

Marine Corps Air Station El Toro  
Installation Restoration Program

Public Information Materials

5/27/98

Restoration Advisory Board  
Information Table Set-up at Irvine City Hall  
Irvine, CA

- **The MCAS El Toro Restoration Advisory Board (RAB) meeting scheduled for May 27, 1998 was cancelled. The reason for the cancellation was to provide interested RAB members the opportunity to attend a meeting on reuse of MCAS El Toro sponsored by the Orange County Board of Supervisors. This meeting was held during the RAB meeting time slot, from 6:00 to 9:00 p.m., May 27, 1998, at the Irvine City Hall, City Council Chambers.**
- **RAB Co-Chairs, Joseph Joyce and Greg Hurley, agreed that since RAB members have requested that presentations on reuse be made by the reuse organizations at future RAB meetings (most recently at the March 28, 1998 RAB meeting); the Board of Supervisors-sponsored meeting would offer RAB members a firsthand opportunity to learn more about the potential aviation and non-aviation reuse of MCAS El Toro.**
- **RAB members attending the reuse meeting at Irvine City Hall were provided the opportunity to pick up information and handouts that would have been made available at the RAB meeting from a table set up from 6:00 to 9:00 p.m., at the Conference and Training Center (the regular meeting room for RAB meetings). Items made available to RAB members included:**
  - RAB Meeting Announcement: May 27, 1998 RAB Meeting is Cancelled
  - MCAS El Toro Proposed Plan, Closure of Inactive Landfills, May 1998
  - Letter (dated April 24, 1998) from Joseph Joyce, BRAC Environmental Coordinator, MCAS El Toro, response to Cal-EPA Dept. of Toxic Substances Control's Feb. 25, 1998 letter; subject: the Final Proposed Plan for Landfill Sites at MCAS El Toro
  - Letter (dated May 5, 1998) from Tayseer Mahmoud, Remedial Project Manager, Cal-EPA Dept. of Toxic Substances Control, to Joseph Joyce, BRAC Environmental Coordinator, MCAS El Toro; subject: Response to Your Letter Regarding Draft Final Proposed Plan For Landfill Sites at MCAS El Toro
  - MCAS El Toro Restoration Advisory Board, Installation Restoration Program - Site Tour Flyer and Sign-up Form
  - Navy and Marine Corps Internet Access - Environmental Web Sites
  - MCAS El Toro Installation Restoration Program - Mailing List Coupon

# Marine Corps Air Station El Toro

## Restoration Advisory Board

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### *Announcement: May 27, 1998 RAB Meeting is Cancelled*

- The purpose of this announcement is to inform you that the MCAS El Toro Restoration Advisory Board (RAB) meeting scheduled for May 27, 1998 has been canceled. The reason for the cancellation is to provide interested RAB members the opportunity to attend an Orange County Board of Supervisors' Local Redevelopment Authority (LRA) meeting on reuse of MCAS El Toro, which is scheduled during the RAB meeting time slot. The LRA meeting is scheduled from 6:00 to 9:00 p.m., May 27, 1998, at the Irvine City Hall, City Council Chambers.
- RAB Co-Chairs, Joseph Joyce and Greg Hurley, agreed that since RAB members have requested that presentations on reuse be made by the reuse organizations at future RAB meetings (most recently at the March 28, 1998 RAB meeting); the time and location of the LRA-sponsored meeting would offer RAB members a firsthand opportunity to learn more about the potential aviation and non-aviation reuse plans for MCAS El Toro.
- RAB members attending the LRA-sponsored meeting at Irvine City Hall will still have the opportunity to pick up information and handouts that would have been made available at the RAB meeting. A table will be set up from 6:00 to 9:00 p.m. at the Conference and Training Center (the regular meeting room for RAB meetings) so RAB members can obtain copies of Regulatory Agency Comments, the Proposed Plan for Closure of Station Landfills, and revised schedule information.
- *Public Meeting Reminder:* The Marine Corps is having a public meeting on Thursday, June 18, 1998 from 4:30 to 8:30 p.m., at the Irvine City Hall, Conference and Training Center. The focus of the meeting is the Marine Corps' Preferred Alternative for closure of four inactive landfills at MCAS El Toro.
- *RAB Meeting Reminder:* The next RAB meeting is now scheduled for Wednesday, June 24, 1998, from 6:30 to 9:00 p.m., at the Conference and Training Center at the Irvine City Hall. The facility was previously reserved on this date for a RAB Subcommittee meeting. By scheduling the RAB meeting at this time, the full RAB will still have the opportunity to meet during the public comment period for closure of four inactive landfills. Approximately two weeks before the June 24th RAB meeting, you will be mailed the meeting agenda and the meeting minutes from the March 25, 1998 RAB meeting.

### *For more information contact:*

*Joseph Joyce at (949) 726-3470  
BRAC Environmental Coordinator &  
RAB Co-Chair*

*Greg Hurley at (714) 450-8430  
RAB Community Co-Chair*



# **PROPOSED PLAN** **for Closure of Inactive Landfills** **at Marine Corps Air Station El Toro**

Final—May 1998

## **Marine Corps Proposes Soil Cap and Long-Term Monitoring**

**T**he Marine Corps is requesting comments from the public on the alternatives for closure of Installation Restoration Program Sites 2, 3, 5, and 17, four inactive landfills at Marine Corps Air Station (MCAS) El Toro. Inactive landfills are non-operational and no longer receive wastes for disposal.

This Proposed Plan notifies the public of opportunities to comment on these alternatives and provides an overview of the environmental investigation results presented in the Draft Final Remedial Investigation Reports prepared by the Marine Corps. The Plan also summarizes the Draft Final Feasibility Study Reports that give the results of the evaluation of possible closure alternatives for the four landfill sites. It presents the Marine Corps' preferred alternative that is based on the U.S. Environmental Protection Agency's (U.S. EPA's) presumptive remedy approach for landfills. This approach is used to help guide the process of identifying a proven method for landfill closure that protects both public health and the environment. A final remedy for the sites will be selected only after the public comment period has ended and all comments have been reviewed and considered. The final remedy will be documented in the Record of Decision (ROD).

The cleanup or remedial objective of the Marine Corps is to protect public health and the environment and meet all applica-

ble or relevant and appropriate federal and state environmental laws and regulations for closure of landfills. Meeting this objective involves preventing people from coming in contact with the landfill materials, and protecting the environment by reducing infiltration of surface water into the landfills to prevent formation of leachate. Leachate is formed when surface water mixes with landfill materials and creates liquid wastes that could migrate downward and impact groundwater.

The Marine Corps' preferred remedy for each landfill site includes installing a 4-foot-thick single-layer soil cap or cover on top of each landfill. The cover would include vegetation and be designed and engineered to meet the specific characteristics of each landfill site to control erosion and slope instability. Nonengineered actions or "institutional controls" would also be taken to limit access or activities at the sites to further protect public health and the environment. Long-term environmental monitoring of the landfills would also be conducted for approximately 30 years to assess each landfill's performance in containing waste materials within its boundaries.

Reports describing the field investigations and evaluations of potential alternatives are available for public review at the Heritage Park Regional Library in Irvine (see back page). These documents are part of the MCAS El Toro Installation Restoration Program Administrative Record file (see page 13).

### **Opportunities for Community Involvement**

#### **Public Meeting**

**Thursday, June 18, 1998 4:30-8:30 p.m.**

**Irvine City Hall, Conference and Training Center, One Civic Center Plaza, Harvard at Alton Parkway, Irvine**

You are invited to attend a public meeting to discuss the information presented in this Proposed Plan regarding the closure of four inactive landfills, Installation Restoration Program Sites 2, 3, 5, and 17, at MCAS El Toro. Marine Corps representatives will provide visual displays and information on the environmental investigations and the closure alternatives evaluated. You will have the opportunity to ask questions and formally comment on the alternatives.

#### **Public Comment Period**

**May 15 – July 13, 1998**

We encourage you to comment on this Proposed Plan and site-related documents during the 60-day public comment period. Originally set for 30 days, the public comment period was expanded by the Marine Corps to accommodate a request for an extension. You may submit written comments by mail **postmarked no later than July 13, 1998** to: Mr. Joseph Joyce, Base Realignment and Closure (BRAC) Environmental Coordinator, AC/S Environment (IAU), MCAS El Toro, P.O. Box 95001, Santa Ana, CA 92709-5001 or MCAS El Toro, Building 368, Santa Ana, CA 92709-5001 (for overnight delivery service). Comments may also be faxed to (714) 726-6586. Public comments received during this period, or in person at the public meeting mentioned above, will be considered in the final closure decision for the landfills.

# Environmental Investigation Overview

## Site Background

The map on page 3 shows the locations of the landfills.

**Site 2, Magazine Road Landfill**, was used from the late 1950s until 1980. During the 1970s, all solid wastes from MCAS El Toro and some waste from MCAS Tustin were disposed in this landfill. Suspected types of waste include construction debris, municipal wastes, batteries, waste oils and solvents, hydraulic fluids, paint residues, and transformers. Investigators conducted record searches and interviews of former employees to initially determine waste types. Site 2 is bordered by Borrego Canyon Wash. An unlined, constructed drainage channel crosses through the central portion of the landfill (Areas A and B), see map on page 3. Site 2 is located in the foothills of the Santa Ana Mountains in the eastern portion of MCAS El Toro and occupies approximately 27 undeveloped acres. Vegetation at the site provides a habitat for the California gnatcatcher, a federally listed, threatened bird species.

**Site 3, Original Landfill**, was active from 1943 to 1955. This landfill, the first at the Station, was operated as a trench-and-fill disposal facility. Prior to burial, wastes were burned at a former incinerator to reduce volume. Reportedly, any wastes generated on the Station may have been disposed at Site 3. The wastes are likely to have included metals, incinerator ash, solvents, paint residues, hydraulic fluids, engine coolants, construction debris, oily wastes, municipal solid waste, and various inert solid wastes. Record searches and interviews of former employees helped to initially determine waste types. Site 3 encompasses approximately 11 acres and is situated between Irvine Boulevard and North Marine Way. Agua Chinon Wash, an unlined drainage channel, crosses the site. Presently, infrastructure at the site consists of concrete and asphalt pads and temporary structures associated with environmental field investigations that are adjacent to facilities that support Marine Corps aircraft activities.

**Site 5, Perimeter Road Landfill**, was active from approximately 1955 until the late 1960s and operated as a trench-and-fill disposal facility. Wastes were often placed in a trench at the site and burned to reduce volume, and then covered with soil. Wastes are likely to have included burnable trash, municipal solid waste, cleaning fluids, scrap metals, paint residues, and unspecified fuels, oils and solvents. Former employees and record searches assisted in determining waste types. Site 5 encompasses approximately 1.8 acres and is located in the eastern portion of the Station near the foothills of the Santa Ana Mountains. The site is flat and is currently undeveloped.

**Site 17, Communication Station Landfill**, was active from 1981 to 1983 as a Station-wide disposal facility. Suspected waste types included domestic waste and rubble, cooking

grease, oils and fuels from sumps, and empty drums. Record searches and interviews of former employees helped to ascertain waste types. Site 17 is located near Site 2 in the foothills and occupies approximately 11 undeveloped acres. Site 17 also provides a habitat for the California gnatcatcher.

## Landfill Investigations

Investigations were performed at each landfill to obtain data necessary to characterize environmental conditions. Generally, these investigations involved extensive sampling and analysis of air, soil gas, soil, surface water, and groundwater to determine the nature of contamination present at and around each landfill. Each investigation was tailored to meet the specific characteristics of each landfill. Sampling of landfill materials is not considered practical because of the large variation and random location of wastes. Sampling procedures followed the U.S. EPA presumptive remedy approach for landfills used throughout the country.

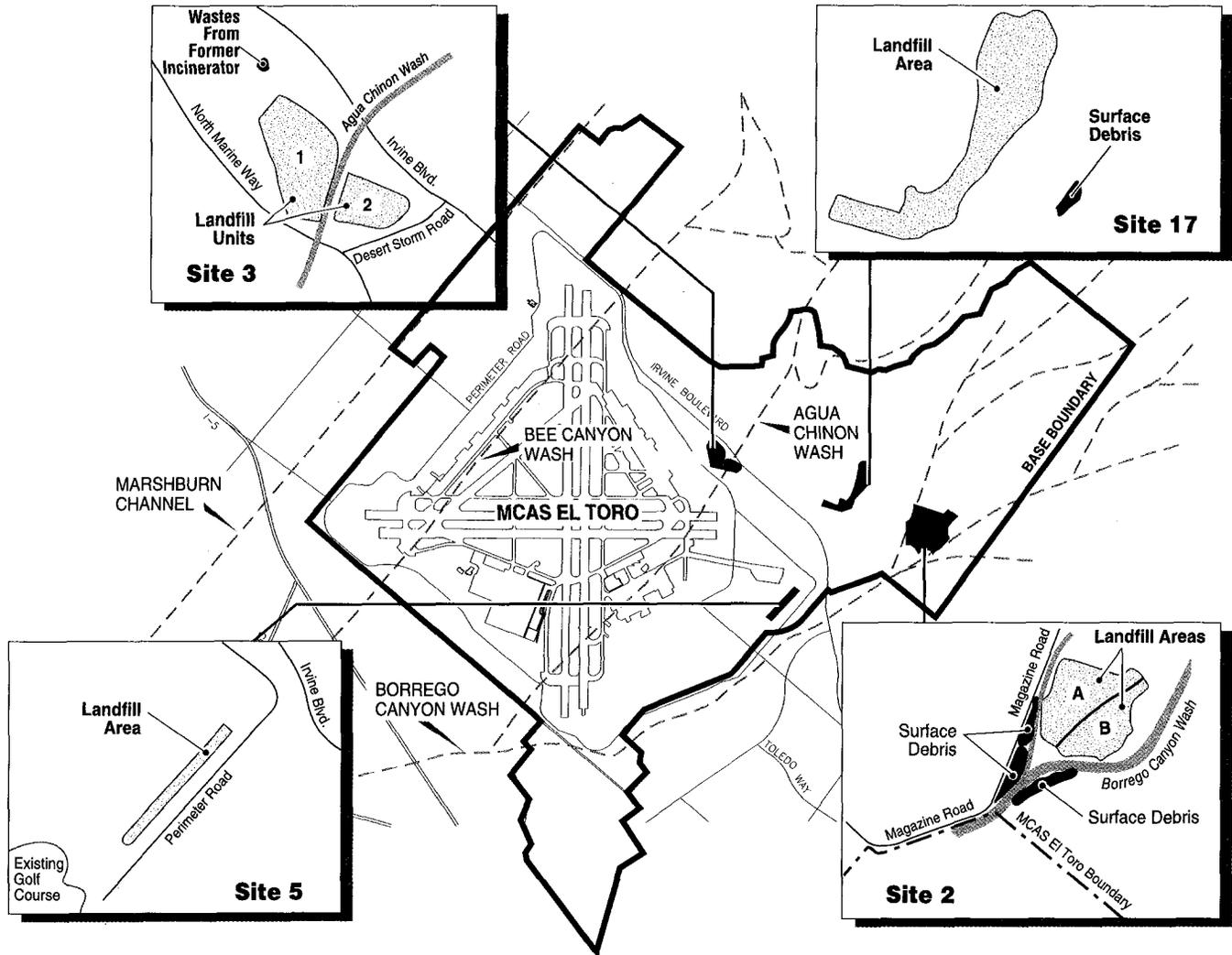
Air samples were collected to determine if landfill gases are being released to the atmosphere. Soil gas samples were collected from landfill soils and at the perimeter of each landfill to evaluate whether hot spots (localized areas with high concentrations of chemicals) are present and if methane or other landfill gases are moving beyond landfill boundaries. Analysis of shallow soil samples was performed to obtain data for human health and ecological risk assessments. Subsurface sampling of soils surrounding the buried landfill materials was conducted to determine if contaminants from the landfills are moving toward groundwater. Groundwater monitoring wells were installed to sample and test groundwater surrounding (up-gradient and down-gradient) landfill boundaries. Depth to groundwater varies from site to site and ranges from 25 to 230 feet deep. Wells were not drilled through the landfills because well borings could create a pathway for chemicals to move downward from the landfill into groundwater. To sample for leachate underneath the landfills, lysimeters (devices that collect moisture in soil) were installed in slanted borings from landfill perimeters to reach under the sites. Leachate is formed when surface water infiltrates landfills and mixes with or dissolves landfill materials and creates liquid wastes that could impact groundwater.

## Investigation Results

Wastes have not been disposed of at the landfills for many years, but the environmental investigations showed that landfill materials at these sites have the potential to impact the environment if actions are not taken to prevent erosion of the existing landfill covers and infiltration of water into the landfills. Investigation results show that no chemicals that would be derived from landfill contents were found outside of site boundaries.

Air sampling showed that volatile organic compounds (VOCs) and methane gas are present at low levels over the landfills. VOCs were detected in soil gas sampling but no

## MCAS El Toro Location Map—Inactive Landfill Sites



localized hot-spot sources of landfill gases were found. Air and soil gas sampling at all four landfills confirmed that controls are not presently needed to contain landfill gases due to their low concentrations. Soil sampling indicated the presence of VOCs, semivolatile organic compounds (SVOCs), petroleum hydrocarbons, and metals that could contribute to the formation of leachate. Groundwater sampling and monitoring results show that one or more of several metals, including nickel, chromium, selenium, thallium, and arsenic, were present at Sites 2, 3, 5, and 17 at concentrations that exceeded drinking water standards established by the federal government and the State of California. However, groundwater in the region of MCAS El Toro is not used for drinking water purposes. These metals in the groundwater that exceed drinking water standards are found upgradient and downgradient of the landfill sites. A computer modeling analysis of these metals, performed as part of the remedial investigation, examined chemical changes to the metals as they move through groundwater. This analysis indicates that these metals are not expected to travel a significant distance from the

sites because the chemical conditions in groundwater that allow the metals to exist in a dissolved state change as groundwater moves away from the landfills. Under these conditions the metals have a natural tendency to *precipitate out* (become separated) from the water. After metals precipitate out of the water solution, they form as a solid on the surface of soil particles.

The remedial investigation showed that groundwater beneath Site 2 contains small plumes of two chlorinated solvents, trichloroethene (TCE) and perchloroethene (PCE). A plume is an area within the groundwater that contains chemicals and generally moves in the direction of, and with, groundwater flow. Since TCE and PCE are not naturally occurring, the solvents are believed to have been disposed in the landfill. Sampling results indicate that these two plumes are small and extend slightly downgradient of the landfill but do not impact regional groundwater in areas where potential drinking water could be extracted. Also, calculations performed for the Site 2 feasibility study estimated that there is less than one pound of

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these solvents present in groundwater, which equates to approximately one cup of solvents.

## Other Site Conditions

**Site 2 – Magazine Road Landfill:** some landfill materials were exposed during flooding of Borego Canyon Wash in 1993. The Marine Corps has taken action to remove or cover the exposed landfill materials and reduce erosion. These actions, undertaken in 1996 and 1997, included installing new fencing at the site to restrict access, moving landfill wastes from Borrego Canyon Wash to a staging area where the materials were recycled or placed in the main body of the landfill and covered, and constructing surface drainage improvements to prevent erosion of landfill materials (see page 8). However, permanent actions are required to improve site drainage and prevent further erosion.

Site 2 also contains large flat areas that are susceptible to ponding of water. Pounded water has the potential to infiltrate into the landfill where it can dissolve landfill materials and create leachate. The leachate can travel, or migrate, downward and may cause contamination of groundwater beneath the site.

**Sites 3 – Original Landfill:** contains large flat areas that are susceptible to ponding of water and has the potential to produce leachate. The leachate can travel downward and cause contamination of groundwater beneath the site. Landfill materials are located

on both sides of the Agua Chinon Wash. The wash itself is unlined and shows evidence of erosion upstream of the site. If the channel were to erode into the landfill, contents could become exposed. An existing fence is used to control site access.

**Site 5 – Perimeter Road Landfill:** is flat and susceptible to ponding and leachate formation. The site is not susceptible to erosion, but landfill materials in portions of the site are covered with a thin soil cover. If an individual dug into the soil at this site, it is possible that he or she could easily come into direct contact with landfill contents. An existing fence is used to control site access.

**Site 17 – Communication Station Landfill:** is located in a small canyon and overflows out of the canyon mouth onto a flat, weed-covered field formerly used for agriculture. Site 17 is experiencing some erosion over the surface of the landfill. Removal actions performed in 1996 and 1997 included installing new fencing at the site, removing drums from the surface of the site to a staging area to reduce potential exposure to these containers, sampling drum contents and disposing of these containers in appropriate off-Station facilities, and building surface drainage control structures (see page 8).

*Details of the removals conducted at Sites 2 and 17 are on page 8. For detailed information on investigation findings, the Draft Final Remedial Investigation Reports prepared for each site are available for public review (see page 13).*

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## Human Health and Ecological Risk Assessments

Human health and ecological risks assessments were performed, as part of the remedial investigations, to determine if environmental cleanup or controls are necessary as a result of potential risks to human health and the environment from each landfill. Results from the risk assessments indicate that if actions are not taken at all four landfills to prevent exposure to wastes or to control infiltration, potential risks to human health and the environment would continue to be present.

During the remedial investigations, only the environmental media (e.g., soils, air and groundwater) surrounding the buried wastes, and not the actual wastes, were sampled for analysis. This approach is typical for landfills and is used throughout the country. Sampling of landfill materials is also not considered practical because of the large variation in waste types found within landfills. Drilling into the landfills could also create a conduit for water to pass into the wastes and cause leachate to form that could impact groundwater. U.S. EPA guidance requires that the Marine Corps consider ways that the public could be exposed to chemicals and the risks associated with exposures to the chemicals.

Human health risk assessments were performed at Sites 2, 3, 5, and 17; ecological risk assessments were performed at Sites 2, 5, and 17. The ecological risk assessments were particularly

important at Sites 2 and 17 because these sites provide habitat for the California gnatcatcher, a federally listed threatened bird species. No ecological risk assessment was performed at Site 3 because this site is covered with gravel or pavement and therefore does not support wildlife habitat.

## Identifying Exposure Pathways

To assess potential human health and ecological risks, "industrial" and "recreational" scenarios were evaluated. During the planning stages of the remedial investigations, the Base Realignment and Closure Cleanup Team (Marine Corps, U.S. EPA, and the Cal-EPA's Department of Toxic Substances Control and the Regional Water Quality Control Board) agreed that the "residential" scenario, where it is assumed people live at the landfills, would not be assessed. Future construction of residential units at the landfills was considered to be a remote possibility because development within 1,000 feet would likely require extensive construction elements for protection of human health as required under California Code of Regulations, Title 27, Section 21190. Information collected during the remedial investigations was used to identify possible exposure pathways, or ways that humans, plants, and animals could come in contact with these chemicals.

To determine potential risks from exposure to soils, the human health risk assessments assumed that people would not be at any of these sites. At Sites 2 and 17, it was assumed that children might play in the adjacent habitat reserves. At Site 3, it was assumed that industrial office workers may work there even though fencing restricts access, and children might play in Agua Chinon Wash. At Site 5, it was assumed for the purposes of the risk assessment that children might play in the soil covering the landfill materials.

To determine potential risks from exposure to groundwater, the human health risk assessments assumed that a house would be built directly adjacent to or downgradient from each site and a well would be used as the source of water for domestic use (i.e., drinking, bathing). This hypothetical assumption is very conservative because it is highly unlikely that any future residential units would be built this close to the landfill as a result of regulatory limitations.

## Estimating Human Health and Ecological Risks

Calculated risk levels are an indication of potential risks, and are not an absolute prediction that risk will occur at a certain level. Actual human and nonhuman exposures and risks are likely to be much less than those calculated for the risk assessments. The assumptions made during the risk assessment process lead to an overestimation of potential risk and provide a margin of safety to protect public health and the environment.

Risks to human health associated with exposure to and toxicity of chemicals were estimated for cancer-causing (carcinogenic) and noncancer-causing (noncarcinogenic) effects. Risks are expressed as a result of being exposed to the various chemicals from the sites. For the recreational scenario (children) exposure was estimated for 7 years. For the industrial scenario (workers) exposure was estimated for 25 years.

For carcinogens, potential risk is expressed in terms of the probability of an individual contracting cancer (cancer risk). This probability is expressed as the number of additional cancer cases that would occur within a population, and it is calculated assuming an individual has an extended exposure to the chemicals. The term "additional cancer cases" refers to cancer cases that could occur in addition to those cases that otherwise occur in a population not exposed to site chemicals.

To manage risks and protect human health from known or suspected carcinogens, the U.S. EPA has established acceptable *exposure levels* at general concentration levels that represent an *excess* upper bound lifetime cancer risk to an individual of between  $10^{-4}$  (1 additional case in a population of 10,000) and  $10^{-6}$  (1 additional case in a population of 1,000,000). Various site specific factors such as exposures, types of contaminants, and potential future uses are factored into the selection of a remedy that protects human health.

Noncarcinogenic risks are expressed as a hazard index. The U.S. EPA considers a hazard index of less than 1 as protective of human health. A hazard index of 1 indicates that the exposure to the chemicals has limited potential for causing adverse health

effects (e.g., respiratory distress). A site with a hazard index greater than 1 does not by itself require remedial action, but indicates the need to take into account the types of chemicals, historical activities, and potential toxic effects of the chemicals of potential concern.

An ecological risk assessment evaluates potential effects on plants and animals from exposure to chemicals at the sites. It focuses on potential reproductive damage and reductions in reproductive life span rather than the risk of developing cancer. Ecological risks are expressed in terms of a hazard index. Hazard indexes greater than 1 indicate a potential for adverse effects on wildlife, but no adverse effects are expected for a hazard index less than 1. At Sites 2 and 17, plants, mice, and soil were collected and analyzed to determine actual intake of potential contaminants by birds to assess impacts to the California gnatcatcher. For comparison purposes, samples were also taken from a nearby uncontaminated reference site.

## Risk Assessment Results

### Soil



The chance of a child contracting cancer from exposure to soils while playing at Sites 2 and 17 and for an industrial worker at Site 3 is between 1 in 10,000 and 1 in 1,000,000. At Sites 3 and 5, the chance of a child contracting cancer from exposure to soils while playing is less than 1 in 1,000,000. The cancer risks at all the sites are within the range considered acceptable by the U.S. EPA. Noncancer risks from exposure to soils are below the levels considered acceptable by the U.S. EPA.

### Groundwater



The additional chance of a resident contracting cancer from exposure to groundwater is between 1 in 10,000 and 1 in 1,000,000 at the four sites. The human health risk assessments also concluded that exposure to groundwater would result in noncancer risks greater than 1. Risk assessment results show that the contamination present in groundwater at Sites 2, 3, 5, and 17 does not present a current risk to human health because the impacted water is not used for domestic purposes. Restrictions may be needed to prevent domestic use of this water in the future.

### Ecological

Ecological risk assessments performed at Sites 2, 5, and 17 and at the reference site exceeded the hazard index of 1. The risk assessments concluded that ecological risks at Sites 2 and 17 are slightly elevated for animals which are dependent on a plant and insect diet such as the California gnatcatcher. However, these risks are not elevated for predators such as the coyote or red-tailed hawk.



# Summary of Landfill Closure Alternatives

The Marine Corps' remedial (closure) objective for the landfill sites is to protect public health and the environment by preventing direct contact with landfill materials, and eliminating or reducing infiltration of water into the buried wastes to prevent further formation of leachate and potential impact to groundwater. The Marine Corps' feasibility studies and evaluation of cleanup alternatives were guided by the U.S. EPA's presumptive remedy approach used at other landfill sites throughout the country. Presumptive remedies can be cleanup technologies, control technologies, or institutional controls that have proven to be most effective for typical landfills.

The presumptive remedies of landfill capping, institutional controls (deed and access restrictions), and long-term monitoring are components of the alternatives evaluated for Sites 2, 3, 5, and 17. Other presumptive remedies for landfills, such as landfill gas collection and treatment, leachate collection and treatment, and source area groundwater control, were found to

be not appropriate for the landfills at MCAS El Toro. Metals present in groundwater at the four sites and the solvent plumes in groundwater at Site 2 are expected to be reduced by natural precipitation and monitored natural attenuation, respectively.

When TCE and PCE dissolve into groundwater, several natural processes can occur to destroy or alter these chemicals. These processes, known collectively as *natural attenuation*, include adsorption to soil particles, biological breakdown of contaminants, and dilution and dispersion in groundwater. Adsorption of contaminants to soil particles prevents them from migrating off the site. Although biological breakdown may not occur at all sites with chlorinated solvents, 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. Monitored natural attenuation is not a presumptive remedy but is recognized by U.S. EPA as a viable method for cleanup of groundwater. The selection of monitored natural attenuation as a component

**MCAS El Toro Landfill Closure Remedial Alternatives and Cost Comparison**

Remedial Alternatives Evaluated	Estimated Cost in \$ Millions			
	Site 2	Site 3	Site 5	Site 17
<b>Alternative 1</b> No Action (Sites 2, 3, 5 & 17)	0	0	0	0
<b>Alternative 2</b> Institutional Controls and Monitoring (Sites 2, 3, 5 & 17)	1.7	2.8	2.2	2.0
<b>Alternative 3—Preferred Alternative</b> Single-Layer Soil Cap with Institutional Controls and Monitoring (Sites 2, 3, 5 & 17)	13.0	7.8	4.2	5.9
<b>Alternative 4</b> Single-Barrier Cap with Institutional Controls and Monitoring (Sites 2, 3, 5 & 17)				
Option A – clay barrier	16.4	8.7	4.5	7.2
Option B – soil/bentonite barrier	17.2	9.0	4.7	7.6
Option C – geocomposite clay liner (GCL)	14.7	8.1	4.4	6.7
Option D – synthetic flexible membrane liner (FML)	16.7	8.8	4.7	7.5
<b>Alternative 5</b> Single-Barrier Cap with Additional Soil Cover, Institutional Controls, and Monitoring (Sites 2 & 17)				
Option A – clay barrier	18.7	N/A	N/A	8.0
Option B – soil/bentonite barrier	19.5	N/A	N/A	8.3
Option C – geocomposite clay liner (GCL)	17.0	N/A	N/A	7.3
Option D – synthetic flexible membrane liner (FML)	19.0	N/A	N/A	8.2
<b>Alternative 5</b> Pavement Cap with Institutional Controls and Monitoring (Sites 3 & 5)				
Option A – concrete cap	N/A	8.0	4.4	N/A
Option B – asphalt cap	N/A	8.8	4.7	N/A
<b>Alternative 6</b> Pavement Cap with a Flexible Membrane Liner Barrier with Institutional Controls and Monitoring (Sites 3 & 5)				
Option A – concrete cap	N/A	8.6	4.7	N/A
Option B – asphalt cap	N/A	9.5	5.0	N/A
N/A – Alternative is not applicable at this site.				

of any site remedy is based on its ability to protect human health and the environment and it is expected to reduce contaminant levels in groundwater within a reasonable time frame.

Long-term monitoring of groundwater upgradient and downgradient of the landfills will be performed to verify that concentrations of metals at all four sites are stable and solvents at Site 2 are decreasing with time.

Other technologies (not presented in this Proposed Plan) were also evaluated during the feasibility studies but were eliminated from further consideration. These technologies either could not effectively control, reduce, or contain landfill wastes and contamination, or would incur excessive costs compared to other methods that can achieve the same degree of protection for human health and the environment.

The MCAS El Toro Restoration Advisory Board (RAB), a community-based advisory group, was extensively involved in the evaluation of landfill closure options and the comparison with the presumptive remedies of landfill capping. Closure options involved digging up landfill contents for disposal at

another landfill. Any hazardous wastes removed would be disposed at a state-permitted hazardous waste disposal facility. RAB members who examined the technical aspects and costs of these alternatives concluded that the presumptive remedy approach was better suited for closing Station landfills.

Descriptions of the alternatives evaluated for Sites 2, 3, 5, and 17 are presented below and are numbered as they appear in the respective Draft Final Feasibility Study Reports. Key supporting information from the feasibility studies includes:

- cost comparison of remedial alternatives (page 6).
- postclosure maintenance and monitoring (page 9).
- evaluation of the preferred alternative (page 10).
- institutional controls pertaining to landfill closure (page 13).
- federal and state applicable or relevant appropriate requirements (ARARs) for landfill closure (page 14).

**The Marine Corps' preferred alternative for all four sites is Alternative 3, the Single-Layer Soil Cap with Institutional Controls and Monitoring.**

### **Alternative 1 – No Action (Sites 2, 3, 5, and 17)**

By law, the No Action alternative is evaluated to provide a basis from which to develop and evaluate other remedial alternatives. Under the No Action alternative, the Marine Corps would not implement any cleanup actions and there would be no change to the existing site conditions.

### **Alternative 2 – Institutional Controls and Monitoring (Sites 2, 3, 5, and 17)**

The term "institutional controls" refers to nonengineering mechanisms taken to limit exposure to the chemicals in the landfills. For Alternative 2, land-use restrictions or lease conditions would be placed on the property to prohibit excavation, construction of homes, or use of groundwater. Wording of these restrictions and conditions would be finalized at the time the property is transferred for all four sites, and be consistent with the general language in the Marine Corps' Record of Decision for the sites. Physical access would be controlled by fences and appropriate signage.

Environmental monitoring would be used to assess changes in concentrations or locations of contaminants at the sites. Existing groundwater monitoring wells would be used: five at Site 2, seven at Site 3, five at Site 5, and three at Site 17. In addition, landfill gas and leachate would be monitored at Sites 3, 5, and 17 using three existing lysimeters at each site. Monitoring would be conducted for 30 years.

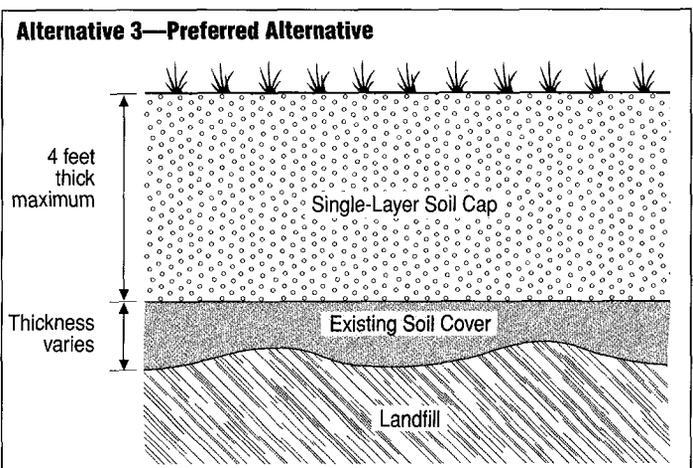
### **Alternative 3 – Preferred Alternative – Single-Layer Soil Cap with Institutional Controls and Monitoring (Sites 2, 3, 5, and 17)**

Alternative 3 includes construction of a 4-foot single-layer soil cap to prevent exposure to landfill materials and reduce the amount of rainfall that can infiltrate into and through the landfill. At each of the sites, wastes on the periphery will be consolidated to minimize the size of the cap (see page 12). The top of the cap would be graded to prevent ponding. Drainage channels constructed of riprap (boulder-sized rocks) or concrete would be designed for placement at the perimeter of the cap and, if necessary, within the cap surface

to control runoff to prevent erosion of landfill materials. Riprap will also be used to protect slopes exposed to flood events at Sites 2, 3, and 17. Soil in the cap would be compacted to reduce the amount of water that could pass through the cap, thereby reducing the chance for leachate to form and potentially affect groundwater.

Computer modeling was performed to evaluate if the single-layer soil cap would meet California Code of Regulations Title 27 for final landfill cover requirements and be an acceptable engineered alternative to the Title 27 prescriptive (clay) cap. Results showed that the single-layer soil cap is as effective at reducing infiltration as the clay cap. It is expected to achieve an equivalent standard of performance for protecting groundwater.

The surface of the cap would be vegetated with drought-resistant annual grasses to reduce erosion. Coastal sage scrub is currently present at Sites 2 and 17 and provides a nesting area for breeding pairs of the California gnatcatcher. Coastal sage scrub that is removed from the newly capped areas of Sites 2 and 17 would be replaced with twice as many plants in those areas close to the sites that do not currently contain this plant. Initially, the annual grasses on the surface of the cap at all four sites would be mowed to inspect the landfill cap and drainage



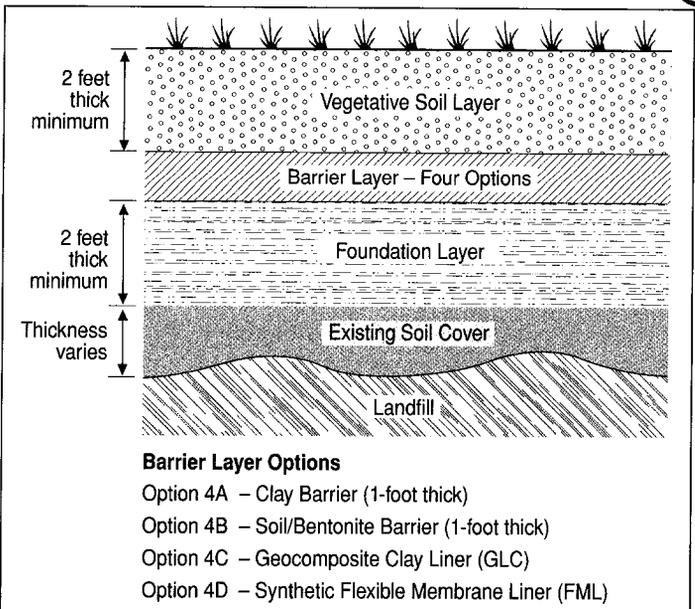
system. Eventually, natural plants such as coastal sage scrub would be allowed to reinvade Sites 2 and 17. Combined with the revegetation near the site, this would provide a significant net gain in California gnatcatcher habitat at these sites.

Institutional controls for Alternative 3 are similar to those for Alternative 2 and include land-use restrictions and access controls. Monitoring would consist of landfill gas, leachate, and groundwater monitoring and be conducted for 30 years. Alternative 3 also includes perimeter gas monitoring wells to sample for gases that might move away from the landfills. Visual inspections would also be performed to assess the condition of the landfill caps and erosion control measures.

#### **Alternative 4 – Single-Barrier Cap with Institutional Controls and Monitoring (Sites 2, 3, 5, and 17)**

Alternative 4 is similar to Alternative 3 except for construction of the landfill cap. This cap would consist of a 2-foot soil foundation layer, a barrier layer made of either clay, soil/bentonite mix, geocomposite clay, or a synthetic flexible membrane (plastic) liner, and a 2-foot soil layer to support vegetation. The surface would be graded and planted with annual grasses. Coastal sage would not be allowed to reinvade the Alternative 4

cap at Sites 2 and 17 because the roots of this plant are deep enough to damage the barrier layer. Institutional controls and monitoring would be similar to Alternative 3.



#### **Erosion Control and Debris Cleanup Actions Performed at Sites 2 and 17**

The Marine Corps conducted removal actions to reduce erosion and cleanup debris at two inactive landfill sites at MCAS El Toro. Work began in 1996 and was completed in 1997 at the Magazine Road Landfill (Site 2) and the Communication Station Landfill (Site 17). Most of this work is considered to be part of the final remedy and closure action for the landfills.

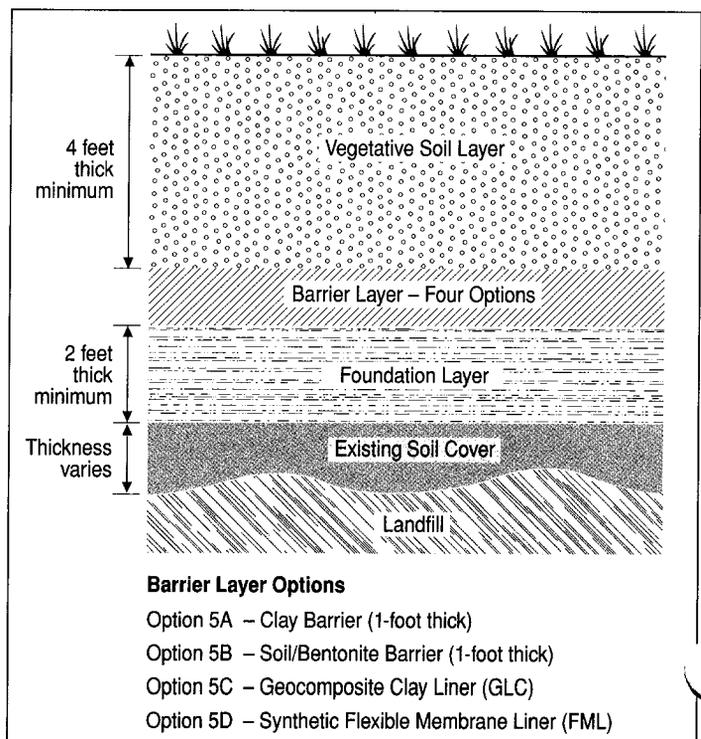
Plans for managing the erosion control and cleanup at these sites were presented to the public by the Marine Corps for a 30-day review and comment period beginning in October 1996. In addition, presentations were made at the September 1996 and January 1997 meetings of the Station's community-based Restoration Advisory Board. The control and cleanup activities included:

- securing the landfill sites with fencing to prevent public access;
- removing eroded landfill materials and debris from Borrego Canyon Wash and placing these wastes in the main body of each landfill site and covering the wastes with native soil;
- diverting surface runoff water away from the landfills with improved drainage channels; and
- improving access roads to minimize the impact on local habitat.

Construction debris along Borrego Canyon Wash, such as scrap metal (approximately 140,000 pounds) and concrete was recycled. Nonhazardous materials were disposed at the landfills while batteries and other hazardous materials uncovered during these activities were collected for disposal at an off-site State of California-permitted hazardous waste disposal facility.

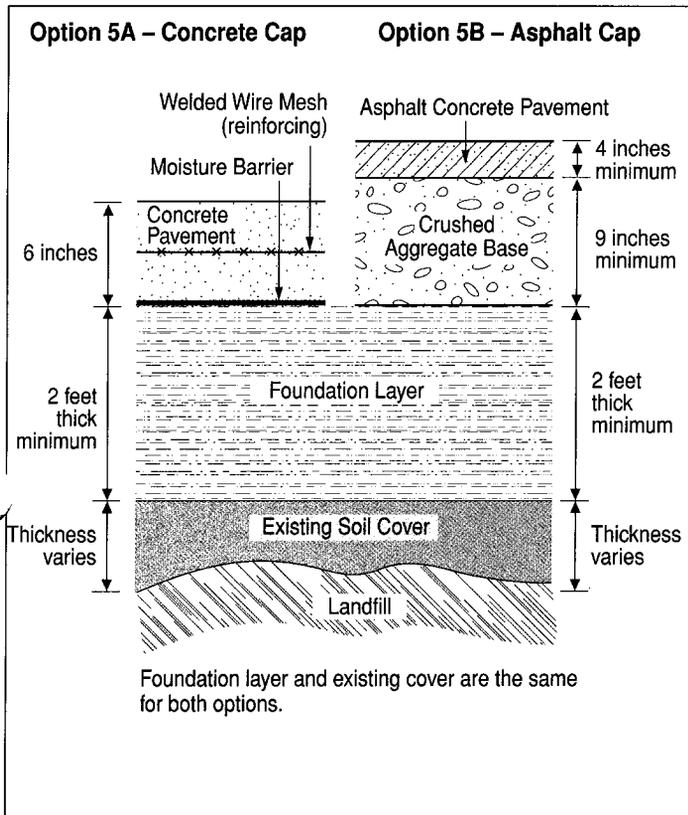
#### **Alternative 5 – Single-Barrier Cap with Additional Soil Cover and Institutional Controls and Monitoring (Sites 2 and 17)**

Alternative 5 at Sites 2 and 17 is similar to Alternative 4 except that the upper soil layer for vegetation is 4 feet thick. The additional soil would allow coastal sage scrub to eventually grow back over the landfill cap at Sites 2 and 17 without damaging the barrier layer. Institutional controls and monitoring would be similar to Alternative 3.



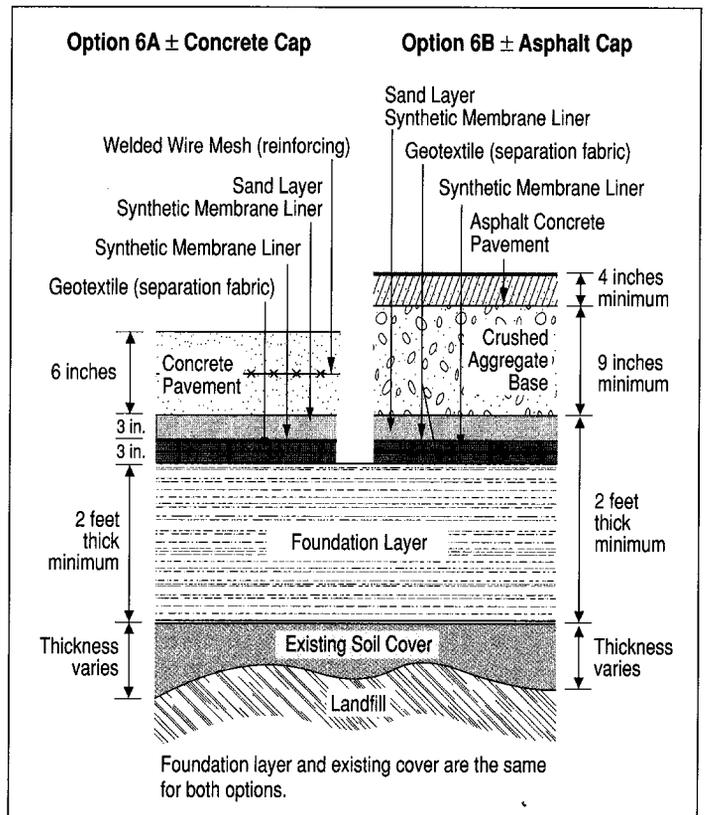
**Alternative 5 – Pavement Cap with Institutional Controls and Monitoring (Sites 3 and 5)**

Alternative 5 at Sites 3 and 5 consists of a 2-foot soil foundation layer covered with a concrete (Option 5A) or asphalt pavement (Option 5B) cap. This type of cap is effective in reducing infiltration of water into the landfills and allows use of these sites for parking or light storage. Pavement also provides effective erosion control and prevents plants and animals from rooting or burrowing into the landfill. Both of these cap options will require maintenance and repair to prevent leaking. Institutional controls and monitoring would be similar to Alternative 3.



**Alternative 6 – Pavement Cap with a Flexible Membrane Liner Barrier with Institutional Controls and Monitoring (Sites 3 and 5)**

Alternative 6 at Sites 3 and 5 consists of a 2-foot-thick soil foundation layer overlain with a synthetic flexible membrane liner (plastic) and a concrete (Option 6A) or asphalt pavement (Option 6B) cap. The liner combined with the pavement cap prevents almost all moisture from entering the landfill. The pavement cap also allows use of these sites for parking or storage. Both of these cap options will require maintenance and repair to prevent leaking. Institutional controls and monitoring would be similar to Alternative 3.



**Postclosure Maintenance and Monitoring at the Landfills**

Following construction of the landfill caps, erosion protection structures, and monitoring systems that are required as part of the remedial action, postclosure maintenance and monitoring activities will begin. These activities consist of:

- landfill gas monitoring;
- leachate monitoring;
- groundwater monitoring; and
- monitoring of the landfill cap, surface water run-on and run-off control structures, final grading, revegetation program, and site security measures.

Postclosure activities will take place during the first 30 years following landfill closure. The monitoring, in general, occurs on a more frequent basis during the first 5 years, usually on a quarterly basis, and is conducted on an annual basis thereafter. However, the monitoring frequency and duration may be modified based on evaluations of the monitoring results. In addition, corrective actions such as resampling or installation of additional control systems may be implemented based on the review of monitoring reports.

# Evaluation of Alternative 3—the Preferred Alternative

Each alternative has undergone detailed evaluation and analysis, using evaluation criteria developed by the U.S. EPA. The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The threshold criteria must be satisfied in order for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. Generally, the modifying criteria are taken into account after public comment is received on the Proposed Plan and reviewed with the various State regulatory agencies to determine if the preferred alternative remains as the most appropriate remedial action. The nine criteria are defined below and are accompanied by the key points from the evaluation of the six alternatives with emphasis on Alternative 3, the preferred alternative. A chart that summarizes evaluation of the six alternatives is shown on page 11.

## A. Threshold Criteria

**1. Overall Protection of Human Health and the Environment** – assesses whether a cleanup remedy provides adequate public health protection and describes how health risks posed by the site will be eliminated, reduced, or controlled through treatment, engineering controls, or institutional and regulatory controls.

All the alternatives, except for 1 and 2, meet this criteria. Alternative 3, the preferred alternative, would use a 4-foot single-layer soil cap barrier to prevent contact with landfill materials and limit infiltration of surface water into the soil to reduce the potential for formation of leachate and potential contamination of groundwater. At Sites 2 and 17, the landfill cap of Alternative 3, the preferred alternative, would provide adequate rooting depth for the reinvasion of coastal sage scrub that provides habitat for the California gnatcatcher. Institutional controls would protect the landfill cap and prevent exposure to groundwater.

**2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** – addresses whether a cleanup remedy will meet all federal, state, and local environmental statutes or requirements (see page 14).

All the alternatives, except for 1 and 2, meet all ARARs. The single-layer soil cap of Alternative 3, the preferred alternative, can be shown to be the technical equivalent to a State of California Title 27 clay cap.

## B. Primary Balancing Criteria

**3. Long-Term Effectiveness and Permanence** – refers to the ability of a remedy to continue protecting human health and the environment over time after the cleanup action is completed.

Alternative 3, the preferred alternative, provides the most long-term effectiveness and permanence. The single-layer soil cap is less subject to drying and cracking and is tolerant of roots and burrowing animals. For all sites, natural precipitation and monitored natural attenuation are expected to reduce the concentrations of metals and VOCs in groundwater over time. In the meantime, institutional controls would be implemented to prevent use of groundwater at all sites. The single-layer soil cap of Alternative 3, the preferred alternative, has the fewest obstacles of the capping alternatives if modifications are needed for future site use. The clay and soil/bentonite barriers proposed in Alternatives 4A, 4B, 5A, and 5B at Sites 2 and 17 are subject to drying and cracking in semiarid climates and are less effective than the single-layer soil cap. Alternatives 4C, 4D, 5C, and 5D contain thin barriers that can be breached by roots and burrowing animals. Alternatives 5 and 6 (Sites 3 and 5) are also protective of human health and the environment, but require more maintenance and repair of cracks to prevent leaking in order to preserve their effectiveness than the single-layer soil cap of Alternative 3, the preferred alternative. At Sites 3 and 5, Alternatives 5 and 6 (concrete/asphalt caps) would allow for use as parking or storage areas. Alternatives 4, 5, and 6 would require considerable reconstruction efforts if they need to be modified by future owners or users.

to be modified by future owners or users.

**4. Reduction of Toxicity, Mobility, and Volume** – refers to the degree to which a cleanup alternative uses treatment technologies to reduce: 1) harmful effects to human health and the environment (toxicity), 2) the contaminant's ability to move (mobility), and 3) the amount of contamination (volume).

Alternatives 3, 4, 5, and 6 are expected to achieve reduction in toxicity, mobility, and volume of metals and VOCs in groundwater through natural precipita-

### Preferred Alternative – Cost Estimate Summary Single-Layer Soil Cap with Institutional Controls and Monitoring

Cost Category	Estimated Costs in Millions			
	Site 2	Site 3	Site 5	Site 17
<b>Capital Costs</b>	\$10.2	\$4.0	\$1.5	\$3.0
<i>Includes design and construction of the single-layer soil cap and drainage control features, and includes revegetating the surface with annual grasses.</i>				
<b>Operations and Maintenance and Monitoring Costs</b>	\$2.8	\$3.8	\$2.7	\$2.9
<i>Includes operating and maintaining groundwater, landfill gas, and leachate monitoring systems for 30 years. Also includes maintenance and monitoring of the landfill cap, drainage system, and site security system.</i>				
<b>Total – Estimated Present Worth Costs</b>	\$13.0	\$7.8	\$4.2	\$5.9

*Covers all costs to complete this project and includes a 20 percent contingency to cover cost increases that may occur as a result of unforeseen conditions.*

Detailed information on estimated costs for closure of Sites 2, 3, 5, and 17 is presented in the Draft Final Feasibility Studies.

tion and monitored natural attenuation. Alternatives 3, 4, 5, and 6 also reduce infiltration into the landfill to limit the production and mobility of leachate to groundwater. None of the proposed alternatives attempts to reduce the volume of the landfill mass.

**5. Short-Term Effectiveness** – assesses how well human health and the environment will be protected from impacts due to construction and implementation of a remedy.

Alternative 1 does not have any short-term impacts on health and safety because this alternative involves no action. Alternative 2 has minimal impact during monitoring. Alternatives 3, 4, 5, and 6 involve short-term impacts to health and safety as a result of dust emissions from the consolidation of wastes and construction of the landfill cap. Alternative 3, the preferred alternative, would result in the least amount of impact. Construction time required for the single-layer soil cap is the shortest of all the capping alternatives.

**6. Implementability** – refers to the technical feasibility (how difficult the alternative is to construct and operate) and administrative feasibility (coordination with other agencies) of a remedy. Factors such as availability of materials and services needed are considered.

No problems are expected during implementation of Alternatives 3, 4, 5, and 6 which would use proven construction techniques and available equipment. Alternative 3, the preferred alternative, is the easiest capping alternative to implement because the soils required for the construction of the single-layer soil cap are available from a nearby source. Institutional controls and monitoring are also readily implementable.

**7. Cost** – evaluates the estimated capital costs and present worth in today's dollars required for design and construction and long-term operation and maintenance costs of a remedy.

Alternative 3, the preferred alternative, is the most cost-effective of all capping alternatives. See the chart on page 6 for a cost comparison of alternatives. Estimated costs specific to the preferred alternative are on page 10.

### C. Modifying Criteria

**8. State Acceptance** – reflects whether the State of California's environmental agencies agree with, oppose, or have no objection to or comment on the Marine Corps' preferred alternative.

The Department of Toxic Substances Control has concerns about the selection of an alternative that may impact reuse. The Department of the Navy is continuing to work with the Department of Toxic Substances Control to resolve their concerns. The Regional Water Quality Control Board supports Alternative 3 as the preferred alternative.

**9. Community Acceptance** – evaluates whether community concerns are addressed by the remedy and if the community has a preference for a remedy. Although public comment is an important part of the final decision, the Marine Corps is compelled by law to balance community concerns with the other criteria.

This Proposed Plan is the Marine Corps' invitation to the community to comment on the proposed alternatives and the Draft Final Feasibility Studies.

### Comparative Analysis of Alternatives

U.S. EPA Criteria	All Sites								Sites 2 and 17				Sites 3 and 5			
	1	2	3	4A	4B	4C	4D	5A	5B	5C	5D	5A	5B	6A	6B	
1 Overall Protection of Human Health and the Environment	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2 Compliance with Applicable or Relevant and Appropriate Requirements	N/A	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3 Long-Term Effectiveness and Permanence*	○	◐	◑	◒	◒	◑	◑	◒	◒	◑	◑	◑	◒	◑	◑	
4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	○	○	◑	◒	◒	◑	◑	◒	◒	◑	◑	◑	◒	◑	◑	
5 Short-Term Effectiveness	◑	◑	◑	◒	◒	◑	◑	○	○	◐	◐	◑	◑	◒	◒	
6 Implementability	◑	◑	◑	◐	◐	◑	◑	○	◒	◐	◐	◑	◑	◒	◒	
7 Cost	◑	◑	◒	◒	○	◒	◒	○	○	◒	○	◒	◒	◒	○	
8 State Acceptance	○	○	◑	◒	◒	◒	◑	○	○	◒	◒	◒	◑	◒	◒	
9 Community Acceptance – To Be Determined for all Alternatives																

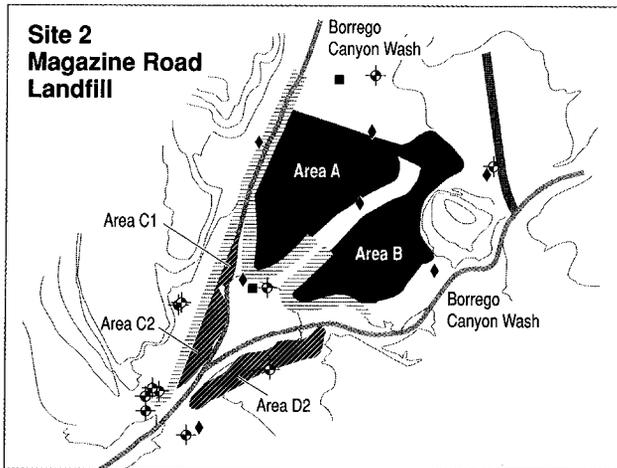
X – does not meet criteria    ✓ – meets criteria    N/A – not applicable

\*Note: In the FS reports, Long-Term Effectiveness and Permanence are based on factors from U.S. EPA landfill presumptive remedies, specifically, the ability of the caps to inhibit mobility of landfill contents and maintain cap integrity.

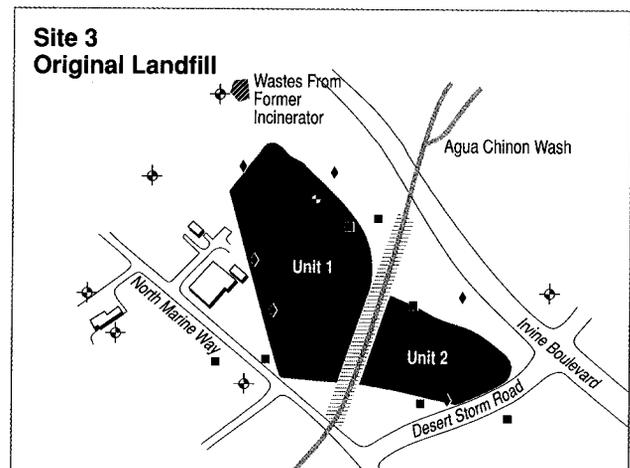
#### Relative Performance in Satisfying Criteria

○ Low    ◐ Low Moderate    ◑ Moderate    ◒ Moderate High    ◑ High

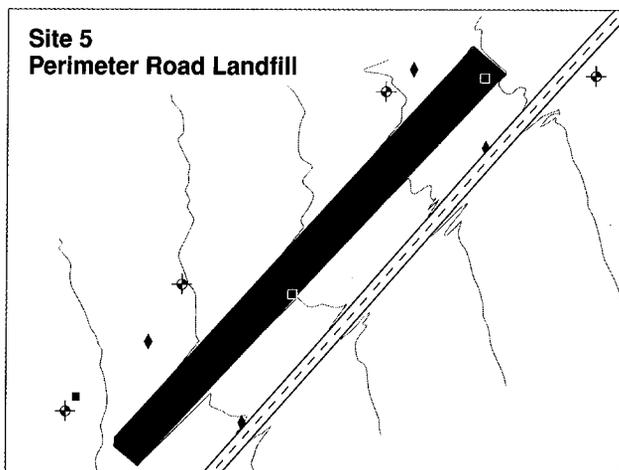
# Conceptual Design of Alternative 3 – Preferred Remedy Single-Layer Soil Cap with Institutional Controls and Monitoring



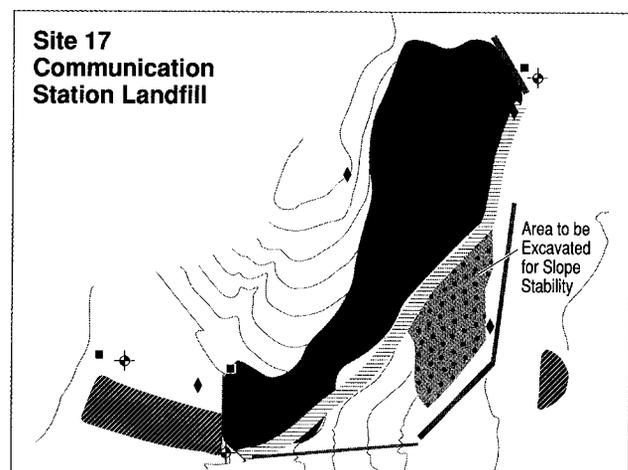
1. Single-layer soil cap (4 feet thick) in Areas A and B planted with annual grasses
2. Areas C1, C2, and D2 to be consolidated in Areas A and B before capping
3. Riprap flood control protection on Borrego Canyon Wash
4. Revegetation (2:1 ratio) of coastal sage scrub
5. Long-term (30 years) monitoring of landfill gas, leachate, groundwater, erosion, settlement, and habitat
6. Institutional controls include deed restrictions on development and groundwater use, and signs restricting access



1. Single-layer soil cap (4 feet thick) in Units 1 and 2 planted with annual grasses
2. Wastes in former incinerator area to be consolidated in Unit 1 before capping
3. Riprap flood control protection on Agua Canyon Wash
4. Long-term (30 years) monitoring of landfill gas, leachate, groundwater, erosion, and settlement
5. Institutional controls include deed restrictions on incompatible land uses, irrigation and groundwater use, and signs restricting access



1. Single-layer soil cap (4 feet thick)
2. Long-term (30 years) monitoring of landfill gas, leachate, groundwater, erosion, and settlement
3. Institutional controls include deed restrictions on incompatible land uses, irrigation and groundwater use, and signs restricting access



1. Single-layer soil cap (4 feet thick) planted with annual grasses
2. Two areas of wastes to be consolidated under cap
3. Area of unstable slope next to landfill to be cut back and soil placed over landfill
4. Riprap drainage protection and diversion channel around cap
5. Revegetation (2:1 ratio) of coastal sage scrub
6. Long-term (30 years) monitoring of landfill gas, leachate, groundwater, erosion, and settlement
7. Institutional controls include deed restrictions on development and groundwater use, and signs restricting access

## Legend

Cap	Riprap	Monitoring Wells	Perimeter Soil Gas Probes	Diversion Structures
Wastes to be Consolidated	Drainages	Lysimeters	Topographic Contour Lines	

# Proposed Institutional Controls – MCAS El Toro Landfills

Institutional controls are nonengineering mechanisms and legal measures designed to limit access or activities at a particular property. They may be used as part of an environmental remedy to limit exposure pathways of humans or the environment to contamination that may be present at a site, or to protect a remedy that is in place.

A key consideration in identifying and evaluating potential institutional controls of a remedial action is the planned or anticipated future use of the property. According to the Community Reuse Plan for MCAS El Toro, the preferred redevelopment option for the Station is a major commercial airport. This option includes potential future uses for various zones of Station property. Sites 2 and 17 are located in an area designated as a habitat reserve. Site 3 is located in a zone designated for commercial and light industrial uses. Site 5 is located in a zone designated for recreation (golf).

The Department of the Navy (DoN), on behalf of the Marine Corps, anticipates that the primary legal mechanism for implementing institutional control measures will be either lease conditions if the relevant property is leased or restrictive covenants if the property is transferred by deed. The institutional control measures would fall into two broad categories: 1) restrictions on future land use, and 2) provisions for access for potential future monitoring and maintenance activities.

## Land-Use Restrictions

The future landowners or users of Sites 2, 3, 5, and 17 shall be prohibited from conducting the following activities without the prior approval of the DoN and the Federal Facility Agreement (FFA) signatories (Marine Corps, U.S. EPA, and California EPA's Department of Toxic Substances Control and Regional Water Quality Control Board):

- using the sites for residential purposes or day care centers for children;
- performing any activity (such as excavation or construction) on the landfills or on adjacent parcels or properties that will adversely impact the cap and monitoring system or affect the drainage and erosion controls developed for the cap;
- planting of deep-rooted plants and irrigation beyond the amount to establish the proposed grass on the landfill cap;
- disturbing or removing any part of the remedy that prevents access or alerts property users and the public of the presence of landfill materials; and

### **Internet Connection**

**For more information on the closure of MCAS El Toro and the Installation Restoration Program, check out the Marine Corps Air Bases Western Area Website at [www.eltoro.usmc.mil](http://www.eltoro.usmc.mil). Key on BRAC, and you will find base closure information on MCAS El Toro, as well as links to related websites.**

- disturbing landfill settlement monuments and wells, probes, and other devices used for groundwater, leachate, or landfill gas monitoring.

## Site Access Restrictions, Monitoring and Maintenance

The proposed remedial action includes requirements for long-term monitoring and maintenance activities to ensure the long-term integrity of the landfill cap. DoN will ensure that provisions for access by DoN and the FFA signatories for purposes of conducting or overseeing such monitoring and maintenance activities are included in the relevant lease or deed.

## Groundwater

The future landowners and users, without prior approval from the DoN and the FFA signatories, shall be restricted by deed covenants or lease restrictions from conducting subsurface drilling or excavation that would expose groundwater within the shallow or principal aquifers that underlie the landfills. These restrictions also prohibit extracting groundwater within the shallow or principal aquifer from the landfills for drinking, irrigation, or commercial purposes, and injecting fluids which may affect groundwater or contaminant plume flow direction.

## Reports and Documents Available for Review and Comment

The collection of reports and documents used by the Marine Corps in the selection of cleanup or environmental management alternatives is the Administrative Record (AR). A site-specific AR file has been compiled for Sites 2, 3, 5, and 17 discussed in this Proposed Plan. It includes the Phase I Remedial Investigation Draft Technical Memorandum (May 1993); separate Draft Final Phase II Remedial Investigation Reports for each of the landfill sites (April 1997); and separate Draft Final Phase II Feasibility Studies for the landfills (September 1997).

These Remedial Investigation and Feasibility Study Reports, other relevant documents that pertain to these sites, and a complete index of all MCAS El Toro documents are housed in the Information Repository at the Heritage Park Regional Library, 14361 Yale Avenue in Irvine, (714) 551-7151.

The complete collection of documents listed in the AR index is also available for review at MCAS El Toro. To schedule a time to review documents at the Station during the public comment period, contact Joseph Joyce at (714) 726-3470 or 726-3386.

# Applicable or Relevant and Appropriate Requirements for Proposed Closure of MCAS El Toro Landfills

The federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) states that remedial actions at sites listed on the National Priorities List must meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be legal applicable or relevant and appropriate requirements (ARARs). MCAS El Toro was listed on the National Priorities List in 1990. The intent of meeting ARARs is to select and implement cleanup or remedial actions that are protective of human health and the environment in accordance with regulatory requirements. Requirements of ARARs are divided into three categories:

■ **Chemical-specific** – are health- or risk-based numerical values for various environmental media, specified in federal or state statutes or regulations.

■ **Location-specific** – addresses regulations that may require actions to preserve or protect aspects of environmental or cultural resources that may be threatened by remedial actions to be undertaken at the site.

■ **Action-specific** – are regulations that apply to specific activities or technologies used to remediate a site, including design criteria and performance requirements.

ARARs that will be met by the preferred remedy (Alternative 3) for landfill closure at MCAS El Toro are listed below.

## The California Regional Water Quality Control Board– Santa Ana Region (RWQCB-SAR)

Pursuant to the California Code of Regulations, Division 2 Title 27, the RWQCB-SAR has designated substantive provisions of the following portions of Title 27, as ARARs pertaining to:

- alternatives to construction or prescriptive standards [Sections 20080(b) and (c)];
- monitoring points and the point of compliance [Section 20405];
- groundwater monitoring system design and operation [Section 20415(e)(1) and (13)];
- corrective action plan requirements [Section 20430];
- closure design documentation [Section 21769];
- final grading [Section 21090(b)(1)];
- groundwater monitoring [Section 21090(c)(3)];
- design of diversion and drainage facilities [Section 21890(c)(4)];
- placement of the foundation layer of the final cover [Section 21090(a)(1)];
- barrier layer design [Section 21090(a)(2)];
- vegetation layer [Sections 21090(a)(3)];
- permeability requirements for the final cover [Section 20324(a)(1)]; and
- development and implementation of a groundwater monitoring program [substantive provisions of Section 20080(g)].

## The State Water Resources Control Board

Pursuant to the State Water Resources Control Board (SWRCB), substantive provisions of the following requirements are ARARs pertaining to:

- stormwater runoff controls [SWRCB Order No. 91-13-DWQ (as amended by Order No. 92-12-DWQ) and Order No. 92-08-DWQ];
- drinking water determinations in California [Resolution No. 88-63 (as incorporated in the RWQCB-SAR Basin Plan by Regional Board Resolution 89-42)]; and
- the authorization of state and regional boards and establishment of surface and groundwater quality standards [substantive provisions of California Water Code, Division 7, Section 13263(a)].

## The California EPA Department of Toxic Substances Control (DTSC)

Pursuant to the California Code of Regulations, Title 22, substantive provisions pertaining to:

- hazardous waste determinations [Sections 66261.22(a)(3) and (4), 66261.24(a)(2) to (a)(8), 66261.101, 66261.3(a)(2)(C), and (a)(2)(F)];
- generator requirements [Sections 66262.10(a) and 66262.11 and 66263.50 to 66263.34];
- state maximum contaminant levels (MCLs), which are more stringent than federal MCLs [Sections 64435 and 64444.5];
- state secondary MCLs, which are more stringent than federal MCLs and have been promulgated by the state [Section 64473];
- closure performance standards [Section 66264.111];
- compaction requirements [Section 66264.228(e)(1)];
- landfill cover seismic requirements [Section 66264.310(a)(5)];
- prevention of downward entry of water in the closed landfill and maintenance of the effectiveness of the final cover [Sections 66264.310 (a)(1) and (b)(1)];
- benchmark maintenance [Section 66264.310(b)(5)];
- drainage and filter layer requirements [Sections 66264.228(e)(10) and (11)]; and
- because Site 2 is located in a 100-year flood plain [Section 66264.18(b)].

## The California Integrated Waste Management Board (CIWMB)

Pursuant to the California Code of Regulations, Division 2, Title 27, substantive provisions of the following portions of Title 27 as ARARs pertaining to:

- landfill closure performance standards [Section 21100];
- security at closed sites [Sections 21135(f) and (g)];
- placement of the final cover [Section 21140(a) and (b)];
- final drainage design [Section 21150];
- landfill gas control [Sections 2092(a)(1)(2), and (3) and 21160(b)];
- postclosure maintenance [Section 211801];
- postclosure land use [Sections 21190(a), (b), and (c)];

- differential settlement monitoring [Sections 20950(d) and 21090(e)(1)];
- emergency response planning [Section 21130];
- information requirements to be included in detailed design packages [Sections 21800 and 21830]; and
- closure certification and documentation [Section 21880].

### South Coast Air Quality Management District (SCAQMD)

Pursuant to the rules and regulations of the SCAQMD, substantive provisions of the following SCAQMD requirements have been determined to be ARARs pertaining to:

- a landfill gas control system [Rule 1150.2];
- control of visible emissions [Rule 401];
- fugitive dust emissions [Rule 403]; and
- excavation at landfill sites are relevant and appropriate requirements [Rule 1150].

### U.S. Environmental Protection Agency (U.S. EPA)

Pursuant to Title 40 of the Code of Federal Regulations, substantive provisions of the following requirements that pertain to maximum contaminant levels (MCLs) and nonzero MCL goals under the Safe Drinking Water Act have been determined to be ARARs [Sections 141.11 thru 141.16, excluding 141.11(d)(3), 141.60 thru 141.63, and Subpart JF.

Pursuant to Title 22 of the California Code of Regulations (CCR), which is part of the federally authorized Resource Conservation and Recovery Act (RCRA) program in California and pertaining to:

- the classification of RCRA hazardous wastes in the event that wastes are generated as a result of the response action [substantive provisions CCR Title 22 of Section 66261.24(9)];
- groundwater protection standards [substantive provisions of CCR Title 22, Section 66264.94 except 66264.94(a)(2) and (b)].

## Landfill Closures Play Key Role in Restoration Program

Closure of Installation Restoration Program (IRP) Sites 2, 3, 5, and 17, four inactive landfills, represents one component of the comprehensive environmental investigation and cleanup program underway at MCAS El Toro. Designed to protect public health and the environment, the IRP provides a structure for the Marine Corps to identify, investigate, and implement remedies for contamination that resulted from past operations and waste disposal activities. This effort is being coordinated with the scheduled operational closure of the Station in July 1999. Shown below is the IRP process and the current status of the landfill sites.

To effectively manage the overall cleanup effort, the Marine Corps organized the IRP sites into Operable Units or OUs.

- OU-1 addresses the TCE contamination in the regional groundwater that extends 3 miles west of the Station.
- OU-2A includes Site 24, the VOC Source Area, and Site 25, the Major Drainage Channels.

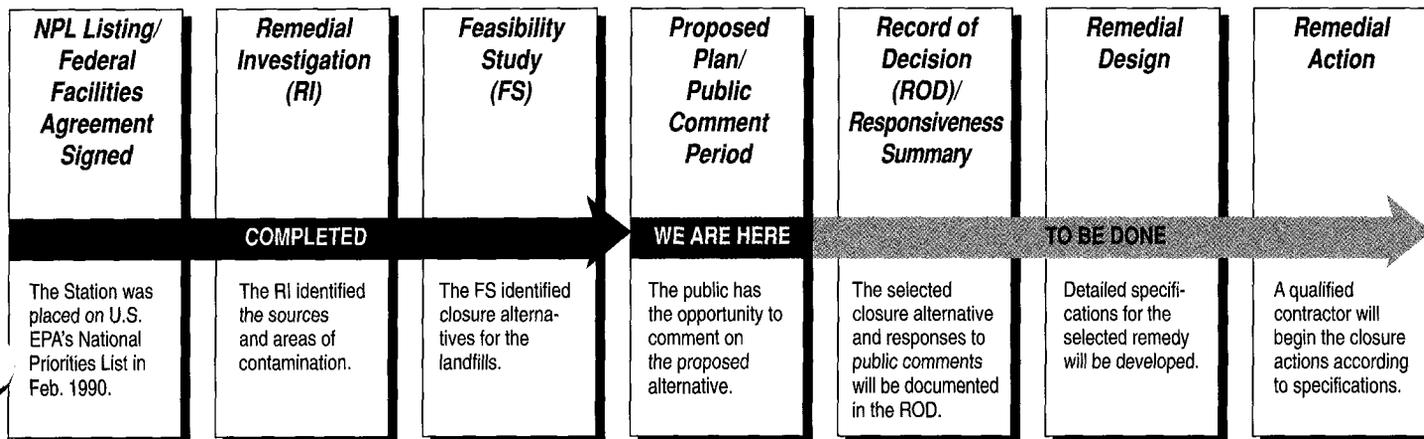
- OU-2B (Sites 2 and 17) and OU-2C (Sites 3 and 5) address landfill sites that contain a variety of waste materials.

- OU-3 includes the remaining sites at the Station.

In 1997, the Marine Corps issued Proposed Plans and established public comment periods for: the Site 24 VOC Source Area for soil cleanup using soil vapor extraction technology; and for the Marine Corps' recommendation for No Further Action for OU-3 Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, 22, and OU-2A Site 25. After consideration of public comments on the proposed alternatives, Records of Decision that formally document the remedial actions planned for these sites were issued in September 1997.

The Marine Corps currently anticipates issuing the Proposed Plan for VOC groundwater cleanup at OU-1 and OU-2A in early 1999. Proposed Plans for remaining OU-3 sites are expected to be released in 1998 and 1999.

### MCAS El Toro Installation Restoration Program Process Landfill Closures – Sites 2, 3, 5, and 17



# Where to Get More Information

Copies of Remedial Investigation and Feasibility Studies Reports, including the human health risk assessments and other key documents relating to environmental activities at MCAS El Toro, are available for public review at this Information Repository: **Heritage Park Regional Library, 14361 Yale Avenue, Irvine, California 92714; (714) 551-7151**. Current hours of operation: Monday – Thursday 10 a.m. to 9 p.m.; Friday – Saturday 10 a.m. to 5 p.m.; and Sunday 12 p.m. to 5 p.m.

The Marine Corps encourages community involvement in the decision-making process of the environmental restoration program at MCAS El Toro. If you have any questions or concerns about environmental activities at the Station, please feel free to contact any of the following project representatives:

**Mr. Joseph Joyce**

BRAC Environmental Coord.  
Commanding General  
AC/S, Environment (1AU)  
MCAS El Toro  
P.O. Box 95001  
Santa Ana, CA 92709-5001  
(714) 726-3470

**Capt. Matthew Morgan**

BRAC Public Affairs Officer  
Marine Corps Air Bases,  
Western Area (1AS)  
MCAS El Toro  
P.O. Box 95001  
Santa Ana, CA 92709-5001  
(714) 726-3853

**Mr. Andrew Bain**

Community Involvement  
Coordinator  
Superfund Division  
U.S. EPA  
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San Francisco, CA 94105  
(800) 231-3075

**Ms. Marsha Mingay**

Public Participation Coord.  
California EPA  
Department of Toxic  
Substances Control  
5796 Corporate Avenue  
Cypress, CA 90630  
(714) 484-5416

## 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: Commanding General, AC/S, Environment, (1AU), Attn: Mr. Joseph Joyce, IRP Department, MCAS El Toro, P.O. Box 95001, Santa Ana, CA 92709-5001.

- 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 \_\_\_\_\_

Commanding General  
Attn: Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S, Environment (1AU)  
MCAS El Toro  
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Santa Ana, CA 92709-5001

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## UNITED STATES MARINE CORPS

HEADQUARTERS MARINE CORPS AIR STATION EL TORO  
PO BOX 95000  
SANTA ANA CA 92709-5000

IN REPLY REFER TO:

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1AU

April 24, 1998

State of California Environmental Protection Agency  
Department of Toxic Substances Control, Region 4  
Attn: Mr. Tayseer Mahmoud  
Site Mitigation Branch  
Base Closure Unit  
5796 Corporate Avenue  
Cypress, CA 90630

### **FINAL PROPOSED PLAN FOR LANDFILL SITES AT MARINE CORPS AIR STATION (MCAS) EL TORO**

Dear Mr. Mahmoud:

We received the Department of Toxic Substances Control (DTSC) letter dated February 25, 1998, regarding the Draft Final Proposed Plan for landfill sites at MCAS El Toro. Based on the Federal Facility Agreement (FFA), Section 7.9, the Proposed Plan is considered final, and ready to submit to the public for comment under CERCLA.

Based on the language DTSC requested to be inserted in the Proposed Plan in the February 25 letter, there appears to be a misunderstanding regarding the status of the Community Reuse Plan (CRP), and in general, the planning process currently being undertaken by the LRA. The CRP and associated Environmental Impact Report (EIR) were completed in December 1996. It is the Department of Navy (DoN), as well as County of Orange's understanding that, although the EIR is being revised in response to a judge's ruling in a legal challenge, the CRP was not invalidated by the court so that the December 1996 CRP remains in effect. This is an approved final plan, not a draft reuse plan.

DTSC is correct in identifying the specific page in the landfill FS report for Site 5 that discusses irrigation. DoN proposed Alternative 3, as well as all variations of Alternative 4 restrict irrigation, and are therefore not compatible with an irrigated golf course. DTSC's preferred alternative for Site 5 has the same land use restrictions as our preferred Alternative 3. The golf course is planned in a parcel designated for recreational golf use that is comprised of 271 acres. The landfill at Site 5 is approximately 2 acres providing ample opportunity to design the golf course to avoid the constraints of the landfill. DTSC also stated that Alternative 5B or 6B, asphalt caps, would have a better likelihood of supporting future light industrial/ commercial reuse at Site 3. Both of these alternatives have the same land use restrictions as Alternative 3, including a restriction on excavating or disturbing the final cover. Again, DTSC's preferred alternative for Site 3 has the same land use restrictions as our preferred Alternative 3.

The LRA is currently initiating work on a more detailed level of reuse planning in developing an Airport Layout Plan (also referred to as Airport Master Plan) and associated "second tier" EIR in

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support of an application for Federal Aviation Administration (FAA) approval of a Public Benefit Conveyance for public airport use. Although the CRP is a conceptual plan which identifies broad, very generally defined land use planning zones, the Airport Master Plan will contain more detail regarding future reuse of the proposed airport and immediately surrounding lands.

As previously stated in response to comments on the Draft Proposed Plan, the DoN is presenting the proposed remedy early in the LRA's planning process, well in advance of the LRA's efforts to comply with CEQA and various public participation requirements regarding discussion of the details of the second tier plan for the parcels that include Sites 3 & 5. After completion of this second tier of planning, it is expected that the LRA would develop site specific plans for the areas that include Sites 3 & 5.

It is in the interest of DoN, the LRA and the public that there be no unnecessary delays in selecting and implementing the remedies for the landfill so that base closure can proceed. A Federal agency or department must comply with the provisions of CERCLA Section 120(h)(3) before conveying any real property on which any hazardous substances were known to have been released or disposed of. CERCLA Section 120(h)(3) provides that a deed conveying such real property must include a covenant that all remedial action necessary to protect human health and the environment with respect to any hazardous substances remaining on the property has been taken before the date of transfer. Before DoN can make such a covenant and transfer the real property containing the landfills by deed, a remedy must be selected in a Record of Decision (ROD) and then implemented.

Even after issuance of the ROD, it is possible to propose a restricted use, although it might be necessary to amend the ROD and conduct additional remedial actions. As stated in the feasibility study reports for Sites 3 & 5, future landowners or users will have to submit a written request to the DoN and regulatory agencies to undertake restricted uses, and shall be liable for the cost of any additional remedial action required to facilitate such restricted uses (Enclosure 1). Modification to the final remedy is predicated here on the assumption it would be approved by the DoN and regulatory agencies because it would remain protective of human health and the environment. We have met with the LRA staff to provide and discuss briefings on the status of the environmental program, site specific remedy selection, institutional controls and site tours. We will continue our efforts and look forward to maintaining our excellent working relationship established by our Marine Corps team.

The subject letter indicated DTSC verbally requested a 60-day extension during a BRAC Cleanup Team (BCT) meeting, in order to resolve reuse issues with the LRA. Section 9.1 of the FFA states that any request for extension be submitted in writing. The DoN did not receive an extension request in accordance with the FFA, which outlined the length of the extension sought by DTSC, the affect on related schedules and the good cause for such an extension request. In

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our BCT meeting February 23, 1998, a proposal presented by DTSC for a 60-day extension was discussed. DTSC was not able to support the discussion with good cause outlined in Sections 9.1 and 9.2 of the FFA, and no final decision was made during our discussions.

The majority of the BCT supported finalizing the Proposed Plan as written. The LRA submitted a written request to the Marine Corps for delay in going to the Public with our Final Proposed Plan and the DoN preferred alternative. The request was granted and we continue our coordination with the LRA staff. We remain optimistic we will achieve consensus among stakeholders interested in the environmental cleanup program at MCAS El Toro.

If you have any questions or would like to schedule a management meeting to discuss the DoN preferred remedy, please contact me at (949) 726-3470.



JOSEPH JOYCE

Base Realignment and Closure  
Environmental Coordinator

By direction of the  
Commanding General

Enclosure: 1. Under Secretary of Defense Memorandum of July 25, 1997

Copy to:

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April 24, 1998

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Long Beach, CA 90802-4444



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



## Policy on Responsibility for Additional Environmental Cleanup

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### 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

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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.



Cal/EPA

Department of  
Toxic Substances  
Control

5796 Corporate Ave.  
Cypress, CA  
90630-4700

May 5, 1998



Pete Wilson  
Governor

Peter M. Rooney  
Secretary for  
Environmental  
Protection

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
U.S. Marine Corps Air Station - El Toro  
P.O. Box 95001  
Santa Ana, California 92709-5001

Dear Mr. Joyce:

**RESPONSE TO YOUR LETTER REGARDING DRAFT FINAL PROPOSED  
PLAN FOR LANDFILL SITES AT MARINE CORPS AIR STATION (MCAS) EI  
TORO**

The Department of Toxic Substances Control (DTSC) has received your letter dated April 24, 1998 regarding the draft final Proposed Plan (PP) for the landfill sites at MCAS El Toro. This letter is to reiterate DTSC's concern that the proposed remedy (Alternative 3, native soil caps) may not be compatible with the Reuse Plan for future land use at landfill sites 3 and 5, and may restrict future uses of the sites. Although it appears that you disagree with this position, DTSC must reiterate our request that the following statement be inserted in the PP under the State/support agency acceptance criterion in the "Evaluation of Alternatives" section:

*"DTSC remains concerned that the Marine's proposed remedy (native soil caps) may not be compatible with the Reuse Plan for future land use as proposed by the Local Redevelopment Authority (LRA) for landfill Sites 3 and 5. Hence, it may restrict future uses of the sites. DTSC believes that other remedies may be more compatible with the future land use. For example, Alternative 4D, synthetic flexible membrane liner (FML), appears to be more appropriate for a future recreational use scenario, such as the golf course at Site 5. Alternatives 5B or 6B, asphalt caps, would have a better likelihood of supporting a future light industrial/commercial reuse at Site 3."*

This request is made in accordance with the National Contingency Plan (NCP) Section 300.430(e)(9)(iii)(H) and OSWER Directive 9335.3-02 Chapter 3, Section 3.2.4.

Mr. Joseph Joyce  
May 5, 1998  
Page 2

The following is a reiteration of our rationale for DTSC's recommendation of remedial alternative and a response to other issues raised in your letter:

#### 1) Information in Feasibility Study (FS)

DTSC's position for Site 5 is based upon information contained in the Marine's Feasibility Study (FS) submittal which specifically indicates that the native soil cap is not compatible with an irrigated golf course (pages 5-10 and 5-11 of the draft final FS); this conclusion was also acknowledged during the March 25, 1998 Restoration Advisory Board meeting. However, the Reuse Plan clearly proposes that Site 5 will be part of a golf course. It therefore appears that the proposed remedy is in direct conflict with the Reuse Plan. DTSC recommends remedial Alternative 4D because it is more protective of public health and the environment if the future reuse of the site will be as part of an irrigated golf course. This conclusion is based on the HELP modeling performed, which showed that Alternative 4D would provide the lowest infiltration rate of all the alternatives evaluated in the FS. Alternative 4D allows irrigation of the site up to 30.6 inches of water every year (the irrigation number provided by the Navy for the golf course) without impact to the waste in the landfill. I want to point out that the Marines' response to the October 25, 1996 comments regarding potential reuse issues at Site 5 acknowledged that, based on the HELP model results for an irrigated golf course, a GCL or FML barrier is needed to minimize infiltration (see Enclosure 1).

DTSC notes that, although the FS proposes to restrict irrigation for *all* alternatives, the FS statement could be modified to allow irrigation of as much as 30.6 inches of water if alternative 4D were the chosen alternative.

For Site 3, DTSC has not received additional information from you regarding our concerns about the relative merits of the native soil cap vs. the use of an asphalt cap. DTSC continues to recommend that an asphalt cap be used, so as to protect the environment and to allow for less restrictive future land uses. The asphalt cap would be flexible, allowing light industrial use or use as a parking lot, etc. At present, DTSC is not aware of other uses for this property that would correspond to the Reuse Plan if the landfill Site 3 was capped with native soil.

#### 2) Evaluation of PP by State Regulatory Agencies

DTSC is the lead state regulatory agency for MCAS El Toro, is a member of the BRAC (Base Realignment and Closure) Cleanup Team (BCT), and is a signatory to the Federal Facility Agreement (FFA). We have contacted representatives of other state agencies to discuss their evaluation of the PP. The California Integrated Waste Management Board (CIWMB) shares the DTSC opinion regarding the proposed remedy. This is reflected in the November 17, 1997 and November 21, 1997 letters issued by

*Mr. Joseph Joyce  
May 5, 1998  
Page 3*

DTSC and CIWMB regarding the draft PP. Both agencies have recommended that other alternative remedies for Sites 3 and 5 that could support the Reuse Plan should be evaluated by the BCT.

It is DTSC's understanding that the California Regional Water Quality Control Board (RWQCB) recommended Alternative 3 for Site 5 due to the presence of semi-arid climate conditions. However, if the site were irrigated (i.e., irrigated golf course reuse), then the semi-arid conditions would no longer exist, as a result of which the native soil cap would no longer be protective. Thus, taking future land use into consideration, the recommendation for a native soil cap would no longer be valid. The RWQCB has deferred to DTSC for evaluation of compatibility of proposed remediation and proposed reuse.

### 3) Compatibility of PP With Reuse Plan

In your letter, you advised DTSC that the Reuse Plan has been "finalized". Perhaps we simply have a difference in semantics regarding the entire process. Under the auspices of the Orange County Board of Supervisors, the MCAS El Toro Local Redevelopment Authority (LRA) developed the Community Reuse Plan, which was approved in December 1996. This Reuse Plan is the basis for both the Environmental Impact Study (EIS) being developed by the Navy, and for the Environmental Impact Report (EIR) being developed by the County. The EIS will be the basis for the National Environmental Policy Act (NEPA) Record of Decision (ROD); the EIR will be the basis for the California Environmental Policy Act (CEQA) Notice of Determination. It is our understanding that these documents are being developed separately, and that the Notice of Intent (EIS) and Notice of Preparation (EIR) will be issued in summer, 1998. It is anticipated that completion of these reviews will take approximately one year, i.e., summer, 1999, and will occur at approximately the same time as base closure. It is also our understanding that the Community Reuse Plan will become "final" at the time of the NEPA ROD, after which property transfers will legally be able to take place.

According to the enclosure you sent in your letter, "Responsibility for additional Environmental Cleanup after Transfer of Real Property", the Department of Defense has agreed that closing military installations will evaluate remedial alternatives in conjunction with reuse plans, so as to ensure that both the BCT and the LRA are working on parallel tracks to achieve the goals of environmental cleanup, functional reuse and economic revitalization of communities. Also, please see Enclosure 2 to this letter which has excerpts from federal BRAC laws referring to interaction and relationships of closing military bases and state and local communities. In addition to BRAC law, State and community acceptance are two of the nine criteria under the NCP for remedy selection.

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At this time, DTSC has not yet received the LRA's written evaluation concerning the PP. In the event that this information is not received prior to public notice of the PP, we note that the PP may need to be revised based upon comments received during the public comment period. Because we want to make certain that the LRA and members of the public are aware that the PP may result in restricted future land uses, DTSC must again reiterate our request that the language we have proposed (see page 1) be placed in the PP prior to issuance of public notice.

#### 4) Request for Extensions

DTSC staff followed the BCT's normal procedure by verbally discussing requests for Federal Facility Agreement (FFA) extensions before sending a request in writing. We did not send a written request for a 60-day extension because you had already informed me during the February 23, 1998 BCT meeting that you would not grant the extension. You told me that extension requests "solely to support base closure" are denied under the FFA. Also, by not agreeing that DTSC could refer to Section 9.2(g) of the FFA ("any other event or serious of events mutually agreed to by the Parties as constituting 'good cause'"), you precluded any opportunity for the extension. Because DTSC considers compatibility of remedial alternatives with proposed reuse plans to be an important component of remedy selection, we were disappointed by your decision.

DTSC is committed to provide timely decisions on remedial actions; however, we recognize that haste may sometimes result in future difficulties which could have been avoided by more explanation and evaluation. DTSC has endeavored to assure that there has been full disclosure to all interested parties, and to ensure cooperative interaction among all stakeholders.

DTSC remains hopeful that MCAS El Toro is committed to working with both state and local agencies to achieve base closure and reuse. If you have any questions or need further information, please call me at (714) 484-5418.

Sincerely,



Tayseer Mahmoud  
Remedial Project Manager  
Office of Military Facilities  
Southern California Operations

Enclosures

cc: See next page.

*Mr. Joseph Joyce*  
*May 5, 1998*  
*Page 5*

cc: Mr. Glenn R. Kistner  
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U. S. Environmental Protection Agency  
Region IX  
Superfund Division (SFD-8-2)  
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San Francisco, California 94105-3901

Ms. Patricia Hannon  
Remedial Project Manager  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3339

Mr. Peter Janicki  
California Integrated Waste Management Board  
8800 Cal Center Drive  
Sacramento, California 95826

Mr. Steven Sharp  
County of Orange  
Environmental Health Division  
Solid Waste Local Enforcement Agency  
2009 East Edinger Avenue  
Santa Ana, California 92705

Ms. Candace Haggard  
Lead Project Manager  
MCAS El Toro Local Redevelopment Authority  
300 North Flower Street, Suite 720  
Santa Ana, California 92703

Mr. Tim Latas  
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401 West A Street, Suite 1000  
San Diego, California 92101-7905

Mr. Gregory F. Hurley  
Restoration Advisory Board Co-chair  
8001 Irvine Center Drive, Suite 900  
Irvine, California 92618-2921

*Mr. Joseph Joyce*  
*May 5, 1998*  
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cc: Mr. Wayne Lee  
AC/S Environmental and Safety (1AU)  
U.S. Marine Corps Air Station - El Toro  
P.O. Box 95001  
Santa Ana, California 92709-5001

Col. J. Ritchey, USMC  
AC/S BRAC (1AS)  
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Ms. Marianna Potacka  
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2 Navy Annex  
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Ms. Laura Duchnak  
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*Mr. Joseph Joyce*  
*May 5, 1998*  
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cc: Mr. Bernie Lindsey  
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Ms. Courtney Wiercioch  
Manager of El Toro Master Development Program  
10 Civic Center Plaza, 2nd Floor  
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Mr. Louis Misko  
BRAC Operations Officer  
Naval Facilities Engineering Command  
Southwest Division  
BRAC Operation Office  
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Mr. Dana Sakamoto  
West Coast Environmental Business Line Team Leader  
Naval Facilities Engineering Command  
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1220 Pacific Highway  
San Diego, California 92132-5190

RESPONSE TO COMMENTS  
 POTENTIAL REUSE ISSUES ASSOCIATED  
 WITH OPERABLE UNIT 2C - SITE 5  
 MCAS EL TORO, CALIFORNIA

Enclosure 1

<p>Originator: Peter M. Janicki                  Cal/EPA</p> <p>To: Tayseer Mahmoud                  DTSC</p> <p>Date: 25 October 1996</p>	<p>CLEAN II Program                  Contract No. N68-711-92-D-4670                  CTO-0076                  File Code: 0214</p>
<p>5. Modified HELP model infiltration analyses based on the proposed irrigation and approved final cover design.</p>	<p>RESPONSE 5: The draft final PS report presents a HELP model result which simulates the use of the site as an irrigated golf course (30.6 inches of water application over the year). Under this scenario, a GCL or FML barrier layer is required to minimize infiltration.</p>
<p>In addition to the site investigation requirements and based on its results, modifications to the design of the final cover may be required as well. The modifications may include the following elements:</p>	
<p>6. Modified final cover design which would include a synthetic impermeable membrane along with a subsurface drainage layer connected to the runoff collection system.</p>	<p>RESPONSE 6: Based on the HELP model results for an irrigated golf course, a GCL or FML barrier layer is needed to minimize infiltration.</p>
<p>7. In addition to the final cover design modification or in lieu of, a subsurface moisture sensing system synchronized with the onsite irrigation system may be required.</p>	<p>RESPONSE 7: As part of the final design, a soil moisture sensing system, especially in the area of the landfill, is a design element which would be useful for minimizing irrigation.</p>
<p>8. Landfill gas monitoring and collection systems and audible gas detection devices (for onsite enclosed structures) may be required, based on the results of the landfill gas survey.</p>	<p>RESPONSE 8: All results of the landfill gas surveys have shown that low concentrations of VOCs and methane are present and would be monitored through the perimeter soil gas probes on a quarterly basis. Onsite enclosed structures are not considered as part of the irrigated golf course reuse but this will be negotiated at the time of BRAC transfer.</p>
<p>9. Special design consideration should be given to allow ease of all monitoring and control systems related to the landfill postclosure maintenance.</p>	<p>RESPONSE 9: Access will be included in the final design and will be negotiated as part of the BRAC transfer process.</p>
<p>As an alternative to constructing actual irrigated golf course areas over the fill, the project proponent may consider designating the landfill for golf course related functions such as parking lot, restrooms, etc. By eliminating site irrigation, the site investigation and closure requirements may be then reduced.</p>	<p>For the PS report, the irrigated golf course presents the most severe problems with reuse and will be considered in the report. Actual reuse activities will be decided by the reuse agency.</p>
<p>It should be pointed out that the extent of site investigation may have a direct effect on the final cover and other closure related requirements for</p>	<p>Based on the results from the Air SWAT, Phase I RI, and Phase II RI, the existing environmental threats from Site 5 are minimal. The PS report for the</p>

## ENCLOSURE 2

Excerpts from Public Law, 103-160, Division B, Title XXIX, Section 2903 © and (d), (Nov. 30, 1993), 107 Stat. 1915

“...the Federal Government will assist communities that experience adverse economic circumstances as a result of the closure of military installations by working with such communities to identify and implement means of reutilizing or redeveloping such installations in a beneficial manner or of otherwise revitalizing such communities and economies of such communities...”

“...the federal government may also provide assistance by accelerating environmental restoration at military installations to be closed, and by closing such installations in a manner that best ensures the beneficial reutilization and redevelopment of such installations by such communities...”

“...the Secretary [of Defense] shall take into account the redevelopment plan developed for the military installation involved.”

“...the Secretary of Defense shall cooperate with the State in which a military installation ...is located, with the redevelopment authority with respect to the installation, and with local governments and other interested persons in communities located near the installation in implementing the entire process of disposal of the real property and personal property at the installation.”

**Marine Corps Air Station El Toro**  
**Restoration Advisory Board**  
**Installation Restoration Program**  
**Site Tour**



Restoration Advisory Board (RAB) members are invited to participate in a tour of the Installation Restoration Program Sites at MCAS El Toro. This tour will provide RAB members with a firsthand opportunity to see the sites and to ask questions of Marine Corps and regulatory project staff.

**Date:** Saturday, July 25, 1998 at 9:00 a.m.

**Sign-up:** Please sign-up by filling out the attached form and mailing or faxing it to Mr. Joseph Joyce by July 10, 1998.

**Mailing address:** Commanding General  
Attn: Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS El Toro, P.O. Box 95001  
Santa Ana, CA 92709-5001

**Overnight mail:** Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS El Toro, Bldg. 386, 2nd Floor  
Santa Ana, CA 92709-5001

**FAX number:** (949) 726-6586

**Time:** The tour will begin promptly at 9:00 a.m. and last approximately 2 hours. Please arrive 15 minutes early.

**Location:** Meet at MCAS El Toro, Officers' Club. Directions to the Officers' Club are attached to this flyer.

*Please wear comfortable walking shoes*

**MCAS El Toro  
Restoration Advisory Board**

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**Installation Restoration Program Site Tour  
Sign-up Form**

**Date:** Saturday, July 25, 1998 at 9:00 a.m.

**Sign-up:** Please sign-up by filling out this form and mailing or faxing it to Mr. Joseph Joyce by July 10, 1998.

**Name:** \_\_\_\_\_

**Affiliation:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**FAX Number:** \_\_\_\_\_

**Address:** \_\_\_\_\_

---

If there is more than one person in your party please include their names and relevant information

**Mailing address:** Commanding General  
Attn: Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS El Toro, P.O. Box 95001  
Santa Ana, CA 92709-5001

**Overnight mail:** Mr. Joseph Joyce  
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**Marine Corps Air Station El Toro**

**Restoration Advisory Board**  
**Installation Restoration Program Site Tour**

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**Directions to Officers' Club (tour starting point):**

- From either I-5 or I-405 exit at Sand Canyon Avenue.
- Take Sand Canyon north to Trabuco Road, make a right turn. You will head straight to the Main Gate. At the Main Gate, inform the guard you are attending the Restoration Advisory Board (RAB) tour.
- From the Main Gate proceed straight to Perimeter Road, make a right turn (stop sign).
- Follow Perimeter Road for 1/2 to 3/4 of a mile, look for "Officers' Club signs.
- The Officers' Club is a large, tan colored building that stands alone on the right side of the road.
- Pull into the parking lot on the right side of the building. The parking lot at the Officers' Club is the starting point for the tour.

# **Navy and Marine Corps - Internet Access Environmental Web Sites**

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## **Southwest Division Naval Facilities Engineering Command Web Site:**

**<http://www.efdswest.navfac.navy.mil/DEP/ENV/default.htm>**

## **Marine Corps Air Bases Western Area Web Site:**

**[www.eltoro.usmc.mil](http://www.eltoro.usmc.mil)**

## **Department of Defense - Environmental BRAC Web Page**

**[www.dtic.mil/environdod/envbrac.html](http://www.dtic.mil/environdod/envbrac.html)**

## **U.S. EPA Superfund Web Page**

**[www.epa.gov/superfund/index.html](http://www.epa.gov/superfund/index.html)**

**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: Commanding General, AC/S, Environment, (1AU), Attn: Mr. Joseph Joyce, IRP Department, MCAS El Toro, P.O. Box 95001, Santa Ana, CA 92709-5001.

- 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 \_\_\_\_\_