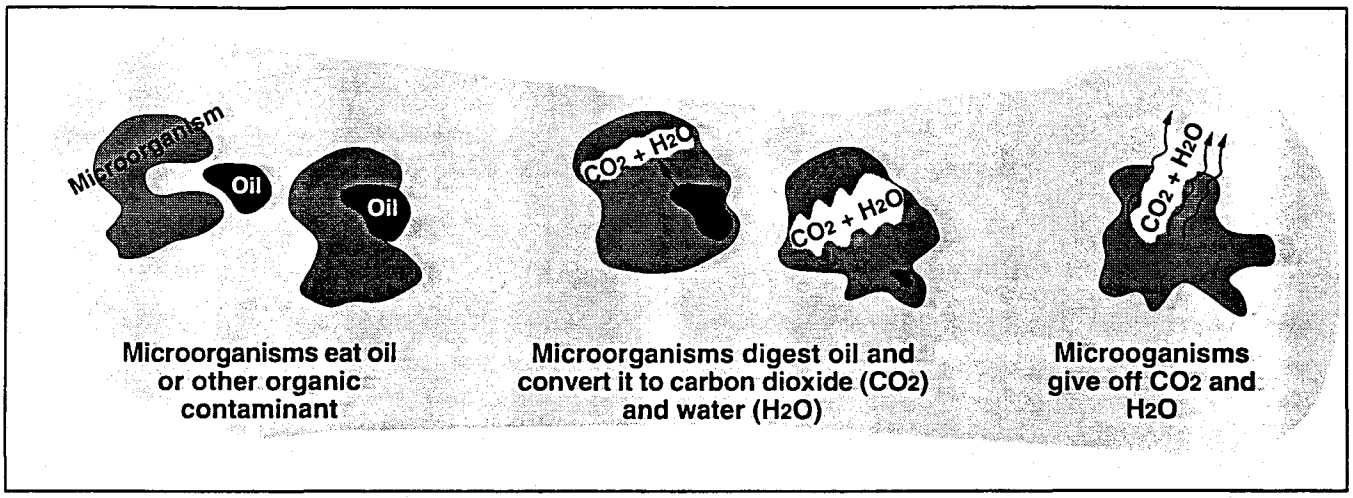
Natural attenuation processes may reduce contaminant mass (through destructive processes such as **biodegradation** and chemical transformations); reduce contaminant concentrations (through simple **dilution** or **dispersion**); or bind contaminants to soil particles so the contamination does not spread or migrate very far (**adsorption**).

Biodegradation, also called bioremediation, is a process in which naturally occurring microorganisms (yeast, fungi, or bacteria) break down, or *degrade*, hazardous substances into less toxic or nontoxic substances. Microorganisms, like humans, eat and digest organic substances for nutrition and energy. (In chemical terms, "organic" compounds are those that contain carbon and hydrogen atoms.) Certain microorganisms can digest organic substances such as fuels or solvents that are hazardous to humans. Biodegradation can occur in the presence of oxygen (aerobic conditions) or without oxygen (anaerobic conditions). In most subsurface environments, both aerobic and anaerobic biodegradation of contaminants occur. The microorganisms break down the organic contaminants into harmless products—mainly carbon dioxide and water in the case of aerobic biodegradation (Figure 1). Once the contaminants are degraded, the

A Quick Look at Natural Attenuation

- Uses naturally occurring environmental processes to clean up sites.
- Is non-invasive and allows the site to be put to productive use while being cleaned up.
- Requires careful study of site conditions and monitoring of contaminant levels.

Figure 1. Schematic Diagram of Aerobic Biodegradation in Soil



microorganism populations decline because they have used their food sources. Dead microorganisms or small populations in the absence of food pose no contamination risk. The fact sheet entitled *A Citizen's Guide to Bioremediation* describes the process in detail (see page 4).

Many organic contaminants, like petroleum, can be biodegraded by microorganisms in the underground environment. For example, biodegradation processes can effectively cleanse soil and ground water of hydrocarbon fuels such as gasoline and the BTEX compounds—benzene, toluene, ethylbenzene, and xylenes. Biodegradation also can break down chlorinated solvents, like trichloroethylene (TCE), in ground water but the processes involved are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Chlorinated solvents, widely used for degreasing aircraft engines, automobile parts, and electronic components, are among the most often-found organic ground-water contaminants. When chlorinated compounds are biodegraded, it is important that the degradation be complete, because some products of the breakdown process can be more toxic than the original compounds.

The effects of **dilution** and **dispersion** appear to reduce contaminant concentration but do not destroy the contaminant. Relatively clean water from the ground surface can seep underground to mix with and dilute contaminated ground water. Clean ground water from an underground location flowing into contaminated areas, or the dispersion of pollutants as they spreading out away from the main path of the contaminated plume also lead to a reduced concentration of the contaminant in a given area.

Adsorption occurs when contaminants attach or *sorb* to underground particles. Fuel hydrocarbons tend to repel water, as most oily substances do. When they have an opportunity to escape from the ground water by attaching to organic matter and clay minerals that also repel water, they do so. This is beneficial because it may keep the contaminants from flowing to an area where they might be a health threat. Sorption, like dilution and dispersion, appears to reduce the concentration and mass of contamination in the ground water, but does not destroy the contaminants.

Why consider natural attenuation?

In certain situations, natural attenuation is an effective, inexpensive cleanup option and the most appropriate way to remediate some contamination problems. Natural attenuation is sometimes mislabeled as a "no action" approach. However, natural attenuation is really a proactive approach that focuses on the confirmation and monitoring of natural remediation processes rather than relying totally on "engineered" technologies. Mobile and toxic fuel hydrocarbons, for example, are good candidates for natural attenuation. Not only are they difficult to trap because of their mobility, but they are also among the contaminants most easily destroyed by biodegradation. Natural attenuation is non-invasive, and, un-

like many elaborate mechanical site cleanup techniques, while natural attenuation is working below ground, the land surface above ground may continue to be used. Natural attenuation can be less costly than other active engineered treatment options, especially those available for ground water, and requires no energy source or special equipment.

Will natural attenuation work at every site?

To estimate how well natural attenuation will work and how long it will take requires a detailed study of the contaminated site. The community and those conducting the cleanup need to know whether natural attenuation, or any proposed remedy, will reduce the contaminant concentrations in the soil and water to legally acceptable levels within a reasonable time.

Natural attenuation may be an acceptable option for sites that have been through some active remediation which has reduced the concentrations of contaminants. However, natural attenuation is not an appropriate option at all sites. The rates of natural processes are typically slow. Long-term monitoring is necessary to demonstrate that contaminant concentrations are continually decreasing at a rate sufficient to ensure that they will not become a health threat. If not, more aggressive remedial alternatives should be considered.

What Is An Innovative Treatment Technology?

Treatment technologies are processes applied to the treatment of hazardous waste or contaminated materials to permanently alter their condition through chemical, biological, or physical means.

Innovative treatment technologies are those that have been tested, selected or used for treatment of hazardous waste or contaminated materials but lack well-documented cost and performance data under a variety of operating conditions.

Because the ability of natural attenuation to be an effective cleanup method depends on a variety of conditions, the site needs to be well-characterized to determine if natural attenuation is occurring or will occur. Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands often provide successful conditions for natural attenuation. Certain geological formations such as fractured bedrock aquifers or limestone areas are less likely candidates for natural attenuation because these environments often have a wide variety of soil types that cause unpredictable ground water flow and make predicting the movement of contamination difficult.

Where is natural attenuation being used?

Natural attenuation is being used to clean up petroleum contamination from leaking underground storage tanks across the country.

Within the Superfund program, natural attenuation has been selected as one of the cleanup methods at 73 ground-water-contaminated sites—but is the sole treatment option at only six of these sites. Some of these sites include municipal and industrial land fills, refineries, and recyclers.

At the Allied Signal Brake Systems Superfund site in St. Joseph, Michigan, microorganisms are effectively removing TCE and other chlorinated solvents from ground water. Scientists studied the underground movement of TCE-contaminated ground water from its origin at the Superfund site to where it entered Lake Michigan about half a mile away. At the site itself, they measured TCE concentrations greater than 200,000 micrograms per liter (µg/L), but by the time the plume reached the shore of Lake Michigan, the TCE was one thousand times less—only 200µg/L. About 300 feet offshore in Lake Michigan, the concentrations were below EPA's allowable levels. EPA estimated the plume took about 20 years to move from the source of contamination to Lake Michigan—plenty of time for the microorganisms naturally present in the ground water to destroy the TCE without any outside intervention. In fact, microorganisms were destroying about 600 pounds of TCE a year at no cost to taxpayers. EPA determined that nature adequately remediated the TCE plume in St. Joseph.

For More Information

The publications listed below can be ordered free of charge by faxing your request to NCEPI at 513-489-8695. If NCEPI is out of stock of a document, you may be directed to other sources. Some of the documents listed also can be downloaded free of charge from EPA's Cleanup Information (CLU-IN) World Wide Web site (http://clu-in.com) or electronic bulletin board (301-589-8366). The CLU-IN help line number is 301-589-8368.

You may write to NCEPI at:

National Center for Environmental Publications and Information (NCEPI)
P.O. Box 42419
Cincinnati, OH 45242

- *A Citizen's Guide to Bioremediation,* April 1996, EPA 542-F-96-007.
- *Symposium on Intrinsic Bioremediation of Ground Water,* August 1994, EPA 540-R-94-515.
- *Bioremediation Research: Producing Low-Cost Tools to Reclaim Environments,* September 1995, EPA 540-R-95-523a.
- "Natural Bioremediation of TCE," *Ground Water Currents* (newsletter), September 1993, EPA 542-N-93-008.
- "Innovative Measures Distinguish Natural Bioattenuation from Dilution/Sorption," *Ground Water Currents* (newsletter), December 1992, EPA 542-N-92-006.
- *How to Evaluate Alternative Cleanup Technologies for UST Sites*, (Chapter on Natural Attenuation), May 1995, EPA 510-B-95-007.
- *Bioremediation Resource Guide,* September 1993, EPA 542-B-93-004. **A bibliography of publications and other sources of information about bioremediation technologies.**
- *Engineering Bulletin: In Situ Biodegradation Treatment,* April 1994, EPA 540-S-94-502.
- *Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation: A Bibliography of EPA Information Sources,* January 1995, EPA 542-B-95-001. **A bibliography of EPA publications about innovative treatment technologies.**
- *WASTECH® Monograph on Bioremediation,* ISBN #1-883767-01-6. Available for $49.95 from the American Academy of Environmental Engineers, 130 Holiday Court, Annapolis, MD 21401. Telephone 410-266-3311.

COMMONLY ASKED QUESTIONS REGARDING THE USE OF NATURAL ATTENUATION FOR CHLORINATED SOLVENT SPILLS AT FEDERAL FACILITIES

This brochure was developed through a partnership among the U.S. EPA, Air Force, Army, Navy, and Coast Guard.

Do federal, state, and local regulations allow natural attenuation as an option for remediation of chlorinated solvents?

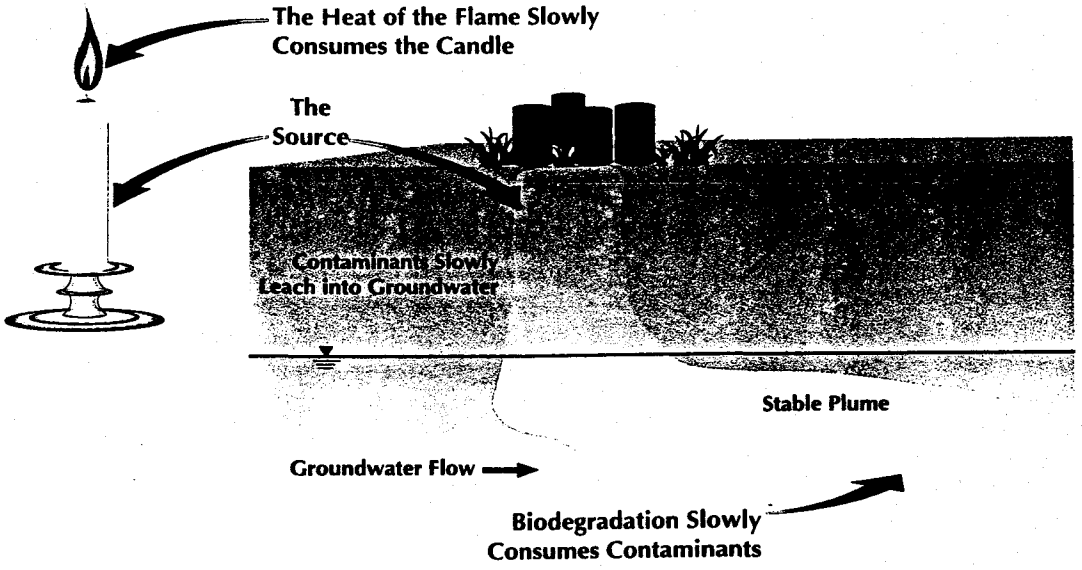
Natural attenuation is recognized by the EPA as a viable method of remediation for soil and groundwater that can be evaluated and compared to other methods of achieving site remediation as a part of the remedy selection process. The selection of natural attenuation as a component of any site remedy should be based on its ability to achieve remediation goals in a reasonable timeframe and protect human health and the environment. EPA recognition of natural attenuation extends to sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Resource Conservation and Recovery Act (RCRA); and underground storage tank (UST) regulations. Natural attenuation is not a default option or a "presumptive remedy." As with any remedy, it must comply with state groundwater use classifications and standards.

"Under certain site conditions, and if properly documented, natural attenuation can be a viable option for remediating sites as a stand-alone option or in conjunction with other engineered remediation." Jim Woolford, Director, EPA's Federal Facilities Restoration and Reuse Office

What is natural attenuation?

When chlorinated solvents such as trichloroethene (TCE) or perchloroethene (PCE) are spilled or leak into the soil or groundwater, several natural processes can occur to destroy or alter these chemicals. These processes, known collectively as natural attenuation, include adsorption to soil particles, biodegradation of contaminants, and dilution and dispersion in groundwater. Many contaminants are prevented from migrating off the site because they are adsorbed to soil particles. Although biodegradation does not occur at all chlorinated solvent sites, it can be an important process in destroying these contaminants. Dilution and dispersion do not destroy contaminants, but can significantly reduce their potential risk at many sites.

"Intrinsic" and "passive" remediation are other terms which have been used to describe the combined effect of these processes. Dr. John Wilson of the EPA compares natural attenuation in groundwater to the flame of a candle. The source of the flame is the wax of the candle just as the source of the groundwater contamination is the concentrated solvents trapped in the soil. The flame appears steady because the wax is destroyed in the flame as fast as it is removed from the candle. In the same way, many groundwater plumes will reach "steady state" at some distance from the source, when biological reactions are able to destroy contaminants as they enter the groundwater from the soil. Eventually, the candle is consumed by the flame just as the contaminants in the soil and groundwater can be attenuated through biodegradation and other natural processes.



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How is natural attenuation different from the "do nothing" approach?

Natural attenuation is sometimes mislabeled as the "do nothing" or "walk away " approach to site cleanup. The truth is that natural attenuation is a proactive approach that focuses on the verification and monitoring of natural remediation processes rather than relying totally on "engineered" processes.

Before natural attenuation can be proposed for any site, significant soil and groundwater data must be collected and evaluated to document that natural attenuation is occurring and to estimate the effectiveness of natural processes in reducing contaminant concentrations over time. If natural attenuation is selected as the preferred site remedy, the party responsible for site cleanup must commit to long-term monitoring to verify that the contaminants pose no risk to human health or the environment and that natural processes are reducing contaminant levels and risk as predicted. Land use and groundwater use are generally controlled on these sites to prevent human exposure to contaminants.

How does natural attenuation of chlorinated solvents differ from natural attenuation of petroleum products such as fuels?

Because chlorinated solvents are synthetic chemicals, they tend to be more resistant to natural biodegradation processes. However, significant evidence now exists that biochemical reactions can also break down chlorinated compounds in the soil and groundwater. These processes are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Despite these limitations, significant progress has been made in understanding the fate and transport of chlorinated solvents and the role of natural attenuation.

Chlorinated solvents also migrate differently than petroleum hydrocarbons. Because chlorinated compounds have a greater density than water, they tend to sink rapidly into the aquifer. When large quantities of solvent are released, they will sink until they encounter an impermeable layer where they form small pools which serve as a long-term source of groundwater contamination. These untreated sources dissolve slowly over time, contaminating large volumes of water.

How can you tell if natural attenuation may work at a site?

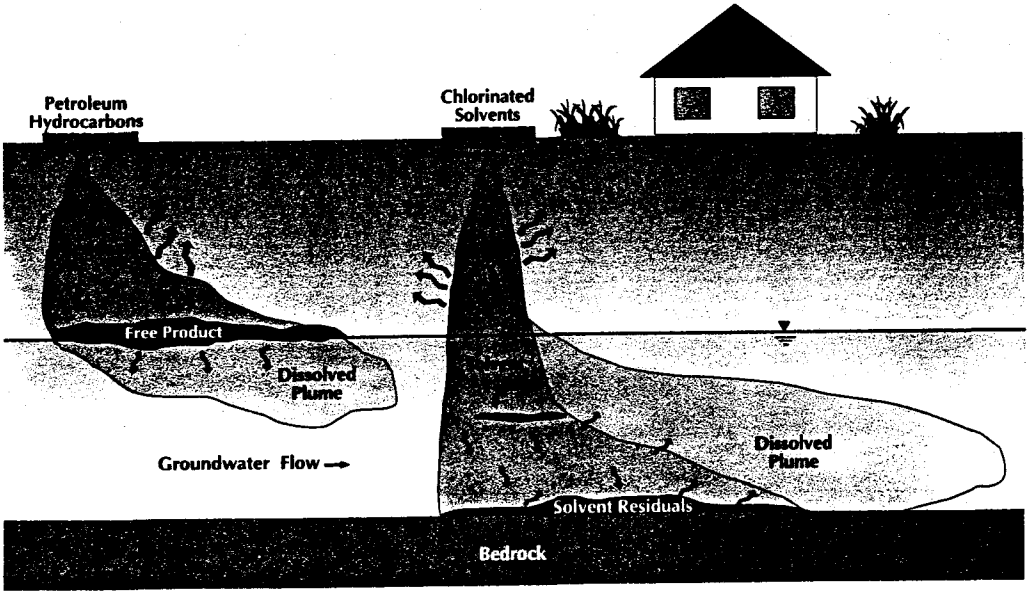
Experts in the science of natural attenuation have identified several good indicators or lines of evidence that can be used to prove that natural processes are reducing contaminant concentrations. The following lines of evidence are useful in documenting the natural attenuation of chlorinated solvents:

- Historical trends indicating a decrease in contaminant concentrations, as well as a stable or retreating plume. A stable or retreating plume generally indicates that contaminants are being destroyed as fast as they are dissolved into the groundwater.

- Favorable geochemical conditions. Biological reactions will change the chemical composition of the groundwater. One condition which is particularly favorable for chlorinated solvent destruction occurs in groundwater that has been completely depleted of oxygen and nitrate. Depleted levels of sulfate and elevated levels of dissolved methane are also favorable conditions.

- Breakdown or "daughter" products. Chlorinated solvents are often destroyed by biochemical reactions which remove one chlorine atom at a time from the "parent" or original solvent. When these breakdown products are detected in the groundwater, it provides evidence that contaminant destruction is underway. It is important for biodegradation to be complete, because some breakdown products may be more toxic than parent compounds.

- Laboratory "microcosm" studies. These studies can be used to simulate aquifer conditions and to demonstrate that native bacteria can create the necessary biochemical reactions to destroy contaminants of concern. This technique is sometimes required for chlorinated solvent sites because the biochemical reactions are more complex and more difficult to predict than reactions on petroleum-contaminated sites.



The Air Force Center for Environmental Excellence is developing a comprehensive natural attenuation protocol (Draft Technical Protocol for Natural Attenuation of Chlorinated Solvents in Groundwater) for chlorinated solvent sites. This document describes how this evidence can be collected during site investigation activities and how it can be interpreted to estimate the contribution of natural attenuation in the remediation process.

Will natural attenuation be effective on all chlorinated sites?

Definitely not. Some chlorinated solvent contamination has impacted large quantities of groundwater which will be required for some beneficial use. There are risks associated with the continued migration of these plumes into public drinking water supplies and some form of engineered remediation is needed at these sites. On sites where no current risk to public health or the environment exists, natural attenuation can play an important role in reducing future risk if institutional controls (e.g., deed restrictions and zoning ordinances) can be implemented. Scientists are beginning to observe certain site profiles where natural attenuation has a higher probability of being integrated into the remediation process. These include:

- Sites where chlorinated solvents are spilled with other petroleum compounds (the best biochemical reactions for degradation are produced).
- Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands.
- Sites where shallow (unused) groundwater is separated from deeper groundwater by a thick, low-permeability clay layer.
- Sites where there is little or no source remaining due to active remediation.

Why are chlorinated solvent spills so common at federal facilities?

Chlorinated solvents were developed as superior cleaning solutions for removing grease and carbon buildup from metal parts. For over 40 years they were widely used by U.S. industry and the federal government for a variety of equipment cleaning tasks.

Prior to environmental laws restricting their use, these compounds were often stored in drums or underground storage tanks and disposed of in the sanitary sewer, in evaporation ponds, or mixed with fuels and burned. These solvents have created significant groundwater contamination at many federal facilities. Since 1976, when RCRA was established, the use and disposal of these solvents have been carefully regulated and many chlorinated solvents have been replaced with less harmful substitutes.

Can natural attenuation achieve site cleanup goals?

Natural attenuation may be effective in achieving cleanup goals at some sites, particularly when these goals are based on site-specific risk reduction. For example, if contaminant migration is limited to shallow groundwater, and groundwater use can be controlled, natural attenuation may eventually achieve cleanup goals on some sites. However, natural attenuation is more likely to play a role in cleaning up a portion of a chlorinated site. Natural attenuation is more likely to clean up areas that have lower levels of contamination. Such areas are normally found outside of highly contaminated source areas, or at sites with relatively small source areas.

What are some of the potential advantages and limitations of natural attenuation?

Potential Advantages

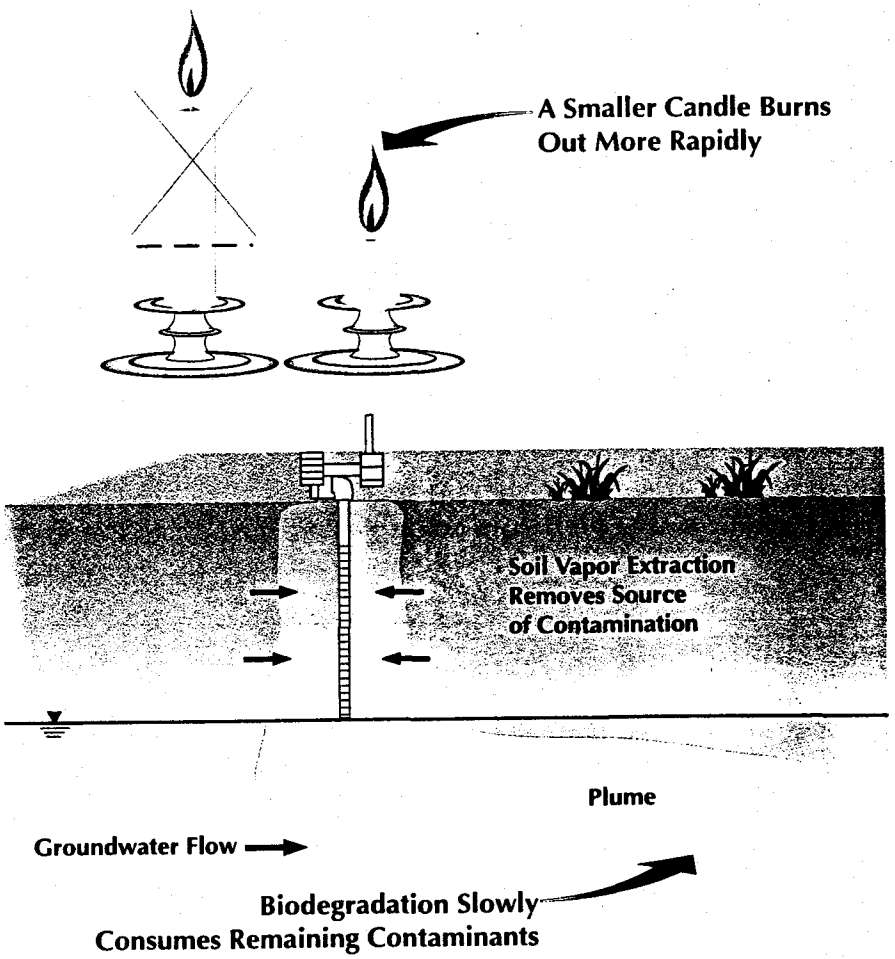
- Less generation or transfer of wastes.
- Less intrusive and disruptive than engineered methods.
- Can be combined with active remedial measures or used to remediate a portion of the site.
- Remediation costs may be lower than with active remediation.

Potential Limitations

- May require more time to achieve cleanup goals and requires a commitment to long-term monitoring. On some sites, long-term monitoring costs can be excessive.
- If natural attenuation rates are too slow, the plume could continue to migrate.
- Incomplete biodegradation can create new, more toxic contaminants.
- Land and groundwater use controls are often required.

Can natural attenuation processes be enhanced to speed up the cleanup process?

Natural attenuation may be successfully combined with other remediation techniques to achieve cleanup goals within a reasonble time frame. Engineered approaches that may be used in conjunction with natural attenuation include hydraulic containment, soil vapor extraction, source removal, and pump-and-treat methods. In addition, non-toxic organic compounds may be added to enhance the breakdown of contaminants.



Again, the candle provides a useful illustration of how active and natural remediation can be combined. If the top of the candle (the source) is cut off and removed, the flame (plume) will exist for only a fraction of the original time. Soil vapor extraction, free product recovery, soil excavation, and groundwater extraction in the source area are all methods of reducing or containing the source of solvent contamination. The rate at which the candle burns can also be increased by improving the conditions for combustion. As mentioned previously, many chlorinated solvents actually degrade faster in the absence of oxygen under anaerobic conditions. Researchers are now developing methods of adding highly biodegradable organic compounds to increase the natural bacteria population in the groundwater which will consume available oxygen and create these favorable conditions. Regardless of whether an engineered remediation or natural attenuation is used, controls on groundwater use will be required on most chlorinated solvent sites.

What if natural attenuation does not work at a site?

As with any remedy, if monitoring results indicate inadequate progress, it will be necessary to reevaluate the remedial action plan. If this occurs, the remediation project manager would consider implementing an engineered approach for all or part of the plume.

This brochure was developed through a partnership among the U.S. EPA, Air Force, Army, Navy, and Coast Guard. If you would like additional information about natural attenuation and its application at federal facilities, you may fax your request to the National Center for Environmental Publications and Information at (513) 489-8695 or contact the following agency home pages on the Internet:

EPA - http://www.epa.gov
Air Force - http://www.afcee.brooks.af.mil
Army - http://aec-www.apgea.army.mil:8080
Navy - http://www.nfesc.navy.mil
Coast Guard - http://www.dot.gov/dotinfo/uscg

United States
Environmental Protection
Agency

Office of Solid Waste and
Emergency Response
5204G

EPA 540-F-01-011
9200.2-42FS
June 2001

EPA

Superfund Today

FOCUS ON FIVE-YEAR REVIEWS AND INVOLVING THE COMMUNITY

Checking Up On Superfund Sites: The Five-Year Review

The U.S. Environmental Protection Agency (EPA) conducts regular checkups, called five-year reviews, on certain Superfund sites. EPA looks at sites where cleanup left wastes that limit site use. For example, EPA will look at a landfill to make sure the protective cover is not damaged and is working properly. EPA will also review sites with cleanup activity still in progress after five years.

The Five-Year Review is:

- a regular EPA checkup on a Superfund site that has been cleaned up—but waste was left behind—to make sure the site is still safe;
- a way to make sure the cleanup continues to protect people and the environment; and
- a chance for you to tell EPA about site conditions and any concerns you have.

In both cases, EPA checks the site to make sure the cleanup continues to protect people and the environment. The EPA review team conducts the review, asks and answers questions, and writes a report on the results of the review. At some sites, other Federal agencies, a State agency, or an Indian Tribe may do the review, but EPA stays involved in the process and approves the report.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, and inspects the site to make sure it continues to be safe. EPA also needs information from people who are familiar with the site. As someone living close to the site, you may know about things that can help the review team decide if the site is still safe. Here are some examples of things to tell EPA about:

- Broken fences, unusual odors, dead plants, materials leaving the site, or other problems;
- Buildings or land around the site being used in new ways;
- Any unusual activities at the site, such as dumping, vandalism, or trespassing; and
- Ways the cleanup at the site has helped the area.

For More Information ...

... about a Superfund site in your neighborhood, please call the toll-free **Superfund/RCRA Hotline at 1-800-424-9346** or the Community Involvement Coordinator in the EPA regional office for your state. Your local EPA office can tell you where you can go to review files on every Superfund site in your area. Often, EPA holds community meetings to let people who live near a site know about site activities. You also may find useful information on the Superfund home page **(www.epa.gov/superfund)**. More information about the five-year review process can be found in the document, "Comprehensive Five Year Review Guidance," EPA 540-R-01-007, OSWER 9355.7-03B-P, June 2001.

The Five-Year Review:
Continuing to Protect You and the Environment

Step 1: Develop Plan

To plan a five-year review, the site manager forms a review team, which may include an EPA Community Involvement Coordinator, scientists, engineers, and others. The team members decide what they will do at the site and when they will do it. The Community Involvement Coordinator is the member of the team who works with your community during the review.

Your role: EPA will announce the start of the review, probably through a notice in a newspaper or a flyer. Review the notice to see when the review will start.

Step 2: Collect Information

The review team members collect information about site cleanup activities. They talk with people who have been working at the site over the past five years, as well as local officials, to see if changes in local policy or zoning might affect the original cleanup plan. The team usually visits the site to see if the cleanup equipment is working properly, to take new samples, and to review records of activities at the site to make sure the cleanup is still effective. Finally, the review team may talk to people who live or work near the site to learn about site activities during the past five years. They may give you a call or meet with you in person.

Your role: If you know anything about unusual site activities at or around the site, such as trespassing or odors, or have any other concerns, call the Community Involvement Coordinator.

Step 3: Ensure Safety, Announce Findings, and Publish Report

The review team uses the information collected to decide if your community and the environment are still safe from the contaminated material left at the site. If the cleanup activities are keeping people and the environment safe, the team calls them "protective." When cleanup goals are not being met, or when problems come up, the review team will call the cleanup activities "not protective." When the team finishes the five-year review, it writes a report about the information that includes background on the site and cleanup activities, describes the review, and explains the results. The review team also writes a summary and announces that the review is finished. They tell your community (via public notices, flyers, etc.) where to find copies of the report and summary—at a central place called the site repository—for anyone to see.

Your role: Read about the site and learn about the cleanup methods being reviewed. Review the report. Ask the Community Involvement Coordinator any questions you have about the site.

What Happens After The Review?

As long as contaminated materials at the site stop people from freely using the land, EPA will do a review every five years. EPA also regularly monitors the site based on an operations and maintenance plan they develop. For example, the site manager may visit the site and read reports about activities at the site. Also, site workers may visit the site to cut the grass, take samples, or make sure equipment is working. If you see any problems or things that concern you—don't wait for the five-year review—let EPA know right away.

EPA Perchlorate Update

United States Environmental Protection Agency

MARCH 2002

The United States Environmental Protection Agency (EPA) has released its revised draft toxicity assessment, "Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization." When finalized, this assessment will be an important update of EPA's health assessment that reflects the state of the science regarding the health effects of the chemical perchlorate. The preliminary revised human health risk estimates found in the document are still undergoing review and deliberations both by the external scientific community and within EPA, and do not represent EPA policy at this stage.

How To Review and Comment on EPA's Draft Perchlorate Toxicity Assessment

The draft perchlorate toxicity assessment is available at EPA's National Center for Environmental Assessment (NCEA) Web site www.epa.gov/ncea under "what's new." Written public comments on the scientific literature and on EPA's characterization of the science in the draft perchlorate assessment will be accepted by EPA's contractor, Eastern Research Group, for consideration during the Agency's document revision process. These comments will be made available to the peer reviewers. Public comments must be received by April 5, 2002. Send your comments to: Eastern Research Group ERG, Attn: Meetings, 100 Hartwell Avenue, Lexington, MA 02421. If your comments are under 50 pages in length, you can send them via email attachment (in Word, WordPerfect or PDF) to *meetings@erg.com.*

What is Perchlorate?

Perchlorate is both a naturally occurring and man-made chemical. Most of the perchlorate manufactured in the United States is used as the primary ingredient of solid rocket propellant. Wastes from the manufacture and improper disposal of perchlorate-containing chemicals are increasingly being discovered in soil and water.

How Can Perchlorate Affect Human Health?

Perchlorate interferes with iodide uptake into the thyroid gland. Because iodide is an essential component of thyroid hormones, perchlorate disrupts how the thyroid functions. In adults, the thyroid helps to regulate metabolism. In children, the thyroid plays a major role in proper development in addition to metabolism. Impairment of thyroid function in expectant mothers may impact the fetus and newborn and result in effects including changes in behavior, delayed development and decreased learning capability. Changes in thyroid hormone levels may also result in thyroid gland tumors. EPA's draft analysis of perchlorate toxicity is that perchlorate's disruption of iodide uptake is the key event leading to changes in development or tumor formation.

What are the Preliminary Conclusions of the Draft Toxicity Assessment?

The EPA draft assessment concludes that the potential human health risks of perchlorate exposures include effects on the developing nervous system and thyroid tumors. The draft assessment includes a draft reference dose (RfD) that is intended to be protective for both types of effects. It is based on early events that could potentially result in these effects, and factors to account for sensitive populations, the nature of the effects, and data gaps were used. The draft RfD is 0.00003 milligrams per kilogram per day (mg/kg/day). The RfD is defined as an estimate, with uncertainty spanning perhaps an order of magnitude, of a daily exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of adverse effects over a lifetime. As with any EPA draft assessment document containing a quantitative risk value, that risk value is also draft and should not at that stage be construed to represent EPA policy. Thus, the draft RfD for perchlorate is still undergoing science review and deliberations both by the external scientific community and within the Agency.

The assessment provides a hypothetical conversion of the draft RfD to a drinking water equivalent level, assuming factors of 70 kilograms (kg) body weight and 2 liters (L) of water consumption per day. The converted draft estimate would be 1 microgram per liter (ug/L) or 1 part per billion (ppb). If the Agency were to make a determination to regulate perchlorate, the RfD, along with other considerations would factor into the final value.

Does Perchlorate Cause Cancer?

Perchlorate is associated with disruption of thyroid function which can potentially lead to thyroid tumor formation. This draft toxicity assessment accounts for both developmental and tumor formation effects.

Does My Water Contain Perchlorate?

Confirmed perchlorate releases have occurred in at least 20 states throughout the United States (see Figure 2). In EPA Region 9, perchlorate releases have occurred in California, Arizona, and Nevada. Perchlorate has also been released into the Colorado River, which is a drinking water source for some areas of the region. Additional information and maps detailing those sites are available in Chapter 1 of the draft of the "Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization." EPA, other federal agencies, states, water suppliers and industry are already actively addressing perchlorate contamination through monitoring for perchlorate in drinking water and surface water. The full extent of perchlorate contamination is not known at this time.

What is Being Done about Perchlorate?

A peer review of the draft perchlorate toxicity assessment will be held March 5 and 6, 2002 in Sacramento, CA. The purpose of the peer review is to provide an independent review of the scientific information and interpretation used in the document. Once the assessment is finalized, the reference dose will be used in EPA's ongoing efforts to address perchlorate problems. EPA's draft reference dose represents a preliminary estimate of a protective health level and is not a drinking water standard. In the future, EPA may issue a Health Advisory that will provide information on protective levels for drinking water. This is one step in the process of developing a broader response to perchlorate including, for example, technical guidance, possible regulations and additional health information. A federal drinking water regulation for perchlorate, if ultimately developed, could take several years.

In 1998, perchlorate was placed on EPA's Contaminant Candidate List for consideration for possible regulation. In 1999, EPA required drinking water monitoring for perchlorate under the Unregulated Contaminant Monitoring Rule (UCMR). Under the UCMR, all large public water systems and a representative sample of small public water systems are required to monitor for perchlorate over the next two years to determine whether the public is exposed to perchlorate in drinking water nationwide.

How is Perchlorate Removed from Water?

Several types of treatment systems designed to reduce perchlorate concentrations are operating around the United States, reducing perchlorate to below the 4 ppb reporting level. Biological treatment and ion (anion) exchange systems are among the technologies that are being used, with additional treatment technologies under development.

Many other perchlorate studies have been completed during the last several years. A May 2001 summary of 65 perchlorate treatment studies is available online at www.gwrtac.org/ (click on "Technical Documents" then look for "Technology Status Reports"). The summary report was prepared by the Ground-Water Remediation Technologies Analysis Center. Most of the projects described in the report are bench-scale and pilot-scale demonstrations of water treatment technologies, although several entries describe full-scale systems and soil treatment methods. Most of the projects employ biological treatment methods or ion (anion) exchange technology, although reverse osmosis, nanofiltration, granular activated carbon, and chemical reduction are also discussed. Results of federally-funded perchlorate treatment research, managed by the American Water Works Association Research Foundation (AWWARF), are also becoming available (see www.awwarf.com/research/spperch.asp).

Is Perchlorate-contaminated Water Safe to Drink?

EPA's draft toxicity assessment is preliminary and thus, it is difficult to make definitive recommendations at this stage. Other factors that influence the answer to this question include how much water is consumed, the degree of perchlorate contamination and the health status of the consumer.

Sensitive populations, like pregnant women, children and people who have health problems or compromised thyroid conditions, should follow the advice of their health care provider regarding the amount and type of liquids, including water that should be consumed.

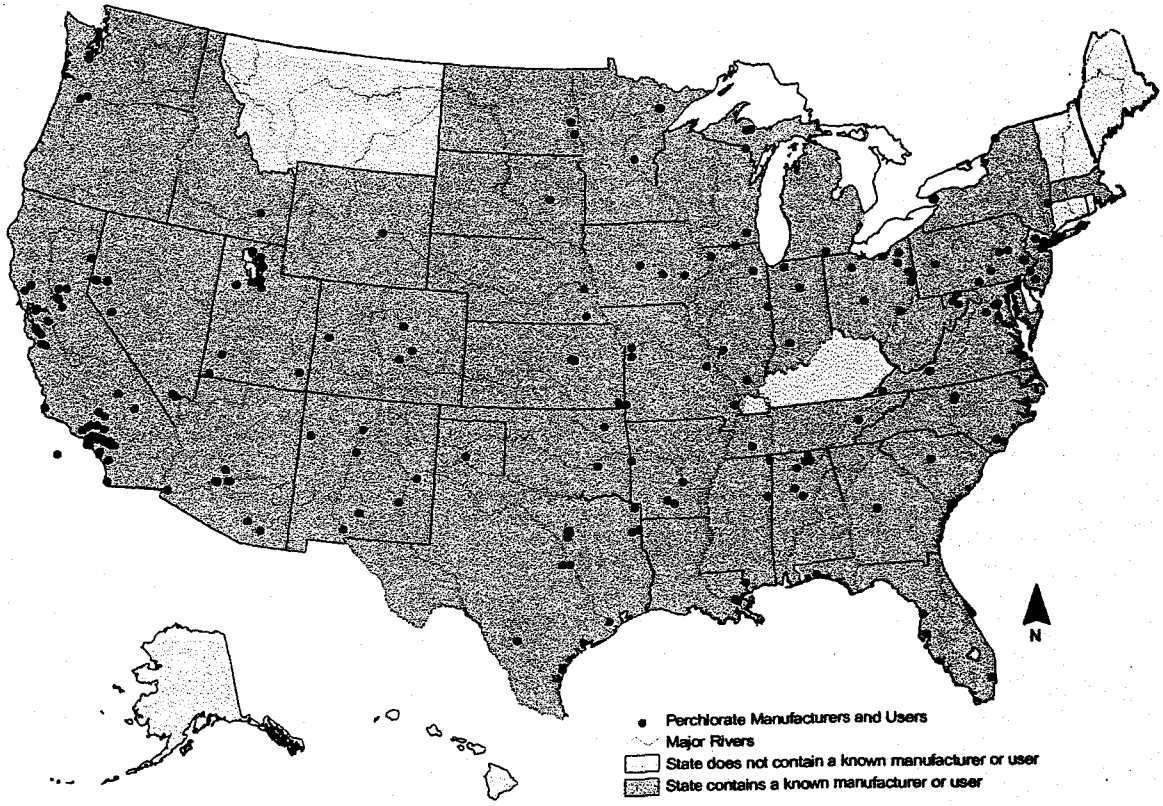


Figure 1: U.S. Perchlorate Manufacturers and Users, as of October 2001

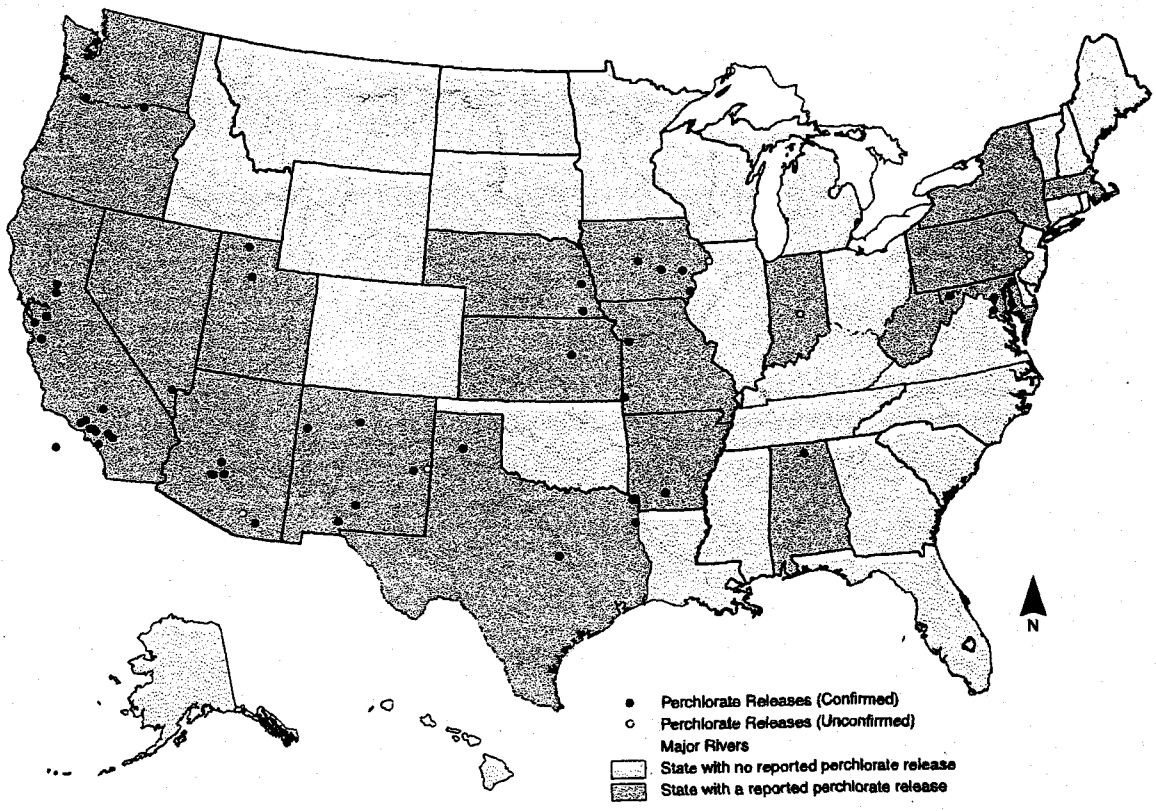


Figure 2: Reported Releases of Perchlorate into the Environment, as of November 2001

For more information

U.S. Environmental Protection Agency Contacts

Direct health and risk assesment questions to:
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(919) 541-4847

Direct questions about occurrence to:
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Direct questions about treatment technology to:
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(415) 972-3181

Direct questions about regulatory issues to:
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(202) 564-4878

Direct questions about the Integrated Risk Information System (IRIS) to:
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National Center for Environmental Assessment
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During the peer review and in regard to Region 9
Direct press inquiries to:
Lisa Fasano
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(415) 947-4307

After peer review and outside of Region 9
Direct press inquiries to:
Dave Deegan
EPA Office of Media Relations
(202) 564-7839

or

Richard David
Immediate Office of the Assistant Administrator
Office of Research and Development
(202) 564-3376

Direct questions about community involvement or the mailing list to:
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Environmental Data Quality

The Navy, through its prime contractors, employs several laboratories to perform a wide variety of environmental analyses. These laboratories are required to successfully complete the state of California certification process and the Navy's laboratory evaluation program before they are used for Navy projects. These quality control programs are designed to determine if laboratories have (and use) adequate quality control and quality assurance procedures that enable them to produce reliable environmental data. As a component of these certification programs the lab must be able to produce acceptable analytical results for samples provided by the certifying agency. These samples are known as performance evaluation samples, and ongoing laboratory performance is monitored throughout the year through analyses of additional performance evaluation samples. .

The quality of environmental data is judged according to various criteria; these include Precision, Accuracy, Representativeness, Completeness and Comparability. These criteria are collectively referred to as the PARCC parameters. Precision refers to the variability of the data (i.e. how closely results from the same test of the same sample agree). Precision of reported results is a function of inherent field-related variability plus laboratory analytical variability. Accuracy is the degree of agreement between the test result and the true value of the property being measured; it is a measure of bias in the system. Representativeness is a parameter that is most concerned with the proper design of the sampling plan and the absence of cross-contamination. Good representativeness is achieved through careful selection of sampling locations, testing parameters and methods, and proper sample collection and handling procedures. Completeness refers to the amount of usable data obtained from a given sampling effort, and comparability is related to the similarity of data obtained from one sampling effort to another. Comparability is achieved through the use of consistent methods of acquisition, handling, and analysis of samples.

Analytical methods, many types of quality control samples, and quality assurance procedures have been developed by the EPA and others to insure that environmental data satisfy these PARCC parameters and will meet project needs. The Navy documents these criteria in its project specific Sampling and Analysis Plans.

The Navy uses the following types of quality control (QC) checks to insure that the environmental data collected of the highest quality:

1. Duplicate samples collected in the field or prepared in the laboratory to demonstrate precision
2. Equipment Rinsate Blanks collected in the field to verify adequacy of decontamination procedures and insure the accuracy of results
3. Trip Blanks transported with environmental samples to verify that no contamination occurs during sample transport

4. Source Blanks collected in the field to verify that no contamination occurs during sample collection
5. Matrix Spikes prepared in the laboratory to determine the precision and accuracy, of analytical results
6. Surrogate and Internal Standards prepared in the laboratory, which serve as the basis for quantification and provide a measure of accuracy
7. Method Blanks prepared in the laboratory to detect possible laboratory contamination and assess accuracy

The number and type of QC samples required depends upon the nature and purpose of the samples being collected. For example, a trip blank is a sealed water sample that is placed in the cooler used to transport samples from the field to the lab. Trip blanks are only used when water samples are being collected for volatile organic compound (VOC) analysis. This is because water samples can absorb and retain air borne contaminants if not properly handled and sealed. In general, the type of sample and the tests to be performed determines which types of quality control samples are needed. These requirements are documented for each project in the associated Sampling and Analysis Plan.

The quality of laboratory measurements is verified on several levels before test results are released to the end users. Test results that are not fully compliant with the prescribed quality control requirements are flagged with coded laboratory qualifiers to alert the end users. These lab qualifiers allow the end-user to determine data usability. In addition, the Navy uses independent (third party) data validation to verify compliance with a wide variety of method and QC requirements. Data sets whose QC requirements are not fully compliant are also flagged (validation qualifiers). These qualifiers are important to the data users in assessing data usability.

As described above, good quality data requires many things from sample collection to data reporting. Analysis of environmental samples are highly prescriptive, there is no room for arbitrary experimentation or sloppy techniques. Deviations from the prescribed methods are not allowed unless acceptable alternatives are approved in advance.

Toxic agents are not always a hazard

By Jane E. Brody
NEW YORK TIMES NEWS SERVICE

July 21, 2004

Dr. Robert L. Brent has been studying environmental toxicology for nearly half a century.

A distinguished professor at Thomas Jefferson Medical College in Philadelphia, he specializes in the effects of environmental factors like radiation, drugs and chemicals on the developing embryo and child.

But Brent, who is also the head of a birth defects research laboratory at the Alfred I. duPont Hospital for Children in Wilmington, Del., said he often found himself defending the safety of such environmental agents in the face of misinformation that ignites the fears of parents and causes confusion.

Too often, Brent says, many millions of dollars are spent to clean up substances that actually present little or no risk to anyone's health.

To clarify what is known and what is not about environmental hazards, Brent, whose research has been financed by the National Institutes of Health and the Department of Energy, was a co-author of a printed symposium that appeared as a supplement to a recent issue of the journal *Pediatrics.*

In a telephone interview, he discussed the current state of knowledge.

QUESTION: Claims of harm from environmental exposures attract a lot of media attention and arouse intense parental concern. How justified are they?

ANSWER: There's a lot of misinformation out there scaring parents. Just because you have trichloroethylene in your well doesn't tell you what your exposure is and whether there's any risk. I wish there wasn't one chemical in the environment. But they're there, and we have to deal with them scientifically - find out if they're at a dangerous level.

You and your co-authors say our knowledge of toxic effects - particularly for low-level exposures experienced by embryos and fetuses - is very limited, which in itself can be a source of anxiety for parents. Can you offer any reassurances?

We know the threshold dose - the level above which harm can be done - for most of these substances from animal studies. We also know that their mechanisms of action are not the same in every species. We can use animal data to allay anxiety in certain instances. When the levels in humans are close to what we see causes harm in animals, then we're concerned.

This is easy to do with drugs: If you take a drug, I know what your exposure is. But I can't say the same for environmental chemicals.

What has to be done to clarify the potential harm of environmental exposures?

You have to know what levels of chemicals are in the population, their range of exposure and whether children have higher or lower levels at different stages of development. Children's behavior can change their exposure. An infant who crawls on the floor or who eats dirt will have a different level than an older child. You can't guess; you have to know what's in the person's blood. Then you can do quality animal studies to determine the threshold dose for toxic or embryonic effects.

If what's present in the environment is one-hundredth or one-thousandth the level that produces any effect in animals, that gives you a safety valve. But if you find the levels are equal, that's a concern.

You say that the dose often makes the poison. Is it reasonable, then, for people to become alarmed when exposed to any level of a toxic substance?

Toxicological agents all have a threshold below which they will have no effect. There are only two mechanisms in which there is no threshold. These are chromosomal changes that cause a genetic disease or cancer, which can result from a change in a single cell. There's more data to support cancer risks. But for many of the genetic abnormalities, the damaged embryo is lost even before a woman knows she's pregnant.

What limits scientists' ability to determine the specific effects of various agents on the developing fetus or young child?

We don't have good animal models for attention deficit disorder, convulsive disorders, autism or lowered IQ. It's pretty hard to determine whether subtle changes in an animal will be reflected in the human.

In the meantime, how can parents best protect their children from possible harm from environmental agents, short of raising them in a bubble?

Many women do limit the medications they take during pregnancy to only what is necessary. They should stay away from all herbal medications, which are not well controlled. A pregnant woman shouldn't put anything in her body that is not approved by the Food and Drug Administration. As for environmental agents, city water is as safe if not safer than what most people drink. Wells can get contaminated.

We don't always know what's in bottled water. Perrier had benzene in its water a couple of years ago. And you've got to be sensible about foods you eat. I don't know what's in food made in a restaurant. I do know what's in food my wife makes. You're better off eating at home, especially if you're raising children.

Can you give any examples of false claims from animal studies of potential toxic agents?

Most agents that cause birth defects have not been discovered through animal studies, which are helpful primarily to corroborate risks. There was a claim that trichloroethylene produces cardiac malformations in the fetus, but scores of studies say it doesn't. There was another claim that Retin-A, used to treat acne and wrinkles, caused birth defects. But you don't get enough into the body when it's put on skin to affect the embryo.

Some advocates insist that the environment be cleansed of suspect agents even when clear evidence of harm is lacking and regardless of the cost of such cleanup. Is this reasonable or necessary to protect our young?

Love Canal was an example of a terrible environmental problem that should be cleaned up, but there was no evidence of risk to the people who lived there. Many fears are irrational. Each instance has to be evaluated on its own merits. They wanted to tear down a group of houses in Philadelphia in which the level of radon was just a little above background. All that was needed was to put a fan in the basement to blow the stuff out.

Once a substance has been shown to cause birth defects, pregnant women often become alarmed when they realize they've been exposed to it. But dose and timing make a difference. When should women worry?

Timing is important. If ACE inhibitors, used to control blood pressure, are given in the first trimester, nothing happens because it doesn't interfere with organogenesis. But in the second and third trimester, it produces fetal hypotension and babies are born severely growth-retarded - with hypoplastic lungs and damaged kidneys - and die.

The same is true for dosage: If you give cortisone at a high enough dose, you could cause birth defects. But at therapeutic doses it's innocuous during pregnancy. Health care workers often misinform pregnant women. There are probably 1,200 babies in this country alive today because I stopped their mothers from having an abortion once I knew the timing or dose of their exposure.

2004 Navy and Marine Corps Restoration Advisory Board
Training Workshop – Salt Lake City – 23 July 2004

RAB IN A NUTSHELL POSTINGS – 23 JULY 2004

The following table transcribes the "RAB in a Nutshell" cards distributed during registration:

Your greatest success	Your greatest challenge	A question or idea you have
Project almost finished	Getting people to meetings	Where does the money come from?
Cleaning our landfill, which the Navy and community used. It was a battle for our RAB and municipal government to have the Navy finance the cleanup.	To have the Navy completely clean up the Naval Arctic Research Lab, so that the transfer can take place. The transfer is between our Native Corporation and the navy.	Thank you, Navy!
Removal process of the abandoned DEWLINE sites have started.	To have all the sites removed and cleaned (including toxic chemicals in the soils).	My question: Are toxic chemicals removed, and how can I be sure the chemicals are removed?
PCB Ground well study.	Volume of data and years of project work completed prior to the start of the RAB	---
Transferring 16,000 acres and de-listing the 16,000 acres from the NPL.	Keeping community members interested until we are finished.	How do we adjourn the RAB?
Getting the Navy to listen.	Convincing the DON that our community was part of the America they were supposed to represent (they do now).	Hurry up every chance you get.
Restoring our landfill through capping.	Finding sources of PCB's in marine environments, and cleaning them up.	Use and support local scientific capacity for testing, clean-up and monitoring.
We recently got a section of land turned over to McGregor, which will be used for fire and police training center working with McLennen Community College.	To get old-timers to understand why the areas must get cleaned up and used for only certain things.	I would love to know where participants are from (NOTE: See last section of conference binder for attendee list).
Encapsulation and removal of up to ten feet deep of hazardous material from the New Gosport Naval Housing area. Bringing in new fill and plants to covert the area into a public park	Going around attorneys on both sides and having a dialogue with a civilian neighbor resulting in a joint cleanup with costs shared and an environmentally safe area created.	---
Having the Navy and community communicate and work together as a team on the common goal of environmental cleanup. Also, coordinating a community tour of the base.	As land transfers, set clear coordination with all parties: city, developers, community, regulators, and the Navy.	RAB/Community tours are great!
Getting local government and Navy to talk to each other.	Same as to left.	How are we doing?
Fuel spill management	Convincing the public that we are serious about cleaning things up.	How do we improve public image?
Get Navy to stop bombing (Vieques); get on NPL candidate list. Get 4,000 acres returned to municipality.	Get a real cleanup and be able to use the land.	Have contractors and agencies watch the Vieques documentaries and history of the island before taking a position

Your greatest success	Your greatest challenge	A question or idea you have
Maintaining an active RAB for a community forum about the environmental cleanup in a town that is not a democracy.	Dealing with accelerated document preparation and review of cleanups that are on fast tracks based on early transfer to developers – we are swamped with documents!	How other RAB's utilize TAPP grant process – what types of projects do they request funding for?
Mutual respect and cooperation between Navy, regulators, and RAB community members.	Keeping RAB members (Please join the Treasure Island RAB).	What is the current governing guidance and regulations for Navy RAB's?
Very well attended RAB meetings with a very informed community.	Keeping cleanup process on schedule.	How difficult is it to have an IR program moved from RCRA to CERCLA?
No public outcry! Navy does A-1 job of putting out the small fires.	Generating more non-crisis public awareness.	Navy sponsored along with contractor's Public Environmental Fair and Exhibition.
Great working relations with RAB community co-chairs and members that attend meetings regularly.	RAB meeting attendance.	How to attract more interest in RAB's and increase meeting attendance? Relax constraints on RAB members meeting attendance and selection of members.
Getting environmental agencies at all levels from local to National to revise policies and actions.	Only 24 hours in a day so I have to work nights.	How to best get various government agencies to work with each other effectively.
Early transfer. Thousands of gallons of petroleum have been removed.	Adequate funding for a timely cleanup.	NAS Alameda: Will the future residential; areas be really safe for families in the long run?
Cleanup estimate end date changed from 25 years of natural attenuation to less than 5 years.	Community doesn't have basements – built on slabs. The original decision to pump and treat led to concern about soil holes.	The chemical breakdown and cleanup with different solutions is more convenient and productive.
Have the testing offsite of old swamp river, a drinking water source for Weymouth that runs from the base (by EPA).	Making sure that the Air Station is used to create permanent jobs and return a clean base back to the towns involved.	How to keep a developer from turning our site into nothing more than home sites during these times.

PARKING LOT ISSUES FROM OPENING SESSION – 23 JULY 2004

- Navy publicity efforts are needed at closed bases to heighten local awareness of their activities and successes. The lack of a Public Affairs Officer (PAO) at these sites hurts the potential for this.
- How is income/revenue from BRAC transfers/land use sales managed? Where is it applied?
- Need more discussion about water/marine-based Ranges (underwater ordnance).
- Need more discussion on how RAB's can share information between installations (between RAB's). How could the Navy help facilitate this inter-RAB coordination and sharing?
- Need more discussion on how the Tri-Services coordinate environmental activities for co-located installations, or for sharing information between installations with similar issues. What cost savings could be possible by doing this?
- **Action Item: Distribute OSD Website address with RAB contact information:** http://www.dtic.mil/envirodod/Stakeholder/WCommunity/SI_WCRAB_Dir.htm)

SUMMARY NOTES FROM INSTALLATION OPEN FORUM – 23 JULY – 3:15-5:00 PM

Purpose of RABs:

- Navy/DOD Policy – cleanup focus; ERN/BRAC environmental projects and related issues
- RABs generally have defined charters to memorialize the purpose of their RABs
- Non-cleanup issues commonly brought to RABs:
  - Reuse/redevelopment projects and proposals (BRAC bases)
  - Base operations and impacts to communities (active bases)
    - Noise, traffic, projects
  - Non-cleanup environmental issues (natural resources, cultural resources)
  - RABs become default public forums in the absence of any other public forums
- Members "self-policing" of issues raised at RABs
  - Community members are maintaining the cleanup focus when non-cleanup issues are raised
- RABs and early transfers
  - RAB's role after an early transfer – what happens?

RAB Membership Issues:

- Low attendance conditions exist at a majority of RABs—both active and BRAC sites
  - Can be the result of "high trust" and satisfaction within community, but can also be the result of "low trust" or community perception of inability to effect cleanup decisions
  - Navy role in membership drives
- Demographic representation
  - Community representation is fair
  - Lack of representation in areas of socio-economically depressed individuals and/or community members under the age of 35
- RAB meeting advertising – done primarily through newspaper advertisement(s)
- Member information and privacy rights – needs that can facilitate information sharing:
  - Privacy policy statements
  - RAB members' privacy preference forms

Good News/Success Stories:

- Currently being advertised through fact sheets, newsletters
- Increasing advertisement of successes and accomplishments
  - Special projects with academia
  - Participation in industry forums
- Increasing press releases by Navy
  - Providing incentive to Navy cleanup team members given increasing reduction of resources

TRANSCRIBED NOTES FROM COMMUNITY OPEN FORUM – 23 JULY – 3:15-5:00 PM

The following bullets list the key messages, ideas, issues, actions, and/or recommendations that the Community representatives wish to communicate to the Navy:

- Recommendations Related to On-Line Communication
  - Create a RAB LISTSERV mechanism, with specific issue "boards," allowing RAB's to share information online.
  - Distribute quarterly updates/information summaries between RAB's through this vehicle.
  - Create RAB Navy-funded websites, with contacts, accomplishments, upcoming actions, and other information. Ensure that site is easy to access and navigate. (Sample website: www.mareisland.org.)
  - Create a site that provides an index of RAB's by State. Show map with states, where you can click the map to see all the installations, with links directly the RAB website. (See website: http://www.dtic.mil/envirodod/Stakeholder/WCommunity/SI_WCRAB_Dir.htm)
  - Maintain electronic library of information and publications. Get Navy to put documents on CD with an index – distribute to local libraries.

- Recommendations Related to Community Outreach:
  - Good outreach vehicle for RAB's: Present at local public service clubs; have Navy PAO help with preparing presentation.
  - Navy needs to supply resources, staff, mechanisms, and funding to create public outreach newsletters from the RAB's perspective (to supplement Navy-generated newsletters.) Recommendation from floor: Use TAPP funds.
  - It is time for Navy to revisit/enhance the CRP policies/protocols to ensure they still work. Assess whether policies and plans have been implemented and at what levels of success.
  - Navy: Generate Annual Reports that summarize successes and status over the past year – will help summarize success at a high level.

- Recommendations Related to RAB Management:
  - Structure and manage agendas and meetings in a way that controls political agendas.
  - Create a RAB Steering Committee made up of key Navy, Community and Regulatory representatives to develop meeting agendas and plans.
  - Develop a mechanism by which RAB's self-determine how often they meet, and establish means by which they can convene more frequent meetings as needed.
  - Establish subcommittees to discus specific issues, and keep following-up until it's done.
  - Conduct regular meetings between RAB's and regulatory groups; bring technical review committees (BTC's) in for minuted meetings.
  - Need advice on how to recruit for RAB's – sharing of best practices. (Comment from floor: Best way to ensure RAB participation is to have a controversial issue.)
  - Navy: Ensure that presenters confirm RAB's understanding of technical content DURING presentations, so the community doesn't get lost in the middle of the discussion.
  - Navy: Assess RAB strengths when convened, and provide RAB's with training in the areas where expertise is lacking.
  - Navy: Assign military (uniformed) representative as RAB Co-chair or member.

- Comments Regarding Funding and Resource Needs:
  - Navy: Provide ongoing funding for technical assistance/resources staff for RAB's (for meeting attendance with regulators, and subsequent report-back with recommendations to the RAB).
  - Teach RAB's how to effectively access TAPP funds.
  - Need better mechanisms for getting dollars from the private pollution generators.

- Comments Concerning Sharing Between RAB's
  - Navy: Determine how Tri-Services coordinate environmental activities for co-located installations, or for sharing information between installations with similar issues.
  - Select "model" Navy Installations to serve as "best practice" models for other installations.
  - Create a National RAB Board to interact with Navy on a regular basis (ala the DERTF concept).

- Comments Concerning Navy-Base-Community Interaction:
  - Problem: There is no effective interface mechanism between the RAB and Base leadership. (Recommendation from floor: Talk with Navy Commander.)
  - Question: How do we best approach/manage public oversight of private developers, once the site has been transferred to private interests or conservation organizations? What are the roles of RAB and EPA at that point in the process?
  - Need to have regulators actively involved in environmental aspects of base transfers.

- Other Topics:
  - Ensure that there is independent validation/verification of Navy environmental data.
  - Navy: Use reuse as the key driver. Find ways to relate reuse to environmental activities at the installation.
  - Consider RAB differences between IRP and BRAC sites.

- The group noted that there is a lot of variability between RAB's and installations some installations are excellent; others are very poor (examples of poor include: no training, insufficient funding and communication, lack of interest by Navy in sustaining local culture). Examples of "Good Job" Navy Installations:
  - NAV/STA, Newport, RI
  - NAV/STA Treasure island
  - Brunswick NAS
  - Adak, Alaska
  - Kingsbay Sub Base
  - Central Oahu and Pearl Harbor, HI
  - NIROP Facility, MN
  - Former Narl Arctic Research Lab (Barrow, Alaska)
  - Cecil Field Naval Air Station
  - Orlando, FL (was naval Training)
  - Bangor Sub-Base, Washington State
  - Lualualei RAB, O'Ahu, Hawaii
  - Camp Lejuene, NC
  - Cheery Point, NC
  - Washington Navy Yard
  - Charleston SC Naval Base

- Navy: Please listen to us!'

Break-Out Session: Input from Community

Much of the Community session was spent completing a round-robin brainstorming session, designed to gather ideas from RAB Community Co-Chairs on a variety of topics. The following sections provide the questions and output from this brainstorming effort. Each section opens with the question asked; the answers provided by the group are captured in the subsequent bullets – items listed more than once on the board are followed by a *. .

Describe your RAB's interaction with the Navy....Methods? Effectiveness?

- We work with the State (Elected) Departments like Department of Environmental Management. They have more control over sign-offs.
- Better whenever the dialogue engages State and EPA regulators/representatives. *
- We require regulators to comment on clean-up progress at each meeting.
- CRP-type products are helpful (e.g., newsletters).
- Navy interaction has been great, and we are seeing resolution of issues. Some members have been involved for 10 years. *
- Good interaction – Receptive military co-chairs. Presence of a military-actual Navy officer co-chair or attending member is very useful. Even though they change every few years, they mostly are there and do respond. *
- Navy and Air Force reps are well-prepared, interested, and in attendance at meetings – works well. *
- Member access to all documents – we receive a copy of all documents that are available.
- Communication from Navy is on a need-to-know basis – site is under remediation, is a non-issue in the community.
- Refreshments used to be served at meetings – that was helpful (not done any more).
- Established a Steering Committee to set agendas and direction, made up of community members and regulators. *
- Navy co-chair announcements are detailed at the meetings – sudden questions are handled by e-mail and telephone. Current BRAC clean-up team activities are updated at all RAB meetings – All Good!
- Meetings are very informative. Questions, even beyond the purview of the RAB's, are answered before or during the meeting. Installation co-chairs are very sensitive to our concerns.
- Small focus group meetings.
- Co-chairs communicate regularly, even with periodic changes – seems to succeed.
- We have critiques after every meeting.
- Navy is content to remove only 3 feet of soil in residential areas, and then say to just not "dig." **
- Navy continues to deny the real impacts of types of practices done (e.g., depleted uranium, radiological practices, and damage done to health.
- RAB meetings have been mainly agency reps and Navy Co-Chair and me. We mainly had community involvement when we were dealing with BRAC.
- Navy attitude on cleaning great, but when cleaning stops....(no funds for complete clean-up).
- Not always effective communication between Navy and Community; sometimes fractious interaction' PAO hates the public; more communication between Navy and Community would benefit both; websites would benefit; Navy should provide more contact points throughout the Chain of Command. Establish a more congenial, welcoming attitude at the beginning of RAB functions, especially for the general public.
- Our RAB needs to have credibility. One method may be to actually vote on controversial issues as it pertains to restoration and remediation.
- Meetings sometimes drift off topic. Sometimes Navy is reacting to issues, but not leading.

- Fairly good relationship is paramount to being effective in any way. Navy is sometimes slow to respond to questions of how to clean something up).

What are the most critical factors driving RAB dynamics?

- Common goals; community cohesiveness; civility and respect. Patience!
- Money; concerned citizens for their environment; cooperative government with honest intentions for clean-up.
- We want to make sure that they clean up what they left.
- Lack of money to fund the RAB.
- Communication (talk to each other, Navy and Community); communication with C.O., and how they present the program.
- Personal respect and trust (no necessarily agreement).
- Trust, honesty, respect. *
- Safety.
- Current and future health and safety of people and environment (water, land and air). *
- Perceived risk to the community.
- Telling the public what is happening; lack of public outreach; how can RAB members help save money and avoid spending more than is needed.
- Future site ownership/uses – redevelopment – land use planning.
- TAP Advisor – money? Helps in having a common understanding of the technical issues and goals.
- The need for openness in the process.
- Public will respect the environmental clean-up.
- Environmental impact to Community and the habitats of the area. How polluted the sites are, and do they affect the drinking water.
- Location of site and visibility of community. The rest should follow.
- Bring food to RAB meetings – helps dynamics.
- Relationship between public and private (Navy/RAB), distinctions between the two does not need to be so "defined."
- Money/long-term funding and public approval.
- We needed money and opportunity to train RAB members 10 years ago – there was a lack of trust and understanding of the process.
- Navy facilities need to be places on the Endangered Species List!
- Navy clean-up/funding priorities, rather than community priorities.
- Public engagement by the military to the public (e.g., notices and ads in paper need to include important info and not be buried).
- Directions of installations co-chair; presentations by Navy consultants and contractors.
- IR impact off-base.
- Our ability to be proactive; to be watchdogs, rather than lapdogs. To thoroughly review IRP's and EECA's (Engineering Evaluations and Cost Analysis) and present a cogent synopsis of our Point of Views.

How can RAB's better communicate shared issues between RAB's?

- Restore National/Regional RAB Caucus (Talk to each other), and ensure there are funds for this. *
- Quarterly or semi-annual meetings (Regional) of Community Co-Chairs. *
- Have workshops like this on a smaller scale – example: with a state if there are two RAB's, even for a day. *

- Through interactive dialogue with State and federal regulators who are RAB members and more aware of other BRAC/IRP work.
- Combine Navy, Army, Air Force States of Residence as one RAB – this combines clean-up funds.
- Navy/military websites.
- LISTSERV, Bulletin Board system, Websites that post status and contacts, E-Mail, Chat Rooms. *
- Navy should issue e-mail ID's to members and establish a Users Group on-line. *
- Newsletters, publications between RAB's – comparing solutions, and announcing RAB awards based on accomplishments or performance, etc.
- We have each other's contact information in the Manual – we can send out what's needed, or the Navy could host a Site Dump.
- Provide joint TAPP training.
- Publish a problems/solution directory.
- List remedial issues at sites for better information sharing between RAB's.
- BLOGS.
- All of the above.

What are your "lessons learned?"

- The Navy works for us! We, the people, are in charge, and we will only be tread upon as long as we allow it to happen – standing together, we have strength in numbers.
- Communication is so important – listening as well as asking and talking – trust is built through understanding through listening. Include everybody, and listen to all community and RAB members.
- Communication between Navy and public and between other RAB's is vital. Train early!
- When government says "you can't," remember that you (RAB) are not regulated by the government.
- Be patient and understanding – some stakeholders don't care about what is happening until it is in their backyard.
- Have a think skin, because some people do not care – don't hold back, keep going forward.
- Be patient with the process when clean-up solutions are changed – this is not an exact science.
- Be forward, speak out, ask – and be willing to listen! Be in a good mood, and listen/ask – do not be afraid to ask.
- Persevere – ask questions. Have small focus group meetings with stakeholders.
- Learn your science, and keep learning and asking the hard questions.
- Site tours and special programs allow members to see site work, and understand what is being done.
- Bring in ATSDR for separate evaluation.
- Avoid public meetings right before elections (political campaigns).
- BRAC Clean-up Team (BCT) has information that is not always given to the RAB.
- Keep RAB meeting sites accessible. This is required under law.
- Ask questions, questions, questions. *
- Be patient – everyone benefits when we all work toward common goals.
- Put all information out on the table – maximize public/community involvement.
- Involve local government.
- Get government agencies on the same page.
- Play fair; eat all your food, share, and say your prayers before you go to sleep.
- Need greater CRP applications to engage the general public.
- Get newspapers on your side; get them interested. Encourage publicity within the community.
- Develop a website.
- Sublimate the dog and pony shows – be actively interactive, not vicarious observers.
- Navy did not want to give technical assistance until we absolutely insisted – then they did.

- Require Navy to personnel to speak in civilian language (explain acronyms).
- Advertise meetings with multi-media. *
- Develop trust. *
- Personal contact attracts more interest.
- Good food brings the public.
- It takes two to tango.
- Money talks.

How does the RAB communicate with other interest groups? Who are they? Key resources used?

- Newspaper publishes activities. *
- Newsletters, e-mail, media outreach and interventions.
- Public notices, announcements at other public meetings and through local government agencies. *
- Telecons, cooperative government, concerned citizens.
- Public access TV shows our RAB meetings in stakeholder towns.
- Recruit RAB members from local interest groups. *
- Maintain contact with local politicians/elected officials. *
- All public officials get letters and announcements in the newspapers.
- Need National coverage/information on RAB issues. *
- Navy needs to publish regular updates for local papers of project/site status.
- Navy includes periodic newsletter in our newspaper; minutes are taken by a private contractor and distributed to all interested parties; the web is a good source of information; and are meetings are convenient for all elected officials.
- Our RAB inter-relates via our membership in other diverse community organizations. We have not communicated as a sole entity! Perhaps this should be an option.
- Speaker for addressing groups. *
- Individual letters by US mail to people directly impacted – despite Navy objections, you can't censor private correspondence.
- Hold annual town hall meetings.
- Communicate better through programs for churches, schools, Scouts, community interest groups, university clubs, Senior Citizen's groups.
- Communicate with schools by providing educational materials for students, and possibly workshops for teachers. All people are interested in what their kids do.
- We try; other interest groups have shown no interest. If it's not bad news, they don't want to hear.
- State-wide RAB Conferences as Round Tables.
- We interact with EPA and DEM each month, and maintain contact lists by Internet.
- Letters to Civic Leagues.
- Tours of completed projects are open to the public.
- Invite other interest groups to speak at RAB meetings.
- We have minimal contact with other groups. *
- **Who:** League of Women Voters; Local environmental groups (e.g., Sierra Club, Heal the Bay, Watershed groups); TAG recipient groups; City Councils/staff; Congressmen and Senators as needed; State legislators as needed; personal contacts,* newspaper contacts, labor unions, religious contacts,

What does RAB success "look like?" What are some "best practices" for RAB success (tools, processes, approaches)?

- Successful property transfer of a clean base = success. *

- Site closed and issues resolved.
- Early transfer (FOST).
- Successful resolution of novel or unexpected problems – timely and within budget – with recognized public approval.
- A clean site for future generations, producing clean water and air. Clean air, clean water, clean land to leave as our legacy. *
- Working together as a whole.
- BMP – Soil heat treatment to remove PBC's.
- Money for landfill clean-up and closure
- Land return and use – community treatment for the detoxification of heavy metals.
- Navy clean-up beyond that which is "required."
- Both sides need to walk away feeling that they have won.
- Communication, communication, communication. *
- Breadth and depth of public engagement; progressive meetings/agendas, focus on milestone attainment.
- Informed community – projects turned over for public use.
- Use of PERT or progress charts; good refreshments and handouts, overall well planned facilitations.
- Interaction on what is needed to finish each project.
- Identification and removal of all pesticides.
- Both sides need to maintain a mutual respect for each other.
- Before and after environmental test results on clean-up sites.
- Clean-up of non-water and soil issues.
- Fully and accurately identify problems and select proper solutions the first time.
- Success is "Nothing" – after clean-up, the land is totally restored – "status quo."
- Unconstrained public participation.
- Presence of a technical advisor (TAPP).
- Website that has contact information for the installation, community leads and regulators, and repository of RAB meeting handouts. .
- Serves as "model" for what can be achieved on a "larger" scale.
- Community outreach – an informed community about clean-up progress.
- Participation in the decision-making process – before decisions are made.
- It's incumbent on a RAB to show its teeth on occasion. Failure to act when we have determined an anomaly is effectively dropping the ball for our community, and one could iterate, our nation. Success is based upon a significant level of understanding – without this, we are doomed to failure if we cannot communicate our concerns adequately.
- RAB sponsored some very specific training on toxicology – helped get community members on a common level of understanding that could be applied to other areas.
- No RAB.

What's not working well for you now? What do you need help with?

- Keeping RAB members active and interested and RAB positions filled. *
- Recruiting community members. *
- Members are losing interest. *
- The prime driver for environmental restoration is reuse. These issues must be addressed quickly. One cannot present a master plan without factoring this into the equation.
- What happens to the RAB when Navy feels the work is completed?
- Little communication and media participation. *

- Early transfer is not working for the towns involved.
- Getting the "general" public to meeting. *
- Cleanup is not complete (e.g., buildings are gone), but the chemicals have not been removed when entered into environment (e.g., PCP in salmon stock).
- Too much money is spent on huge bureaucracy – need tro have more efficient clean-ups.
- Some contaminants (e.g., dioxins) not being addressed, due to lack of risk assessment/standards – leads to inaction and the ignoring of issues.
- Difficult to maintain continuity with periodic replacement of the Base CO.
- Marine contamination associated with Navy base, but not with identified IR sites, therefore, the Navy claims no budget to sample and analyze for finding sources.
- Need better background level standards.
- Both sides need to use the calendar – we want it done now!
- Overwhelming paperwork and technical documents – early transfer has increased workload for regulators).
- Not enough public awareness of progress and current status.
- Work seems to be slowing; meetings are becoming personality contests.
- People don't talk.
- Communication between members.
- Dwindling attendance as BRAC closure takes effect – expand CRP to include quarterly press releases and status/progress.
- Government agencies are not cooperative, and are fighting with each other.
- The Navy needs to listen to the RAB.
- City official's lack of knowledge about cleanup.
- Relationship with Navy work pretty well, but as always, there is room for improvement.
- Institutional controls (e.g., no digging) is not acceptable, clean-up levels are not clean enough.
- My installation has not set up a website that includes a repository of information and handouts given out during the meeting. Not everyone goes to the library to use Internet.
- Too much paper! Need to identify global document management/presentation storage mechanism – go electronic
- There has been a problem with isolation and lack of training. There has been very little community involvement and little to no communication with other groups. It is vital to connect with others to really know how to be effective.
- Lack of community PR – need better PR about successes. *
- Not really cleaning for future use of the land – clean our people' we need health to be able to work.
- No community input to the scope of work.
- Funding limitations lengthen the cleanup process.
- We need translations for non-English speaking communities.

NAVFAC
Naval Facilities Engineering Command
SOUTHWEST DIVISION

Navy & Marine Corps Restoration Advisory Board Training Workshop Held in Salt Lake City

Presented By
Andy Piszkin
SWDIV

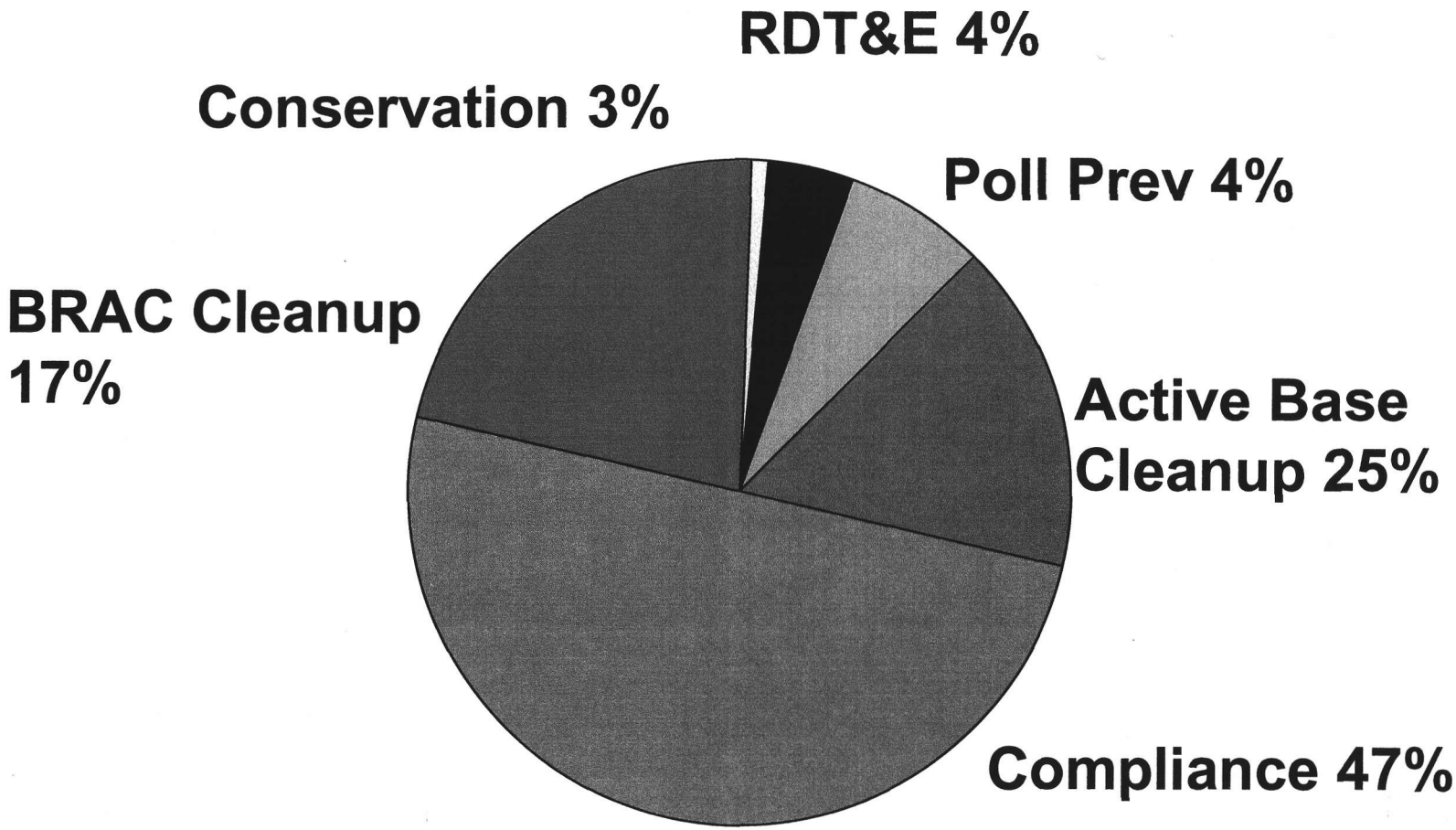
FORMER MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING

July 28, 2004

Workshop Overview

- **2nd National RAB Workshop Sponsored by Chief of Naval Operations**
- **Agenda Topics Discussed**
  - –Navy Budget Overview
  - –Munitions Response Program
  - –Remediation Technologies
  - –Site Investigation Techniques and Risk Assessments
  - –How Regulatory Standards are Set
  - –Risk Communication
  - –Site Closeout and Land Use Controls
  - –BRAC Cleanup and Transfer Issues
  - –Technical Assistance for Public Participation
  - –Revised RAB Rule

Department of Navy FY04 Environmental Budget = $1.02 B



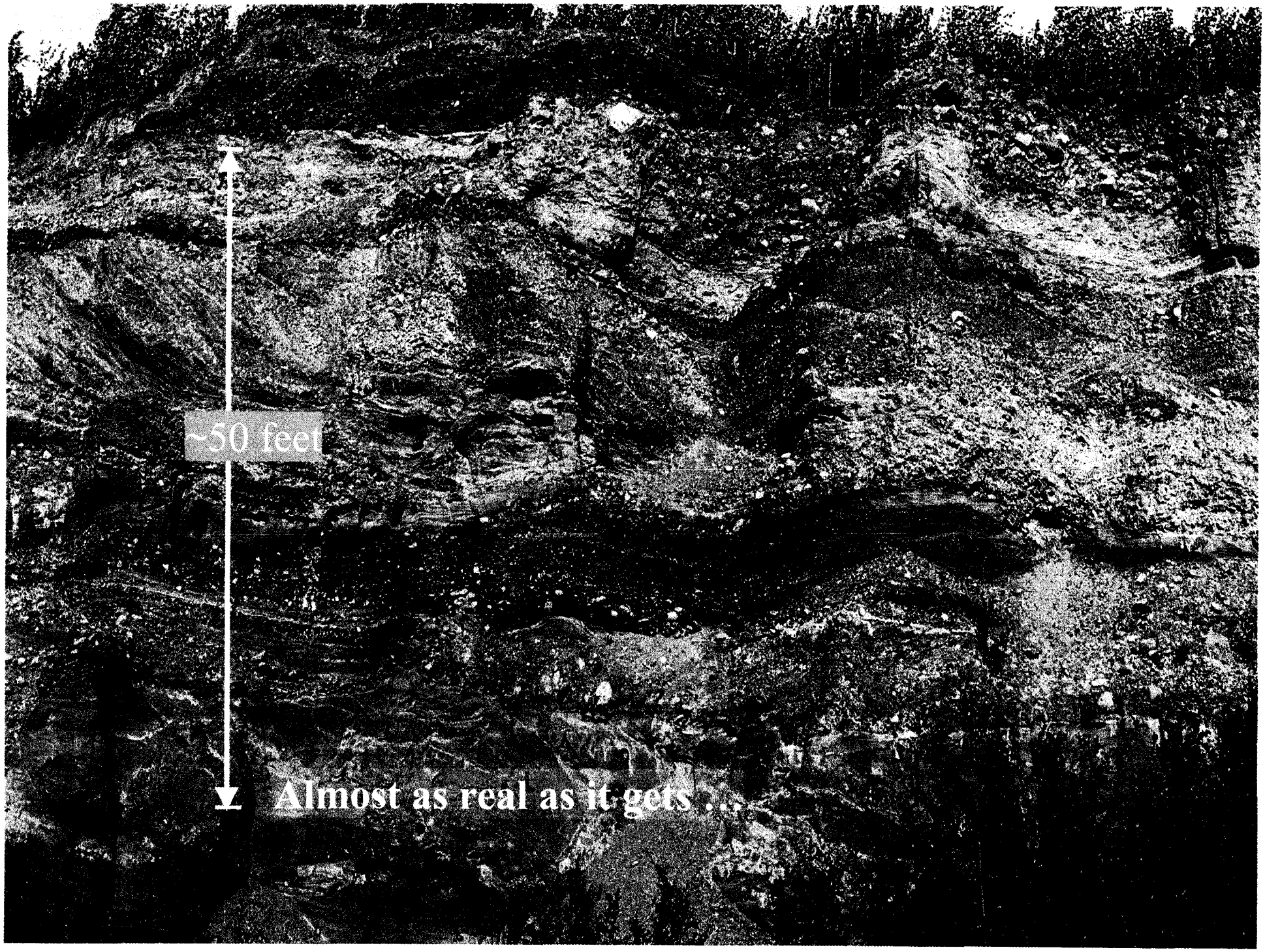
Munitions Response Program

- Separate program element within the ER,N account
- CERCLA is the preferred regulatory framework
- Focus on explosive safety hazards first, then chemical hazards from constituents

Geologic Limitations Of Remediation Technologies

By

Evan K. Nyer


~50 feet
Almost as real as it gets …

Presentation Overview

- Purpose of Site Investigation
- History of Site Investigation
- Triad Approach
  - A better way

- Site Investigation Techniques
  - Non-Invasive
  - Invasive
  - Special
  - Field Analytical Techniques
- Future of Site Investigation
- Case Study

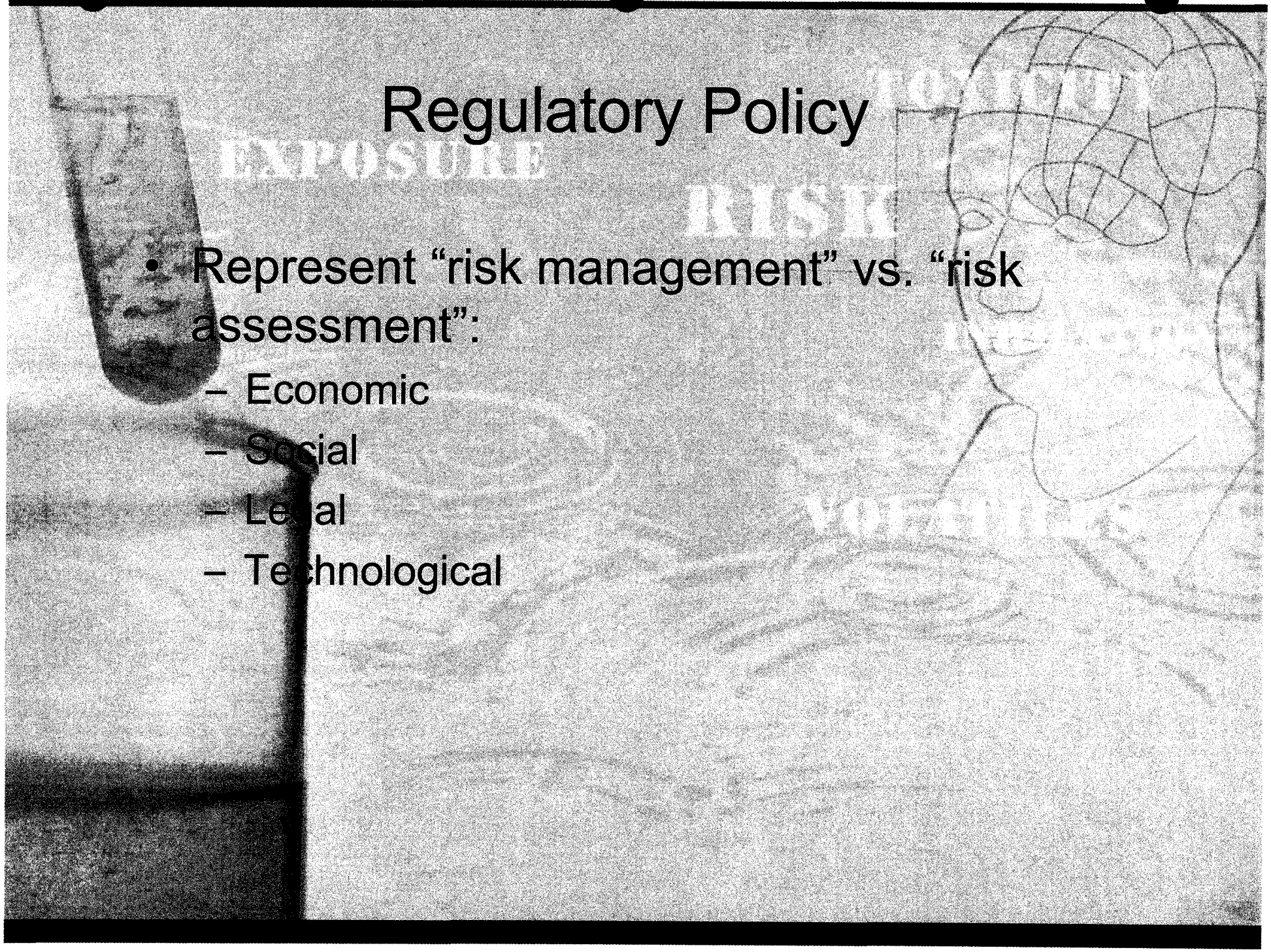
Risk Assessment

Presenter:
Dan Waddill, PE, PhD
NAVFAC EFD SOUTH

Most Slides Courtesy of:
Ihor Hlohowskyj, PhD
Argonne National Laboratory

"HMM... TRACES OF OIL, GAS, LEAD, EDB... IT'S WATER, ALL RIGHT."

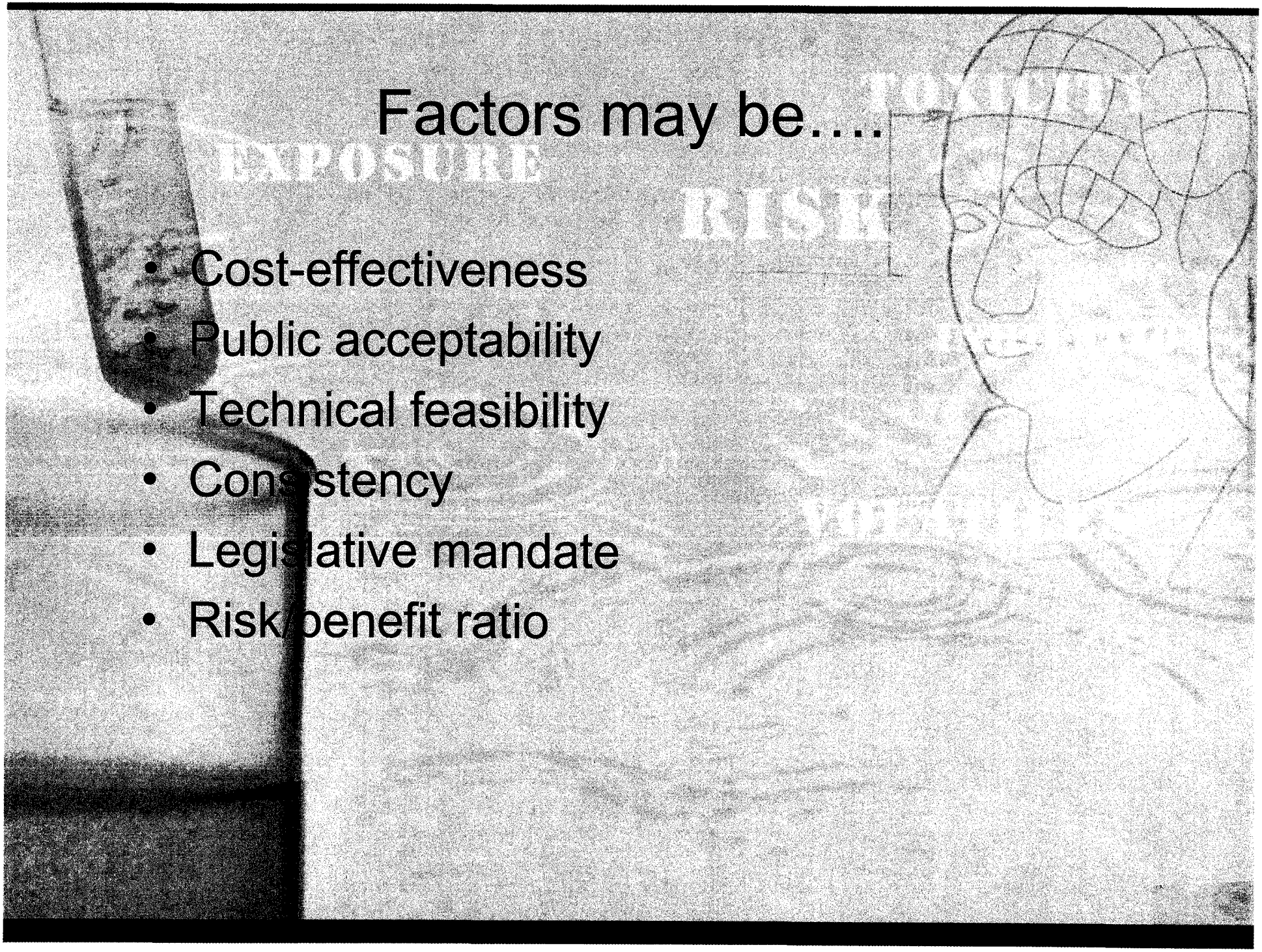
Regulatory Policy



- Represent "risk management" vs. "risk assessment":
  - Economic
  - Social
  - Legal
  - Technological

Factors may be....

- Cost-effectiveness
- Public acceptability
- Technical feasibility
- Consistency
- Legislative mandate
- Risk/benefit ratio



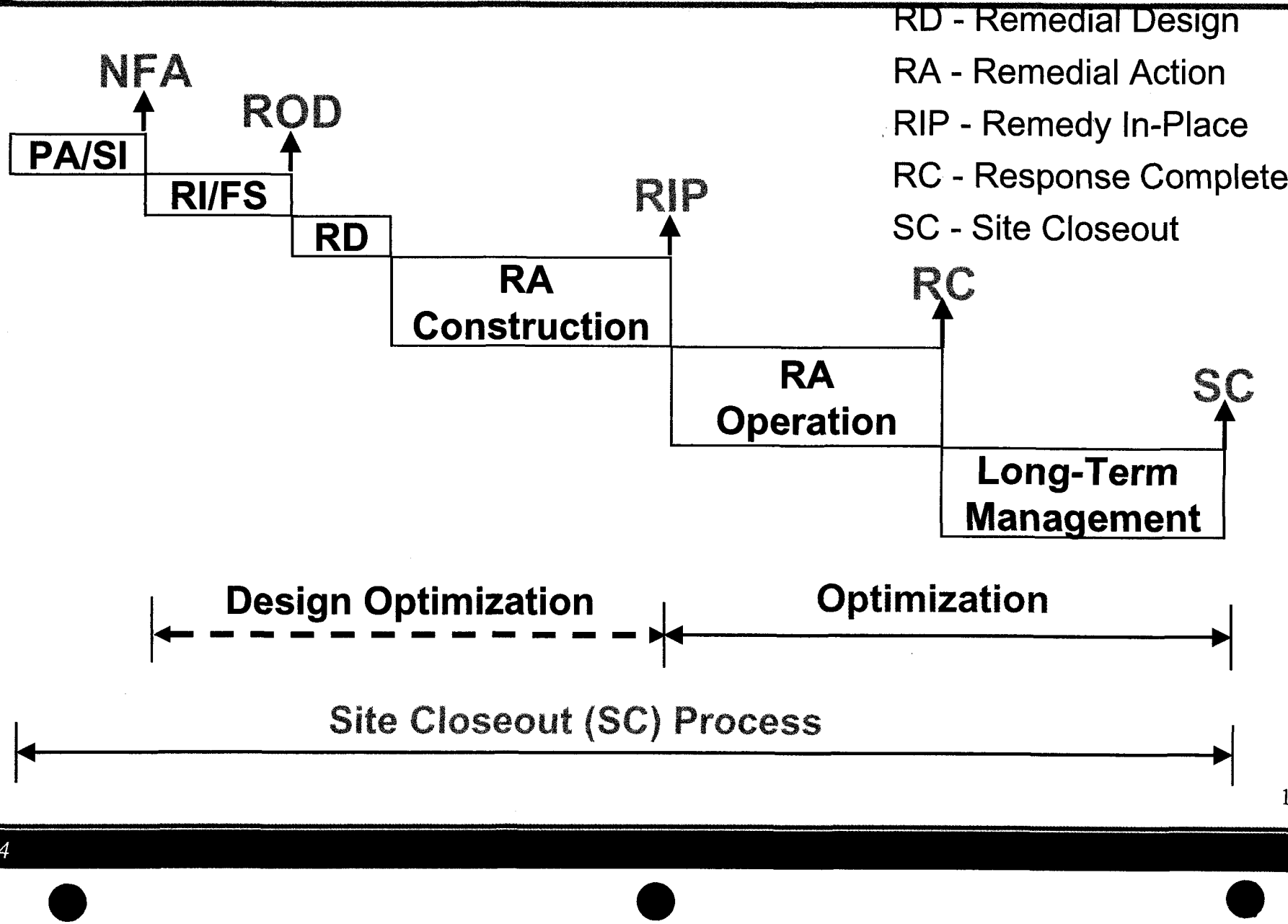
TRUST AND CREDIBILITY RANKING
1998 Survey Results

Most

Least

- Non-management employees
- Nurses, physicians and other health professionals
- Safety/emergency response professionals (fire chief)
- Professors / Educators (from respected local institutions)
- Non-profit voluntary health organizations
- Professional societies
- Media
- Environmental Groups
- Industry Officials

Environmental Restoration Process Phases



LUC Considerations

- ✓ **Select w full knowledge ...analyze life cycle costs**
- ✓ **Select w full participation ...public involvement**
- ✓ **Ensure long-term viability & enforcement**
- ✓ **Use layering approach**
- ✓ **Give regulators a property interest to enforce**

BRACs I-IV
Some Lessons Learned

- Minimize Fed-to-Fed transfers
- Maximize property sale where markets are good
- Integrate redevelopment & cleanup
- Involve all parties early
- Get parties to assume proper roles
  - Navy…transfers property…retains CERCLA liability
  - LRA…vision, planning, zoning, proffers
  - Developer…development & remaining cleanup
  - Regulator…oversight of new owner
  - New owner…maintain & report on LUCs
- Reduce self-induced process

TAPP - What is it?

- Technical Assistance for Public Participation is a program that can *provide independent assistance in interpreting scientific and engineering issues* with regard to the nature of environmental hazards and restoration activities at an installation.
- The goal of the program is to *enhance the public's ability to participate in the decision-making process* by improving their understanding of overall conditions and activities

2004 Key Additions

- Criteria to establish a RAB
- Goals for Membership
- Co-Chair selection process
- Requirement for operating procedures
- Military Munitions Response Program (MMRP) sites
- Conditions for RAB adjournment and dissolution
- Defines eligible expenses

NAVFAC
Naval Facilities Engineering Command
SOUTHWEST DIVISION

Indoor Air Risk Evaluation
IRP Sites 16 and 24

Presented By
Karnig Ohannessian
SWDIV

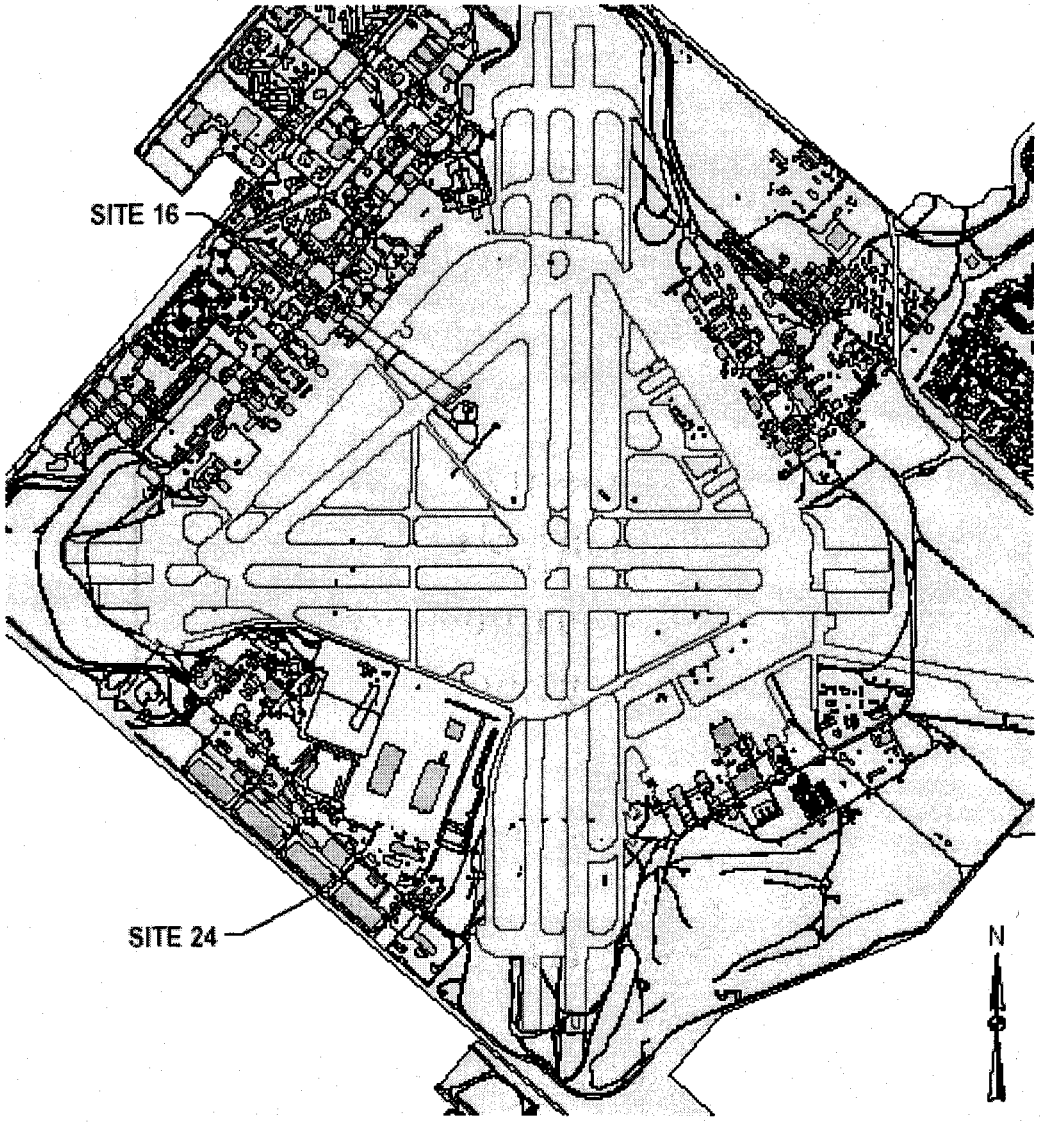
FORMER MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING

July 28, 2004

Introduction

- **Discuss Final Technical Memorandum issued June 2004**
  - –Human health risk evaluation performed for Sites 16 and 24, leasable property that remains under Navy control
  - –Evaluate potential exposure to indoor air vapors that could accumulate in future hypothetical buildings
  - –Residential and industrial worker land-use scenarios
  - –**Conclusion: no restrictions on reuse of Sites 16 and 24 are necessary relative to the indoor air exposure route.**
- **Overall methodology for evaluating human-health risk**
  - –Followed Risk Assessment Guidance for Superfund: Part A (USEPA 1989) and Part B (USEPA 1991)
  - –Followed supporting guidance by Cal/EPA: Supplemental Guidance for Human Health Multimedia Risk Assessment of Hazardous Waste Sites and Permitted Facilities (Cal/EPA 1992)

Locations of Sites 16 and 24



Analytical Data

- **Site-specific soil gas sampling data were used**
  - –Measured soil gas concentrations of volatile organic compounds (VOCs) were used to calculate indoor air concentrations
  - –Reduce uncertainty of modeling contaminant partitioning from soil and/or groundwater into sorbed, aqueous, and vapor phases
- **IRP Site 16 - Firefighter Training Area**
  - –Soil gas data set: post-remediation confirmation soil gas samples collected from soil vapor extraction (SVE) and vapor monitoring wells in January 2002, 10 months after system shut down
  - –Samples collected from 145 to 160 feet below ground surface (bgs)
- **IRP Site 24 - VOC Source Area**
  - –Soil gas data set: vadose zone closure soil gas samples collected from SVE wells in September 2000, 7 months after system shut down
  - –Samples collected from 15 to 111 feet bgs

Exposure Assessment

- **Chemicals of potential concern (COPCs) in soil gas**
  - –All VOCs reported above laboratory detection limits at each site
- **Soil gas exposure point concentrations (EPCs)**
  - –Reasonable maximum exposure (RME) conditions for indoor air inhalation pathway - deliberately overestimate risk (safety margin)
  - –Estimate soil gas EPCs as either maximum reported concentration or the 95 percent upper confidence limit (UCL) of the average measured concentration using normal, lognormal, or nonparametric (bootstrap) method as appropriate based on analysis of distribution of data
- **Indoor air EPCs**
  - –Use Johnson and Ettinger model to estimate the VOC emissions from contaminated soil gas into indoor air
  - –USEPA- and Cal/EPA-approved model to estimate vapor transport from subsurface soil into indoor air above the source of contamination

Conceptual Johnson and Ettinger Model

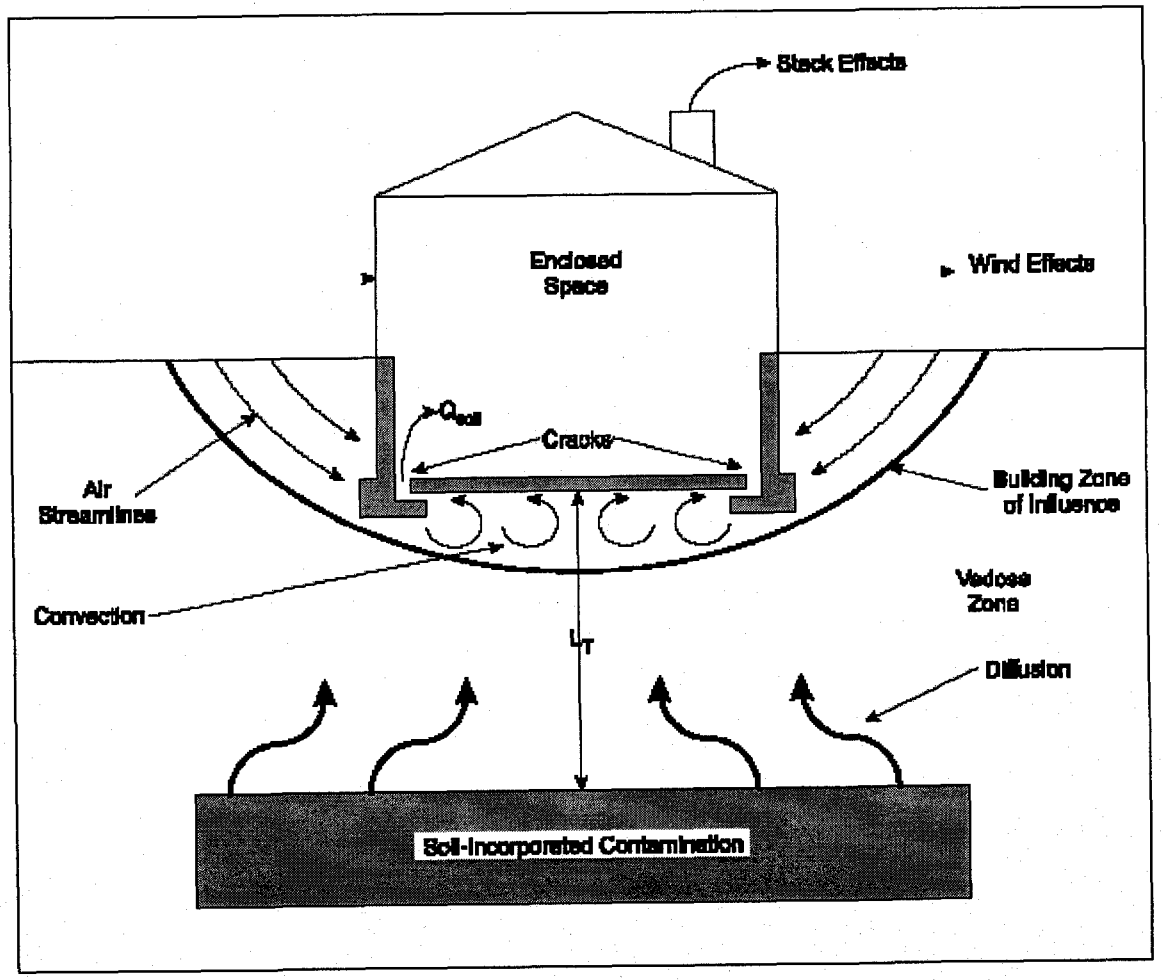


Figure 1. Pathway for Subsurface Vapor Intrusion into Indoor Air

Modeling Input Parameters

- **Site-specific data**
  - –Used depth of the shallowest detected result as a conservative measure
  - –Soil parameters (e.g., soil type, dry bulk density, total porosity, water-filled porosity, soil vapor permeability)
- **USEPA and Cal/EPA default assumptions**
  - –Default hypothetical residential structure
  - –Building parameters (e.g., building dimensions, floor thickness, crack width, soil pressure differential, indoor air exchange rate)
- **Engineering data**
  - –Model-provided literature values for chemical properties (e.g., Henry's law constant, diffusion coefficients, water solubility)
  - –Two-story, 20,000 square-foot industrial building

Dose Rate and Toxicity Assessment

- **Site-specific COPCs**
  - –Site 16: trichlorotrifluoroethane, trichloroethene (TCE), trichlorofluoromethane
  - –Site 24: trichlorotrifluoroethane, 1,1,2-trichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, carbon tetrachloride, chloroform, tetrachloroethene, TCE
- **Estimation of dose rate**
  - –USEPA and Cal/EPA default intake variables to estimate dose rates (e.g., inhalation rate, body weight, exposure duration)
  - $-D_V = (C_a \times IR_a \times ET \times EF \times ED)/(BW \times AT)$
- **Toxicity assessment**
  - –USEPA and Cal/EPA default toxicity values

Risk Characterization

NAVFAC

Table 6
Summary of Total Lifetime Cancer Risk and Hazard Index

Exposure Route	Cancer Risk (U.S. EPA)[a,b]	Cancer Risk (State)[a,c]	Hazard Index[d]
IRP Site 16			
Resident			
Inhalation of VOCs in indoor air[e]	3.2E-06	5.7E-08	3.5E-03
Industrial Worker			
Inhalation of VOCs in indoor air[e]	1.5E-07	2.6E-09	1.0E-04
IRP Site 24			
Resident			
Inhalation of VOCs in indoor air[e]	7.8E-06	3.1E-07	1.1E-02
Industrial Worker			
Inhalation of VOCs in indoor air[e]	3.3E-07	1.3E-08	3.1E-04

Notes:
- [a] the risk is higher for the resident adult; therefore, only the resident adult risk results are shown
- [b] risk was calculated using U.S. EPA toxicity values
- [c] risk was calculated using Cal/EPA toxicity values
- [d] the hazard index is higher for the resident child; therefore, only the resident child index is shown
- [e] risk was calculated using soil gas data

Risk Summary

- USEPA cancer risks at both Site 16 and 24 are acceptable (i.e., less than the 10^{-6} point of departure for acceptable risk specified in the National Oil and Hazardous Substances Pollution Contingency Plan [NCP]) or fall within the 10^{-6} to 10^{-4} range for risk that may be acceptable depending on site-specific and other factors considered appropriate for risk point-of-departure analysis (per NCP Preamble).
- Likewise, Cal/EPA cancer risks are also acceptable.
- The difference in the USEPA and Cal/EPA estimated total cancer risks is largely attributable to differing cancer slope factors (CSFs) for TCE recognized by the two agencies.
- TCE accounts for 100 percent of the estimated risk at Site 16 and 98 percent at Site 24 using USEPA toxicity criteria.
- The non-cancer hazard indices estimated for indoor-air exposure under residential and worker scenarios at both sites are acceptable (less than 1).

Uncertainty Discussion

- **Sampling depth**
  - –Uncertainty in vertical distribution and average concentrations of COPCs addressed by statistical analyses of measured data and conservative assumptions of the depth of contamination.
- **Subsurface geologic conditions**
  - –Soil properties uncertainty addressed by using site-specific data for the sensitive parameters of water-filled porosity and soil vapor permeability
  - –Uncertainties in transformation and transport processes (e.g., biodegradation, subsurface phase equilibrium, spatial variations)
- **TCE risk using USEPA toxicity likely overestimated**
  - –USEPA's provisional TCE CSF developed by the National Center for Environmental Assessment (NCEA) has not been accepted into the Integrated Risk Information System (IRIS) database because USEPA's Science Advisory Board questions its scientific basis

Conclusions

- Conditions at Sites 16 and 24 do not pose unacceptable risk to human health via an indoor air inhalation exposure pathway, because risks are acceptable or may be acceptable depending on site-specific and other factors considered appropriate for risk point-of-departure analysis, per the NCP.
- Factors that support these conclusions include:
  - Conservative modeling assumptions overestimate soil vapor migration
  - Cancer risks are either less than 10^{-6} or in the 10^{-6} to 10^{-4} range for residential and industrial scenarios
  - Hazard indices are less than 1 for residential and industrial scenarios
  - Differences in USEPA and Cal/EPA estimated cancer risks attributable to differing CSFs for TCE recognized by the two agencies
  - Risk assessments by design use conservative RME conditions to deliberately over-estimate risk to provide risk managers a safety margin

Recommendations

- No action is required and no restrictions on reuse of Sites 16 and 24 are necessary relative to the indoor air inhalation exposure route.
- USEPA and DTSC have concurred on the findings of the Final Tech Memo
- The Final Tech Memo is a supporting document to the Finding of Suitability to Lease (FOSL).

Terry Tamminen
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

June 23, 2004

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station El Toro
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COMMENTS ON ADDITIONAL PROPOSED SAMPLING STRATEGY FOR THE TEMPORARY ACCUMULATION AREA (TAA) SITE 651B, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the additional proposed sampling strategy information package dated June 14, 2004, prepared by Naval Facilities Engineering Command. TAA Site 651B is approximately 20 feet wide by 20 feet long chain-link fence enclosed area on an asphalt paved surface southwest of Building 651, where tires and miscellaneous items were stored. Upon visual inspection, heavy oil stains were observed and investigated in the Summary and Supplemental Information Report TAA 651B dated October 30, 2001 and October 4, 2002 respectively and submitted for DTSC's review. Soil samples were collected from two 13.5 foot deep borings and tested using Immunoassay field kits or field portable x-ray florescence (XRF) analyzer. The holding times for several samples were exceeded and the quality assurance/quality control was not within acceptable criteria. Based on these findings, DTSC disagreed with the no further action recommendation and requested additional investigation in a letter dated October 6, 2003.

In response, the Department of Navy (DON) proposed additional soil sampling in this sampling information package. Six soil samples will be taken from three locations at TAA 651B. The soil will be tested for total petroleum hydrocarbons, volatile organic compounds, semi-volatile compounds, pesticides, herbicides, polychlorinated biphenyls, and metals. Therefore DTSC concurs with DON's additional sampling plan for TAA 651B.

If you have any question, please call me at (714) 484-5419.

Sincerely,

Tayseer Mahmoud
Senior Hazardous Substances Engineer
Office of Military Facilities
Southern California Branch

cc: Ms. Nicole Moutoux
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Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
OFFICE OF MILITARY FACILITIES

RESPONSE TO COMMENTS
FOR
RCRA CORRECTIVE ACTION COMPLETE DETERMINATION &
RCRA FACILITY BOUNDARY MODIFICATION

MARINE CORPS AIR STATION EL TORO
JULY 2004

The California Department of Toxic Substances Control (DTSC) issued a public notice on a proposed Resource Conservation and Recovery Act (RCRA) Corrective Action Complete Determination and a RCRA Hazardous Waste Facility Boundary Modification at the former Marine Corps Air Station (MCAS) El Toro. DTSC also publicly noticed a proposed Notice of Exemption (NOE) prepared for the project under the California Environmental Quality Act (CEQA). The same notice invited comments on the Draft Final Finding of Suitability to Transfer (FOST) for certain properties at MCAS El Toro that was prepared by Department of the Navy (DON). DTSC mailed the public notice to approximately 600 individuals on the MCAS El Toro mailing list on April 30, 2004. A public notice was published in the Los Angeles Times and the Orange County Register on May 2, 2004. The 45-day public comment period started on May 3, 2004, and ended on June 17, 2004. DTSC considered all public comments related to the Determination and RCRA Facility Boundary Modification during the public comment period, concurred with the Final FOST, finalized a NOE, and made a decision to approve the Determination and RCRA Facility Boundary Modification. The DON received comments on the Draft Final FOST and has responded to those comments in Attachment 4 of the Final FOST.

The following are the DTSC's responses to comments received during the public comment period for the RCRA Corrective Action Complete Determination:

Comment by Charles Griffin 6/17/2004:

The Draft Final Finding of Suitability to Transfer (FOST) for certain property at the former Marine Corps Air Station (MCAS) El Toro and the proposed Resource Conservation Recovery Act (RCRA) Corrective Action Complete Determination and hazardous waste facility boundary modification are intuitively, obviously, absolutely, and

categorically inappropriate and incomplete because they have been prepared and published for the purpose of transferring contaminated property for use as private residences and public municipal park and recreation uses. The obvious appropriate use of this property is as an international airport operated by Los Angeles World Airports (LAWA) as illustrated on the website http://www.ocxeltoro.com. The Draft Final Finding of Suitability to Transfer (FOST) for certain property at the former Marine Corps Air Station (MCAS) El Toro and the proposed Resource Conservation Recovery Act (RCRA) Corrective Action Complete Determination and hazardous waste facility boundary modification would be appropriate for the Navy to sell the closed MCAS El Toro to LAWA who could purchase it with FAA Aid-to-airport grant funds in order to expand aviation operations to meet the ever expanding air-transportation market in Southern California.

An international airport at El Toro operated as proposed per http://www.ocxeltoro.com would remove ever growing pressure to use a portion of the Marine bases at Camp Pendleton and Miramar as a commercial airport, and would provide the FAA airport funds (instead of Navy funds) to mitigate the contamination at the MCAS El Toro and to filter underground water contaminated in the future by the existing migrating underground toxic plum at the airport (as normal airport operating expenses).

An international airport at El Toro would provide a base for military aircraft to protect against the growing inherent international terrorist threat against an aircraft suicide attack on the nuclear power plant at nearby San Onofre, and provide a base for aerial water-tankers to protect the contiguous natural wildlife preserve that stretches from the Riverside County line to the Pacific Ocean and provides wide natural uninhabited air corridors for arrival to and departure from an airport at El Toro into the prevailing on-shore wind and seasonal Santa Ana winds.

DTSC Response: Thank you for your comment. DTSC is responding to a portion the comments as it relates to RCRA Corrective Action Complete Determination. DTSC does not agree that the property is contaminated and not suitable for the intended reuses (private residences and public municipal park and recreation uses). The FOST documents that corrective action has been conducted for all hazardous waste, hazardous substance and hazardous constituent releases identified by previous environmental assessments and that those actions were conducted to adequately protect human health, safety, and the environment. Also, the FOST provides the necessary disclosure, notification, and use restrictions that apply to each parcel.

The California Health and Safety Code section 25187 authorizes DTSC to require corrective action for any release from a hazardous waste facility such as Marine Corps

Air Station El Toro. Identification of hazardous constituent releases was completed through a RCRA Facility Assessment; a historical aerial photograph survey; the aboveground and underground storage tank inventory and closure program; a polychlorinated bi-phenyls (PCBs) transformer and equipment inventory, and through assessments conducted under the U.S. Navy's Installation Restoration Program (IRP). DTSC made the determination based on the completion of the investigation and cleanup of hazardous waste areas conducted under several programs. These programs are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) overseen by DTSC, the Regional Water Quality Control Board (RWQCB), and the United States Environmental Protection Agency (U.S. EPA); and underground/aboveground storage tank cleanup programs overseen by the RWQCB and the Orange County Health Care Agency (OCHCA). Environmental impacts associated with past and present activities at the subject property have been investigated and appropriate remedial action has taken place at the locations of concern where hazardous substance releases might have occurred. All of the above actions were conducted in order to adequately protect human health and the environment.

The remaining comments on the reuse of the El Toro property as an airport is noted and DTSC will not provide a response because the comments are not related to the RCRA Corrective Action Complete Determination.

Comment by Greg Hurley, Greenberg Traurig, LLP May 6, 2004:
It is my understanding that the Navy last week formally published the FOST. I expect that this happened after your 2 day BCT meeting on final comments on the FOST & FOSL.
Is it true that at the end of this comment period the FOST is considered final?
Do the regulators accept the published FOST as being adequate? It is my understanding that there are still outstanding issues on what the FOST must contain. For example, DTSC's position on lead based paint sampling, and incorporating the data on Perchlorate into the FOST & EBS. How will these be disclosed after the approval of the FOST?

DTSC Response: The Draft Final Revision 2 Finding of Suitability to Transfer (FOST) was formally public noticed and available for public comment from May 3, 2004 through June 17, 2004. Regulatory agencies and DON held a two-day meeting on April 21 - 22, 2004 and discussed comments on the Draft Final FOST that would be released on May 3, 2004. During the 45-day public comment period, DTSC and DON did not receive a request for a public meeting or an extension request beyond the comment period. Therefore, the public comment period is considered closed.

The Navy has responded to all comments submitted by the regulatory agencies and the public and the responses are included in Attachment 4 of the July 2004 Final FOST, Comments/Responses to Comments. Issues that have not been resolved, if any, can be found in Attachment 5, Unresolved Comments. After review of the Final FOST and consideration of public comments on the document, DTSC concurred on the Final FOST on July 22, 2004.

Regarding lead-based paint (LBP), DTSC and the DON continue to "agree to disagree" on whether lead from LBP is considered a CERCLA release. DTSC considers the presence of exterior LBP that has been released to the soil to be CERCLA release. And, while there has been no evaluation of soil-lead hazards at nonresidential buildings, DTSC has determined that the appropriate notifications and restrictions have been included in the FOST to ensure public health and environmental protection.

In regard to perchlorate, DTSC requested that a notification of perchlorate in groundwater be included in the FOST. While a notification will not be in the FOST itself, the DON will provide a fact sheet that includes information on perchlorate detections at the former MCAS El Toro as part of the due diligence material for the upcoming public sale. The fact sheet will also be posted on the public sale website.

Terry Tamminen
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

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July 12, 2004

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APPROVAL OF ADDENDUM CLOSURE REPORT FOR THE TEMPORARY ACCUMULATION AREA (TAA) SITE 31A, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated January 13, 2003, prepared by Naval Facilities Engineering Command. The report summarizes the results of additional soil samples collected at TAA 31A on November 12, 2002. The confirmation samples were collected at 30 inches below ground surface (bgs) and 48 inches bgs in response to DTSC's comments on the December 2001 Closure Report for the unit. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, pesticides, and metals.

TAA 31A was identified as Solid Waste Management Unit (SWMU) 272 during the development of the Resource Conservation and Recovery Act Facility Assessment (RFA) prepared for El Toro. The unit may have been used for the storage of hazardous waste drums containing waste oil, hydraulic fluid, solvents, as well as product drums. TAA 31A is described as a 10-feet by 20-feet concrete pad enclosed by a six-inch concrete berm and covered by an aluminum roof, located adjacent to Building 31 and Installation Restoration Program (IRP) Site 15 in the northwestern section of MCAS El Toro.

Based on our review, we agree with the Navy's recommended no further action for TAA 31A with Environmental Condition of Property (ECP) category 3. Also, the unit should be identified as "closed" in the next Base Realignment Closure Business Plan update. The net carcinogenic risk is less than 10^{-6} for residential scenario and the non-cancer hazard index for detected chemicals is less than 1.0 for residential scenario.

If you have any question, please call me at (714) 484-5419.

Sincerely,

Tayseer Mahmoud
Senior Hazardous Substances Engineer
Office of Military Facilities
Southern California Branch

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SITE ASSESSMENT WORKPLAN FOR SOLID WASTE MANAGEMENT UNIT (SWMU) 72 SITE, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances has reviewed the subject document dated June 28, 2004, prepared by Geofon, Inc. The Workplan was submitted in response to DTSC's June 8, 2004 comments on the draft Workplan dated April 26, 2004. The investigation includes eight additional soil samples from four locations at the site. The samples will be analyzed for metals, volatile organic compounds (VOCs), semi-VOCs, polynuclear aromatic hydrocarbons (PAHs), pesticides, herbicides, polychlorinated biphenyl (PCBs), total petroleum hydrocarbons (TPH) as gasoline, and TPH as diesel.

SWMU 72 was identified during the development of the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) prepared for MCAS El Toro. The unit consists of a building structure # 957 reconstructed on September 1, 1994 and may have been used for the storage of JP-5 fuel, waste oil, and hydraulic fluids. SWMU 72 is described as 12-feet by 13-feet concrete pad covered by an aluminum roof, surrounded by a berm and protected by a chain link fence, located in the southwestern quadrant of MCAS El Toro and is surrounded by Installation Restoration Program (IRP) Sites 7 and 24.

DTSC is satisfied that its comments raised in the June 8, 2004 letter on the draft Workplan have been adequately addressed and we hereby approve the final document. However, some of the Preliminary Remediation Goals (PRGs) values shown in tables of the Workplan are not accurate. The Navy should use the most recent PRG's when closure report is prepared for the site because DTSC utilizes the latest PRGs to evaluate the adequacy of closure.

If you have any questions, please contact me at (714) 484-5419.

Sincerely,

Tayseer Mahmoud
Senior Hazardous Substances Engineer
Office of Military Facilities
Southern California Branch

Enclosure

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CONCURRENCE ON FINDING OF SUITABILITY TO TRANSFER (PARCEL IV AND PORTIONS OF PARCELS I, II, AND III), FORMER MARINE CORPS AIR STATION EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed electronic versions of the revised text, tables, figures and attachments for the *Finding of Suitability to Transfer (Parcel IV and Portions of Parcels I, II, and III), Former Marine Corps Air Station, El Toro, California*, dated July 2004. Based upon review of the revised text, tables, figures and attachments, DTSC comments sent in a letter dated June 17, 2004 have been adequately addressed.

This document, referred to as the FOST, is intended to establish that the property identified above is suitable for transfer by deed. There are specified areas that are subject to ongoing environmental investigations or response actions that are not suitable for transfer by deed. These areas have been carved out of the parcels proposed for transfer and are included in the *Finding of Suitability to Lease for Carve-outs Within Parcels I, II, and III, Former Marine Corps Air Station, El Toro, California*, dated July 2004.

DTSC concurs that the property associated with this FOST can be transferred with the specified conditions, notifications and restrictions in a manner that is protective of human health and the environment.

Thank you for providing DTSC with the opportunity to review the FOST. If you have any questions regarding this letter, please contact Mr. Manny Alonzo at (714) 484-5425 or Ms. Jennifer Rich at (714) 484-5415.

Sincerely,

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CONCURRENCE ON FINDING OF SUITABLILITY TO LEASE FOR CARVE-OUTS WITHIN PARCELS I, II, AND III, FORMER MARINE CORPS AIR STATION, EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed electronic versions of the revised text, tables, figures and attachments for the *Finding of Suitability to Lease for Carve-outs Within Parcels I, II, and III, Former Marine Corps Air Station, El Toro, California*, dated July 2004. Based upon review of the revised text, tables, figures and attachments, DTSC comments sent in a letter dated July 2, 2004 have been adequately addressed.

This document, referred to as the FOSL, is intended to establish that the property identified above is suitable for lease by a lease in furtherance of conveyance. The FOSL includes carve-out areas associated with the *Finding of Suitability to Transfer (Parcel IV and Portions of Parcels I, II, and III), Former Marine Corps Air Station, El Toro, California*, dated July 2004. These carve-outs are subject to ongoing environmental investigations or response actions that are not suitable for transfer by deed.

DTSC concurs that the property associated with this FOSL can be leased with the specified conditions, notifications and restrictions in a manner that is protective of human health and the environment.

Please ensure that the revised text, tables, figures and attachments are incorporated into the final version of the document. Thank you for providing DTSC with the opportunity to review the FOSL. If you have any questions regarding this letter, please contact Mr. Manny Alonzo at (714) 484-5425 or Ms. Jennifer Rich at (714) 484-5415.

Sincerely,

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CORRECTIVE ACTION COMPLETE DETERMINATION AND BOUNDARY MODIFICATION FOR THE SALE PARCELS AT THE FORMER MARINE CORPS AIR STATION EL TORO, IRVINE, CALIFORNIA

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the Final Finding of Suitability to Transfer (Parcel IV and Portions of Parcels I, II, and III), former Marine Corps Air Station El Toro (MCAS El Toro), California, dated July 2004, and finds that Corrective Action, as required by California Health and Safety Code section 25200.10, has been completed for all hazardous constituent releases on the portions of MCAS El Toro proposed for sale and transfer by deed. The hazardous waste facility boundary of MCAS El Toro is hereby modified to exclude the property identified for transfer by deed.

MCAS El Toro is a Resource Conservation Recovery Act (RCRA) hazardous waste facility which operated under a Part B Storage Permit until it expired in 2003. As a hazardous waste facility, MCAS El Toro is required to conduct corrective action for all releases of hazardous constituents on all contiguous property owned or operated by MCAS El Toro. RCRA corrective action applies to a broad range of hazardous substance releases and is not limited to hazardous waste. All spills and releases of fuel, oil, and hazardous chemicals are subject to RCRA corrective action. Because of this, DTSC makes the determination that corrective action has been completed based on a DTSC file review, review of the MCAS El Toro Finding of Suitability to Transfer, and relying on findings, supporting documentation and correspondence from the Santa Ana Regional Water Quality Control Board and the Orange County Health Care Agency.

Identification of hazardous constituent releases was completed through a RCRA Facility Assessment; an historical aerial photograph survey; the aboveground and underground storage tank inventory and closure program; a polychlorinated bi-phenyls (PCBs)

transformer and equipment inventory, and through assessments conducted under the U.S. Navy's Installation Restoration Program (IRP). DTSC has determined that there are no RCRA-regulated hazardous waste treatment, storage or disposal units existing in the parcels proposed for deed transfer. In addition, the following locations of concern have been identified and addressed within the parcels proposed for deed transfer:

1) 113 hazardous substance and IRP locations of concern that received regulatory concurrence for No Further Action decisions,
2) 211 aboveground and underground storage tank sites that received regulatory closure letters, and
3) 106 other locations which were evaluated for presence of PCBs, or other miscellaneous hazardous materials.

The MCAS El Toro Finding of Suitability to Transfer (FOST) documents environmental findings to support that the property proposed for transfer is suitable for transfer by deed. The FOST documents that corrective action has been conducted for all hazardous waste, hazardous substance and hazardous constituent releases identified by previous environmental assessments and that those actions were conducted to adequately protect human health, safety and the environment. The FOST further documents that the deed transfer property will not be negatively impacted by adjacent properties and contiguous carve-out Finding of Suitability to Lease properties where corrective action has not been completed.

This Corrective Action Complete determination is made based on the completeness of environmental assessments to identify releases and the accuracy of documentation provided DTSC in support of corrective action completion. Where the Orange County Health Care Agency or the Santa Ana Regional Water Quality Control Board has provided regulatory closure letters (see item 2 above), DTSC has not conducted independent evaluations of these actions and is basing its determination on the respective agency findings. DTSC reserves the right to require additional corrective action should new information arise.

If you have questions or comments concerning this matter, please contact DTSC's Office of Military Facilities Division Project Manager, Mr. Tayseer Mahmoud, at (714) 484-5419.

Sincerely,

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BECHTEL ENVIRONMENTAL, INC.

CLEAN 3 TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-95-D-7526 **Document Control No.:** CTO-0060/0135

File Code: 0216

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Chon S. Son, Code 02R1.CS
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: September 22, 2004
CTO #: 0060
LOCATION: MCAS El Toro

FROM: Thurman L. Heironimus, Project Manager

DESCRIPTION: MCAS El Toro, Public Information Materials 7/28/04 Restoration Advisory Board Meeting Held at Irvine City Hall, Irvine, CA

TYPE: ____ Contract Deliverable (Cost) X CTO Deliverable (Technical) ____ Other

VERSION: N/A REVISION #: 0

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