

Public Information Materials

1/29/03

Restoration Advisory Board Meeting 61st Meeting Held at Irvine City Hall Irvine, CA

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 1/29/03 RAB meeting – 61st Meeting.
- *Meeting Minutes from the December 4, 2002 RAB Meeting – 60th Meeting.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (Sept. 2002 – July 2003).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro Restoration Advisory Board – Membership Roster (revised December 2002).
- 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.
- One-Page Glossary of Technical Terms.
- Environmental Compliance Program Documentation Update (22 January 2003).
- Contact information for Steven Sharp, RAB member representing Orange County Health Care Agency.
- MCAS El Toro Base Realignment and Closure Business Plan, Introduction Section, March 2002.
- 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.
- U.S. EPA, Region 9 - Progress on Perchlorate Toxicity Assessment and Regulation, December 2002.
- U.S. EPA Memorandum, Office of Solid Waste and Emergency Response – Status of EPA's Interim Assessment Guidance for Perchlorate, January 22, 2003.
- *Presentation* – MCAS El Toro RAB Meeting, , January 29, 2003, What is Perchlorate – Chemistry and Uses, Brief History of Environmental Concern, Toxicity, Regulatory Status, presented by Kevin Mayer, U.S. EPA, Region 9.
- *Presentation* – MCAS El Toro RAB Meeting, Sites 11 Transfer Storage Area Update, January 29, 2003, presented by Karnig Ohannessian, SWDIV Remedial Project Manager, and Crispin Wanyoike, Earth Tech, Inc.
- *Presentation* – MCAS El Toro RAB Meeting, Issue: What if New Contamination Found After Property Transfer? January 29, 2003, presented by Andy Pizskin, BRAC Environmental Coordinator, MCAS El Toro. Accompanying Handout: News Clip, San Diego Union-Tribune, "Dump site delays NTC construction" from January 13, 2003.

* Mailed to all RAB meeting mailer recipients on 1/17/03.

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)

- No Items Submitted

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)*

- Meeting Minutes from the 12/4/02 MCAS El Toro RAB Subcommittee Meeting and Attendees List

Additional Information Submitted - 1/29/03 RAB Meeting

- No Items Submitted

**MCAS El Toro
Restoration Advisory Board**

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

**January 29, 2003
6:30 - 9:00 p.m.
61st 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- Jerry Werner, RAB Community Co-Chair at (949) 859-1322.

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 (6:40-7:05)

Approval of 12/4/02 Minutes (6:40-6:45)

Jerry Werner
RAB Community Co-Chair

Announcements/Review of Action Items (6:45-6:55)

Andy Piszkin & Jerry Werner

Subcommittee Meeting Report (6:55-7:05)

Marcia Rudolph
RAB Subcommittee Chair

New Business (7:05-8:55)

Regulatory Agency Comment Update (7:05-7:20)

- Impact of State Budget

Nicole
Moutoux
U.S. EPA

Triss
Chesney
*Cal-EPA
DTSC*

John
Broderick
RWQCB

- RAB Community Co-Chair Election (7:20-7:40)

Andy Piszkin

- U.S. EPA Update on Perchlorate (7:40-8:20)

Kevin Mayer
U.S. EPA

BREAK – 5 minutes

- Update on Site 11, Transformer Storage Area
(8:25-8:40)

Karnig
Ohannessian
SWDIV

& Crispin
Wanyoike
Earth Tech

- What if New Contamination is Found After Property Transfer?
(8:40-8:50)

Andy Piszkin

Open Q&A (Environmental Topics) (8:50-8:55)

Andy Piszkin

Meeting Summary & Closing (8:55-9:00)

Andy Piszkin

Meeting Evaluation & Topic Suggestions for Future Meetings

P U B L I C N O T I C E

MARINE CORPS AIR STATION EL TORO

Restoration Advisory Board Meeting



**61st Meeting
Wednesday, January 29, 2003
6:30 - 9:00 p.m.**

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

The Restoration Advisory Board (RAB) is composed of concerned citizens and government representatives involved in the environmental cleanup program at MCAS El Toro since 1994. Community participation and input is important and appreciated. This meeting will feature the following activities and presentations specific to MCAS El Toro:

- RAB Community Co-Chair Election
- U.S. EPA Update on Perchlorate
- Update on Installation Restoration Program Site 11, Transformer Storage Area
- What if New Contamination is Found After Property Transfer?



For more information about this meeting and the Installation Restoration Program at MCAS El Toro, please contact:

**Base Realignment and Closure
Mr. Andy Piszkin
BRAC Environmental Coordinator
P.O. Box 51718, Irvine, CA 92619-1718
(949) 726-5398 or (619) 532-0784**

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

September 2002 – July 2003

RAB Meetings: The Conference and Training Center (CTC) at Irvine City Hall is being 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 will now be on the *SAME DAY* as the full RAB meeting from 5 to 6:00 p.m. in a smaller room. The preferred room is by the Council Chambers, Room L-104. **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.
+September 25, 2002	CTC	Room L-104
*Dec. 4, 2002	CTC	Room L-104
January 29, 2003	CTC	Room L-104
+March 26, 2003	CTC	Room L-104
May 28, 2003	CTC	Room L-104
July 30, 2003	CTC	Room L-104

+ Start times for these meetings will be at 7:00 p.m. (unless otherwise noted).

* Traditionally when Thanksgiving falls on the last week of November, the RAB meeting has been held the first week of December. (In Nov. 2002, the last Wednesday of the month is the day before Thanksgiving.)

MARINE CORPS AIR STATION EL TORO
RESTORATION ADVISORY BOARD MEETING

December 4, 2002 – 60th Meeting

MEETING MINUTES

The 60th Restoration Advisory Board (RAB) meeting for Marine Corps Air Station (MCAS) El Toro was held Wednesday, December 4, 2002 at the Irvine City Hall. The meeting began at 6:38 p.m. These minutes summarize the discussions and presentations from the RAB meeting.

WELCOME, INTRODUCTIONS, AGENDA REVIEW

Mr. Andy Piszkin introduced himself as the new BRAC Environmental Coordinator (BEC) for MCAS El Toro and Navy RAB Co-Chair. He stated that he previously worked on MCAS El Toro until 3 years ago, and that he was the first BEC for MCAS El Toro in 1994. He called the 60th RAB meeting to order and thanked everyone for attending. He provided an overview of the agenda and reminded attendees that the election for the RAB Community Co-Chair position would take place at the January 29, 2003 RAB meeting.

Mr. Jerry Werner, RAB Community Co-Chair, explained that he has accepted a position with the El Toro Water District and will have to therefore resign from the RAB Community Co-Chair position, since elected officials cannot serve as Co-Chair. He then asked all those in attendance to introduce themselves and self-introductions were made.

Mr. Piszkin briefly discussed the importance of informing either of the Co-Chairs if RAB members are unable to attend the meeting. RAB members Mr. Greg Hurley and Mr. John Broderick, Project Manager, Santa Ana Regional Water Quality Control Board (RWQCB), both informed the Co-Chairs that they would be unable to attend tonight's meeting, thus they have "excused" absences. He also mentioned that Ms. Patricia Hannon, RWQCB, gave birth to a little girl, Charlotte. Mr. Broderick has been filling in for Ms. Hannon while she is on maternity leave. Mr. Dean Gould, former BEC for MCAS El Toro and Navy RAB Co-Chair, has been called to active duty in the Navy reserves. He is a commander with the SEABEEs and will be away at least 6 months. Mr. Gould's Base Closure Manager responsibilities have been assigned to another SWDIV employee.

OLD BUSINESS

Review and Approval of the September 25, 2002 RAB Meeting Minutes

Mr. Werner asked for any changes or comments prior to the approval of the September 25, 2002 RAB meeting minutes. He pointed out that on Page 2, third bullet, regarding his possible election to the El Toro 2002 Water District board, please delete the word "small." There were no other changes and the minutes were then approved.

Announcements

- Mr. Piszkin reviewed the RAB attendance policy. The charter states that after missing two or more consecutive meetings, membership on the RAB can be discontinued based on the lack of participation. In January 2003, the attendance list (maintained by Bob Coleman) will be checked and notices sent out apprising members of their attendance record.
- Mr. Piszkin stated the next RAB meeting would be held on Wednesday, January 29, 2003, from 6:30 to 9:00 p.m., in the Irvine City Hall Conference and Training Center. The schedule for RAB meetings through July 2003 is available on the information table. In addition, the RAB Subcommittee meeting will be held from 5 to 6 p.m., in Room L-104.
- Mr. Piszkin provided information on the MCAS El Toro Administrative Record (AR) and Information Repository (IR) location and contact information. If there is a need to review AR documents at MCAS El Toro, please contact Ms. Marge Flesch at (949) 726-5398 to arrange a time to visit.
- Mr. Piszkin stated that a site map requested by Ms. Marcia Rudolph, RAB Subcommittee Chair, which was provided at the last meeting, is also available tonight. This map provides an overlay of the proposed reuse of MCAS El Toro.
- Mr. Piszkin stated that the "RAB Rule" has not yet been finalized. Arrangements will be made for Lee Saunders, SWDIV Environmental Public Affairs Officer, to provide a presentation on the RAB rule sometime in early 2003 after the Rule has been finalized.
- Mr. Werner reiterated that the RAB Co-Chair election will be held at the January 29, 2003 RAB meeting. Since elected official cannot serve as the RAB Community Co-Chair, RAB members need to nominate candidates that are not serving in such a capacity. He will start the January meeting off and then turn the position over to the newly elected Co-Chair.

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

Ms. Rudolph led the RAB in the Pledge of Allegiance and then reviewed the key points discussed in the RAB Subcommittee meeting.

- Ms. Rudolph stated she appreciated that regulatory agency representatives are attending RAB Subcommittee meetings; their presence provides more relevance to the meetings.
- Ms. Rudolph said Mr. Ray Ouellette, RAB Subcommittee member, provided an article on biotransformation pathways for chlorinated compounds, saturated and unsaturated, which she offered to make available to other RAB members. She pointed out that it is interesting to learn what the "daughter" products are, especially of 1,2-DCA.
- The Subcommittee had a lengthy discussion on land transfers, particularly when the City of Irvine takes over the Station and sell pieces of the property, and the restrictions that go along with these parcels. They also discussed what happens if there is a breach of the Institutional Controls (ICs), what would be the position of the Navy relative to the continuance of that process or IC, and how all this would be handled.
- Interest was expressed in the Alton Parkway Extension and how everything is being coordinated with all the players involved including various cities, Orange County, and Cal-Trans.

- The Subcommittee discussed budget issues including: the federal government's continuing resolution, Cal-EPA's Department of Toxic Substances Control (DTSC) budget, and funds from the federal government that support the state's oversight efforts at MCAS El Toro. If there is a cut in DTSC personnel, it is likely that environmental documents would not get reviewed on time, lengthening the current schedule. The Subcommittee would like an update at every monthly meeting regarding state funding.
- During the last site tour of MCAS El Toro, the Subcommittee expressed that a tour should be conducted every 6 to 9 months. It is almost time for another tour and it was suggested that it be conducted during the first Quarter of 2003. Ms. Rudolph said it would be good to go back and see what has occurred since the last visit.
- Ms. Rudolph stated that the issue of perchlorate is always of interest and an update on this topic would be appreciated.

NEW BUSINESS

◆ Regulatory Agency Comment Update

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

Ms. Moutoux said she recently issued two letters in response to the Navy. The first letter provided U.S. EPA's response to a schedule extension request for Sites 3 and 5. She said that more information on these sites, regarding the findings of the pre-design investigation, would be provided in a presentation later in the evening. The second letter covered U.S. EPA's position on the risk assessment for Sites 8, 11 and 12, summing up in written form the position stated in previous meetings.

Ms. Moutoux briefly reviewed the activities she and the U.S. EPA support staff have been working on regarding MCAS El Toro:

- Reviewing proposed sampling for 21 sites that will be included in the revised Environmental Baseline Survey (EBS).
- Participated in a conference call on sampling of the pond at the Site 1 Explosives Ordnance (EOD) Range at the request of the U.S. Fish and Wildlife Service (USFWS), concerning the Riverside Fairy Shrimp (an endangered species).
- Involved in BRAC Cleanup Team (BCT) discussions on the Site 2 aquifer test and delineation of the Site 2 plume.
- Participated in discussion regarding the continued groundwater sampling for perchlorate at Site 1.

Discussion:

Mr. Don Zweifel, RAB Member, commented that fairy shrimp, except possibly this species at Site 1, are not endangered, and that they can be purchased locally where tropical fish are sold. He noted that the pond at Site 1 has dried up and that the shrimp are present only under wet conditions. He

asked what the concern is there and if the Navy and agencies are going overboard on the fairy shrimp issue.

In response, Ms. Moutoux stated the goal of the U.S. EPA is to protect human health and the environment, endangered species are part of that environment, and that this issue is something the USFWS is very concerned about.

Mr. Zweifel asked if this meant the property cannot be developed because of the fairy shrimp, to which Ms. Moutoux responded that it was not necessarily so.

Mr. Piszkin stated that the Endangered Species Act requirements drive the decision to sample further, and that law determines what are protected and endangered species. It is not up to Ms. Moutoux, U.S. EPA or the USFWS, to decide what is protected and what is not. They provide oversight so that the remedial program is handled within the regulations.

Triss Chesney, Project Manager, Cal/EPA Dept. of Toxic Substances Control (DTSC)

Ms. Chesney stated that the DTSC has been working on the same issues as described by Ms. Moutoux. In addition, DTSC has been reviewing numerous summary closure reports for temporary (waste) accumulation areas. Some of the sites have been closed and additional sampling has been requested for some others.

◆ Overview of Installation Restoration Program – 60th RAB meeting -- Mr. Andy Piszkin

Mr. Piszkin presented an overview of the Installation Restoration Program (IRP) at MCAS El Toro. A summary handout was provided to all meeting attendees that included a summary chart that explains the CERCLA process and showed the progress for each “operable unit” (OU). The development of OUs helps to manage the program by grouping and addressing like sites together. For MCAS El Toro, OU-1 is groundwater, OU-2 comprises landfills at the Station, and OU-3 consists of soil-only sites (no groundwater contamination). As the IRP progressed, OUs were further refined, particularly OU-2. OU-2A was designated, as potential sources of the 3-mile long plume of VOC-contaminated groundwater. OU-2B and OU-2C were also designated with each containing two of the Station’s four landfills.

OU-1 (Groundwater): The source area of the contaminated groundwater plume is Site 24. Volatile organic compounds (VOCs), primarily the industrial solvent trichloroethene (TCE), are present in the groundwater. Site 18 is designated as the regional plume. A settlement agreement was signed in 2001, completing negotiations between the U.S. Government (Navy and Department of Justice) and the Orange County Water District (OCWD) and Irvine Ranch Water District (IRWD) that had been ongoing since 1994. The implementability of two complete programs simultaneously (Marine Corps/Navy’s CERCLA groundwater cleanup and the OCWD/IRWD water supply project) was a big issue and the Department of Justice helped negotiate the settlement agreement. This is a great victory and as partners this will work out well. The next step is to complete design of the Irvine Desalter Plant. The Navy is working on design for the shallow groundwater unit, which is the source of the plume. The Navy is also

coordinating with the water districts, which are working on the offsite portion of the plume. The proposed date for beginning of plant operations is June 2006.

OU-2A: Site 25, Drainage Channels and Washes, were thought to be potential sources of the groundwater contaminant plume. Sediments in both on-site and downgradient segments of the channels have been sampled and tested, including San Diego Creek. The results indicate the washes, which drain all surface and storm water from El Toro, were not the source and no further action was recommended for them. Mr. Broderick of the RWQCB worked on this and it was determined that the washes were not an issue of environmental concern.

Site 24 consists of VOC-contaminated on-Station groundwater and soil. The soil has been cleaned up, and a closure report is being prepared. The Final ROD for the site is to be issued next year since the soil cleanup actions were taken under an Interim ROD while cleanup goals, based on potential impact to groundwater, could be negotiated. Now that the Groundwater ROD has been finalized, the Interim ROD for soil can also be finalized. The Final ROD for soil is anticipated to be for No Further Action (NFA) because the Navy believes the soil cleanup has achieved protective levels. The treatment system used for cleaning up the soil came from Norton Air Force Base in San Bernardino after successful VOC cleanup of soil at that facility.

OU-2B: At Sites 2 and 17, aquifer tests are being performed at Site 2 to determine what contaminants in groundwater may be coming from the landfill. There is a ROD for addressing the soil at Sites 2 and 17, but the ROD for groundwater at Site 2 had not been prepared. There are no groundwater issues at Site 17. The remedial design for the Sites 2 and 17 landfills is at 90 percent (%) complete stage. The Navy is working through the comments provided by the regulatory agencies.

OU-2C. At Sites 3 and 5, no RODs have been signed yet. Radiological issues involved at these sites need to be finalized; some pre-design sampling and investigation is underway. Detailed information on the current activities at these sites will be presented later in the meeting. The Navy is working with the Army Corps of Engineers and the Navy's Radiological Affairs Support Office (RASO) on the radiological issues. The Army Corps handles removal and disposal of radiological materials. The Navy and Navy's environmental contractors are precluded from handling this aspect of remediation.

OU-3 (soil-only sites, no groundwater issues): Ten of these sites achieved NFA status in 1997. Site 11 has a signed ROD. For Sites 8 and 12, a Draft ROD has been submitted. However, some actions still need to be taken, and radiological aspects need to be incorporated into the ROD prior to finalization. The U.S. EPA's Preliminary Remediation Goals (PRGs) were recently updated, so a reevaluation of the risk was performed to see what impact, if any, this may have on the Draft ROD and previously issued Proposed Plan. The Navy has received regulatory agency comments on this on-going effort. Ms. Content Arnold, Lead Remedial Project Manager, SWDIV, stated that reevaluation of the risk assessment is being completed and the Navy expects to get Responses-to-Comments issued in January 2003 followed by the report in February 2003. Mr. Piszkin said that an Explanation of Significant Difference (ESD) would be issued for Site 11 because it is likely there will be a correction in the action level for PCBs, but that the excavation alternative remains the remedy. The Navy will issue the ESD for the agencies to review.

At Site 16, the old fire-fighting pit in the middle of the airfield, the Proposed Plan was issued to the public, and the Draft ROD was submitted to federal and state regulatory agency representatives last week

for review (November 27). Interim remedial action has been completed which significantly reduced contaminants in the soil. The Navy will be addressing agency comments and then issue the Final ROD.

At Site 1, the Exploded Ordnance Disposal (EOD) Range, the remedial investigation (RI) is still underway. This includes performing a Ground Penetrating Radar (GPR) survey across the site. Earth Tech has generated detailed maps from this effort. Sampling for fairy shrimp is also being done. Work is progressing following the CERCLA process under the Federal Facility Agreement (FFA) for MCAS El Toro. At Site 1, there are many tasks to perform before completion. He added that the U.S. Fish & Wildlife Service (USFWS) are fully involved.

Mr. Gordon Brown, Remedial Project Manager, SWDIV, stated that the Navy has been working with the FBI on a federal-to-federal transfer of the lower third of the site. The transfer agreement is back in Washington, D.C., with the FBI, for approval. The FBI would construct a fence around their part of the site and Navy would have access to the rest of the site. The FBI will be free to conduct training in their part of the site. When the Navy is finished with the balance of the site, the remainder would be turned over to the FBI. It is expected that by the end of this month (December 2002), the lower third of the site will be transferred following the transfer signing. The fencing would then be installed in January 2003. All the details are being addressed to make sure there are no future issues regarding this transfer. Ms. Arnold added that the FBI would receive 5 acres that is useable in the interim until CERCLA process work is completed on the rest of the property.

Discussion:

Mr. Zweifel commented that there is concern that the presence of fairy shrimp will impinge on the reuse of the EOD range by the FBI or Orange County Sheriffs Department. In response, Mr. Piszkin clarified that the fairy shrimp are in a pond off to one side of the site and are not in the areas where the training was held, but within a fenced area. This pond area would not impact use of the rest of the site, but it needed to be checked out as part of the remedial investigation. Mr. Piszkin stated that the fairy shrimp would not have an impact on the progress of site reuse by the FBI.

Mr. Fred Meier, RAB member, commented that there was an issue on the November ballot under advisories about clean closure of MCAS El Toro and he asked how that got on the ballot, because it appears to put the Navy on the hook to remediate any contamination forever.

In response, Mr. Piszkin said he was not sure how it got on the ballot. He said the National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the NCP, indicates how the Navy has to implement CERCLA to protect human health and the environment, and specifies that the laws of the land, state and federal, are what govern the cleanup process. He said that his understanding is that such propositions, like the one passed in San Francisco Bay Area for Hunters Point Shipyard, are a means of gauging community preference or acceptance of any general cleanup effort, which is one of the modifying criteria under the NCP. These ballot items are a way for the community to express their concerns.

Mr. Meier asked Mr. Piszkin if he had knew anything about the ballot issue. Again, Mr. Piszkin stated he did not know about it; he asked Ms. Rudolph if she knew about it. She confirmed that the Orange County Board of Supervisors placed this measure on the ballot as an advisory vote.

Mr. Piszkin stated that the advisory measure for Hunters Point also passed. He said that in the case of Hunters Point, this called for the Navy to cleanup the 150 year old shipyard to the maximum risk level (unrestricted residential use), which means the Navy would have to remediate the entire surface of the shipyard. Although it passed, it does not warrant the Navy to act beyond the existing environmental laws the federal government has to abide by.

Mr. Zweifel said that Senator Diane Feinstein is on record as wanting clean closure for MCAS El Toro. It may not be monetarily feasible, but this is what she wants.

◆ **Update on Sites 2 and 17 -- Mr. Gordon Brown, Remedial Project Manager, Naval Facilities, SWDIV**

Mr. Brown referred the meeting attendees to a slide in the presentation handout showing the locations of the sites at MCAS El Toro. For the benefit of those in attendance, he pointed out the locations of Site 2, Site 17, Borrego Canyon Wash, and proposed location of Alton Parkway. He also showed where Site 1 was located and the lower part of the site that is designated for use by FBI and local law enforcement agencies at this time. He also marked the proposed FBI fence line location.

Mr. Brown said that Site 2, the Magazine Road Landfill, and Site 17, the Community Station Landfill, cover a combined area of approximately 38 acres. Site 2 is located in the southern part of the Station, and Site 17 is in the southwestern part of the Station. Historically, the landfills were used for non-traditional landfill activities, and do not contain as much of the organic content that is typically associated with municipal-type landfills. There has not been much methane gas production at these landfills, and there has not been as much settling.

Mr. Brown said that when landfill activities were conducted, there was one main area where dumping occurred. However, there were a couple of areas downgradient and across the wash where construction debris was deposited over time. The Navy is working on consolidating these areas and a couple areas near Site 17 into the main landfill at Site 2.

Landfill design for Site 2 initially called for a very compact clay layer with a soil layer several feet thick above that, said Mr. Brown. The RWQCB called the Navy to task, questioning the viability of the clay layer in this type of environment, because the clay could dry out and crack, providing preferential pathways for leaching through the landfill. The RWQCB's preference was for a monolithic cap design to a minimum of 4-feet thick above the refuse and an evapotranspirative mechanism involving plants on top. The plants would remove moisture from the soil layer and evaporate it. This type of cap has been effective at other landfills in the region.

Mr. Brown said the landfill design now has a monolithic soil cover, covered in coastal sage scrub, which is doubly advantageous in that it provides a mechanism for evapotranspiration and satisfies habitat mitigation requirements for the California gnatcatcher, an endangered species, by planting the sage scrub. USFWS required MCAS El Toro to plant 43 acres of coastal sage scrub to compensate for habitat lost through past or planned future activities. So this cover represents a win-win proposition. At the conclusion of landfill capping, a fence will be placed around the landfills, with signs restricting access. The Navy will enter into an operation and maintenance (O&M) agreement

for the landfills to make sure they function as designed over time and that groundwater is not effected.

Mr. Brown said the Remedial Design for Site 2 requires a filter design report, detailed plans and specifications of a hydrology report, a geotechnical report, and a technical memorandum. The latter will cover all designs and contingencies for earthquakes, differential settling, and details with regard to construction of the landfill itself and what the Navy does to make sure the quality is there and it is built to specifications. At this time, the 90% design has been completed and issued it to the BCT, they have submitted their comments, and the Navy has 30 days to complete responses. The Navy has also been working with USFWS to address their issues, especially regarding the gnatcatcher. The issues include when the Navy can do construction so as not to impact the breeding season, the level of noise, and the impact of required tasks such as denuding summary vegetation that has grown in the area. We expect a biological opinion by the end of this week or next week.

Mr. Brown also explained the elements of the 100% design for Site 2. There are two lobes to the Site 2 landfill with a channel in between the two. The Navy will consolidate the areas of construction debris into the landfill by filling up the channel with the debris. Riprap will be placed along the fence line and especially in the wash areas in order to maintain the integrity of the cap and minimize erosion during flood events.

The landfill design involves the participation of two different contractors, Earth Tech and Shaw/IT Environmental Group, which are working in concert to come up with design documents, specifications and construction approach. The County of Orange is also working on constructing the Alton Parkway, on the other side of Borrego Canyon Wash, so there are also quarterly coordination meetings with the County. There does not appear to be a conflict in what the Navy is proposing to do and what the County is proposing to do. The County has communicated concerns and sensitivities on the 90% design and those concerns will be addressed along with the BCT's comments. The Navy will also be addressing the County's comments on the design regarding Alton Parkway and the next meeting is scheduled after the Christmas and New Year holidays.

Mr. Brown said that at Site 17, there is a much steeper surface elevation gradient than Site 2. There is quite a bit of excavation to be performed at Site 17 and because of the gradient, channeling needs to be performed. The Navy has completed 30% and 60% remedial design submittals, then the RWQCB questioned the design and the Navy addressed the comments. The Navy is now at the 90% design stage, and in the final stretch, with final design completion expected by January 2003. If everything can be brought together, remedial action construction will start in the non-breeding season for gnatcatcher, September 2003 to February 2004, but may require a few additional months to complete. The Navy is discussing this in coordination with the USFWS.

Mr. Brown presented information on the benefits and results of the Site 2 aquifer tests and updated the RAB meeting attendees with regard to its use for remediation at Site 2. When the Navy first started looking at the aquifer, TCE and PCE were present, but the extent, source or whether there are two different plumes or one commingled plume was not yet known. One key question was whether or not site conditions were going to facilitate the natural attenuation (NA) process. Initial data indicated that there was a low probability that NA was occurring. Further sampling, monitoring and analysis was performed and the analysis still indicated that NA was not occurring. This put the Navy in the position to consider other alternatives and an aquifer test was proposed. An aquifer test

provides investigators with the ability to determine if there are any subterranean geologic features present, or other sources of groundwater coming into the area, or "sinks." Sinks are geologic features that consist of fractured areas in basaltic lava beds that allow groundwater to pass through and enter more permeable ash beds below, where the groundwater could flow at hydraulic transmissivities of several thousand feet per day instead of centimeters per day. Relative to typical aquifer flow rates; these ash aquifers were like underground rivers. Aquifer testing also helps determine what the options are for treatment. If a typical pump and treat system will be used to remediate groundwater, aquifer test results help determine how many wells will be necessary and where to place them.

Mr. Brown said that the objectives for aquifer testing at Site 2 were to evaluate the extent of groundwater contaminated with VOCs, determine aquifer properties and potential mass removal rates, and further evaluate the potential for NA. All of the data collected would help determine what type of remedy should be proposed and selected for the site.

Now the Navy is in the midst of the aquifer test field work. Prior to starting the aquifer test, another round of groundwater sampling was performed, with sensitivity to perchlorate, because low concentrations were previously reported there. The Navy now knows that there are two separate plumes beneath the site. Dissolved Oxygen (DO) or oxidation reduction potential (ORP) was measured in some of the existing wells to determine the potential for NA. The Navy installed piezometers at 12 locations, with two dual-nested units to look at the two water-bearing layers.

As the Navy performs the aquifer test, pumping is started and later on the pump rate is increased over time. Groundwater is pumped into very large tanks on site, called "Baker Tanks," that are sampled as they are filled. The water in the tank is run through the treatment system and into another tank and sampled again. Therefore, constituents at both pre-treatment and post-treatment are evaluated. The Navy, under CERCLA, is not required to have a permit for testing this water before discharge. Sampling began on December 2, 2002 and samples were taken again today, results will be available for evaluation on December 9, 2002. If the Navy meets the criteria that would be required by a permit, the water is considered to be clean. Then the discharge of the treated water will occur upgradient instead of downgradient to help flush out residual contamination and also makes the aquifer test evaluation more inclusive. The water would come through the aquifer again, washing additional contaminants down to the extraction wells. The filtration units used to treat the groundwater get contaminated and ultimately are disposed of at a treatment, storage, and disposal facility.

Mr. Brown displayed a slide showing a side view of the site, with question marks along the plume boundary indicating that the upgradient extent of the plume is not fully delineated and the source area of contamination is uncertain. This still needs to be determined. There were no detections of contamination from a monitoring well set between areas of PCE and TCE in groundwater. This distinguished that there are two separate plumes. In the last sampling round PCE detections were higher than expected so the plume configuration will change accordingly. The question mark at the downgradient end of the TCE plume means the extent of this plume is uncertain; this needs to be resolved. The Navy has high expectations for obtaining a lot of data from the aquifer test. It will help determine if there is a point source yielding contaminants to these two plumes and provide an opportunity to figure out specific aspects for a pump and treat system.

In regard to the aquifer test schedule, the Draft Work Plan was issued in August 2001, after BCT review the Final Work Plan was completed in November 2001, and field work began in June 2002 and is expected to be completed in April 2003. The Draft Technical Memorandum is due in September 2003.

Discussion:

Mr. Zweifel asked to what depths the piezometers were installed. Mr. Brown responded that they were installed to depths of 40 and 70 feet. Mr. Dhananjay Rawal of Navy contractor, Shaw/IT Environmental Group, clarified that some piezometers were installed at a depth of 110 feet.

Mr. Werner asked about the diameter of the wells and the rate of pumping. Mr. Rawal added that 4 to 6 inch diameter wells are used and the pumping rate is 7.6 gallons per minute that is equivalent to 9,000 gallons per day. The test started with two wells, and more will be added for a total of up to six wells.

Mr. Ouellette asked if TCE and PCE are the only constituents that will be monitored for or if there are there other contaminants that will be monitored. Mr. Brown said the Navy is monitoring for a full suite of constituents including TCE, PCE, perchlorate, 1,2,3-TCP, and a suite of metals (selenium naturally occurs here). He added that there are concerns for the discharge component to Borrego Canyon Wash. In regard to analysis of alpha and beta radiation, Ms. Arnold said that this is not being evaluated at this time since this was previously done as part of the radionuclide investigation by Earth Tech that was conducted for all of the landfills, in a joint project with the water districts. After a lengthy study with the involvement of Lawrence Livermore Laboratory, it was determined that all results for radionuclides in Station-wide groundwater were at naturally occurring levels and were not from any man-made sources.

Mr. Werner asked how long the Navy intends to monitor groundwater and at what frequency. Mr. Brown stated that there are usually high levels of concern after remedial activities as to whether or not work performed has activated constituents or contaminants because the aquifer system has been altered. Therefore, initial sampling would be conducted quarterly for 1 to 3 years, then semi-annually for a few years. At the 5-year mark, if there are no outstanding situations and no anomalies in the data, monitoring would be conducted once a year. Usually the approach is site-specific and depends on how close the aquifer is to a designated drinking water source, and there are a lot of parameters to consider, but this is the general idea for monitoring frequency.

Mr. Zweifel made a request to obtain a copy of the Final Biological Opinion for Sites 2 and 17 that is scheduled for release this month. Mr. Brown stated that a copy would be given to Mr. Werner and Ms. Rudolph, per the previously established procedures. Mr. Zweifel asked for his own copy, and Mr. Brown said he could supply him with a copy. Ms. Arnold reiterated that copies of documents are typically given to the Community Co-Chair and Subcommittee Chair and only, but since it is a small document a copy could be made as an exception to standard procedures. There are also the Information Repository (IR) and the Administrative Record (AR), which will each contain copies of this document. Mr. Zweifel requested that it be made available on the Navy's web site. Ms. Arnold said it was not available by that means and suggested he contact Ms. Diane Silva, SWDIV AR Manager, and she might provide an imaged copy of the document if it is available. Ms. Arnold offered to supply Mr. Zweifel with the contact information for Ms. Silva.

◆ **Updates on Sites 3 and 5 -- Ms. Kyle Olewnik, Remedial Project Manager, SWDIV and Mr. Eli Vedigiri, Earth Tech, Inc.**

Ms. Olewnik said she would provide brief background information on Sites 3 and 5 and that Mr. Vedagiri would then provide an update of recent fieldwork. The results are very preliminary, and the report has not been completed yet, however detailed information would be supplied at subsequent RAB meetings.

Site 3, the Original Station Landfill, is roughly 11 acres in size and bisected into two lobes by Agua Chinon Wash. This landfill was operated from 1943 to 1955 and handled predominantly municipal-type wastes. Site 5, the Perimeter Road Landfill, is smaller and is a long thin landfill, approximately 1200 feet long by 100 feet wide, that was used from 1955 through the 1960s for disposal of predominantly typical municipal-type wastes.

She said that previous investigations included Phase I and II Remedial Investigations, a Feasibility Study (FS), and a Proposed Plan that was issued in 1998. The Draft ROD was issued in March 1999. The Radiological Survey was conducted from 2000 through 2001. Based on some of the new information obtained regarding the sites, the Navy may issue a revised Draft ROD to the regulatory agencies. The ROD is expected to be released in 2003.

In addition, previous investigations included review of two aerial photograph anomalies located near Site 5: APHO 46 and MSCR (Miscellaneous Refuse Area) 2. APHO 46 is located north of Site 5 and was investigated as a potential uncontrolled disposal area, using geophysical surveys to locate buried debris. The objective was to assess surficial debris piles and handle this area with Site 5 if any debris or contamination was found. MSCR 2 was identified during the 1995 Environmental Baseline Survey (EBS) as another potential debris area.

Ms. Olewnik said the selected remedy for capping Sites 3 and 5 landfills is similar to the Site 17 remedy previously presented in the Draft ROD, but the landfill cap contains a flexible membrane. The selected remedy will also include a pre-design investigation to further assess if conditions are appropriate for the cap.

Ms. Olewnik introduced Mr. Vedagiri who provided background information on the investigations, recent field work, and preliminary results. Mr. Vedagiri stated the objectives for the pre-design investigation at Sites 3 and 5:

- Confirm the landfill boundaries that were established during the EBS and FS, and documented in the draft ROD.
- Determine and evaluate the geotechnical design properties for native soil for its use as foundation layer material beneath the membrane. Sampling will be involved in this effort. This evaluation is typical for any landfill investigation performed in accordance with state regulations.
- Evaluate the landfill gas collection system to determine if methane gas is being produced and if it will migrate out of the landfill.

At APHO 46, Mr. Vedagiri said a geophysical survey had previously identified a smaller pocket within the surficial debris. It needs to be investigated to determine if there is an associated release or if any debris present impacts the environment.

At MSCR 2, geophysical surveys were performed to determine if anomalies or evidence of associated waste disposal areas were present. The geophysical methods employed were GPR and magnetic and electromagnetic detection methods. The conclusion was that evidence of waste placement was not detected in these areas. A decision needs to be made whether further verification or investigation is required.

Mr. Vedagiri showed a slide containing a map of APHO 46 with the aerial photographic anomalies as well as the smaller geophysical survey area known to have surficial debris. He said 11 samples were collected at 6 locations in this area at 0 to 2 feet below ground surface. The results indicated that analytes did not exceed the U.S. EPA, Region IX Preliminary Remediation Goals or PRGs. It was concluded that no impact of a hazardous nature had occurred and the area can be handled as a housekeeping issue.

At Site 3, the original boundaries of the landfill were established in the RI/FS process. Because of uncertainties in the basis for the location of the boundaries, the ROD called for the boundaries to be investigated by the remedial design contractor to determine the actual extent of the landfill. Trenching was done in 15 locations according to a BCT-supported workplan. The map (on the slide) shows the locations of the waste found in gray. These gray areas are not predominant over the site area, amounting to only 4 acres, compared to 11 acres of the previously determined extent of the landfill, and are found predominantly on the west side of Aqua Chinon Wash.

At Site 5, trenching confirmed the previously established boundary of the landfill, without a marked difference from what was published in the RI report.

Ms. Olewnik quickly recapped the results from the fieldwork:

- Site 5 results confirmed what was expected,
- Site 3 data was spotty, but there is much less waste than originally believed to be present,
- MSCR 2 has no debris, and
- APHO 46 has no hazardous materials and no analytes above the PRGs.

Essentially, this is a lot of positive news and this information will be going into a Tech Memo and will eventually be incorporated into the ROD.

Discussion:

Mr. Zweifel noted that the APHO boundary in the slide and handout extends beyond the "preliminary landfill existing boundary" at the north end of the map shown for Site 5. He added that the boundary of Site 5 would need to be extended. Mr. Vedagiri acknowledged that this correction would be made. Mr. Zweifel then asked if the regulators present were comfortable with that action. Ms. Chesney indicated that the proposed change of the landfill boundary would be okay assuming that is what the investigation shows that this is accurate. Mr. Vedagiri stated that the new boundary only deviates by a few feet. Ms. Arnold said that the purpose of the investigation is to define the limits of the landfill. This was done for Sites 2 and 17 whereby the Navy confirmed the boundaries, and the same thing is being done again for Sites 3 and 5. He added that the boundaries are pretty much dead on, with the exception of the northwest end, where it is somewhat above the previous

boundary. Mr. Vedagiri stated that the difference was not really significant and that the cap design could handle it.

Mr. Zweifel asked when soil gas sampling would be instituted. Mr. Vedagiri said some gas wells have been installed at Site 3, and it is still to be decided if more wells are required; sampling would be conducted per state requirements and is tentatively scheduled for January 2003.

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

Mr. Zweifel asked when the Revised Draft ROD would be created for Sites 3 and 5. Mr. Piszkin responded that, at this time, a new schedule for completing that task has not been developed. The Navy is waiting for the results of the Radiological Release Report, and issues regarding the report are still being discussed with the California Department of Health Services and RASO, therefore the results have not been fully evaluated. Ms. Olewnik added that this information, in light of the Radiological Release Report results, would be presented in the Tech Memo in the next couple of months. In the spring, two Tech Memos, for Sites 3 and 5, and APHO 46 and 2, would be issued. So the next step is to present those and evaluate the information. Mr. Zweifel asked if the RAB would get to see that. Ms. Olewnik responded that it would be made available.

Mr. Zweifel asked if a membrane would be part of the landfill cap for the Site 3 and 5 landfills. Mr. Piszkin replied with "yes," and reiterated what was stated earlier that these two landfills are different from the landfills at Sites 2 and 17, and not just in size, and that a membrane was determined to be unsuitable for Sites 2 and 17 by the Navy and the regulatory agencies.

Mr. Piszkin directed the RAB to the "Where to Get More Information" handout, located on the information table, to check out the Navy and regulatory agency personnel listed as part of the team managing the MCAS El Toro remediation program, and where the Navy's information on making environmental decisions are located. The Navy is the responsible party, but gets much oversight and support from the regulatory agencies, assuring the Navy does the right thing. They are the public's representatives and they "police" the Navy's remedial decisions. The regulatory agency personnel have been through the information on the landfill cap decision pretty thoroughly and in one case the membrane was appropriate and for the other natural soil was appropriate.

Mr. Piszkin added that the Navy is acting under a Federal Facility Agreement or FFA, and as the lead agency it is responsible for doing the work (and hiring consultants); the regulatory experts oversee the work. They are expected to concur with what the Navy decides to do if it's within the appropriate laws and regulations. It is truly a team; it is not a case of the Navy saying that we are going to go do something regardless of the laws and agency input; it does not happen that way. Therefore, the Navy cannot do something solely on their own without regulatory agency concurrence.

Mr. Werner told Mr. Zweifel that RWQCB staff oversee landfill management and design and they have also reviewed all this information to determine if a membrane is necessary for each landfill. Mr. Piszkin added that the design decision is then not just an opinion, but a proven direction, a

proven remedial action. Mr. Zweifel asked how thick the membrane will be. Ms. Arnold stated that a sample of a similar membrane would be brought to a future RAB meeting.

MEETING EVALUATION AND FUTURE TOPICS

Meeting evaluation by RAB members:

RAB members did not provide any input pertaining to this meeting.

Suggestions for future presentation topics include:

- Alton Parkway and status of consolidated effort.
- Land-use controls, breach of restrictions, and enforcement procedures.
- Update on Sites 8, 11 and 12 the risk re-evaluation.
- Radiological Release Report - discussion between RASO and California Department of Health Services regarding "releasable levels."
- Status of base housing with regard to future use.
- Budget issues - an overview of state and federal oversight funding, when information is available.
- Site tour - interest in seeing progress with regard to remediation.
- Perchlorate – U.S. EPA offered to make a presentation.
- Groundwater monitoring – Round 16 results.

CLOSING ANNOUNCEMENTS/FUTURE MEETING DATES

Upcoming Public Meeting, RAB Meeting, and Subcommittee Meeting

The next RAB meeting will be held from 6:30 to 9 p.m., January 29, 2003 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, December 4, in Room L-104, Irvine City Hall, before tonight's RAB meeting.

RAB Meeting Adjournment – December 4, 2002 Meeting

The 60th meeting of the MCAS El Toro Restoration Advisory Board was adjourned at 9:04 p.m.

See following pages for list of meeting handouts.

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 12/4/02 RAB meeting.
- *Meeting Minutes from the September 25, 2002 RAB Meeting – 59th RAB.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (Sept. 2002 – July 2003).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro Restoration Advisory Board – Membership Roster (revised December 2002).
- MCAS El Toro Administrative Record File - Information Sheet (for on-Station access).
- MCAS El Toro Information Repository - Information Sheet.
- Internet Access – Environmental Web Sites.
- MCAS El Toro Marine Corps/Navy RAB Co-Chair (address, telephone, fax, e-mail).
- MCAS El Toro Marine Corps/Navy Team (address, telephone, fax, e-mail).
- MCAS El Toro Project Contacts – Where to Get More Information.
- One-Page Glossary of Technical Terms.
- MCAS El Toro Base Realignment and Closure Business Plan, Introduction Section, March 2002.
- 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.
- Map – Former MCAS El Toro, IRP Site Locations and Proposed Future Land Use, RAB Meeting, September 25, 2002.
- *Presentation* – MCAS El Toro, Installation Restoration Program, Status Update for 60th RAB Meeting, December 4, 2002, presented by Andy Piszkin, BRAC Environmental Coordinator, MCAS El Toro.
- *Presentation* – MCAS El Toro RAB Meeting, Installation Restoration Program Sites 2 and 17, Remedial Design and Aquifer Test Update, December 4, 2002, presented by Gordon Brown, SWDIV Remedial Project Manager and Crispin Wanyoike, Earth Tech, Inc.
- *Presentation* – MCAS El Toro RAB Meeting, Installation Restoration Program Site 3 and 5, Pre-Design Investigation, December 4, 2002, presented by Kyle Olewnik, SWDIV Remedial Project Manager and Crispin Wanyoike, Earth Tech, Inc.

* mailed to all RAB meeting mailer recipients on 11/22/02.

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

- U.S. EPA, Reevaluation of Risk at IRP Sites 8, 11 and 12, MCAS El Toro, letter dated November 18, 2002 - To: Ms. Laura Duchnak, BRAC Operations; From: Nicole G. Moutoux, Remedial Project Manager, U.S. EPA.
- U.S. EPA, FFA Schedule Extension Request for Sites 3 and 5, MCAS El Toro, letter dated November 26, 2002 - To: Dean Gould, BEC, MCAS El Toro; From: Nicole G. Moutoux, Remedial Project Manager, U.S. EPA.

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

- No Items Submitted

Agency Comments and Letters – California Regional Water Quality Control Board (RWQCB), Santa Ana Region

- No Items Submitted

RAB Subcommittee Handouts and Letters

- No Items Submitted

Additional Information Submitted

- 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

Navy and Marine Corps Internet Access

Naval Facilities Engineering Command, Southwest Division, Environmental Web Sites (includes RAB meeting minutes):

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

www.efdsww.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/index.html (site for Superfund)

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

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

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
December 4, 2002**

RAB MEMBER SIGN-IN SHEET

Name	Signature	Name	Signature
Bell, Richard		Marquis, Suzanne	
Britton, George		Matheis, Mary Aileen	<i>Mary Aileen Matheis</i>
Broderick, John		Mathews, Thomas	
Chesney, Triss	<i>Triss Chesney</i>	Meier, Fred J.	<i>Fred J. Meier</i>
Crompton, Chris		Olquin, Richard	
Herndon, Roy		Piszkin, Andy - Co-Chair	*PRESENT*
Hersh, Peter	<i>Peter Hersh</i>	Reavis, Gail	
Hurley, Greg	<i>Greg Hurley</i>	Rudolph, Marcia	<i>Marcia Rudolph</i>
Jung, Dan		Sharp, Steven	<i>Steven Sharp</i>
Moutoux, Nicole	<i>Nicole Moutoux</i>	Werner, Jerry - Co-Chair	<i>Jerry Werner</i>
Marquis, Roland		Woodings, Bob	<i>Bob Woodings</i>
		Zweifel, Donald E.	<i>Don Zweifel</i>

⊗ EXCUSED ABSENCE

* PRESENT * (SIGNED OTHER SHEET)

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

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
December 4, 2002

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

NAME <i>PLEASE PRINT CLEARLY</i>	AFFILIATION	COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Dhananjay Rawal	IT/Shaw	3347 Michelson drive #200 IRVINE CA 92612	(949) 660-7576 (949) 474-8309	
Bill Sedlak	Kennedy/Jankes Consultants	2151 Michelson Dr #100 Irvine CA 92612	949-261-1577	N
Vicki Cooper	U.S. EPA		(415) 972-3243	
Ray Ouellette	Mission Viejo Resident.	28792 Tomelloso Mission Viejo, CA	(949) 770-2131	N
Christie S. Spottsville	Dept of Toxic Substances Control	5790 Corporate Ave Cypress, CA 90630	(714) 484-5311 (714) 484-5302 ^{fax}	Not at this time
Scott KEE	U.S. NAVY	CSO EL TORO	949 726-2506	No

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

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
December 4, 2002

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

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	<u>COMPLETE MAILING ADDRESS</u> [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Convent Arnold	SWDIV			
ALI KASHANI	PRT	PRT 12 MEDICI, Suite 200 Laguna Hills, CA 92656	949-588-9473 ext.6	No
ANDY PISZKIN	SWDIV			
MICHAEL BROWN	CITY OF IRVINE			
Kim Foreman	DTSC		(714)484-5324	

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**DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132**

TELEPHONE: (619) 532-3676

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.

INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD MISSION
STATEMENT AND OPERATING PROCEDURES
PAGES 4 THROUGH 6

29 JANUARY 2003 RESTORATION ADVISORY
BOARD MEETING AGENDA, MEETING SCHEDULE
FROM SEPTEMBER 2002 – JULY 2003, VARIOUS
HANDOUTS, AND 04 DECEMBER 2002 RAB
MEETING MINUTES

THE ABOVE IDENTIFIED PAGES ARE NOT
AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY
SOUTHWEST DIVISION TO LOCATE THESE
PAGES. THIS PAGE HAS BEEN INSERTED AS A
PLACEHOLDER AND WILL BE REPLACED
SHOULD THE MISSING ITEMS BE LOCATED.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92113
TELEPHONE: (619) 532-3676

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

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 space below:

Yes, I would like to be considered. ____

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

Yes, I am willing- to serve for two (2) years. ____

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

Applicant Signature

Date

Please return your completed application to:

Andy Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure, Environmental Division
P.O. Box 51718
Irvine, CA 92619-1718

(949) 726-5398
FAX (949) 726-6586

San Diego office: (619) 532-0784

MCAS El Toro

Installation Restoration Program

MAILING LIST 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 and mail to:

Base Realignment and Closure
Attn: Environmental, Ms. Marge Flesch
P.O. Box 51718
Irvine, CA 92619-1718

- 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
P. O. Box 51781
Irvine, CA 92619-1718
(949) 726-5398 or (619) 532-0784
piszkinaf@efdswnavfac.navy.mil



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 documents in the file at MCAS El Toro.

To schedule an appointment call Ms. Marge Flesch at (949) 726-5398.

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-Friday – 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

State Representatives

Ms. Triss Chesney*
Project Manager, Cal/EPA Dept. of Toxic
Substances Control (DTSC)
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5395
tchesney@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
jbroderic@rb8.swrcb.ca.gov

Mr. Tim Chauvel
Public Participation Specialist, Cal/EPA
Dept. of Toxic Substances Control (DTSC)
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Cypress, CA 90630
(714) 484-5395
tchauvel@dtsc.ca.gov

Internet Access Environmental Web Sites

Southwest Division Naval Facilities Engineering Command Web Site:

<http://www.efdswnavfac.navy.mil/environmental/envhome.htm>

Department of Defense - Environmental Web Page:

<http://www.dtic.mil/environdod/>

U.S. EPA:

www.epa.gov (homepage)

www.epa.gov/superfund/index.html (Superfund)

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

www.epa.gov/fedrgstr (Federal Register Environmental Documents)

Cal/EPA:

www.calepa.ca.gov (homepage)

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

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

Steven Sharp

**Environmental Health Division
Orange County Health Care Agency**

**2009 East Edinger Avenue
Santa Ana, CA 92705**

**(714) 667-3623
FAX (714) 972-0749**

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.



Environmental Compliance Program Documentation Update 22 January 2003

Underground Storage Tank (UST) Sites, Resource Conservation and Recovery Act Facility Assessment (RFA) Sites, and other Locations of Concern - Former Marine Corps Air Station, El Toro

Recent Regulatory Submittals

Site Identification	Date of Submittal	Title of Submittal and Lead Regulatory Oversight Agency
TAA 31A	13 January 2003	Closure Report - DTSC
TAA 900	10 January 2003	Summary Report - DTSC
TAA 651A	10 January 2003	Closure Report - DTSC
TAA 770	10 January 2003	Closure Report - DTSC
SWMU 213	27 December 2002	Data Summary - DTSC and RWQCB
UST 392D	26 December 2002	Site Assessment Addendum - RWQCB
UST 761B/OWS 761A	26 December 2002	Site Assessment - RWQCB
UST 204	27 November 2002	Proposed Sampling Strategy - RWQCB
Anomaly Area 5	25 November 2002	Response to Comments - DTSC
TAA 10	12 November 2002	Closure Report - DTSC
TAA 636 (A & B)	7 November 2002	Closure Report - DTSC
UST 398, UST Group 651, UST 364A, Tank Farm 6	5 November 2002	Groundwater Data Summary - RWQCB
TAA 761	20 September 2002	Summary Report - DTSC
SRU 2	12 September 2002	Technical Memorandum - DTSC
TAA 462	12 September 2002	Summary Report - DTSC
SRU 1	9 September 2002	Technical Memorandum - DTSC
TAA 7B	19 July 2002	Summary Report - DTSC
TAA 5A	19 July 2002	Summary Report - DTSC
TAA 371B	30 May 2002	Summary Report - DTSC
TAA 371A	10 May 2002	Summary Report - DTSC
AST 658	18 April 2002	Information Package - DTSC
UST 98A	18 April 2002	Addendum - RWQCB
TAA 155A & TAA 155C	16 April 2002	Technical Memorandum - DTSC

INTRODUCTION SECTION

United States Marine Corps

Base Realignment and Closure Business Plan

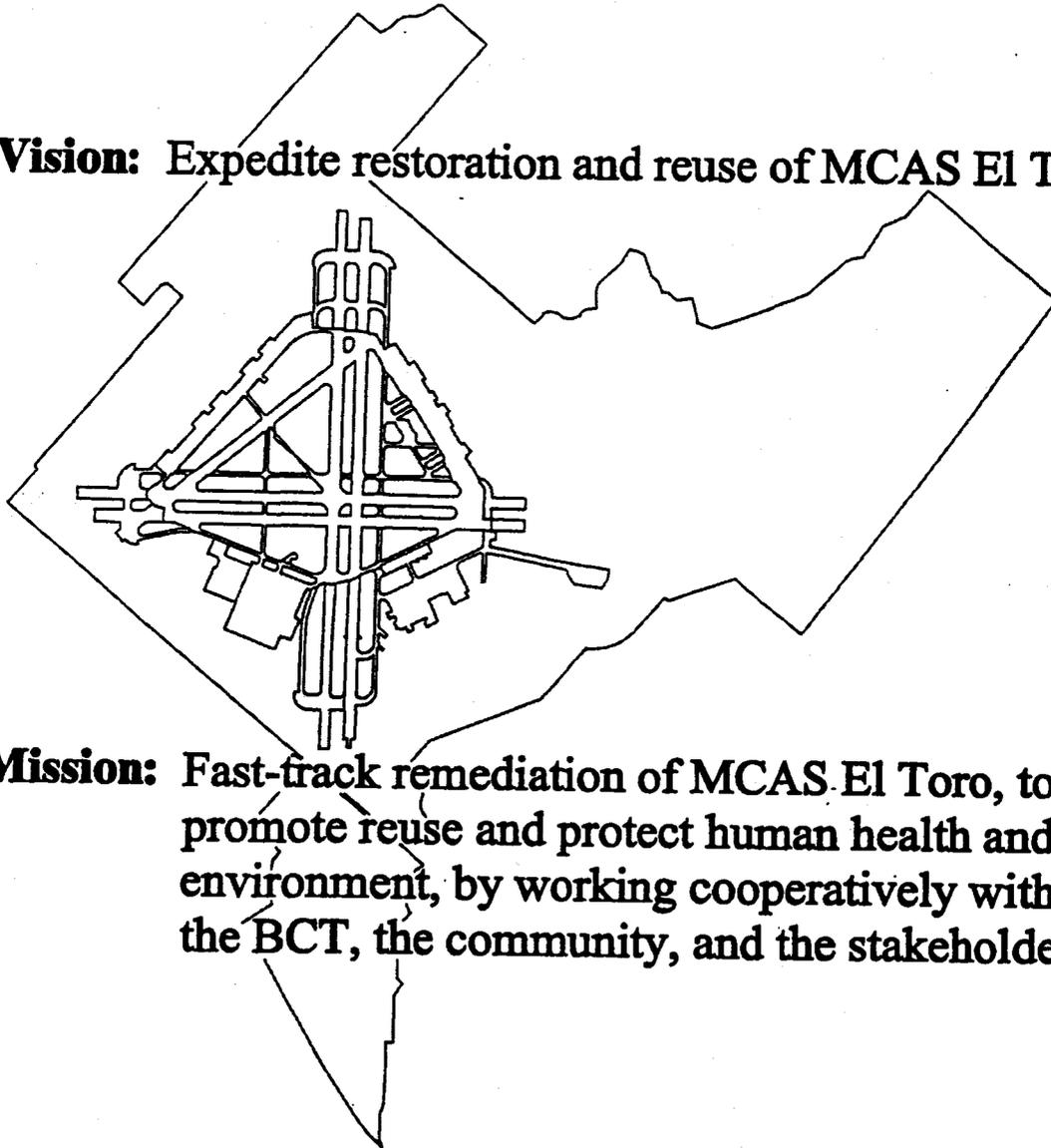


For
**Marine Corps Air Station
El Toro, CA**

MARCH 2002

Vision and Mission Statements

Vision: Expedite restoration and reuse of MCAS El Toro.



Mission: Fast-track remediation of MCAS El Toro, to promote reuse and protect human health and the environment, by working cooperatively with the BCT, the community, and the stakeholders.

INTRODUCTION

The Department of the Navy (DoN) completed the realignment and closure of Marine Corps Air Station (MCAS) El Toro (Station) on 2 July 1999, in accordance with the Base Realignment and Closure Act (1993) (BRAC III). The location of the Station is shown on Figure 1. In 1993, the DoN organized a Base Realignment and Closure (BRAC) Cleanup Team (BCT) to manage and coordinate closure activities and to prepare an annual BRAC Cleanup Plan (BCP). The DoN published the initial BCP in 1994 and issued annual updates in 1995, 1996, 1997, 1998, and 1999. In 1999, the BCT agreed to publish a BRAC Business Plan (Business Plan) for the Year 2000 update. The DoN established the Business Plan, a ten to fifteen page document that is comparable to an extended executive summary, as an alternative to the BCP for installations with continuing environmental restoration programs. The Business Plan provides the status of, management and response strategies for, and action items related to the environmental restoration and compliance programs at MCAS El Toro. The Business Plan presents information available as of 31 December 2001, and describes the most significant environmental Locations of Concern, the acceleration initiatives implemented at MCAS El Toro, and BRAC projects under way. Exhibits, tables, and figures provide additional information pertaining to the environmental Locations of Concern (LOCs).

The scope of the Business Plan considers the following regulatory mechanisms:

- BRAC III;
- National Environmental Policy Act (NEPA);
- Resource Conservation and Recovery Act (RCRA);
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act and the Community Environmental Response Facilitation Act (CERFA); and
- other applicable state and local laws.

MCAS El Toro was listed on the National Priorities List under CERCLA in February 1990, and the DoN, the United States Environmental Protection Agency, Region 9, the California Department of Health Services (part of which is now the California Department of Toxic Substances Control), and the California Regional Water Quality Control Board, Santa Ana Region entered into a Federal Facilities Agreement (FFA) that establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions. The Business Plan is a planning document; therefore, the information and assumptions presented may not have complete approval from federal and state regulatory agencies. The Business Plan is a dynamic document that is updated regularly to reflect the current status of response actions and changes in strategies or plans that affect the ultimate restoration and disposal of MCAS El Toro property. Comments from various sources, including major

claimants, DoN activities, and federal and state regulatory agencies, were evaluated and considered for inclusion during the preparation of this Business Plan.

STATUS OF DISPOSAL, REUSE, AND INTERIM LEASE PROCESS

In March 1994, the County of Orange (County), along with the Cities of Irvine and Lake Forest, formed a joint powers authority to develop a reuse plan for MCAS El Toro. In January 1995, the County withdrew from the joint powers authority in response to the passage of Measure A, a countywide ballot initiative approved by Orange County voters in November 1994. Measure A anticipates that the principal feature of a County-adopted reuse plan for MCAS El Toro should be a commercial airport. Measure A also established the 13-member El Toro Airport Citizens Advisory Commission to advise the Board of Supervisors and Orange County Planning Commission on base reuse.

In April 1995, the Office of Economic Adjustment formally recognized the Orange County Board of Supervisors as the official Local Redevelopment Authority (LRA) for MCAS El Toro. As the recognized LRA, the Board of Supervisors was given sole responsibility for preparing a Community Reuse Plan (CRP) for submittal to the DoN. Eight Department of Defense (DoD) and federal agencies submitted formal applications for MCAS El Toro property during the federal screening process. The LRA provided its recommendations on each of these requests to the Assistant Secretary of the Navy in early 1995. The LRA has endorsed requests by the Department of Interior (DOI) for the Habitat Reserve, the Federal Aviation Administration (FAA), and the California Air National Guard. The LRA recommended that the remaining requests be denied. A surplus property determination was issued on 31 August 1998. In 1999, DOI withdrew their request for the Habitat Reserve and the FAA expanded its request to include the Habitat Reserve. The 901 acres (corresponding to reuse parcel 5a1) was transferred to FAA on 3 December 2001. The habitat area will be managed for FAA by the United States Fish and Wildlife Service (USFWS).

The suitability of property for transfer was evaluated and documented in the Environmental Baseline Survey (EBS) process, and the Final EBS was published in 1995. Property designated as Environmental Condition of Property (ECP) area types 1 through 4 is environmentally suitable for transfer by deed, and approximately 87 percent of the 4,738 acres of Station property is designated as types 1 through 4. The remaining real property is identified as area types 5, 6, and 7. The extent of land classified as area types 5, 6, and 7 is approximately 252 acres (5 percent), 322 acres (7 percent), and 3 acres (less than 1 percent), respectively. Landfill sites which comprise less than 100 acres will require permanent use restrictions following the completion of the remedial actions, while the remaining property is anticipated to be suitable for unrestricted use following the completion of the remedial actions. The ECP area types are described in Exhibit 1.

Exhibit 1. Environmental Condition of Property (ECP) Types

ECP Type	Description
1	Areas where no release or disposal of hazardous substances or petroleum products (including migration) has occurred.
2	Areas where only release or disposal of petroleum products has occurred.
3	Areas of contamination below action levels.
4	Areas where all remedial action has been taken.
5	Areas of known contamination with removal and/or remedial action underway.
6	Areas of known contamination where required response actions have not been implemented.
7	Areas that are unevaluated or that require further evaluation.

In the fall of 1995, the LRA conducted the state/local and homeless provider screening process in accordance with the Base Closure Community Redevelopment and Homeless Assistance Act of 1994 and implementing regulations issued by the DoD and the U.S. Department of Housing and Urban Development (HUD) in August 1995.

The LRA prepared a final CRP and draft Environmental Impact Report (EIR), which evaluated three reuse alternatives for the Station. Reuse Alternative A - Commercial Passenger/Cargo Use (the proposed project) - provided for a full service commercial passenger and cargo airport and compatible non-aviation uses. Reuse Alternative B -Cargo/General Aviation Use - provided for a cargo and general aviation airport and compatible non-aviation uses. Reuse Alternative C - Non-aviation-provided for non-aviation uses including an educational campus, visitor-oriented attractions, research and development, and other uses.

In August 1996, the LRA issued the draft MCAS El Toro CRP, Homeless Assistance Submission (HAS) and draft EIR for a 67-day public review and comment period. The written public comment period ended on 15 October 1996. In the fall of 1996, the Orange County Airport Commission, the El Toro Airport Citizens Advisory Commission, and the Orange County Planning Commission conducted public meetings/hearings and adopted recommendations to the Board of Supervisors on the draft CRP, HAS and EIR.

On 11 December 1996, the Board of Supervisors adopted the final MCAS El Toro CRP (P&D Consultants Team, December 1996), which provides for a more detailed study of a full-service commercial passenger and cargo airport, as well as compatible non-aviation uses.

The final CRP also incorporates the LRA's previously transmitted recommendations on each of the DoD and federal agency requests for property at the base and the 47 Notice Of Interest applications submitted during the state/local and homeless provider screening process conducted by the LRA. The final CRP and HAS were submitted to the Assistant Secretary of the Navy and the Secretary of HUD on 13 December 1996.

The scheduling and prioritizing of parcels for reuse based on the final CRP was provided by the LRA in 1997. The closure programs summarized in this Business Plan are not anticipated to be adversely impacted by the LRA's parcel prioritization schedule.

The Bake Parkway/Interstate 5 public highway expansion project was completed and resulted in the transfer of approximately 25 acres of MCAS El Toro property in 1998.

In June 1999, Cooperative Agreement N68711-99-2-6504 for caretaker services to protect, secure, and maintain MCAS El Toro was executed with the County of Orange, extending through 31 August 2000. The expiration of the cooperative agreement for caretaker services was concurrent with the execution of a Master Lease, effective 31 August 2000. The Master Lease has a term of five (5) years beginning on 1 September 2000, and the terms and conditions of the Master Lease are identified in *Interim Lease Between The United States of America and County of Orange, California For Property at Marine Corps Air Station, El Toro* dated 31 August 2000. The Master Lease encompasses the entire Station (fence line - to - fence line) with the exceptions of parcels 5a, 13e, and a portion of 12b. The Master Lease included the areas that were identified in the interim lease of 1999: the Golf Course (approximately 225 acres); the Child Development Center (Buildings 656 and 873); the Officers' Club (Building 791); the Horse Stables (approximately 30 acres); the Recreational Vehicle (RV) Storage Area; the Indoor Training Pool (Building 839); and Building 83.

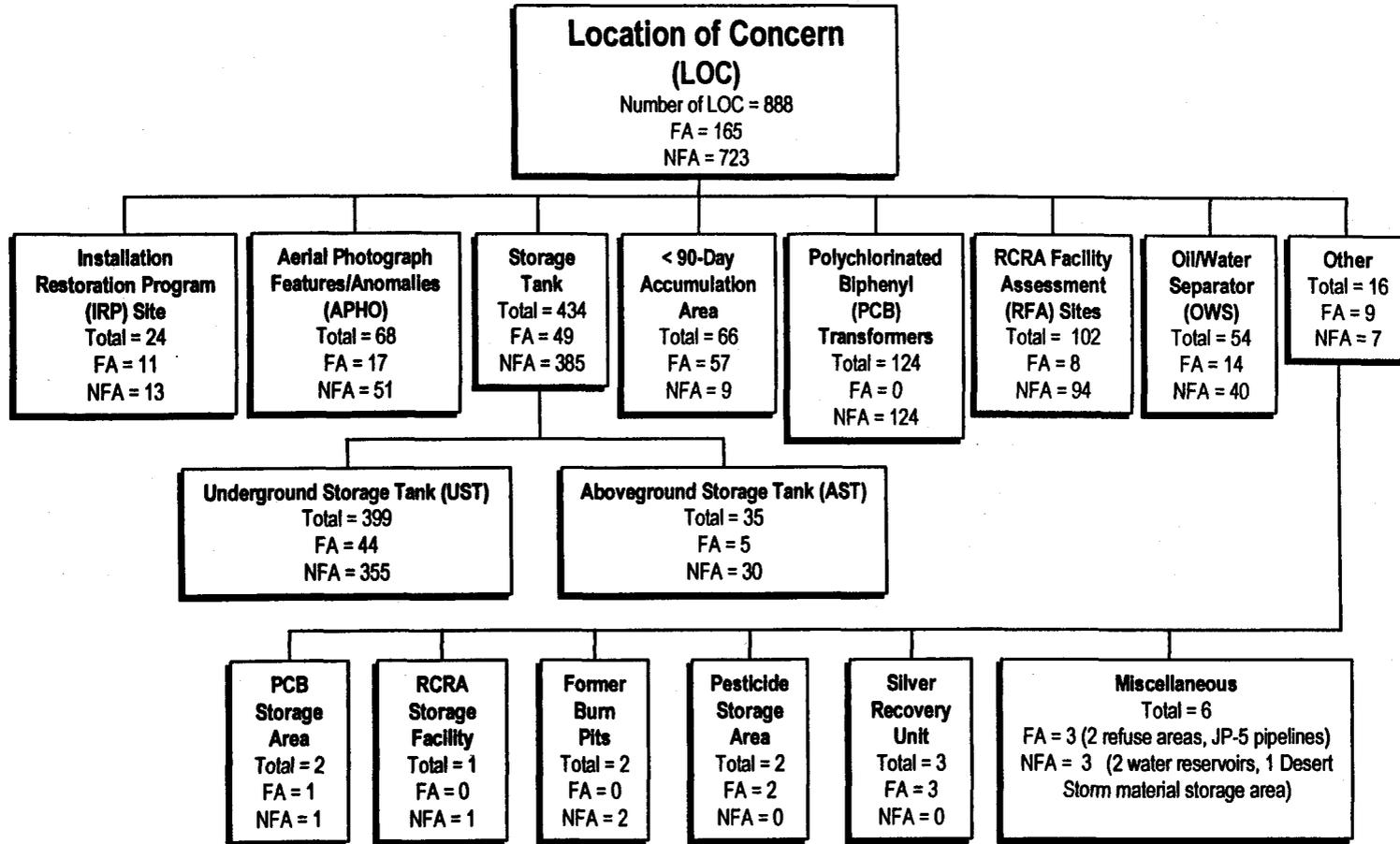
The County of Orange identified a detailed CRP for MCAS El Toro in the Draft Environmental Impact Report (EIR 573) in December 1999, and the proposed future land uses are identified on Figure 2 of this Business Plan. The County of Orange certified their EIR on 23 October 2001.

STATUS OF ENVIRONMENTAL RESTORATION PROGRAM

A total of 888 environmental Locations of Concern, including twenty-four (24) Installation Restoration Program Sites (Sites), have been identified at MCAS El Toro. A Location of Concern (LOC) is defined as any identified location or area that is potentially contaminated or is a potential source of contamination. Several new LOCs were added to the program during 2001: Above-ground Storage Tank (AST) 314, AST 315, AST 658, Underground Storage Tank (UST) 800G, and Temporary Accumulation Area (TAA) 651B. Silver Recovery Unit (SRU) 3 was expanded to include three former silver recovery unit (SRU) sites at Buildings 46, 133, and 457 as well as the former SRU at Building 312.

Exhibits 2, 3 and 4 summarize the types, numbers, and status of different LOCs at the Station.

**Exhibit 2 - Location of Concern Distribution
(as of 31 December 2001)**



Footnotes:

FA = Further Action or Assessment Required
NFA = No Further Action Required

Exhibit 3 – Distribution of 888 LOCs (as of 31 December 2001)

	IRP SITES	APHO SITES	STORAGE TANK SITES	<90-DAY ACCUMULATION AREAS (TAAs)	PCB TRANSFORMERS	RFA SITES	OIL/WATER SEPARATOR SITES	OTHER
TOTAL	24	68	434	66	124	102	54	16
NFA	13	51	385	9	124	94	40	7
Further Action Required (includes LOCs with NFA Decision Documents in Review or In Development)	11	17	49	57	0	8	14	9

Exhibit 4 – New Sites Added during 2001

Description	APHO SITES	UNDERGROUND STORAGE TANKS	ABOVEGROUND STORAGE TANKS	<90-DAY ACCUMULATION AREAS (TAAs)	RFA SITES	OIL/WATER SEPARATOR SITES
New Sites	0	1	3	1	0	0

Historical Environmental Program Highlights. The following accomplishments highlight the progress of environmental restoration activities at MCAS El Toro:

- Agency concurrence on a No Action Record of Decision (ROD) for Sites 7 and 14 in 2001;
- Agency concurrence on a No Action ROD for eleven sites from OU-3 and OU-2A (Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, 22, and 25) in September 1997;
- Agency concurrence on the ROD for Site 11 in September 1999;
- Agency concurrence on the OU-2A interim ROD for the vadose zone at Site 24 in September 1997;
- Agency concurrence on the OU-2B interim ROD for Sites 2 and 17 in July 2000;
- Agency approval of the polynuclear aromatic hydrocarbon (PAH) Reference Study (prepared by Bechtel National Incorporated in 1996) that allowed the recategorization of 448 acres of land from area type 7 to area type 3, thus allowing this land to be transferable by deed; and
- Completion of two time-critical removal actions at Sites 2 and 17 in 1997 and one non-time-critical removal action at Site 19 in 1996.

Installation Restoration Program. Currently, a total of 24 sites are being managed in the Installation Restoration Program (IRP) at the Station (Sites 1 through 22, 24, and 25). Of these, 22 sites were evaluated during the Phase I RI, which was completed in May 1993. Two additional sites were established for investigation in Phase II, bringing the total number of IRP sites to 24. These sites are grouped into three OUs: OU-1, OU-2, and OU-3. The following is a brief summary of the site groupings, current status, and FFA schedule for each of the three OUs.

- OU-1 addresses contaminated groundwater on- and off-Station and consists of one IRP site (Site 18). The final interim RI/FS report for OU-1 was submitted in August 1996. The Interim Draft Final Proposed Plan was submitted to the BCT in August 2000. The agreement between Orange County and Irvine Ranch Water District and the DOJ in support of a multipurpose project (the Irvine Desalter Project) to extract and treat regional groundwater contaminated with volatile organic compounds was signed in 2001. The Final Proposed Plan for groundwater at Sites 18 and 24 (OU-2A) was released for public comment in November 2001; The ROD for OU-1 and OU-2A, which will finalize the remedial decision for groundwater, is scheduled to be prepared in the year 2002;
- OU-2 consists of three subunits (OU-2A, OU-2B, and OU-2C) and addresses potential source areas of groundwater contamination.
 - **OU-2A:** OU-2A includes Site 24 (the Volatile Organic Compound (VOC) Source Area) and Site 25 (the Major Drainages). **Site 24:** RI and Draft Phase II FS Reports for Site 24 were submitted in June and August 1996, respectively. Site 24 – the Volatile Organic Compound (VOC) Source Area – encompasses approximately 200 acres in the southwestern section of the Station. The planned reuse for Site 24 is cargo storage. The VOCs at Site 24 may have come from solvents containing trichloroethene (TCE) or perchloroethene (PCE) that were used at Site 24 until approximately 1975. Primary sources include degreaser tanks, storm drains and industrial waste sewers, and washracks. Pilot studies utilizing portable soil vapor extraction (SVE) treatment units were conducted during the period from approximately 1996 through 1998. The interim ROD (vadose zone only) for Site 24 was signed in September 1997, implementation of the final remedy – SVE treatment - commenced in 1999, confirmation sampling of the vadose zone was completed in 2000, and the draft closure report was completed in June 2001. The Final Proposed Plan for groundwater at Sites 18 and 24 was released for public comment in November 2001. The ROD for OU-2A and OU-1, which will finalize the remedial decision for groundwater, is scheduled to be prepared in the year 2002. **Site 25:** The Draft Final ROD for no action was signed in 1997.

- **OU-2B:** OU-2B addresses inactive landfill **Site 2** (Magazine Road Landfill) and **Site 17** (Communication Station Landfill). Sites 2 and 17 are located in the northeastern section of the Station in an area designated for future use as a habitat reserve. The former operational landfill units at Site 2 encompass approximately 27 acres, and the former operational landfill unit at Site 17 encompasses approximately 11 acres. Solid wastes from MCAS El Toro were disposed of at Sites 2 and 17. Suspected types of wastes include construction debris, municipal-type waste from Station operations, and oils and fuels. TCE and PCE have been detected in the groundwater at Site 2. The Draft ROD identified the preferred remedy for the former operational landfill areas at Sites 2 and 17 - a four-foot thick single-layer soil cover. The Final Interim ROD was signed in July 2000. The Final ROD, a future document, will address management of the VOC groundwater plumes at Site 2 and will address radiological contamination, if any, at both sites.

- **OU-2C:** OU-2C addresses inactive landfill **Site 3** (Original Landfill) and **Site 5** (Perimeter Road Landfill). Site 3 encompasses approximately 11 acres in the northeastern section of the Station. Site 5 encompasses approximately 1.8 acres in the southeastern section of the Station. Reportedly, any waste generated on the Station could have been disposed of at these sites. The wastes are likely to have included municipal solid waste, fuels, and solvents. Site 3 included an incinerator, and incinerator ash was probably disposed of within the landfill. The Proposed Plan identified the preferred remedy for the former operational landfill areas at Sites 3 and 5 - a four-foot thick single-layer soil cover. The preferred alternative is based upon U. S. EPA's presumptive remedy approach to landfills. Following the receipt of public comments, the preferred remedy was changed to a single-barrier cap with a two-foot foundation layer, a flexible membrane liner (FML), and a two-foot soil cover. The single-barrier cap design allows for future irrigation of the landfill cover. The Draft ROD was completed in March 1999, and the Draft Final ROD is expected to be completed in the year 2002.

- **OU-3** addresses the remaining sites and information pertaining to the suspected types of wastes at each OU-3 site is presented in Tables 2 and 3. **Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, and 22** were addressed in the ROD for no action sites in 1997; **Sites 7 and 14** were addressed in the ROD for no action sites in 2001. **Site 1** is in the remedial investigation/feasibility study phase. A Draft Final ROD for **Sites 8 and 12** is in development. **Site 11** is in the remedial design/remedial action phase. A pilot study for multi-phase extraction at **Site 16** was completed in April 2001; the results of the pilot study were incorporated into the Draft Final Feasibility Study for Site 16 which was issued in June 2001.

The Navy continued to provide notification to the public for Restoration Advisory Board meetings and agendas, to maintain the Information Repository at the Heritage Park Regional Library, and to update the mailing list.

RCRA Facility Assessment Sites. A RCRA Facility Assessment (RFA) was performed at the Station between 1990 and 1993. The RFA included the investigation of 305 solid waste management units (SWMUs)/areas of concern (AOCs). However, 3 units were located at MCAS Tustin, 15 units were duplicates of other SWMUs/AOCs, and 4 SWMUs/AOCs were researched and identified as phantom sites. Of the remaining 283 SWMUs/AOCs, 140 were included in a sampling effort. The RFA report was approved by DTSC contingent upon performance of additional investigation at 14 SWMUs/AOCs. A final addendum to the RFA report was completed on 31 May 1996. The addendum presents results and recommendations for the 14 SWMUs/AOCs and recommends closure strategies for 73 temporary accumulation areas. The status of SWMUs/AOCs, as presented in the RFA documentation, is summarized as follows:

- 8 addressed in the IRP;
- 1 addressed in the PCB category of LOCs;
- 76 addressed as USTs;
- 30 addressed as OWSs;
- 66 addressed as Temporary Accumulation Areas (TAAs); and
- 102 addressed as RFA sites, of which 14 required further action or assessment.

The number of SWMUs/AOCs (283) is greater than the number of RFA sites indicated in Exhibit 2, because some LOCs have been designated as both SWMUs/AOCs and as other types of LOCs. For example, there are USTs that have been identified as SWMUs/AOCs and there are TAAs that have been identified as SWMUs/AOCs. Exhibit 2 refers to these SWMUs/AOCs as USTs or TAAs instead of as RFA sites.

Compliance Program Sites and Other LOCs. There are several compliance programs in progress at MCAS El Toro that involve different types of LOCs including USTs, less-than-90-day accumulation areas, polychlorinated biphenyl (PCB)-containing transformers, oil/water separators, aerial photograph anomalies, and miscellaneous sites. The status of each of the types of LOCs is summarized in Exhibit 2.

INITIATIVES FOR ACCELERATING CLEANUP

The BCT conducted a "bottom up" review of the environmental programs at MCAS El Toro in accordance with DoD guidance on establishing BCTs (DoD 1993). During the review process, the following nine issues were addressed to identify opportunities for accelerating cleanup activities necessary to facilitate conveyance of real property at the Station.

1. **Technology Review.** Publications such as Treatment Technologies Applications Matrix for Base Closure Activities, prepared by the California Base Closure

Environmental Committee, dated November 1994 (CBCEC 1994a) and the latest information from the United States and California Environmental Protection Agencies (U.S. EPA and Cal-EPA) and DoD will be reviewed as part of the evaluations performed in selecting technologies.

2. **Removal Actions.** A UST Tiger Team addressed compliance and closure issues related to USTs on-Station during the 1995-1997 time period, and the Tiger Team worked to identify USTs that could be taken out of service without adversely impacting Station operations. All tanks within the former Tank Farms 1, 2, 3, 4, 5, and 6 have been removed, and most of the tank sites have been closed by the regulatory oversight agencies. Soil vapor extraction (SVE) technology has been utilized to remediate the vadose zone at Tank Farm 2, the Tank 398 site, UST Group 651, and UST Site 364A.

Time-critical removal actions were implemented at IRP Sites 2 and 17 (former landfills) during 1996 and 1997, and a non-time-critical removal action was conducted at IRP Site 19 (Unit 2) in 1996. These removal actions were designed to reduce the risk to human health and the environment and to expedite cost-effective cleanup.

A pilot study utilizing multi-phase extraction for remediation of a combined petroleum hydrocarbon and chlorinated solvent release was completed at Site 16 in April 2001.

3. **Clean Properties.** The suitability of property for transfer is evaluated through the EBS process. The BCT and the LRA will work together to determine how to transfer properties expeditiously.
3. **Overlapping Phases.** As an ongoing effort, the BCT will continue to identify phases of the cleanup process that can be overlapped to reduce the time required for completion.
4. **Contracting Procedures.** SWDIV management of the CLEAN, RAC, and indefinite-quantity contracts is based on a cooperative and interactive approach.
5. **Community Reuse Interface.** In an effort to carry out strategies for environmental restoration activities, while assuring proactive community involvement, the Station has adopted an approach to meet the needs of the public as well as the requirements of NEPA, CERCLA, CERFA, and the California Health and Safety Code Section 25356.1. The approach provides for a number of services to inform interested parties (e.g., the city of Irvine, the city of Lake Forest, and the County of Orange) of environmental restoration activities while maintaining a commitment for efficient and cost-effective cleanup at MCAS El Toro.

6. **Bias for Cleanup.** The BCT will continue to emphasize expedited remedial actions and attempt to avoid lengthy site characterization studies and prolonged RI/FS activities. As such, the BCT members will continue to collaborate in devising work plans, identifying cleanup criteria, and selecting remedial actions in an effort to aggressively pursue cleanup instead of studies and data collection. Acceleration of ongoing or future cleanup activities will continue to be in strict compliance with applicable rules, regulations, and public health and safety requirements. Remediation strategies and plans for cleanup activities have been shared with representatives from the known or anticipated reuse organizations including technical, operational, reuse, and administrative specialists.

8. **Presumptive Remedies.** Presumptive remedies are preferred technologies for common categories of sites, based on previous remedy selection and U.S. EPA scientific and engineering evaluation of performance data on technology implementation. The presumptive remedy approach is one tool used to accelerate cleanup under the Superfund Accelerated Cleanup Model. Presumptive remedies are expected to ensure consistency in remedy selection and reduce time and cost required to clean up similar types of sites. Currently, presumptive remedies are recognized by U.S. EPA for VOC remedies and municipal and military landfill remedies.

9. **Partnering.** A partnering agreement among the Project Team is essential for efficient management of the base closure process. The following team charter agreement for MCAS El Toro was developed during a team-building seminar held in October 1994.

“We, the MCAS El Toro partners, commit to effectively working together to maximize restoration and reuse of MCAS El Toro by 1999. We will accomplish this goal through teamwork, dedicated and focused participation, our ethics outlined below, and effective communication between all partners.

We want the project to be enjoyable to work on and will work together with trust and respect, and will ensure that all team members' interests impact decisions. Problems will be resolved quickly or escalated if appropriate by team members closest to the issue. As partners, we commit to communicating our mission and partnership goals to new project members and encourage them to embrace this partnership.

Our mutually agreed upon ethical standards are listed below.

CODE OF ETHICS

Integrity	Objectivity	Trust	Dependability
Leadership	Accountability	Sincerity	Credibility
Empathy	Candor	Responsibility	Honesty

Additionally, we will listen to and value others' opinions, honor diversity, model the behavior we expect from others, and have fun.”

Through meetings and conference calls, the BCT has worked together as a team to discuss and resolve issues related to environmental restoration activities at MCAS El Toro with a focus on expediting reuse while protecting human health and the environment.

SUMMARY OF CURRENT AND PLANNED BCT ACTION ITEMS

The BCT has coordinated and managed a number of tasks relating to the BRAC cleanup activities at MCAS El Toro during the past year. A brief list of accomplishments for 2001 includes:

Environmental Program Highlights for 2001.

- Signed the agreement between Orange County and Irvine Ranch Water District and the United States (represented by the Department of Justice (DOJ)) in support of a multipurpose project (the Irvine Desalter Project) to remediate regional groundwater contaminated with volatile organic compounds;
- Issued the Final Proposed Plan for Sites 18 and 24 for public comment;
- Conducted six (6) Restoration Advisory Board (RAB) meetings addressing a vast array of issues of public interest during 2001;
- Conducted CERCLA groundwater monitoring activities and investigated perchlorates and radionuclides in groundwater;
- Signed the Final ROD for Sites 7 and 14;
- Conducted the Radiological Survey;
- Completed the Site 16 multi-phase extraction pilot study.
- Completed the draft vadose zone closure report for Site 24;
- Conducted Soil Vapor Extraction (SVE) treatment at UST Group 651 and former UST Site 364A with removal of more than 30,000 pounds of petroleum hydrocarbons during 2001, and conducted SVE testing activities at UST 1B and UST 98A;
- Continued bioventing pilot test activities at Tank Farm 555;
- Conducted testing of sections of JP-5 pipeline in preparation for closure;
- Conducted site verification sampling activities at UST sites, AST sites, OWS sites, and aerial photograph anomaly (APHO) sites, conducted testing activities at

segments of the JP-5 pipelines, and completed closure documentation for more than 20 LOCs.

Planned Goals for Year 2002:

- Issue the Draft ROD for Sites 18 and 24 for public comment;
- Issue the Final Focused FS for Site 16;
- Issue the Proposed Plan for Site 16 for public comment;
- Issue the Draft ROD for Site 16 for public comment;
- Complete radiological survey and issue the Draft Radiological Release Report;
- Prepare updated Environmental Baseline Survey;
- Complete Draft Final RODs for Sites 3 and 5;
- Complete the Draft RI Report for Site 1;
- Issue the Draft Final Vadose Zone Closure Report for Site 24;
- Conduct soil sampling activities for lead-based paint at the housing areas;
- Continue coordination with United States Fish and Wildlife Service, the Integrated Waste Management Board/Local Enforcement Agency, the LRA, and the BCT during the design of landfill covers for Sites 2 and 17 and complete the remedial design for Sites 2 and 17;
- Update the Community Relations Plan;
- Continue groundwater monitoring activities and evaluation of groundwater data; and
- Conduct the site verification and/or remediation activities at UST, OWS, AST, fuel pipeline, and APHO sites.

Table 1 provides a list of recommendations and issues associated with the environmental restoration and compliance programs that require further evaluation and action by the BCT. The list covers key items identified during the course of the Business Plan preparation and includes the BCT activities relating to the base closure.

Tables 2 and 3 identify the status of each LOC, and Table 4 identifies the buildings with known asbestos. The current reuse parcel identifier, for the Concept B Reuse Plan of 1999 (County of Orange Draft Environmental Impact Report (EIR) 573), is included for each LOC in Tables 2 and 3. Figures 1, 2, and 3 show the vicinity of the Station and information pertaining to the most current reuse plan (preferred land use plan (Concept B)). Figures 4 through 12 show each type of LOC, Figure 13 shows the IRP Site boundaries with the preferred land use plan, and Figures 14 and 15 show the environmental condition of property.

SCHEDULE/CRITICAL MILESTONES

The Installation Restoration Program milestones are identified in the Federal Facilities Agreement (FFA) for the Marine Corps Air Station, El Toro. The FFA schedule is usually revised or updated three or more times per year.

Critical milestones for the environmental restoration program are presented in Table 5. Historical information pertaining to the expenditures for each Installation Restoration Program Site and cost to complete estimates are presented in Table 6.

TABLE 5. CRITICAL ENVIRONMENTAL RESTORATION PROGRAM AND SELECTED PROPERTY DISPOSAL MILESTONES
Marine Corps Air Station, El Toro (Status as of 31 December 2001)

Activity or Site Identification	Estimated (E) or Actual (A) Completion Date	Estimated % Complete (as of 31 December 2001)	Notes on Remaining Activities and/or Description of No Action Decision Document
Station Closure	7/2/1999 (A)	100	
Public Benefit Conveyance(s)	April 2005 (E)	30	
IRP Site 1 – Explosive Ordnance Disposal (EOD) Range	2/5/2004 (E)	10	Completion of RI/FS, PP, ROD, RD, Remediation.
IRP Site 2 – Magazine Road Landfill	1/14/2005 (E)	70	Completion of ROD, RD, Remediation.
IRP Site 3 – Original Landfill	1/14/2005 (E)	60	Completion of ROD, RD, Remediation.
IRP Site 4 – Ferrocene Spill Area	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 5 – Perimeter Road Landfill	1/14/2005 (E)	60	Completion of ROD, RD, Remediation.
IRP Site 6 – Drop Tank Drainage Area Number 1	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 7 – Drop Tank Drainage Area Number 2	6/26/2001 (A)	100	Completion of ROD, RD, Remediation.
IRP Site 8 – DRMO Storage Area	1/14/2005 (E)	60	Completion of ROD, RD, Remediation.
IRP Site 9 – Crash Crew Pit Number 1	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 10 – Petroleum Disposal Area	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 11 – Transformer Storage Area	1/14/2005 (E)	60	Completion of RD, Remediation.
IRP Site 12 – Sludge Drying Beds	1/14/2005 (E)	60	Completion of ROD, RD, Remediation.
IRP Site 13 – Oil Change Area	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 14 – Battery Acid Disposal	6/26/2001 (A)	100	Completion of ROD, RD, Remediation.
IRP Site 15 – Suspended Fuel Tanks	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 16 – Crash Crew Pit Number 2	1/14/2005 (E)	55	Completion of RI/FS, PP, ROD, RD, Remediation.
IRP Site 17 – Communication Station Landfill	1/14/2005 (E)	70	Completion of ROD, RD, Remediation.
IRP Site 18 – Basewide Groundwater	1/14/2022 (E)	60	Completion of PP, ROD, RD, Remediation.
IRP Site 19 – ACER Site	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 20 – Hobby Shop	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 21 – Materials Management Group	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 22 – Tactical Air Fuel Dispensing System	9/30/1997 (A)	100	No Action Record of Decision of 1997
IRP Site 24 – VOC Source Area	1/14/2022 (E)	65	Completion of Remediation.
IRP Site 25 – The Major Drainages	9/30/1997 (A)	100	No Action Record of Decision of 1997
USTs and ASTs	8/1/2004 (E)	88	Completion of site remediation activities
OWSs	8/1/2004 (E)	74	Completion of site remediation activities
TAAAs and SWMUs	8/1/2004 (E)	61	Completion of site remediation activities
APHOs	8/1/2004 (E)	75	Completion of site remediation activities
MSC LOCs (MSC D1, etc.) and PCB Transformers	8/1/2004 (E)	91	Completion of site remediation activities
Historical Radiological Assessment/Radiological Survey	11/22/2002 (E)	60	Completion of survey and report(s).

NOTE: Bold print indicates that no further CERCLA response actions are required at the site.

Table 6. Installation Restoration Program
Approximate Historical Expenditures by Site (through Fiscal Year 2001 (period ending 30 September 2001))

Operable Unit (OU)	Site	FY 1985 (\$000)	FY 1986 (\$000)	FY 1987 (\$000)	FY 1988 (\$000)	FY 1989 (\$000)	FY 1990 (\$000)	FY 1991 (\$000)	FY 1992 (\$000)	FY 1993 (\$000)	FY 1994 (\$000)	FY 1995 (\$000)	FY 1996 (\$000)	FY 1997 (\$000)	FY 1998 (\$000)	FY 1999 (\$000)	FY 2000 (\$000)	FY 2001 (\$000)	TOTAL (\$000)	Estimated Cost to Complete* (\$000)
OU-1	18	3.7	0	846.1	486.4	401.2	102.4	43.0	976.0	2797.0	1513.8	2254.1	3152.8	1779.5	1693.0	1200.0		40.0	17289.0	
OU-2A	24	0	0	0	0	0	0	0	0	0	3201.8	376.6	700.6	3925.8	2408.8	4300.0	416.0	500.0	15413.6	
	25	0	0	0	0	0	0	0	0	0	3201.8	0	93.8	46.7	0	0	0		3342.3	
OU-2B	2	3.7	0	0	9.7	39.7	12.3	27.0	857.0	98.2	1686.6	1420.7	44.1	2429.5	56.7	1900.0	372.0		8585.2	
	17	3.7	0	0	8.8	39.7	12.3	27.0	857.0	98.2	1686.6	17.0	59.7	2429.5	0	800.0	0		6039.5	
OU-2C	3	3.7	0	0	8.8	39.7	12.3	27.0	857.0	98.2	1686.6	17.0	35.2	26.9	0	100.0	338.0	500.0	3412.4	
	5	3.7	0	0	8.8	39.7	12.3	27.0	857.0	98.2	1686.6	17.0	35.2	26.9	0	100.0	361.0	500.0	3412.4	
OU-3	1	3.7	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	376.6	35.2	0	0	600.0	650.0	700.0	2789.0	
	4	0	0	0	7.7	1.1	12.2	27.0	857.0	98.2	76.6	503.2	35.2	46.6	0	0	0		1664.8	
	6	3.4	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	376.6	35.2	46.7	0	0	0		1535.4	
	7	3.4	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	503.2	35.2	0	351.1	100.0	5.0		2086.4	
	8	0	0	0	1.4	1.1	12.2	27.0	857.0	98.2	88.1	376.6	35.2	205.5	60.0	0	5.0	65.0	1827.3	
	9	3.7	0	0	1.4	1.1	12.2	27.0	857.0	98.2	88.1	376.6	35.2	46.6	0	0	0		1547.1	
	10	3.4	0	0	1.4	1.1	12.3	27.0	857.0	98.2	76.6	376.6	35.2	46.7	0	0	0		1535.5	
	11	3.7	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	503.2	35.2	205.5	59.2	0	218.0	65.0	1945.3	
	12	0	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	376.6	35.2	205.5	60.2	0	138.0	65.0	1816.0	
	13	3.4	0	0	1.4	1.1	12.3	27.0	857.0	98.2	76.6	503.2	35.2	46.6	0	0	0		1662.0	
	14	3.7	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	503.3	35.2	0	351.1	100.0	0		2066.8	
	15	3.7	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	376.6	35.2	46.6	0	0	0		1535.6	
	16	0	0	0	1.4	1.1	12.2	27.0	857.0	98.2	76.6	376.6	35.2	26.9	351.1	100.0	706.0	800.0	3288.3	
	19	0	0	0	17.8	1.1	13.0	27.0	857.0	98.2	76.6	503.2	290.9	46.6	0	0	0		1931.4	
	20	0	0	0	0	0	13.0	27.0	857.0	98.2	76.6	503.2	35.2	46.7	0	0	0		1656.9	
	21	0	0	0	0	0	13.0	27.0	857.0	98.2	76.6	376.6	35.2	46.6	0	0	0		1530.2	
	22	0	0	0	0	0	13.0	27.0	857.0	98.2	76.6	376.6	35.2	46.7	0	0	0		1530.2	
	23	0	0	0	0	0	0	1.2	32.0	20.0	0	0	0	0	0	0	0		53.2	
TOTAL		50.6	0	846.1	544.8	575.4	362.3	611.2	19005.0	4879.0	15989.0	11391.0	4975.5	11774.6	5391.2	9300	3568	3235	88930.8	73226

* NUMBERS SHOWN ARE FOR ESTIMATING PURPOSES ONLY, AND DO NOT REFLECT WORK CURRENTLY IN PROGRESS WHICH HAS ALREADY BEEN FUNDED, OR FUNDING WHICH MAY ACTUALLY BE APPLIED IN FUTURE YEARS. COST TO COMPLETE INCLUDES YEAR 2002 COSTS THROUGH COMPLETION.



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NOV 29 2001

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 become 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.



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.

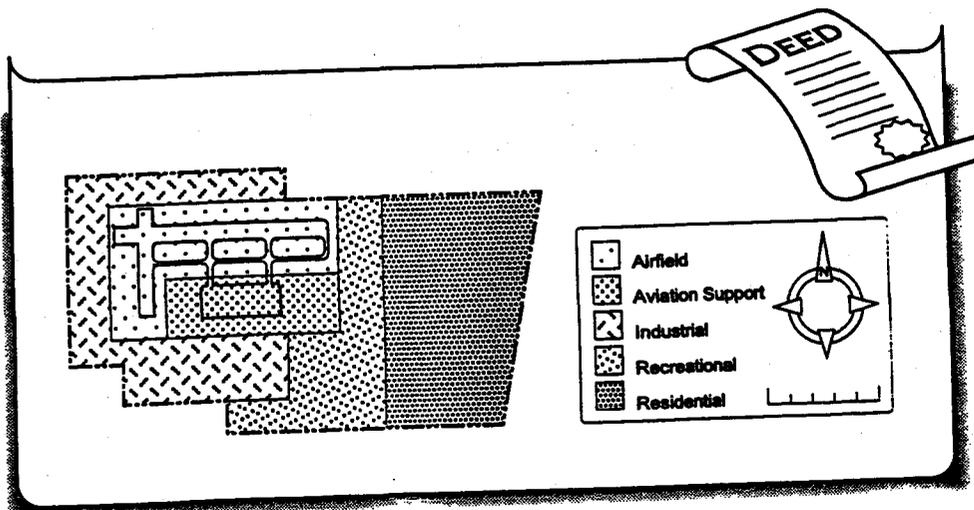
USES OF INSTITUTIONAL CONTROLS IN ENVIRONMENTAL CLEANUP

- 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?

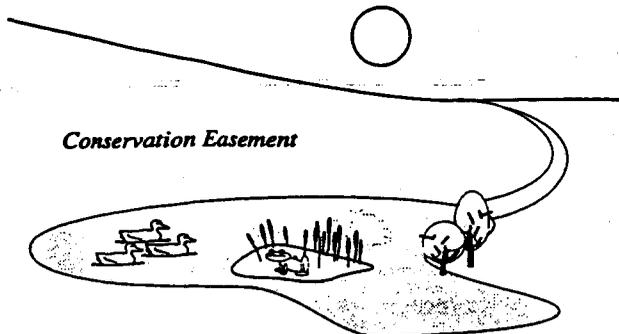
- A proprietary control is a private contractual mechanism contained in

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.



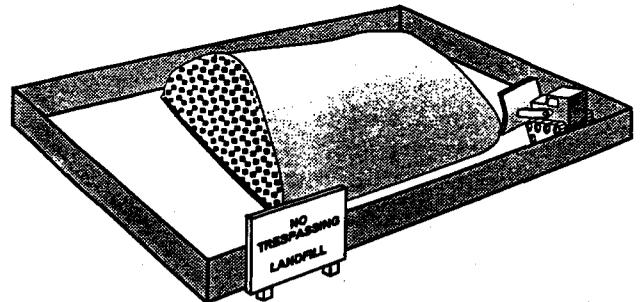
- If the owner violates the easement, the holder may bring suit to restrain the owner.
- An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, 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 ease-

ment, 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?

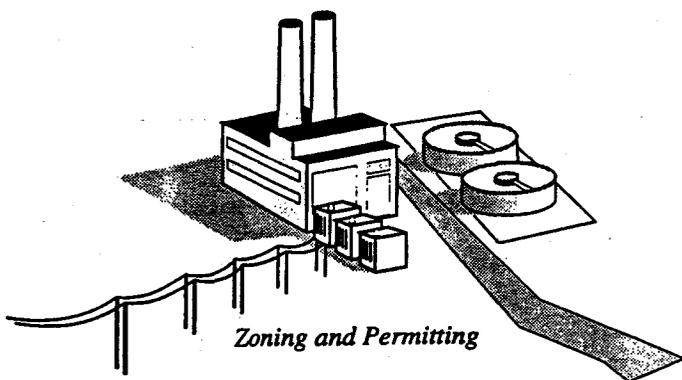
- A covenant is a promise that certain actions have been taken, will be taken, or may not be taken.
- Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners.
- An affirmative covenant is a promise that the owner will do something that the 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.



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.

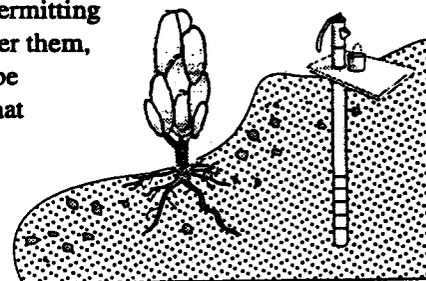
What are possible governmental controls?

- **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.

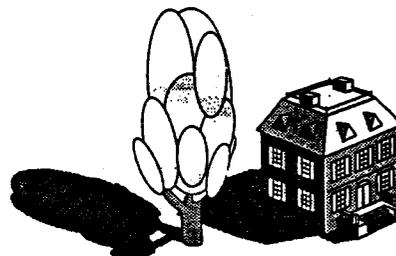
- **Groundwater restrictions**— Specific classification systems used to protect the quality of or use of ground water. These systems operate through a state well permitting system. Under them, criteria may be established that must be met before a use permit or construction is allowed.



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.



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:

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.

- 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.

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 evaluation 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 for 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

Such 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

This guide identifies issues that may be relevant to any number of response actions. It does not suggest how to resolve specific issues, but offers tools that the team may find useful. It is up to the team establishing the ICs to develop and implement 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.

Q. 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
 - Zoning
 - Permitting programs
 - 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
 - State government
 - State court
 - Local government
 - Local court
 - Landowner
 - Adjacent landowner
 - 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.

Local reproduction of this fact sheet is authorized and encouraged.



ACQUISITION AND
TECHNOLOGY

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

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 policies, 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

Policy on Responsibility for Additional Environmental Cleanup

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 Section 120(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 met. 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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MANAGEMENT GUIDANCE
for the
DEFENSE ENVIRONMENTAL
RESTORATION PROGRAM



Office of the Deputy Under Secretary of Defense
(Installations and Environment)

ODUSD(I&E)

September 2001

9.8.3.2.3. The unsafe condition was present when the property was transferred from DoD control; and

9.8.3.2.4. No subsequent owner of the property has made beneficial use of the building or structure.

9.9. The following activities shall not be conducted with those funds requested for environmental restoration purposes that were appropriated to the ER-FUDS account:

9.9.1. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities at ineligible properties.

9.9.2. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities for ineligible projects.

9.9.3. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities to address releases that are solely a result of an act of war.

9.9.4. The payment of environmental fines or other penalties without specific congressional approval to do so.

9.10. Property or project closeout at a FUDS occurs when all removal or remedial responses are complete and no subsequent removal or remedial responses are required, or the FUDS was classified as "No Defense Action Indicated." USACE shall consult with ODUSD(I&E), Headquarters Department of the Army, appropriate federal, state, or tribal regulators, and the local community on FUDS closeouts.

9.11. Restoration Advisory Boards (RABs) at FUDS.

9.11.1. In general, the criteria for determining community interest in establishing a RAB at an operating installation also apply to FUDS. It is, however, recognized that there may be circumstances when the establishment of a RAB at a FUDS is impractical, including when:

9.11.1.1. The FUDS property owner objects to the establishment of a RAB;

9.11.1.2. The project duration is so short so as to make RAB establishment infeasible;

9.11.1.3. The property is in a remote location where there is no community nearby; or

9.11.1.4. All major environmental decisions for all properties have already been made.

9.11.2. When a RAB is not established, a memorandum for the record signed by the USACE military district commander will document the rationale. This memorandum for the record shall be included in the Administrative Record.

9.12. At a FUDS property, the level of environmental restoration will be consistent with statutory and regulatory requirements. It is subject to restrictions placed on land use at the time of transfer from DoD control and may consider any land uses reasonably anticipated at the time of the remedy selection. DoD would not anticipate conducting further environmental restoration activities based solely on changes in land use initiated by current property owners that would be inconsistent with the previous remediation conducted by DoD or land use restrictions attached to the property.

10. COMMUNITY INVOLVEMENT

10.1. It is DoD policy to involve the local community in the environmental restoration process as early as possible and to seek continued community involvement throughout the environmental restoration process.

10.2. Each installation or FUDS will develop a Community Relations Plan defining the comprehensive stakeholder involvement program that will be implemented during the course of environmental restoration activities. A Community Relations Plan will also address the applicable requirements of EO 12898,

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). The installation shall ensure the scope of, and level of detail contained in, the Community Relations Plan is commensurate with the extent and duration of the environmental restoration activities. In this assessment, the installation shall ensure the CRP:

- 10.2.1. Meets the specific requirements for community involvement under the NCP;
 - 10.2.2. Reflects input gained through interviews with a sufficient number of persons to represent the diversity of the community;
 - 10.2.3. Provides analysis of the impacts of the environmental restoration activities on the community;
 - 10.2.4. Evaluates the degree and nature of community concerns or interest in the restoration activities;
 - 10.2.5. Identifies and considers environmental justice issues (i.e., issues associated with minority and economically disadvantaged populations) in the community surrounding the installation or FUDS;
 - 10.2.6. Identifies appropriate and required mechanisms for disseminating information to the public (e.g., local media, public meetings, websites); and
 - 10.2.7. Contains strategies for providing opportunities for community participation in the program.
- 10.3. Each installation or FUDS shall designate a point of contact (POC) for environmental restoration activities. The POC shall be identified to the local community through appropriate means (e.g., a newspaper notice) and will serve as the entry point for community inquiries or comments. Installations shall also provide the community the name of a POC at the installation's or FUDS' Headquarters organization.
- 10.4. As required by CERCLA and the NCP, each installation or FUDS shall establish an Information Repository. The Information Repository provides the public with a single reference source for information about environmental restoration activities at an installation or FUDS. Because it is intended for use by the public, the Information Repository shall be at a location near the site, a location that is easily accessible to the public, and that will make the information available for inspection at times convenient to the public. The Information Repository shall, at a minimum, include a copy of the Administrative Record (the documents that form the basis or the selection of a response action) for the installation or FUDS as required under the NCP.²³ The Information Repository may also contain other documents pertinent to the activities at the installation or FUDS.
- 10.5. Information on environmental restoration activities shall be made available to the public in a timely manner using appropriate mechanisms for disseminating information to the public (e.g., local media, public meetings, websites). Such mechanisms shall be identified in the Community Relations Plan and used in a consistent manner. Draft Final versions of documents that are considered the equivalent of primary documents as defined in Federal Facility Agreements (FFAs) or other regulatory instruments shall be placed in Information Repositories at the same time that these documents are provided to regulatory agencies for review. The availability of these documents shall be announced to the public.²⁴

²³ Some contents of the centrally maintained Administrative Record need not be included in the Information Repository. Sampling and testing data, quality control and quality assurance documentation, chain of custody forms, guidance documents not generated specifically for the site, and publicly available technical literature not generated for the site are examples of the types of documents that an installation or FUDS need not include in the Information Repository, provided that the index to the Administrative Record indicates the location and availability of this information. Documents included in the confidential portion of the administrative record also need not be included in the Information Repository.

²⁴ Where there is litigation addressing environmental restoration activities, Component legal staff shall be consulted on the appropriate or required means for providing documents to the other party.

10.6. Stakeholders shall be given opportunity for involvement in updating the installation or FUDS Management Action Plan (MAP) or equivalent, except for updates to elements that include government cost estimates for future procurement actions.

10.7. Each installation or FUDS shall establish a Restoration Advisory Board (RAB) where there is sufficient and sustained community interest. A RAB fulfills the requirements of 10 USC §2705(c), which directs DoD to establish Technical Review Committees (TRC). Where TRCs or similar advisory groups already exist, the TRC or similar advisory group shall be considered for conversion to a RAB, provided there is sufficient and sustained interest within the community. Only one RAB or TRC will be recognized per installation. Where RABs are not formed initially, installations shall reassess community interest at least every 24 months. Where the reassessment finds sufficient and sustained community interest, the installation or FUDS shall establish a RAB. Where the reassessment does not find sufficient and sustained community interest in a RAB, the installation or FUDS shall document, in a memorandum for the record, the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation or FUDS.

10.7.1. The purpose of the RAB is to:

10.7.1.1. Act as a forum for the discussion and exchange of restoration program information between agencies and the community.

10.7.1.2. Provide an opportunity for RAB members to review progress and participate in a dialogue with the installation's decision makers. Installations shall consider the recommendations provided by the RAB, including advice given that represents the minority view of members. Because DoD does not intend for Federal Advisory Committee Act (FACA) requirements to apply to RABs, consensus is not a prerequisite for RAB recommendations. Each individual provides advice as an individual, not as a group.

10.7.2. Each RAB shall develop and formally document its operating procedures. These procedures shall include, at a minimum:

10.7.2.1. Clearly defined goals and objectives for the RAB;

10.7.2.2. Attendance requirements;

10.7.2.3. Development and approval procedures for the minutes of RAB meetings;

10.7.2.4. The meeting frequency and location;

10.7.2.5. Rules of Order;

10.7.2.6. The frequency and procedures for conducting training;

10.7.2.7. Procedures for selecting or replacing co-chairs and selecting, replacing, or adding other members;

10.7.2.8. Specifics on the size of the RAB membership and the periods for membership and co-chair length of service;

10.7.2.9. Methods for resolving disputes;

10.7.2.10. The process for reviewing and responding to public comments on issues being addressed by the RAB; and

10.7.2.11. Procedures for public participation in RAB activities.

10.7.3. In developing these operating procedures, the RAB must consider and incorporate the following:

10.7.3.1. The RAB must be comprised of representatives of the Component, members of the local community, and representatives from EPA, state regulatory agencies, tribal, or local governments, as appropriate. DoD shall ensure that members reflect the diverse interests within the community.

10.7.3.2. The RAB must be chaired jointly by a representative of the Component and the local community. The community co-chair will be selected by the community members serving on the RAB.

10.7.3.3. A RAB is not subject to the requirements of the FACA; however, all RAB meetings, correspondence, discussions and proceedings shall be conducted in public, and no member of the public will be denied access (unless there is cause for concern for the safety of those involved with the RAB meetings). Documents related to RAB proceedings or communications will be included in the Information Repository and the Administrative Record.

10.7.3.4. A RAB may only address issues associated with environmental restoration activities under the DERP. Environmental groups or advisory boards that address issues other than environmental restoration activities are not RABs.

10.7.3.5. Subject to the availability of funds, funds requested for environmental restoration activities that were appropriated to Components' ER or BRAC accounts or the ER-FUDS account may be used to provide administrative support to RABs. Such funds shall not be used to support the activities of environmental groups or advisory boards in addressing issues other than environmental restoration activities. The activities of the RAB and expenditures of such funds for administrative expenses shall be reported to ODUSD(I&E), at a minimum, on an annual basis. Appendix 5 provides examples of eligible and ineligible RAB expenses.

10.7.3.6. Each installation is required to report regularly on the status and impact of the RAB to the installation's or FUDS' environmental restoration program. The RAB should consider means to assist the installation with this reporting requirement.

10.7.4. An installation commander may adjourn a RAB when there is no longer a need for a RAB or when community interest in the RAB declines. In making such a decision, if environmental restoration activities are not complete, the installation commander shall ensure that the community involvement program detailed in the Community Relations Plan provides for continued effective stakeholder input.

10.7.4.1. RAB adjournment shall not be an independent, unilateral evaluation on the part of DoD. The installation commander shall discuss adjournment with regulators and the community as a whole before making a final decision.

10.7.4.1.1. If a decision to adjourn the RAB is made, the rationale for adjournment shall be formally documented and the community as a whole notified of the decision.

10.7.4.1.2. An installation may reestablish an adjourned RAB if there is sufficient and sustained community interest in doing so and there are environmental restoration activities still ongoing at the installation.

10.7.4.2. Where a RAB is adjourned and environmental restoration activities continue, the installation or FUDS shall reassess community interest at least every 24 months. Where the reassessment finds sufficient and sustained community interest, the installation or FUDS shall reestablish a RAB. Where the reassessment does not find sufficient and sustained community interest in reestablishing the RAB, the installation or FUDS shall document (in a memorandum for the record) the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation or FUDS.

10.7.5. Although installation commanders are expected to make every reasonable effort to ensure that a RAB performs its role as efficiently as possible, circumstances may prevent a RAB from operating

efficiently or fulfilling its intended purpose. When this occurs, the installation commander will make a concerted attempt to resolve the issues that impact the RAB's effectiveness. If unsuccessful, the installation commander may elect to dissolve the RAB. Where an installation commander elects to dissolve a RAB, the installation commander shall:

10.7.5.1. Ensure that the comprehensive stakeholder involvement program is providing sufficient opportunities for the community to provide input on environmental restoration activities.

10.7.5.2. Notify, through the command chain, the Component's Environmental Deputy Assistant Secretary (or equivalent) and ODUSD(I&E) of the status of the RAB, the specifics of the irreconcilable issues, and the intent to dissolve the RAB.

10.7.5.3. In consultation with EPA, state, tribal, or local government representatives, as appropriate, notify the RAB community co-chair and members in writing of the intent to dissolve the RAB and the reasons for doing so, and provide RAB members 30 days to respond in writing.

10.7.5.4. Consider RAB member responses, and in consultation with EPA, state, tribal, or local government representatives, as appropriate, determine the appropriate action.

10.7.5.4.1. If a decision is made to proceed with dissolution, notify the public of the proposal to dissolve the RAB and provide a 30-day public comment period on the proposal.

10.7.5.4.2. If the dissolved RAB will be reconstituted, provide details to the public of the process by which that will happen and provide a 30-day public comment period on the proposal.

10.7.5.5. At the conclusion of the public comment period, review public comments, consult with EPA, state, tribal, or local government representatives, as appropriate, and render a recommendation.

10.7.5.6. Notify the public of the recommendation, and forward all documentation to the Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval.

10.7.5.7. The Component's Environmental Deputy Assistant Secretary (or equivalent) shall notify ODUSD(I&E) of the decision to approve or disapprove the request to dissolve the RAB, and the rationale for that decision.

10.7.5.8. The installation commander shall notify the public of the approval or disapproval of the dissolution of a RAB through written notice to the RAB members and through publication of a notice in a local newspaper of general circulation.

10.8. Information on the activities of a RAB including, but not limited to, documenting the installation's efforts to survey community interest in forming a RAB, steps taken to establish a RAB where there is sustained community interest, how the RAB relates to the overall community involvement program, and steps taken to adjourn the RAB, shall be included in the Information Repository. To the extent that RAB input is considered in a decision regarding response activities, information about the RAB shall be included in the Administrative Record.

10.9. Technical Assistance for Public Participation (TAPP).

10.9.1. Opportunities for technical assistance through DoD's TAPP program shall be made available to community members of RABs or TRCs in accordance with 10 USC §2705(e) and the TAPP regulations found at 32 CFR Part 203. Community members of a RAB may request from an installation's commanding officer, or appropriate DoD official, technical assistance from private-sector sources. (See Appendix 6 for a list of eligible and ineligible TAPP activities.)

10.9.2. Only community members (not government members) of RABs and TRCs may ask for TAPP support on behalf of the community members of the RAB. Any request for TAPP must represent the wishes of the majority of the community members of the RAB/TRC, and the RAB/TRC must certify this to be true on the TAPP application (see Appendix 7). The RAB/TRC requesting assistance must be recognized by the Component.

10.9.3. TAPP Funding.

10.9.3.1. A TAPP will be funded from the appropriate Component ER or BRAC accounts or the ER-FUDS account. TAPP is categorized as a program administration cost. There is no guaranteed or automatic TAPP funding allocation per installation and no separate account.

10.9.3.2. TAPP funding may not exceed \$100,000 over the life of the restoration program at the installation. The limit for a single fiscal year is \$25,000, or 1 percent of the installation's total projected environmental restoration cost-to-complete, whichever is less.

10.9.3.3. Waivers to the \$100,000 total and \$25,000 annual funding limits may be approved by the Component's Environmental Deputy Assistant Secretary (or equivalent). Requests for waivers are initiated by the RAB/TRC community members and forwarded by endorsement with recommendations by the installation commander through the chain-of-command to the Component's Environmental Deputy Assistant Secretary (or equivalent).

10.9.4. In the event that a dispute arises concerning the approval of a TAPP request, the RAB/TRC community members may appeal DoD's decision. Appeals will be considered within the chain-of-command, and in general, will be resolved at the lowest possible level. The highest level of appeal will be at the Component's Environmental Deputy Assistant Secretary (or equivalent).

10.9.5. The fact that a community has received Technical Assistance Grants (TAG) or Technical Outreach Services to Communities (TOSC) from EPA does not preclude them from getting a TAPP award. These other sources of funds are, however, relevant considerations during the decision process.

10.9.6. Each RAB/TRC that receives a TAPP award must submit an annual TAPP Results Report to the installation. The installation will forward this report to the installation's Headquarters. This report will indicate:

10.9.6.1. The amount of TAPP funds obligated by fiscal year.

10.9.6.2. An evaluation for each project concerning whether the TAPP assisted the community in participating in the restoration program.

11. RELATIONSHIPS WITH OTHER GOVERNMENT AGENCIES

11.1. DoD is fully committed to the substantive involvement of EPA, appropriate current and prospective federal land managers, other appropriate federal agencies, states, and tribes, and the public throughout the environmental restoration process. Components responsible for environmental restoration activities shall take proactive steps to identify and address issues of concern to all stakeholders. These efforts have the overall goal of ensuring that decisions regarding environmental restoration activities reflect a broad spectrum of stakeholder input.

11.2. Pursuant to the delegation of certain Presidential authorities under CERCLA to the Secretary of Defense (delegated via EO 12580, *Superfund Implementation* (January 23, 1986) and EO 13016 *Superfund Amendments* (August 28, 1996)), DoD is the lead agency for environmental restoration activities under the DERP. Per DoDI 4715.7, the Secretaries of the Military Services have been further delegated these authorities (subject to the concurrent authority of the Under Secretary of Defense, Acquisition, Technology, and Logistics (USD(AT&L)) and the DUSD(I&E)) to execute the DERP. In the exercise of this authority and responsibility, Components shall:

**DOD GUIDANCE ON IMPROVING PUBLIC
INVOLVEMENT IN ENVIRONMENTAL
CLEANUP AT CLOSING BASES**

I. PURPOSE

This guidance implements the President's plan to expedite the closure and reuse of closing military bases. This guidance directs the Components to involve the community near a closing base in the cleanup program by making information available, providing opportunities for comment, and establishing and seeking public participation on a Restoration Advisory Board (RAB).

II. APPLICABILITY AND SCOPE

This guidance applies to all Department of Defense (DoD) bases being closed or realigned pursuant to the Base Closure and Realignment Act of 1988 (P.L. 100-526) (BRAC 88) or the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510) (BRAC 91, 93 and 95) and where property will be available for transfer to the community. The policy explains DoD intent in establishment of RABs, fundamental responsibilities of the RAB, and procedures for the RAB.

III. POLICY

It is DoD policy to:

- A. Be open, cooperative and forthright with the public concerning environmental cleanup activities and to make information on program activities available in a timely manner.
- B. Provide opportunities for and encourage public comment on documents and proposed activities and to be responsive to comments.
- C. Establish a RAB at closing and realigning bases where property will be available for transfer to the community. The RAB will work in partnership with the Base Realignment and Closure (BRAC) Cleanup Team (BCT) on cleanup issues and related matters. Through the RAB, stakeholders may review progress and provide input to the decision making process. BRAC installations not transferring property to the community should follow the same guidelines for establishing RABs as operational bases.

IV. PROCEDURES AND RESPONSIBILITIES

A. PROCEDURES

1. A RAB will be established at each closing and realigning base where property will be available for transfer to the community. The RAB will:
 - a. be comprised of DoD Component, United States Environmental Protection Agency (EPA) and state representatives and members of the local community;
 - b. be jointly chaired by a DoD Component representative (the BRAC Environmental Coordinator [BEC]) and a member of the local community;
 - c. meet the requirements of 10 USC Section 2705 (c), Department of Defense Environmental Restoration Program, which directs DoD to establish Technical Review Committees (TRC). Where TRCs or other similar groups already exist, they shall be expanded or modified to become RABs, rather than creating a separate committee.

3. Ensuring DoD Base Transition Coordinators (BTC) and BRAC Environmental Coordinators (BEC) are involved in the NEPA analysis process for their installations.
4. Establishing adequate procedures to provide information on the NEPA analysis process and actions so as to permit meaningful community and public participation in the process.

2. The DoD Components will seek to include on the RAB members who reflect diverse interests within the community (e.g. the Local Redevelopment Authority, representatives of citizen, environmental and public interest groups; local government and individual community members). The membership selection process will be conducted in a fair and open manner, ideally by a community selection panel. The DoD Components should accept the panels nominations unless it determines that the nominees would not reflect the full range of views within the community.
3. A point-of-contact for cleanup information shall be identified at the installation level (normally the BEC). A second point-of-contact (e.g., at higher headquarters) to resolve problems in obtaining information shall also be identified.
4. Information on cleanup activities, such as draft and final technical documents, proposed and final plans, status reports, etc., will be provided to the RAB and made available to the public in a timely manner. Public comments will be actively solicited and considered before documents are finalized.
5. Vehicles for disseminating information such as public meetings, bulletins, and central repositories shall be identified and used consistently.

B. RESPONSIBILITIES

1. The DoD Components shall:
 - a. Ensure that the policies stated in this memorandum are implemented by their respective organizations;
 - b. Ensure that administrative support is available to establish RABs and conduct public outreach;
 - c. Conduct oversight of public outreach activities.
 - d. Ensure that:
 - i. community relations plans are developed or revised to reflect these policies;
 - ii. RABs are established expeditiously and that their inputs are fully considered in decision making in the cleanup program; and
 - iii. installation public affairs staff are involved in public outreach activities of the cleanup program.
2. The RAB will:
 - a. act as a forum for discussion and exchange of cleanup information between Government agencies and the public;
 - b. conduct regular meetings, open to the public, at convenient times;
 - c. keep meeting minutes and make them available to the public;
 - d. develop and maintain a mailing list of names and addresses of stakeholders who wish to receive information on the cleanup program;
 - e. review and evaluate documents;

Guidance and Policies on Fast Track Cleanup at Closing Installations

- f. identify project requirements;
- g. recommend priorities among sites or projects;
- h. identify applicable standards and, consistent with Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), propose remedies consistent with planned land use.



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.

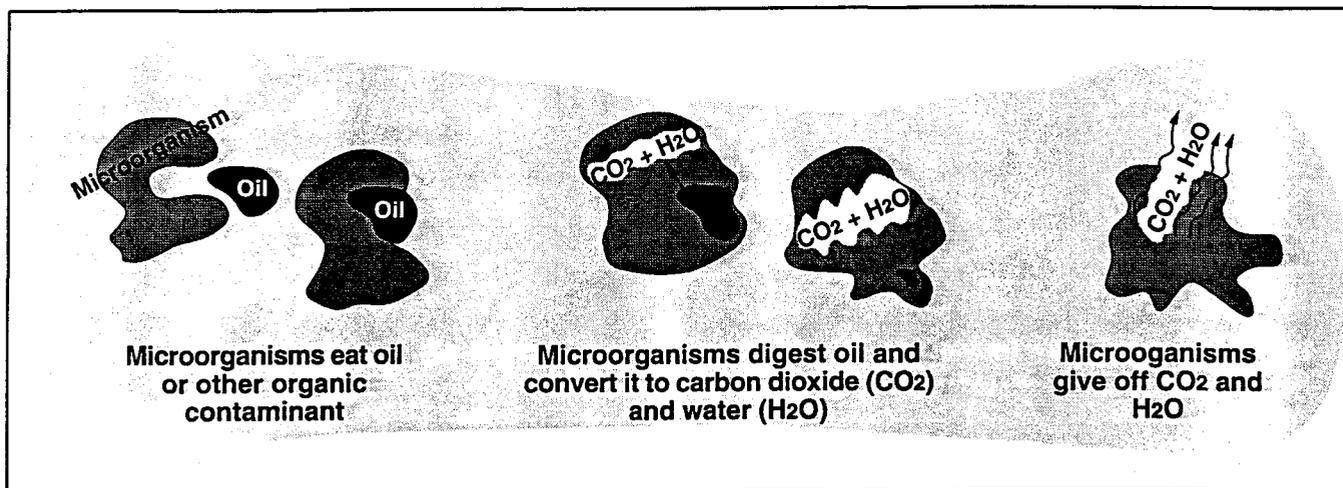
Natural attenuation processes may reduce contaminant mass (through destructive processes such as **biodegradation** and chemical transformations); reduce contaminant concentrations (through simple **dilution** or **dispersion**); or bind contaminants to soil particles so the contamination does not spread 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 ($\mu\text{g/L}$), but by the time the plume reached the shore of Lake Michigan, the TCE was one thousand times less—only $200\mu\text{g/L}$. 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.

NOTICE: This fact sheet is intended solely as general guidance and information. It is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States. The Agency also reserves the right to change this guidance at any time without public notice.

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?

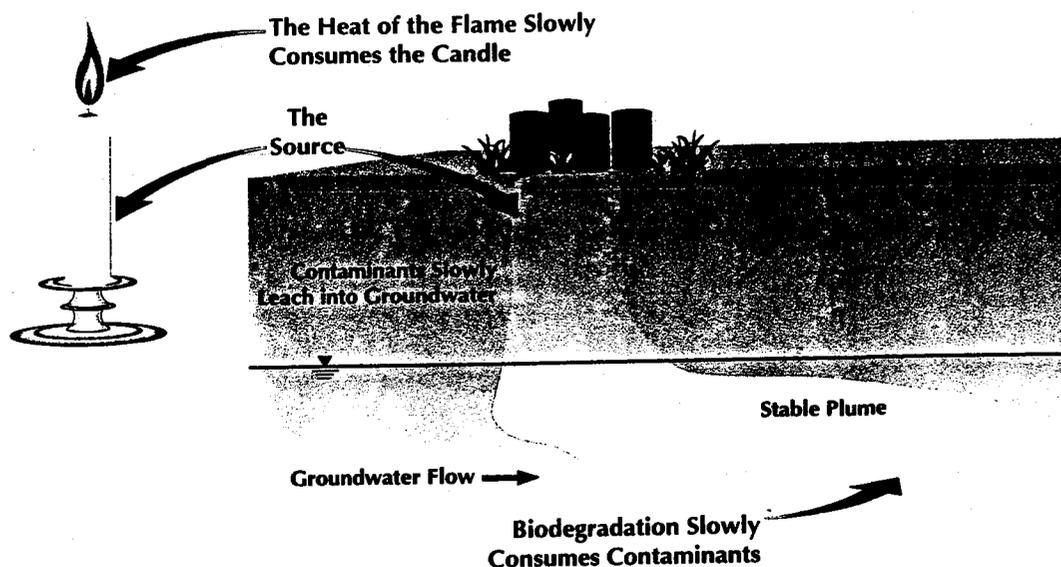
Natural attenuation is recognized by the EPA as a viable method of remediation for soil and groundwater that can be evaluated and compared to other methods of achieving site remediation as a part of the remedy selection process. The selection of natural attenuation as a component of any site remedy should 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.



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

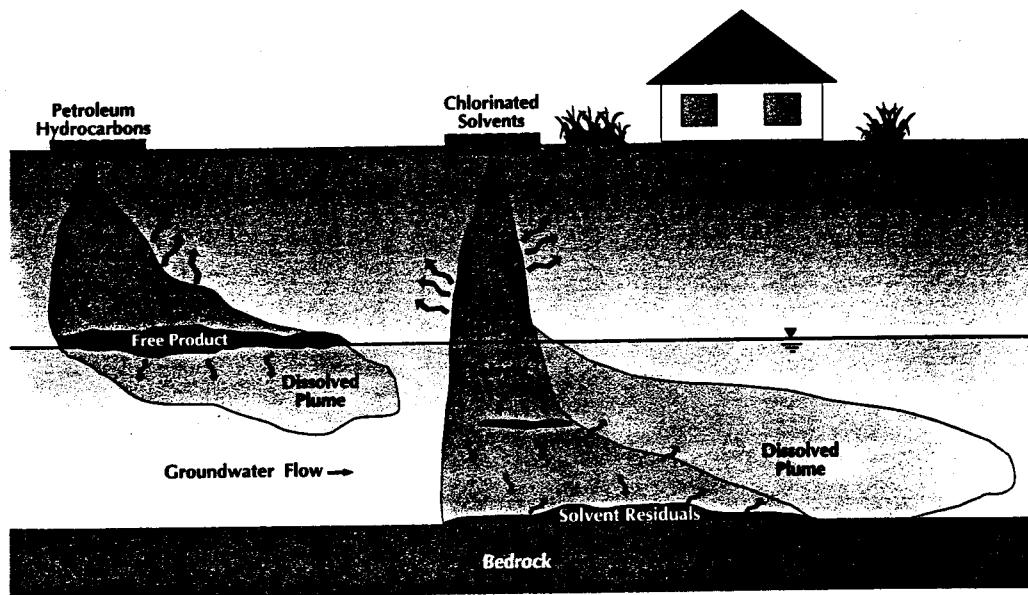
Natural attenuation is sometimes mislabeled as the "do nothing" or "walk away" approach to site cleanup. The truth is that natural attenuation is a proactive approach that focuses on the verification and monitoring of natural remediation processes rather than relying totally on "engineered" processes.

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.

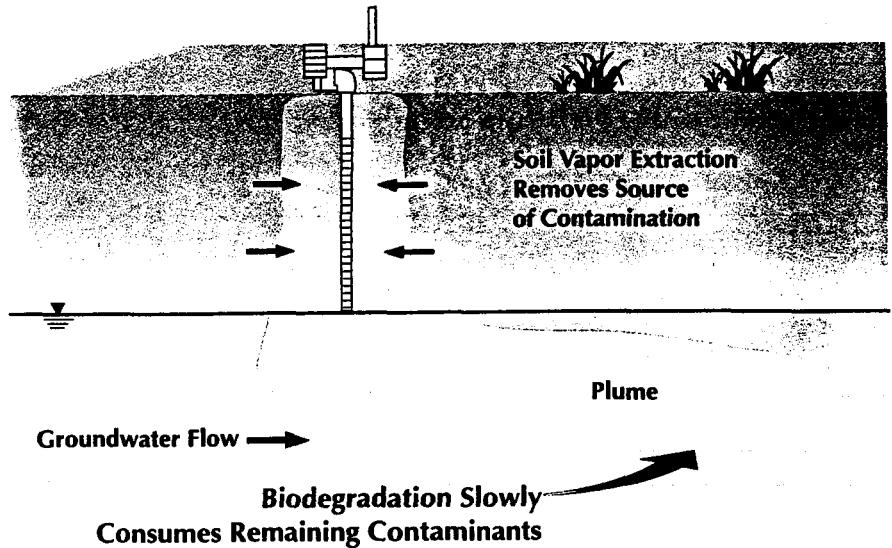
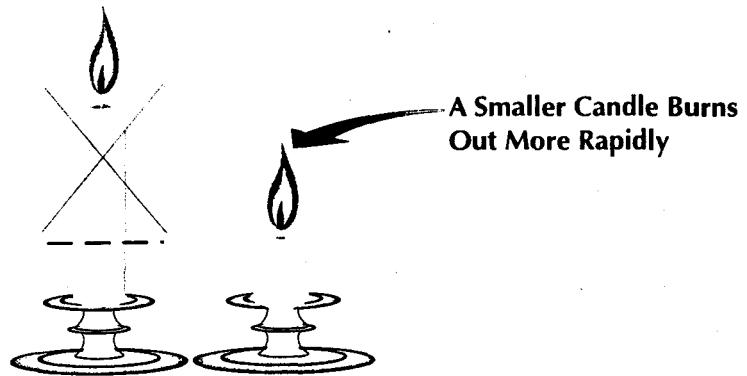
Potential Limitations

- 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 reasonable 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>





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.

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.

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.

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.



Perchlorate Update

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.

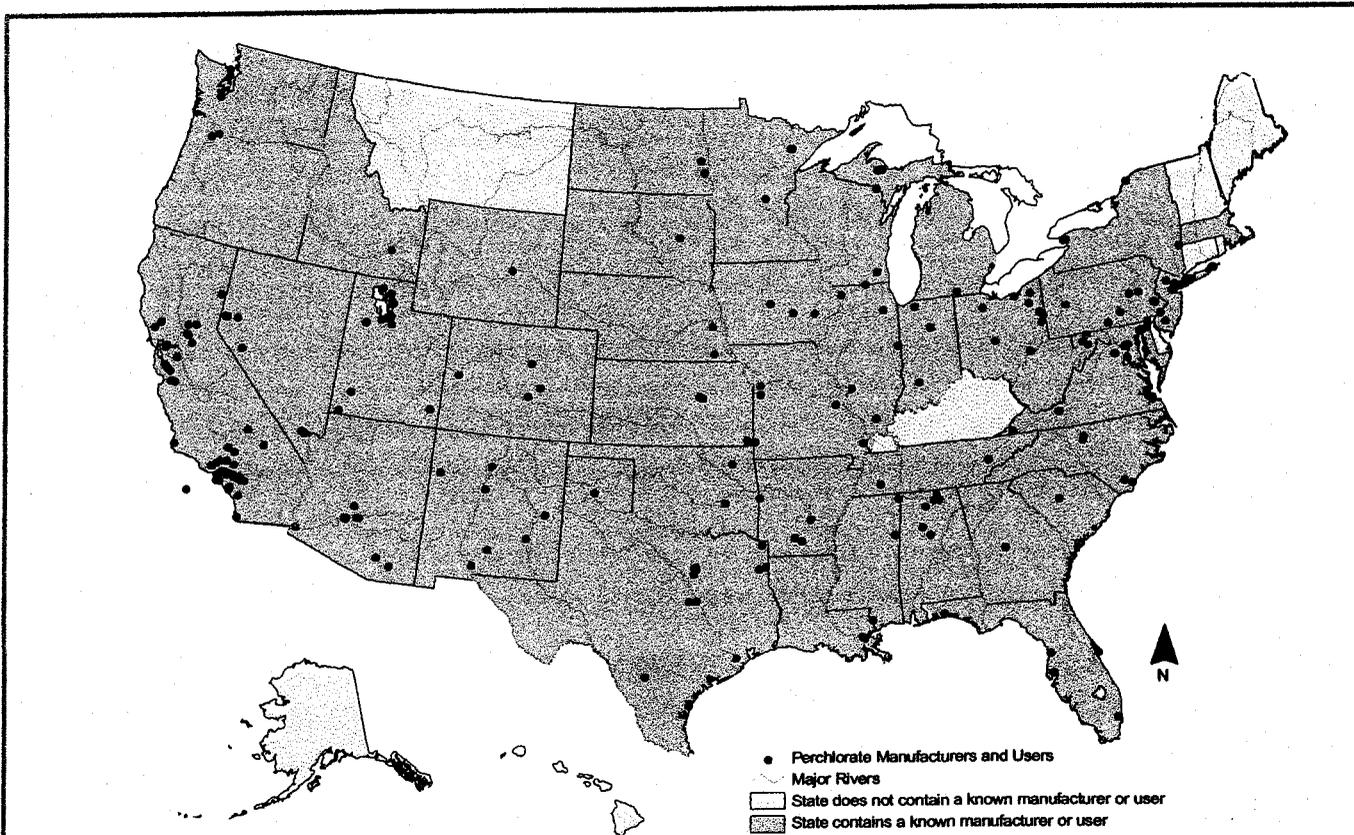


Figure 1: U.S. Perchlorate Manufacturers and Users, as of October 2001

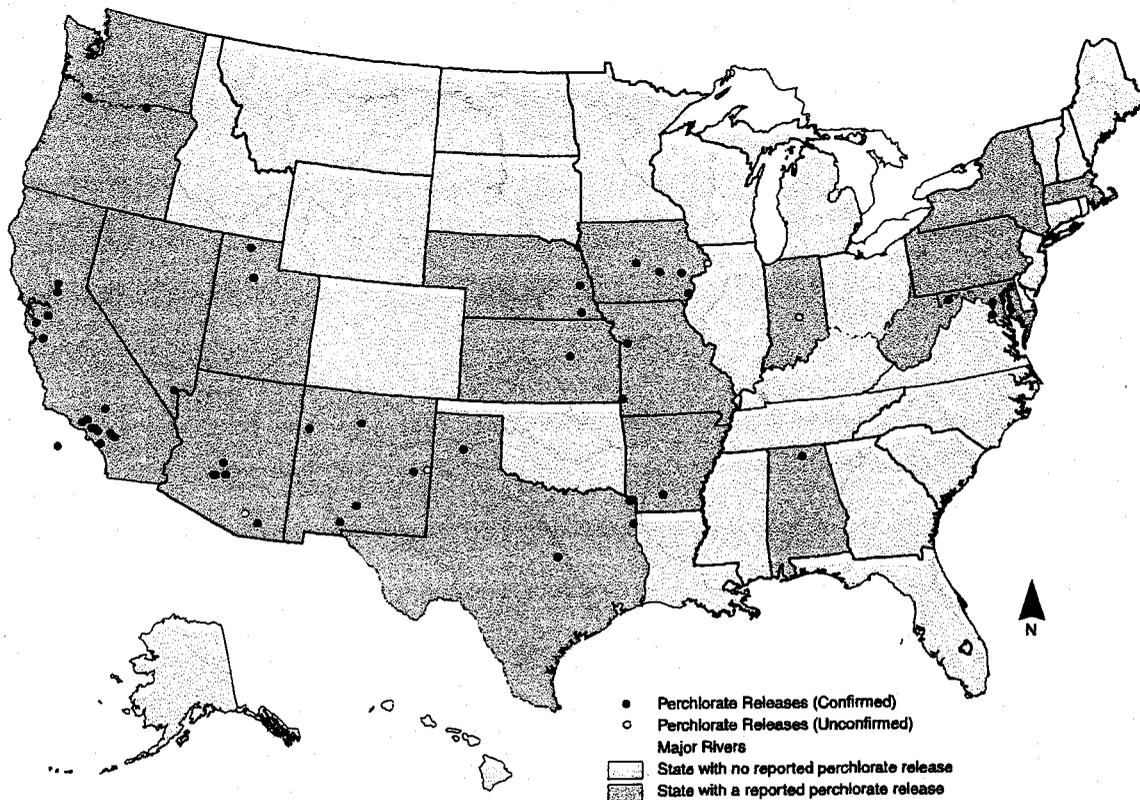


Figure 2: Reported Releases of Perchlorate into the Environment, as of November 2001

For more information

U.S. Environmental Protection Agency Contacts

Direct health and risk assessment questions to:
Annie Jarabek
National Center for Environmental Assessment
Office of Research and Development
(919) 541-4847

Direct questions about occurrence to:
Kevin Mayer
Region 9 Remedial Project Manager
Superfund Division
(415) 972-3176

Direct questions about treatment technology to:
Wayne Praskins
Region 9 Superfund Division
San Gabriel Valley treatment studies
(415) 972-3181

Direct questions about regulatory issues to:
David Huber
Office of Ground Water and Drinking Water
(202) 564-4878

Direct questions about the Integrated Risk Information
System (IRIS) to:
Amy Mills
National Center for Environmental Assessment
Office of Research and Development
(202) 564-3204

During the peer review and in regard to Region 9
Direct press inquiries to:
Lisa Fasano
Region 9 Office of Public Affairs
(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:
Wenona Wilson
Region 9 Community Involvement Coordinator
Superfund Division
(415) 972-3239
(800) 231-3075



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

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PROGRESS ON PERCHLORATE TOXICITY ASSESSMENT AND REGULATION December 2002

FEDERAL ACTIONS

Scientific Assessment - Toxicology

EPA is on schedule to finalize the science-based assessment of perchlorate toxicity by Spring, 2003. In March, 2002, EPA sponsored a scientific peer review of the draft toxicity assessment for perchlorate. In a public meeting in Sacramento, the 17 non-EPA scientists critiqued EPA's estimate of a safe level for perchlorate equivalent to **1 ppb** in drinking water. Their report was published on EPA's website in June and was generally supportive of EPA's approach. EPA considered the comments of the panel and the public in preparation of a final draft, planned for internal-EPA review in early 2003 with a public release in the Spring of 2003.

Health Advisory for Drinking Water

The next step is expected to be a Health Advisory from EPA's Office of Water within a year of the final toxicity assessment. The Office of Water interprets the Toxicity Assessment to determine a concentration that would be health-protective in public water supply. Although neither the Toxicity Assessment nor the Health Advisory are enforceable standards, they provide a solid nationwide basis for management decisions at federal and non-federal sites.

Enforceable Drinking Water Standard

An enforceable drinking water standard for perchlorate involves several years of public and scientific review of the many factors involved in establishing a federal regulation. Much of the information gathering has already begun, including adding perchlorate to the nationwide Unregulated Contaminant Monitoring Rule to estimate the extent of perchlorate contamination in the nation's water supply. EPA has not yet made a decision to proceed with a formal drinking water standard.

Site Specific Standards

EPA has established formal enforceable levels for perchlorate cleanup at **4 ppb** or less on a site-specific basis at three Superfund sites, including two in California.

CALIFORNIA and OTHER STATES

Public Health Goal, a Scientific Assessment

In September, 2002, the Governor of California signed legislation requiring California EPA to establish a science-based Public Health Goal (PHG) for perchlorate in drinking water. Cal EPA published a draft PHG of **6 ppb** in March 2002, and a revised draft recommending a range of **2 to 6 ppb** was released in November, 2002. Cal EPA is primarily relying on a human clinical study while U.S. EPA uses both human and tightly-controlled lab animal studies.

A successful lawsuit by Kerr-McGee and Lockheed Martin resulted in a ruling requiring another peer review. The state estimates that their PHG could be final in June 2003, approximately six months later than the legislative schedule.

The California PHG is specific to drinking water, compared to the federal process in which the toxicology is assessed by scientists in the Office of Research and Development and a drinking water concentration is calculated by the Office of Water.

Enforceable Drinking Water Standard

California will be the first state with an enforceable regulatory standard for perchlorate. The legislation mandating the PHG also required the adoption of a primary drinking water standard by California Department of Health Services. The primary drinking water standard may also be delayed from the January, 2004, date set by the legislature. California currently has a non-enforceable Action Level of **4 ppb**.

Other States and Tribes

States, Tribes and local agencies are using draft toxicity assessments to make management decisions. Eight states have some perchlorate advisory level ranging from **1 ppb** (MA, MD, NM) to **18 ppb** (NV). Some California Tribal governments have considered levels **below 1 ppb**, due to significant tribal thyroid health problems.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 22, 2003

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Status of EPA's Interim Assessment Guidance for Perchlorate.

FROM: Marianne Lamont Horinko
Assistant Administrator

Ma L. H.

TO: Assistant Administrators
Regional Administrators

The purpose of this memorandum is to provide information concerning the status of the interim assessment guidance for perchlorate originally transmitted on June 18, 1999 (the "1999 Interim Guidance"), a copy of which is attached to this memorandum for your information. This memorandum was developed in response to requests from EPA Programs, Regions and individual states for a clarification concerning the Agency's guidance in light of more recent assessment activities. Today, as an interim measure and in the absence of a finalized oral health risk benchmark for perchlorate, we are reaffirming the 1999 interim guidance. The 1999 interim guidance may be replaced upon finalization of the 2002 Draft Assessment referred to below.

Background

The US EPA has been working with states, federal agencies, tribes, water suppliers and the private sector for several years to address perchlorate as an environmental contaminant. Ammonium perchlorate, a component of, among other things, solid rocket fuel, fireworks, air bags and some fertilizers, is a widespread environmental contaminant. In 1998, EPA released an assessment of ammonium perchlorate which was then subject to peer review in 1999. The external review draft of the revised document, entitled, "Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization" (the "2002 Draft Assessment") responds to those recommendations emanating from the peer review.

The development of the 2002 Draft Assessment and the risk characterization activities have been subject to review by the working partnership of the Interagency Perchlorate Steering Committee ("IPSC"), which is co-chaired by the US EPA and the Department of Defense, and comprised of representatives from more than 23 state, federal and tribal agencies. On January 18, 2002, the 2002 Draft Assessment was made available for a 77-day public comment period. An external scientific peer review workshop, open to the public, was held in Sacramento, CA, on March 5 and 6, 2002 to review the 2002 Draft Assessment and provide comments. These

comments are in the process of being addressed, and, over the next few months, the revised 2002 Draft Assessment document, including a recommendation for an RfD, will undergo further, focused review to address remaining issues and uncertainties. Once these issues have been addressed, the document will be finalized and prepared for entry onto the Agency's repository of consensus risk information, the Integrated Risk Information System ("TRIS"). At that time, we will consider the need for further guidance on this issue.

1999 Interim Guidance

On June 18, 1999, because of significant concerns and uncertainties that needed to be addressed in order to finalize a human health oral risk benchmark for perchlorate, the Office of Research and Development ("ORD") released the 1999 Interim Guidance. That guidance recommended that Agency risk assessors and risk managers continue to use the standing provisional reference dose ("RfD") range of 0.0001 to 0.0005 mg/kg-day for perchlorate-related assessment activities. This range was originally issued by ORD's National Center for Environmental Assessment ("NCEA") Superfund Technical Support Center based on assessments completed in 1992 and revised in 1995. In the 1999 Interim Guidance, ORD stated, "If federal, state or local environmental authorities decided to pursue site-specific clean-up or other water management decisions based on this RfD range by applying the standard default body weight (70 kg) and water consumption level (2L/day), the resulting provisional clean-up levels or action levels would range from 4-18 parts per billion ("ppb")."

In the absence of a finalized oral health risk benchmark for perchlorate, but in light of ongoing assessment activities by EPA, states and other interested parties, we are re-affirming this guidance with an added suggestion to carefully consider the low end of the provisional 4-18 ppb range. The 1999 Interim Guidance remains the applicable guidance until supplanted by new guidance based on a finalized risk assessment.¹

The uptake and elimination kinetics of perchlorate for children are such that traditional adjustment of exposure based on body weight scaling results in exposure estimates equivalent to those for adults. Concern for increased susceptibility of exposures throughout lifetime are addressed by the uncertainty factors used in arriving at the health risk benchmark. For these reasons, with respect to both a new oral health risk benchmark and the existing provisional clean up range of 4-18 ppb set out in the 1999 Interim Guidance no additional adjustment for childhood exposure is necessary.

Because of the complexity of the issues surrounding this assessment, Programs, Regions and states are encouraged to consult with ORD on the status of the emerging science and the progress toward finalizing an oral health benchmark value. Similarly, because of the complexity

¹The suggestion to carefully consider the low end of the 4-18 ppb range is based on the fact that recent analyses carried out by EPA and independently by the State of California suggest that a new oral health risk benchmark for perchlorate is likely to suggest provisional clean-up levels within or slightly below the 1999 Interim Guidance range. Because pregnant women and the fetus in utero are the most sensitive populations of concern for perchlorate toxicity in these recent analyses, the standard default adult body weight and water consumption values would be applied in converting a new RfD to provisional clean-up levels in ppb.

of the issues surrounding analytical methods and available treatment technologies as outlined below, and because questions may arise as to the application of this guidance for site specific decision-making, Programs, Regions and States are encouraged to consult with Office of Solid Waste and Emergency Response ("OSWER") on these issues.

Regulatory Implications

The Office of Water ("OW") will use the RfD as a starting point for a rulemaking process under the Safe Drinking Water Act ("SDWA"). Before initiating that process, the statute requires that the Administrator make a determination that the regulation of perchlorate would represent a "meaningful opportunity for health risk reduction". As discussed below, EPA is gathering the necessary data to assess the exposure to perchlorate in public drinking water systems. No later than the spring of 2004, we anticipate data will be available to enable the Administrator to make such a determination. In the interim, prior to a determination whether to proceed with a rulemaking, the Office of Water may issue a Health Advisory (HA), an estimate of acceptable drinking water levels of a contaminant. It is not a legally enforceable standard but serves as guidance to Federal, State and local officials. A Health Advisory may be issued within six months of a final RfD.

By itself, an RfD does not determine the level of the an enforceable standard, but is the foundation for determining the public health target, the maximum contaminant level goal ("MCLG"). The MCLG represents a public health goal specifically set at a level of no known or anticipated adverse health effects with an adequate margin of safety. The SDWA then requires the Maximum Contaminant Level ("MCL") to be set as close to the MCLG as is technically feasible, taking cost and other factors into consideration. By requiring consideration of these additional feasibility factors, Congress specifically recognized that the MCL may not be as stringent as the MCLG. As part of Development of an MCL the Agency will also need to evaluate whether there are other sources of perchlorate exposure in addition to drinking water. The RfD represents a scientific estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to a human population including sensitive subgroups which is likely to be without appreciable risk of adverse health effects. It does not represent a "bright-line" between safety and risk. Because of the use of uncertainty factors in deriving the RfD so as not to underestimate the "safe" level, the specific level at which actual risk from exposure begins above the RfD cannot be precisely calculated.

While an RfD addresses the issue of protection from adverse health impacts, EPA must also gather occurrence data at public water systems, evaluate the availability and cost of treatment technology and, finally, assure that analytical methods are available for a range of different water matrices to measure perchlorate at whatever the ultimate MCL level may be. Simultaneous with development of a revised risk assessment, the Agency has been gathering and developing information to address each of these additional factors.

If the Agency decides to regulate perchlorate, the Agency has 24 months to propose an MCLG and an MCL. Within 18 to 27 months after the proposal, EPA must publish a final rulemaking.

In the area of occurrence, perchlorate is being monitored under the Unregulated Contaminant Monitoring Rule ("UCMR") at all large water systems and a statistical sample of small systems. Data is also being gathered by the USGS, by States, and through several large research projects. The combined results of these efforts together with related data analysis is expected in the Spring of 2004.

With regard to analytical methods, OW is revising the methodology for EPA method 314.0 which will be more definitive for perchlorate and yield results in the sub-ppb range by isolating it from the matrix interferences, and avoiding possible resin contamination which might yield false positives. In addition, OW and ORD are collaborating on a method coupling ion chromatography and mass spectrometry to achieve reliable results, again below 1 ppb. Results are expected in late 2003.

Finally with respect to evaluating available technology, a number of bench and pilot scale research efforts are underway to develop and refine treatment technologies for perchlorate. Ion exchange and biological treatment appear to be the most promising candidates at the moment. There are systems currently operative in California that use an ion exchange technology. Questions remain with respect to the performance of these technologies in different source waters with competing ions, microbial sensitivity, method for waste brine disposal or destruction for IX, and acceptability of using bacterial reduction of perchlorate for drinking water. For more information on available treatment strategies, you can consult <http://clu.in.org/perchlorate>, a web page maintained by OSWER's Technology Innovation Office.

Cleanup Decisions at CERCLA and RCRA Sites

Although EPA's waste programs implement cleanups through several different authorities, they have the goal of operating within a "one-cleanup program" concept. Where different programs face the same environmental problem, we should strive for consistent technical approaches. Thus, as a general matter, we expect the regions, under CERCLA and RCRA, to take similar approaches in assessing risks from perchlorate in groundwater and in determining appropriate cleanup levels. Regardless of the authority under which perchlorate is addressed, the risks are the same. The guidance in this memorandum, therefore, is applicable to all OSWER programs.

Specifically, perchlorate has been found in groundwater at numerous facilities around the country where, for example, rocket propellants and explosives have been handled. Therefore, we encourage the regions to consider during the site assessment and characterization phase, the likelihood that perchlorate may be present at facilities that manufactured, tested, or disposed of solid rocket propellant, fireworks, flares, or other such materials commonly associated with perchlorate. We also recommend that CERCLA five-year reviews and standard RCRA



PERCHLORATE



Kevin Mayer - U.S. EPA, Region 9

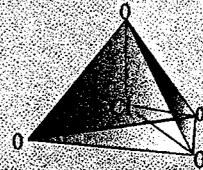
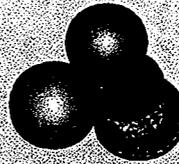
What is Perchlorate - Chemistry & Uses
 Brief History of Environmental Concern
 Toxicity
 Regulatory Status

Perchlorate CHEMISTRY



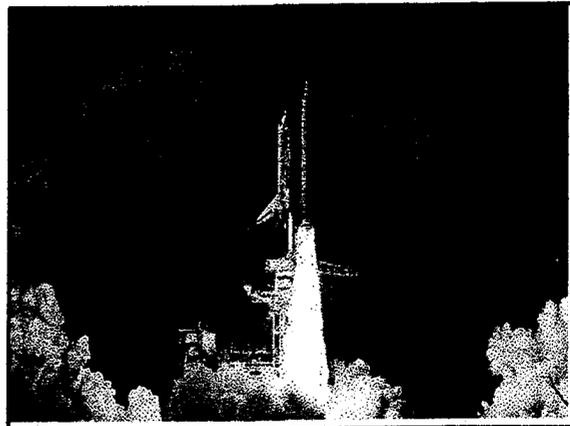
Highly Oxidized Chlorine, ClO_4^-
 Dissociated Salt, Anion, in Water
 Highly Soluble, Mobile, Stable
 Difficult to Detect, Difficult to Treat
 Standard Ion Chromatography Method
 - Detection > 400 ppb
 - CA method to 4 ppb by March 1997

PERCHLORATE



USES of PERCHLORATE

90% used as Solid Rocket Fuel Oxidizer
 Explosives
 Fireworks and Pyrotechnics
 Reported in Nitrate Fertilizer from Chile



PERCHLORATE HISTORY Before 1997

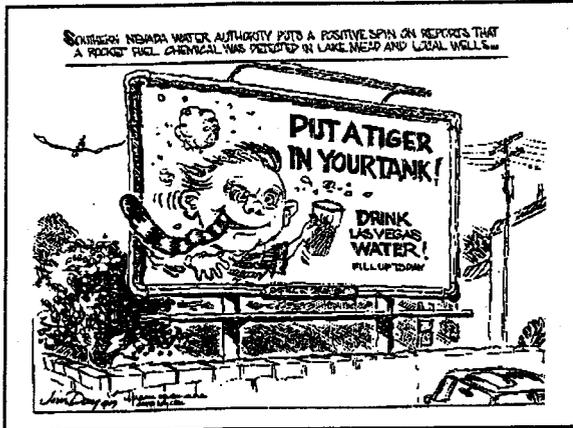
- 1980s - Aware of Perchlorate in CA and NV
- 1985-86 - San Gabriel Valley Superfund Site
- 1990s - Rancho Cordova (Aerojet) ppm
- 1992 and 1995 - Provisional Reference Dose
- 1997 - Analytical Breakthrough to 4 ppb



Agency for Toxic Substances and Disease Registry - ATSDR (January 21, 1986):

"...Given the proprietary nature of the laboratory method for quantification and the poor quality assurance results noted, the data do not prove that perchlorate ion has actually been found. If the presence of perchlorate ion is confirmed, the scientific database on this ion is insufficient to generate either an acute or longer-term health advisory for drinking water."

"... The minimal acute toxicity data available suggest that one or two ppm perchlorate ion would not represent an immediately acute and substantial threat to the public health. The ATSDR does not consider this level to be "safe" in the absence of experimental data."



Perchlorate TOXICOLOGY Before 1997

Thyroid Disruption (Iodide Mimic)

Human Drug Tests in 1950's

EPA Provisional Reference Dose 1992 / 95
Range of 4 to 18 ppb in Drinking Water

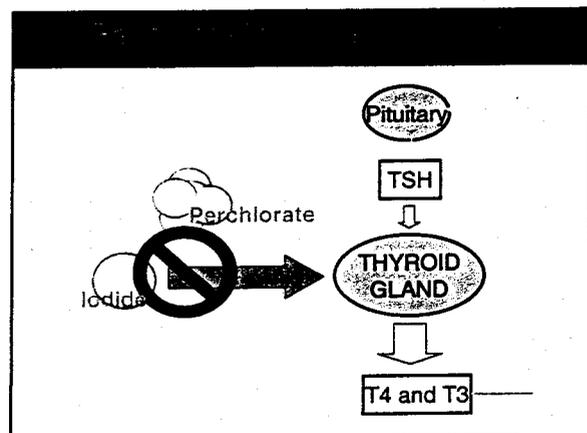
Children's Health and Chronic Effects
Not Addressed

High Uncertainties



Perchlorate TOXICOLOGY Before 1997

- Dispute over "Uncertainty Factors" and Pharmacology "Study Design"
- Air Force and Industry Sponsors Over \$10M of Animal Studies since 1997
- EPA interprets the Data Toxicity Assessment



Toxicology EPA Interpretations



Mechanistic "Mode of Action" analysis:
Perchlorate Blocks Iodide Uptake to Thyroid

Harmonized Cancer and Non-Cancer

Changes in Thyroids of Rat Pups
- Possibly Permanent Neuro-developmental

Dispute whether Effects were Adverse

Toxicology EPA Interpretations

From January 2002 Draft



Draft Reference Dose of 0.00003 mg/kg-day

Adult DW Exposure = 1 ppb

Effects in rat pups after dosing mothers

Ecological Risks not Clear

Other Routes of Exposure? Food?

What is a REFERENCE DOSE (RfD)?



Science Based Only, Not a Regulation

DOSE is mg chemical per kg body wt. / day

$$\text{RfD} = \frac{\text{Experimental Minimum}}{\text{Uncertainty Factors}}$$

Toxicology EPA Interpretations

From January 2002 Draft



Uncertainty Factors total 300-fold
(Order of Magnitude=10 or ½ O.M. = 3)

<u>Lowest Observed Adverse Effect Level</u>	10X
Sensitive Subpopulations (Intraspecies)	3X
Duration (Lifetime exposures?)	3X
Data Deficiencies (Immunotox.?)	3X
Interspecies (Animal-Human)	1X

This is NOT a very large Uncertainty Factor

PERCHLORATE SHIPMENTS

Primarily Manufacturer's Information

Over 220 facilities

40+ States

Most Information in Last 20 Years



States with Perchlorate Manufacturers or Users

PERCHLORATE in the ENVIRONMENT



RELEASES REPORTED IN 22 STATES

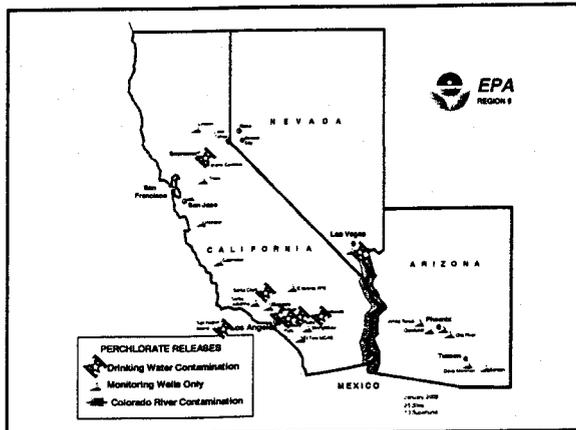
Alabama, Arizona, Arkansas, Colorado, Iowa, Kansas, Maryland, Missouri, Massachusetts, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, Texas, Utah, Virginia, Washington, West Virginia

CALIFORNIA

Over 4500 Water Supply Wells Tested
Detected in 284 sources, 49 Wells over 18 ppb



States with Environmental Releases of Perchlorate



Regulatory Authority



Not a Federally "Listed" Chemical (SDWA, RCRA, CERCLA)

No Hazardous Material Designation

Contaminant Candidate List (UCMR)

Possible EPA Health Advisory (OGWDW)

State Action Levels

May Lead to Drinking Water Standards

States and Tribes May Set Standards

State "Advisories"



California - 4 ppb

New York 5 ppb and 18 ppb

Texas 4 ppb, 7 ppb or 10 ppb

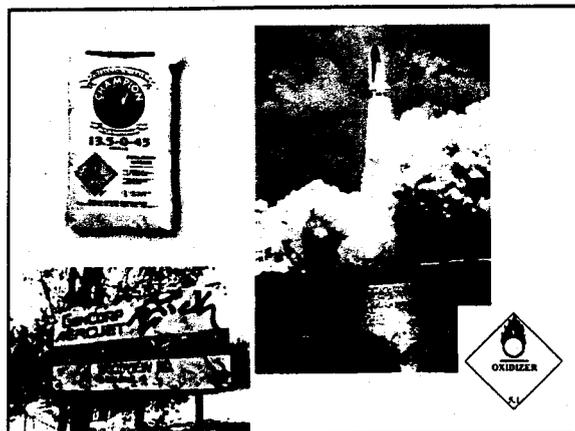
Arizona 14 ppb

Massachusetts 1 ppb

Maryland 1 ppb

New Mexico 1 ppb

Nevada 18 ppb



**MCAS EL TORO
RAB MEETING**

Site 11

Transformer Storage Area

Update

January 29, 2003

Presented By

Karnig Ohannessian- SWDIV
Crispin Wanyoike -Earth Tech Inc

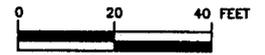
Site 11 Update

• BACKGROUND

- Located on the northeast side of Building 369 in the southwestern quadrant of former MCAS El Toro
- Used in the past (~1968 to 1983) as a maintenance and storage yard for transformers
- Flat site covered with gravel, concrete, and asphalt pavement
- Site consists of three units
 - Unit 1 – a concrete pad and a 3-foot-wide strip of ground adjacent to it
 - Unit 2 – an asphalt-lined drainage ditch
 - Unit 3 – the remainder of the fenced, unpaved storage yard

LEGEND

-  ROAD
-  STREAM WASH
-  IRP SITE
-  MCAS EL TORO BOUNDARY



SCALE: 1" = 40'

Site 11 Location Map

Date: 12-02	Former MCAS El Toro
Project No. 29307	EARTH TECH <small>A tyco INTERNATIONAL LTD. COMPANY</small>

530

UNIT 3
STORAGE
YARD

1595

UNIT 2
DRAINAGE
DITCH

369

UNIT 1
CONCRETE
PAD EDGE

Site 11 Update

- **Phase II RI (1997)**
 - PCBs reported in shallow soil at Units 1 and 2 only
 - Pesticides reported in shallow soil at Units 1, 2, and 3
 - Contamination confined in top 4.5 feet
 - Groundwater (~100 ft) not threatened
 - Human health risk assessment conducted
 - **Units 1 and 2 recommended for further action to remove PCB-contaminated soil (133 cubic yards at Unit 1 and 100 cubic yards at Unit 2)**
 - **Unit 3 recommended for no further action**
 - Proposed Plan and public comment meeting (May 1999)
 - Draft Final ROD (September 1999)

Site 11 Update

- **Post ROD**
 - Draft Final ROD documented selection of soil removal at Units 1 and 2 as the site remedy.
 - Remedial Action Strategy document issued December 1999
 - Realized risk-based cleanup goals *could not be achieved*.
 - Requested use of EPA Region 9 PRGs as cleanup goals.
 - Agencies agreed an Explanation of Significant Differences (ESD) would be required if the cleanup goals were changed.

Site 11 Update

- **Need for Risk Reevaluation**
 - Since the Phase II RI was published, several exposure factors and toxicity indices for PCBs used to calculate risk were updated for the current EPA Region 9 Preliminary Remediation Goals (PRGs).
 - Four additional soil samples were collected at depths of 1.5 feet and 3.5 feet below ground surface and analyzed for PCBs and pesticides/herbicides.
 - PCBs and pesticides/herbicides were detected in the samples
 - Risk reevaluation was conducted in order to *incorporate EPA's new scientific data* on exposure factors and toxicity indices and to *incorporate additional field data*.

Site 11 Risk Reevaluation

- **What Was Different?**
 - Exposure factors
 - Toxicity indices
 - Concentrations
- **What Was Not?**
 - Level of protection
 - Exposure scenarios
 - Chemicals
 - Methodology
 - Receptors

Site 11 Risk Reevaluation Summary

Unit Number	Risk Reevaluation Reference	Excess Lifetime Cancer Risk (residential scenario)	Excess Lifetime Cancer Risk Drivers	Noncancer Risk (Hazard Index)	Noncancer Risk Drivers
1	Record of Decision (BNI 1999)	9 in 100,000	Aroclor 1260 (99%)	4.5	Aroclor 1260 (99%)
	Reevaluation of Risk (Earth Tech 2001)	10 in 1,000,000	Aroclor 1260 (99%)	2.49	Aroclor 1260 (>99%)
2	Record of Decision (BNI 1999)	6 in 1,000,000	Aroclor 1260 (99%)	0.3	—
	Reevaluation of Risk (Earth Tech 2001)	5 in 1,000,000	Aroclor 1260 (91%) Dieldrin (7%) Heptachlor (1%)	1.08	Aroclor 1260 (99%)
3	Record of Decision (BNI 1999)	3 in 10,000,000	—	0.017	—
	Reevaluation of Risk (Earth Tech 2001)	1 in 10,000,000	—	0.01	—

Site 11 Update

- **Risk Reevaluation Results**

- Updated risk calculations were generally *lower* than risk estimates presented in the RI report.
- Therefore, calculated site-specific risk-based concentrations were higher *while still achieving the same risk reduction*.
- Following discussions with regulatory agencies, a decision to continue to implement the remedial action at Units 1 and 2 was made.
- Evaluation of cleanup at these units will be based on the residual risk using updated risk parameters.

Site 11 Update

- **Explanation of Significant Differences (ESD)**
 - Required to document changes in the Record of Decision
 - Changes are “significant” but not “fundamental” per EPA guidance.
 - Cleanup goals have changed – prepare ESD
 - The overall cleanup approach has not changed – no ROD amendment
 - Remedial Action will still achieve specified level of protection.
 - Consistent with the methodology presented in the Site 11 ROD
 - Risk-based cleanup goals (RBCs) have been calculated for the primary constituents of concern and are *achievable*.

Site 11 Remedy

- | | |
|--|---|
| <ul style="list-style-type: none">• What is Changed?<ul style="list-style-type: none">– Cleanup goals | <ul style="list-style-type: none">• What is Unchanged?<ul style="list-style-type: none">– Level of protection– Regulatory compliance– Cleanup approach– Constituents– Cleanup time |
|--|---|

Site 11 Update

- **Schedules**

- ESD document is being developed to present the target cleanup goals and differences in the original and revised cleanup goals.
- ESD
 - BCT Review: February – May 2003
 - Public notice: July 2003
- Future work
 - Remedial Action Work Plan: February 2003 – September 2003
 - Remedial Action: September 2003 – December 2003
 - Remedial Action Report: March 2004

MCAS El Toro

Issue: What if New Contamination Found After Property Transfer?

Restoration Advisory Board Meeting

January 29, 2003

Andy Piszkin

Base Realignment and Closure (BRAC)

Environmental Coordinator

MCAS El Toro

Protections

- Section 120(h) under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
 - All necessary remedial actions to protect human health and the environment have been taken prior to transfer
- Section 330 of the Fiscal Year 1993 Defense Authorization Act
 - Indemnify transferees of closing Defense property from claims that result from the release or threatened release by DoD activities of hazardous substances or petroleum products
- All Federal deeds or transfer documents include a clause granting the United States access to the property in any case in which a response or corrective action is found to be necessary after the date of such transfer.
- Recent example: San Diego Naval Training Center

Subject: NEWS CLIP -- SAN DIEGO UNION-TRIBUNE "Dump site delays NTC construction"

Dump site delays NTC construction

Hazardous materials uncovered at 4-acre site

By Ronald W. Powell
STAFF WRITER

January 13, 2003

The discovery of a trash dump laced with hazardous materials at the former Naval Training Center has delayed construction of 140 town homes and prompted the city's developer to begin a multimillion-dollar cleanup of the site.

Executives at Corky McMillin Cos. said the material at the 4-acre site includes charred metal cans, rusted barrels, and broken china and glass.

McMillin's consultant, in an in-depth report to the county Department of Environmental Health, said its sampling "showed elevated levels of heavy metals and some asbestos," and lead.

"In addition to lead, other metals may also be present in burn ash at levels that could pose a risk to human health," the report from Geocon Consultants stated. "The other metals could include, but are not limited to, antimony, arsenic, chromium, copper, mercury and zinc."

Last month, the county approved a work plan to move at least 11,250 tons of the debris over Interstate 8 to an approved landfill in Arizona. Geocon said each truck will be loaded with about 20 tons of material, and at least 560 truckloads will be hauled away.

Cleanup of the NTC site, which may date to the 1920s or 1930s, could cost \$4 million to \$6 million and last about three months, said McMillin Vice President Walter Heiberg. Heiberg said workers from Harper Construction Co. will begin removing material this week.

After the debris is removed, the excavation site will be filled with clean dirt.

"We found it, and our intention is to fully clean it up," Heiberg said.

Michael D. Verneti, a supervisor in the county's Department of Environmental Health, said the contamination will be satisfactorily cleaned up if McMillin carries out its work plan. The county will examine the site after the work is completed.

McMillin cannot proceed with construction of the town homes without county approval of the contamination removal, Verneti said.

"I don't think it's that serious," Verneti said. "They've defined the boundaries and limits of it. I don't think the public will be at risk if they did satisfactory testing."

Verneti said the county did not do independent testing at the site and is relying on the accuracy of the findings from McMillin's consultant.

The former training center is west of Lindbergh Field. The site of the dump is centrally located on the west side of the property, which is bounded by Rosecrans Street.

Part of the burn site is within the footprint of McMillin's Anchor Cove town home development, and part is in an area where McMillin is constructing office buildings, Heiberg said.

The 140 town homes, which start in the high \$300,000s, are the most modest priced of the 349 housing units McMillin is building. By contrast, the price of the 80 row homes will start in the low \$700,000s, while 129 single-family homes will start in the low \$600,000s.

The housing, which McMillin calls Liberty Station, is part of the city's 360-acre redevelopment plan for the old boot camp, which closed in 1997 after nearly 75 years of operation.

In addition to the housing, the city's plan includes construction of two hotels totaling 1,000 rooms; a 46-acre park; a 26-building Civic, Arts and Culture Center; an educational district; offices; bike paths; and promenades.

The bike path is expected to be completed in October, when improvements to Rosecrans are supposed to be finished. Other project completion dates are November 2003 for the first office buildings; the third quarter of 2004 for the first phase of the civic center; and January 2005 for the housing and the promenade.

Under the city's plan, McMillin owns 81 acres, including 37 acres where the housing is being built. The city retains 279 acres, including the Civic, Arts and Culture Center, the 46-acre park, the 22-acre Sail Ho golf course and the two sites planned for hotels.

The city adopted the redevelopment plan in 1998.

A McMillin contractor discovered the dump about two months ago while preparing to install underground utilities. Some of the material had been charred and some of the soil blackened, indicating a burn site.

McMillin sent letters to 1,200 individuals who had indicated an interest in the Anchor Cove town homes, notifying them of the discovery of the trash site and of the company's intention of clean it up.

"Much of that work may entail soil remediation and excavation as necessary for the long-term protection of human health and the environment," the letter stated.

Heiberg said only a few prospective buyers called for additional information about the cleanup after receiving the letter.

There will be a delay in the start of sales and construction of Anchor Cove town homes until early spring, according to the letter signed by Rick Jarrett, McMillin's vice president of sales.

Joy Williams of the Environmental Health Coalition said the county needs to make sure the cleanup has been carried out properly. The coalition is a nonprofit environmental watchdog group that monitors pollution issues in the county.

Maureen Ostrye, the city of San Diego's project manager for the Naval Training Center redevelopment, said the Navy is ultimately responsible for cleanup of contaminated sites on the property.

McMillin has a \$50 million environmental insurance policy to guard against problems at the site, Heiberg said. If problems arise, McMillin pays for the cleanup, then bills its insurer for reimbursement. The insurer then pursues repayment from the Navy.

The Navy spent millions of dollars to clean up more than 50 contaminated sites at the training center property before transferring it to the city of San Diego. Work included the removal of underground fuel tanks and contaminated soil.

Navy spokesman Lee Saunders said he would need to do research to determine why the dump site had not been identified by the Navy.

Minutes of the El Toro Technical Review Committee
December 4, 2002

The meeting was called to order by Marcia Rudolph. All attendees introduced themselves. (List Appended). There was no meeting held in July. The September meeting did not have a recording secretary so Minutes for that meeting were not prepared.

Marcia reviewed the status of various documents received during the period since the September meeting. In addition, Jerry Werner brought a number of documents that he had received during his tenure as RAB Co-Chair. Jerry indicated that because of his election to the local El Toro Water District Board, he would no longer be able to serve as RAB Co-Chair. Any documents that were not distributed to members would be brought to the RAB for recycling.

The committee discussed the following items with Triss Chesney with the DTSC, Nicole Moutoux and Viola Cooper with the U.S. EPA:

- Transfer and Liability Issues
- The Alton Parkway Extension
- The US Budget and impacts on EPA/DTSC/BRAC funding

A list of subjects was developed for discussion at the RAB meeting. They consisted of the following items:

- Transfer and Liability Issues associated with Land Use and Deed Transfers
- Breach of Institutional Controls after Land Transfer
- Interface with the Alton Parkway Extension Project
- Request update on budget issues – Federal and California
- Recommend another tour within the next 6 to 9 months
- Status of Perchlorate contamination on base.

The next Technical Review Committee meeting will take place at 5:00 p.m. in the Irvine City Hall before the next RAB Meeting that is scheduled for January 29, 2003.

There being no further business, the meeting was adjourned.

Respectfully Submitted,

Raymond E. Ouellette

Raymond E. Ouellette
Secretary

**TECHNICAL REVIEW COMMITTEE
EL TORO RAB**

ATTENDEES

DATE: December 4, 2002

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Andy Piszkin				
R. Coleman		<u>Rbcolema@bechtel.com</u>	(619) 744-3016	(619) 687-8787



BECHTEL ENVIRONMENTAL, INC.

CLEAN 3 TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-95-D-7526

Document Control No.: CTO-0038/0132

File Code: 0216

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Ms. Karen Rooney, Code 02R1.KR
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: March 5, 2003

CTO #: 38 (EL3)

LOCATION: MCAS El Toro

FROM: Thurman L. Heironimus, Project Manager

DESCRIPTION: MCAS El Toro, Public Information Materials 1/29/03 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

ADMIN RECORD: Yes X No Category Confidential

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