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MCAS EL TORO
SSIC NO. 5090.3

Public Information Materials

10/25/00
Public Meeting
Proposed Plan – No Further Action
Operable Unit 3, Sites 7 & 14

Held at Irvine City Hall
Irvine, CA

Materials/Handouts Include:

- Public Meeting Agenda – 10/25/00.
- MCAS El Toro – Public Meeting Overview.
- MCAS El Toro – Public Comment Form.
- MCAS El Toro – Public Meeting Evaluation Form.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- Internet Access – Environmental Web Sites.
- MCAS El Toro Administrative Record File – Information Sheet (for on-Station access); and MCAS El Toro Information Repository – Information Sheet.
- Where to Get More Information.
- MCAS El Toro Restoration Advisory Board – Acronyms and Glossary of Technical Terms.
- MCAS El Toro Installation Restoration Program – Restoration Advisory Board Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro RAB Meeting Schedule, Full RAB (Sept. 2000 – July 2001) and RAB Subcommittee (August 2000 – August 2001).
- MCAS El Toro Local Redevelopment Authority (key contact with phone number).
- DoD Policy on Responsibility for Additional Environmental Cleanup After Transfer of Real Property (memorandum with attachment), July 25, 1997.
- Location of Concern Distribution – As of October 5, 2000; and Location of Concern Distribution, Exhibit 2, December 31, 1999, from MCAS El Toro BRAC Business Plan Year 2000 Update.
- MCAS El Toro Installation Restoration Program (IRP) Sites, Figure 4, Status as of December 31, 1999, from MCAS El Toro BRAC Business Plan Year 2000 Update.
- Base Realignment and Closure Business Plan for MCAS El Toro, March 2000, Introduction Section.
- MCAS El Toro Other Locations of Concern, Figure 12, from MCAS El Toro BRAC Business Plan Year 2000 Update.
- MCAS El Toro Underground Storage Tank Program Map, Figure 1, Status as of 29 February 2000.
- MCAS El Toro VOC Baseline Concentrations – Draft figure, October 2000.
- MCAS El Toro Typical Vapor Concentration Decline, Vadose Zone Remediation – IRP Site 24, Building 297, October 2000.
- MCAS El Toro Proposed Plan for Operable Unit 3 Sites 7 and 14 – September 2000.
- *Presentation* – MCAS El Toro Public Meeting, Proposed Plan – No Further Action, Operable Unit 3 – Sites 7 and 14, October 25, 2000. Presented by Dean Gould, U.S. Navy BRAC Environmental Coordinator.
- Public Meeting Transcript – 10/25/00 Public Meeting (contains formal presentation made at the meeting and comments provided by members of the public).

AGENDA

MCAS El Toro Public Meeting

Proposed Plan – No Further Action
Operable Unit 3 - Sites 7 & 14

October 25, 2000 – 6:30-9:30 p.m.

Time	Activity
6:30-7:30	Poster board session, offers community members to speak with Marine Corps/Navy and BRAC Cleanup Team representatives one-on-one and to provide court reporter with oral comments
7:30-7:45	Set up chairs for presentation segment
7:45-8:15	Formal presentation
8:15-8:45	Open Question and Comment segment
8:45-9:30	Court reporter to take comments after formal portion of meeting and continue poster session

Tables/Stations:

1. Sign-in/Greeters
2. General Environmental
3. Remedial Investigation
4. Risk Assessment Role in Decision Making/Proposed Plan
5. Public Comments/Court Reporter

Other Tables:

- RAB (Community Co-chair, Subcommittee Chair)
- Other interested organizations

MCAS El Toro - Public Meeting Overview
Proposed Plan - No Further Action
Sites 7 and 14

- This public meeting has been organized to provide the community with a step-by-step approach for obtaining information, asking questions, and providing comments on the Marine Corps' Proposed Plan for No Further Action at MCAS El Toro Installation Restoration Program Sites 7 and 14.

- Community members have the opportunity to discuss the issues directly with representatives from the Marine Corps/Navy and the regulatory agencies at various tables throughout the room. We recommend following the sequence listed below.

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Table 1 – Sign-in/Greeter:

Provides opportunity to sign-in, obtain agenda, get an overview of the purpose of the meeting, receive a copy of Proposed Plan, and have the opportunity to be added to the mailing list.

Table 2 - General Environmental:

Presents an overview of the Installation Restoration Program and other environmental cleanup programs at the Station.

Table 3 - Remedial Investigation:

Focuses on the environmental investigation conducted to evaluate the presence, nature, and extent of soil contamination at Installation Restoration Program Sites 7 and 14.

Table 4 - Risk Assessment Role in Decision-Making/Proposed Plan

Explains the risk assessment process, an important component of the remedial investigation, and presents risk assessment results that are used to determine if cleanup is necessary. Presents risk management considerations and a synopsis of the Marine Corp's Proposed Plan for No Further Action at Sites 7 and 14.

Table 5 - Public Comments/Court Reporter

Provides community members the opportunity to formally submit written or oral comments to the Marine Corps/Navy regarding the Proposed Plan for No Further Action. In addition, information on the Information Repository and the Administrative Record will be available.

MCAS EL TORO - PUBLIC COMMENT FORM
PROPOSED PLAN – NO FURTHER ACTION
SITES 7 AND 14

USE THIS FORM TO WRITE YOUR COMMENTS ***Date:*** _____

(Attach additional pages if you need more space.)

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Name: _____

Address: _____

City: _____

State: _____ **Zip Code:** _____

Telephone: ( ) _____

Mail written comments **postmarked no later than November 8, 2000** to: Mr. Dean Gould, Base Realignment and Closure (BRAC) Environmental Coordinator, Environmental Division, MCAS El Toro, P.O. Box 51718, Irvine, CA 92619-1718. Comments may also be faxed to (949) 726-6586.

Meeting Evaluation

MCAS EL TORO Sites 7 and 14 PUBLIC MEETING – October 25, 2000

Please take a few minutes to complete this evaluation and place it in the box by the court reporter. Your input will help shape future meetings and improve communication with the community.

1. How did you learn about this meeting? Please check off ✓ all that apply.

__ Newspaper ad – which paper? _____
__ Newspaper story – which paper? _____
__ TV/radio – which station? _____
__ Mailer – where did you receive the mailer? _____
__ Other – _____

2. Please rate the items below using the following rating system by circling the corresponding number:

1 – poor, 2 – fair, 3 – good, 4 – very good, 5 – excellent

a.	Were the efforts to announce this meeting satisfactory?	1	2	3	4	5
b.	How did the format of this meeting meet your information needs?	1	2	3	4	5
c.	Were the presentations informative?	1	2	3	4	5
d.	Were the handouts helpful?	1	2	3	4	5
e.	Did the meeting provide sufficient opportunity to discuss the issues with project staff?	1	2	3	4	5
f.	Were you satisfied with the various methods for providing public comments?	1	2	3	4	5

3. **Please make any additional comments or suggestions that will help enhance communication with the community at future public meetings. Use the back of this form if needed.**

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Thank you

MCAS El Toro

Installation Restoration Program

MAILING LIST COUPON

If you would like to be on the mailing list to receive information about environmental restoration activities at MCAS El Toro, please complete the coupon below and mail to:

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

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

☐ Send me information on Restoration Advisory Board membership.

Name _____

Street _____

City _____ State _____ Zip Code _____

Affiliation (optional) _____ Telephone _____

Internet Access
Environmental Web Sites

Southwest Division Naval Facilities Engineering Command Web Site:

http://www.efdsw.navfac.navy.mil/DEP/ENV/default.htm

Department of Defense - Environmental Cleanup Home Page Web Site:

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

Department of Defense - Environmental BRAC Web Site:

www.dtic/mil/envirodod/brac/

Department of Defense - Community Involvement RAB Web Site:

www.dtic/envirodod/rab/

Defense Environmental Response Task Force Web Site:

www.dtic/mil/envirodod/brac/dertf.html

U.S EPA Superfund Web Site:

www.epa.gov/superfund/index.html

Administrative Record File

- Located at MCAS El Toro – BRAC Office, Marine Way, Building 368, 2nd floor
- Anyone is welcome to review documents in the file
- To view the documents, schedule an appointment by calling:
  - Mr. Dean Gould at (949) 726-5398 or (619) 532-0784
  - Ms. Charly Wiemert at (949) 726-2840

See the backside for location of the Information Repository

Information Repository

- Located at Heritage Park Regional Library in Irvine
- Address: 14361 Yale Avenue, Irvine
- Hours: Monday-Thursday, 10 am to 9 pm
  Friday and Saturday, 10 am to 5 pm
  Sunday 12 pm to 5 pm
- Phone: (949) 551-7151

- Contains key Installation Restoration Program documents and complete materials from all RAB meetings (agendas, minutes, handouts)

- Anyone is welcome to review documents at the Library

Where To Get More Information:

Copies of Remedial Investigation reports, other key documents, and additional information relating to environmental cleanup activities at MCAS El Toro are available for public review at the following information repository:

Heritage Park Regional Library
14361 Yale Avenue
Irvine, CA
(949) 551-7151

Current hours:
Monday-Thursday 10am-9pm
Friday-Saturday 10am-5pm
Sunday 12pm-5pm

Key Project Representatives:

Mr. Dean Gould*
BRAC Environmental Coordinator
Base Realignment and Closure,
Environmental Division
MCAS El Toro
P.O. Box 51718
Irvine, CA 92619-1718
(949) 726-5398 or (619) 532-0784

Mr. Glenn Kistner*
Project Manager
U.S. EPA Region IX
75 Hawthorne St. (SFD-8-2)
San Francisco, CA 94105
(415) 744-2210

Ms. Triss Chesney*
Project Manager
Cal-EPA, Department of Toxic
Substances Control
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5395

Mr. John Broderick*
Project Manager
Cal-EPA, Regional Water Quality
Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3339
(909) 782-4494

* BRAC Cleanup Team (BCT) Member

Community Involvement
Superfund Division
U.S. EPA, Region IX
(800) 231-3075

Ms. Kim Foreman
Public Participation Specialist
Cal-EPA, Department of Toxic
Substances Control
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5324

MCAS El Toro

Restoration Advisory Board

Acronyms and Glossary of Technical Terms

This handout has been prepared to provide Restoration Advisory Board (RAB) members and others with a better understanding of acronyms and technical terms used during Installation Restoration Program activities and other environmental programs underway at MCAS El Toro.

List of Acronyms

AB	Assembly Bill
accumulation areas	less-than-90-day accumulation areas
ACM	asbestos-containing materials
AC/S	Assistant Chief of Staff
AFB	Air Force Base
AOC	area of concern
AQMP	Air Quality Management Plan
AR	Administrative Record
ARAR	applicable or relevant and appropriate requirement
ASN	Assistant Secretary of the Navy
AST	aboveground storage tank
Basin	the Los Angeles Basin
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BFI	Browning Ferris Industries
bgs	below ground surface
BNI	Bechtel National, Inc.
BRAC	Base Realignment and Closure
BRAC III	Base Closure and Realignment Act of 1993
CAC	Citizens Advisory Committee
Cal-EPA	California Environmental Protection Agency
CBCEC	California Base Closure Environmental Committee
CCR	*California Code of Regulations*
CDM Federal	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	*Code of Federal Regulations*
CLEAN	Comprehensive Long-Term Environmental Action Navy
CMC	Commandant of the Marine Corps
COE	(United States) Army Corps of Engineers
COMCABWEST	Commander, Marine Corps Air Bases Western Area
COPC	chemical of potential concern
County	Orange County
CP	Compliance Program
CRP	Community Reuse Plan
CTO	Contract Task Order

D&M	Dames & Moore
DFSC	Defense Fuel Supply Center
the Districts	the County Sanitation Districts of Orange County
DoD	Department of Defense
DOI	Department of Interior
DoN	Department of the Navy
DRMO	Defense Reutilization and Marketing Office
DTSC	(Cal-EPA) Department of Toxic Substances Control
EBS	Environmental Baseline Survey
ECP	environmental condition of property
EE/CA	Engineering Evaluation/Cost Analysis
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Environmental Office
EOD	explosive ordnance disposal
ETRPA	El Toro Reuse Planning Authority
°F	degrees Fahrenheit
FA	further action
FAA	Federal Aviation Administration
FDS	Federal Disposal Services
FFA	Federal Facility Agreement
FOSL	finding of suitability to lease
FOST	finding of suitability to transfer
FS	feasibility study
ft/day	feet per day
gal.	gallon
GIS	geographical information system
HAS	Homeless Assistance Submission
HRA	Historical Radiological Assessment
HUD	(United States Department of) Housing and Urban Development
IAFS	Interim Action Feasibility Study
IDW	investigation-derived waste
IRP	Installation Restoration Program
IRWD	Irvine Regional Water District
IT	International Technology Corporation
IWTP	industrial wastewater treatment plant
JMM	James M. Montgomery Engineers

LBP	lead-based paint
LDPE	low density polyethylene
LOC	location of concern
LRA	Local Redevelopment Authority
MAW	marine air wing
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
mg/L	milligrams per liter
MSL	mean sea level
NAVFAC	Naval Facilities
NAVFACENGCOM	Naval Facilities Engineering Command
NAVRAMP	Navy Radon Assessment and Mitigation Program
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEDTS	Navy Environmental Data Transfer Standards
NFA	no further action
NEPA	National Environmental Policy Act
NFI	no further investigation
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
OCHCA	Orange County Health Care Agency
OCWD	Orange County Water District
OEA	Office of Economic Adjustment
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
OU	operable unit
OWS	oil/water separator
PAH	polynuclear aromatic hydrocarbon
PBR	Permit by Rule
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
PP	Proposed Plan
ppm	parts per million
PRG	preliminary remediation goal
Project Team	BRAC Project Team
PWC	Navy Public Works Center
QAPP	quality assurance project plan

RAB	Restoration Advisory Board
RAC	remedial action contract
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RECLAIM	Regional Clean Air Initiatives Market
RFA	RCRA Facility Assessment
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
SAIC	Science Applications International Corporation
SCAQMD	South Coast Air Quality Management District
SPCC	Spill Prevention and Countermeasure Plan
Station	Marine Corps Air Station El Toro
STP	sewage treatment plant
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	solid waste management unit
TAA	temporary accumulation area
TCRA	time-critical removal action
TDS	total dissolved solids
TRC	Technical Review Committee
TSCA	Toxic Substances Control Act
UCL	upper confidence limit
U.S. EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USMC	United States Marine Corps
UST	underground storage tank
VOC	volatile organic compound
WW	World War
XFMR	transformer

ACRONYMS/ABBREVIATIONS

Air SWAT	Air Quality Solid Waste Assessment Test
ASTM	American Society for Testing and Materials
BCT	BRAC Cleanup Team
BEIDMS	Bechtel Environmental Integrated Data Management System
bgs	below ground surface
BNI	Bechtel National, Inc.
BRAC	Base Realignment and Closure
°C	degrees Celsius
Cal/EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	U.S. EPA Contract Laboratory Program
CNDDB	California Natural Diversity Data Base
COPC	chemical of potential concern
CPT	cone penetrometer test
CTO	Contract Task Order
DC	direct current
DCE	dichloroethene
Desalter	Irvine Desalter Project
DoD	Department of Defense
DON	Department of the Navy
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
EC	electrical conductivity
EOD	explosive ordnance disposal
°F	degrees Fahrenheit
FFA	Federal Facilities Agreement
FID	flame ionization detector
FS	Feasibility Study
FSP	Field Sampling Plan
ft/day	feet per day

ACRONYMS/ABBREVIATIONS (continued)

GC	gas chromatograph
gpm	gallons per minute
GPR	ground-penetrating radar
IAFS	Interim-Action Feasibility Study
IAS	Initial Assessment Study
ID	inside diameter
IDWMP	Investigation-Derived Waste Management Plan
IRP	Installation Restoration Program
L/min	liters per minute
µmhos/cm	micromhos per centimeter
MCAS	Marine Corps Air Station
MeCl	methylene chloride
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
NACIP	Navy Assessment and Control of Installation Pollutants
NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Engineering Service Center (formerly NEESA)
NFRAP	No Further Response Action Planned
NPL	National Priorities List
NTU	nephelometric turbidity units
OCWD	Orange County Water District
OD	outside diameter
OU	operable unit
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
PRG	(U.S. EPA Region IX) Preliminary Remediation Goal
psi	per square inch
psig	per square inch gauge

ACRONYMS/ABBREVIATIONS (continued)

QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROICC	Resident Officer in Charge of Construction
RPD	relative percent difference
RWQCB	(California) Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SCAQMD	South Coast Air Quality Management District
SIPOA	Site Inspection Plan of Action
SOP	Standard Operating Procedure
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU/AOC	solid waste management unit/area of concern
TCA	trichloroethane
TCE	trichloroethylene
TDS	total dissolved solids
TIC	The Irvine Company
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
USCS	Unified Soils Classification System
U.S. EPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOA	volatile organic analysis
VOC	volatile organic compound
v/v	volume per volume
WSA	waste staging area

ACRONYMS/ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
BCT	BRAC Cleanup Team
bgs	below ground surface
BNI	Bechtel National, Inc.
BRAC	Base Realignment and Closure
°C	degrees Celsius
Cal-EPA	California Environmental Protection Agency
CCR	*California Code of Regulations*
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (1980)
cfm	cubic feet per minute
CFR	*Code of Federal Regulations*
CLEAN	Comprehensive Long-Term Environmental Action Navy
cm^3/g	cubic centimeters per gram
cm/s	centimeters per second
CPT	cone penetrometer test
CTO	Contract Task Order
DCA	dichloroethane
DCE	dichloroethene
DNAPL	dense nonaqueous-phase liquid
DON	Department of the Navy
DTSC	(Cal-EPA) Department of Toxic Substances Control
DWR	(California) Department of Water Resources
°F	degrees Fahrenheit
FFA	Federal Facilities Agreement
FS	Feasibility Study
ft^3	cubic feet
ft/day	feet per day
ft^3/min	cubic feet per minute
GAC	granular activated carbon
gpm	gallons per minute
HQ	hazard quotient
IAFS	Interim-Action Feasibility Study
ICE	internal combustion engine
IRP	Installation Restoration Program

ACRONYMS/ABBREVIATIONS (continued)

IRWD	Irvine Ranch Water District
Irvine Subbasin	Irvine Groundwater Subbasin
JMM	James M. Montgomery Engineers, Inc.
LGAC	liquid-phase granular activated carbon
LNAPL	light nonaqueous-phase liquid
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSL	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NPL	National Priorities List
NPW	net present worth
OCWD	Orange County Water District
OU	operable unit
PCE	tetrachloroethene
PCO	photocatalytic oxidation
POTW	publicly owned treatment works
PVC	polyvinyl chloride
RACER	Remedial Action Cost Engineering Requirements
RAO	remedial action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
RWQCB	(California) Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SCAQMD	South Coast Air Quality Management District
SHSO	Site Health and Safety Officer
SITE	(U.S. EPA) Superfund Innovative Technologies Evaluation
STLC	soluble threshold limit concentration

ACRONYMS/ABBREVIATIONS (continued)

SVE	soil vapor extraction
SWDIV	Southwest Division Naval Facilities Engineering Command
SWRCB	(California) State Water Resources Control Board
TAL	target analyte list
TBC	to be considered
TCA	trichloroethane
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TDS	total dissolved solids
TPH	total petroleum hydrocarbons
USGS	United States Geological Survey
U.S. EPA	United States Environmental Protection Agency
UV	ultraviolet
VGAC	vapor-phase granulated activated carbon
VES	vapor extraction system
VOC	volatile organic compound
WQCP	(Comprehensive) Water Quality Control Plan (for the Santa Ana Region)

United States
Environmental Protection
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EPA 175-B-93-001
February 1993

EPA

Terms Of Environment

Glossary, Abbreviations, And Acronyms

Printed on Recycled Paper

Introduction

Terms Of Environment defines in non-technical language the more commonly used environmental terms appearing in EPA publications, news releases, and other Agency documents available to the general public, students, the media, and Agency employees. The definitions do not constitute the Agency's official use of terms and phrases for regulatory purposes, and nothing in this document should be construed to alter or supplant any other federal document. Official terminology may be found in the laws and related regulations as published in such sources as the Congressional Record, Federal Register, and elsewhere.

The terms selected for inclusion are derived from previously published lists, internal glossaries produced by various programs and specific suggestions made by personnel in many Agency offices. The chemicals and pesticides selected for inclusion are limited to those most frequently referred to in Agency publications or that are the subject of major regulatory or program activities.

Definitions or information about substances or program activities not included herein may be found in EPA libraries or scientific/technical reference documents, or may be obtained from various program offices.

Those with suggestions for future editions should write to the Editorial Services Division, Office of Communications, Education, and Public Affairs, A-107, USEPA, Washington DC 20460.

Abbreviation and acronymn list begins on page 31

A

A—Scale Sound Level: A measurement of sound approximating the sensitivity of the human ear, used to note the intensity or annoyance level of sounds.

Abandoned Well: A well whose use has been permanently discontinued or which is in a state of such disrepair that it cannot be used for its intended purpose.

Abatement: Reducing the degree or intensity of, or eliminating, pollution.

Accident Site: The location of an unexpected occurrence, failure or loss, either at a plant or along a transportation route, resulting in a release of hazardous materials.

Acclimatization: The physiological and behavioral adjustments of an organism to changes in its environment.

Acid Deposition: A complex chemical and atmospheric phenomenon that occurs when emissions of sulfur and nitrogen compounds and other substances are transformed by chemical processes in the atmosphere, often far from the original sources, and then deposited on earth in either wet or dry form. The wet forms, popularly called "acid rain," can fall as rain, snow, or fog. The dry forms are acidic gases or particulates.

Acid Rain: (See: acid deposition)

Action Levels: 1. Regulatory levels recommended by EPA for enforcement by FDA and USDA when pesticide residues occur in food or feed commodities for reasons other than the direct application of the pesticide. As opposed to "tolerances" which are established for residues occurring as a direct result of proper usage, action levels are set for inadvertent residues resulting from previous legal use or accidental contamination. 2. In the Superfund program, the existence of a contaminant concentration in the environment high enough to warrant action or trigger a response under SARA and the National Oil and Hazardous Substances Contingency Plan. The term is also used in other regulatory programs. (See: tolerances.)

Activated Carbon: A highly adsorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions. In waste treatment it is used to remove dissolved organic matter from waste water. It is also used in motor vehicle evaporative control systems.

Activated Sludge: Product that results when primary effluent is mixed with bacteria-laden sludge and then agitated and aerated to promote biological treatment, speeding the breakdown of organic matter in raw sewage undergoing secondary waste treatment.

Activator: A chemical added to a pesticide to increase its activity.

Active Ingredient: In any pesticide product, the component that kills, or otherwise controls, target pests. Pesticides are regulated primarily on the basis of active ingredients.

Activity Plans: Written procedures in a school's asbestos- management plan that detail the steps a Local Education Agency (LEA) will follow in performing the initial and additional cleaning, operation and maintenance-program tasks; periodic surveillance; and reinspections required by the Asbestos Hazard Emergency Response Act (AHERA).

Acute Exposure: A single exposure to a toxic substance which results in severe biological harm or death. Acute exposures are usually characterized as lasting no longer than a day, as compared to longer, continuing exposure over a period of time.

Acute Toxicity: The ability of a substance to cause poisonous effects resulting in severe biological harm or death soon after a single exposure or dose. Also, any severe poisonous effect resulting from a single short-term exposure to a toxic substance. (See: chronic toxicity, toxicity.)

Adaptation: Changes in an organism's structure or habits that help it adjust to its surroundings.

Add-on Control Device: An air pollution control device such as carbon absorber or incinerator that reduces the pollution in an exhaust gas. The control device usually does not affect the process being controlled and thus is "add-on" technology, as opposed to a scheme to control pollution through altering the basic process itself.

Adequately Wet: Asbestos containing material that is sufficiently mixed or penetrated with liquid to prevent the release of particulates.

Administrative Order On Consent: A legal agreement signed by EPA and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a comment period, applies to civil actions, and can be enforced in court.

Administrative Order: A legal document signed by EPA directing an individual, business, or other entity to take corrective action or refrain from an activity. It describes the violations and actions to be taken, and can be enforced in court. Such orders may be issued, for example, as a result of an administrative complaint whereby the respondent is ordered to pay a penalty for violations of a statute.

Administrative Procedures Act: A law that spells out procedures and requirements related to the promulgation of regulations.

Administrative Record: All documents which EPA considered or relied on in selecting the response action at a Superfund site, culminating in the record of decision for remedial action or, an action memorandum for removal actions.

Adsorption: An advanced method of treating waste in which activated carbon removes organic matter from wastewater

Adulterants: Chemical impurities or substances that by law do not belong in a food, or pesticide.

Adulterated: 1. Any pesticide whose strength or purity falls below the quality stated on its label. 2. A food, feed, or product that contains illegal pesticide residues.

Advanced Treatment: A level of wastewater treatment more stringent than secondary treatment; requires an 85-percent reduction in conventional pollutant concentration or a significant reduction in nonconventional pollutants.

Advanced Wastewater Treatment: Any treatment of sewage that goes beyond the secondary or biological water treatment stage and includes the removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids. (See primary, secondary treatment.)

Advisory: A non-regulatory document that communicates risk information to those who may have to make risk management decisions.

Aerated Lagoon: A holding and/or treatment pond that speeds up the natural process of biological decomposition of organic waste by stimulating the growth and activity of bacteria that degrade organic waste.

Aeration: A process which promotes biological degradation of organic matter in water. The process may be passive (as when waste is exposed to air), or active (as when a mixing or bubbling device introduces the air).

Aeration Tank: A chamber used to inject air into water.

Aerobic Treatment: Process by which microbes decompose complex organic compounds in the presence of oxygen and use the liberated energy for reproduction and growth. (Such processes include extended aeration, trickling filtration, and rotating biological contactors.)

Aerobic: Life or processes that require, or are not destroyed by, the presence of oxygen. (See: anaerobic.)

Aerosol: A suspension of liquid or solid particles in a gas.

Affected Public: The people who live and/or work near a hazardous waste site.

Afterburner: In incinerator technology, a burner located so that the combustion gases are made to pass through its flame in order to remove smoke and odors. It may be attached to or be separated from the incinerator proper.

Agent Orange: A toxic herbicide and defoliant used in the Vietnam conflict, containing 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and 2-4 dichlorophenoxyacetic acid (2,4-D) with trace amounts of dioxin.

Agricultural Pollution: Farming wastes, including runoff and leaching of pesticides and fertilizers; erosion and dust from plowing; improper disposal of animal manure and carcasses; crop residues, and debris.

Agro-ecosystem: Land used for crops, pasture, and livestock; the adjacent uncultivated land that supports other vegetation and wildlife; and the associated atmosphere, the underlying soils, groundwater, and drainage networks.

AHERA Designated Person (ADP): A person designated by a Local Education Agency to ensure that the AHERA requirements for asbestos management and abatement are properly implemented.

Air Changes Per Hour (ACH): The movement of a volume of air in a given period of time; if a house has one air change per hour, it means that all of the air in the house will be replaced in a one-hour period.

Air Contaminant: Any particulate matter, gas, or combination thereof, other than water vapor. (See: air pollutant.)

Air Curtain: A method of containing oil spills. Air bubbling through a perforated pipe causes an upward water flow that slows the spread of oil. It can also be used to stop fish from entering polluted water.

Air Mass: A large volume of air with certain meteorological or polluted characteristics-e,g, a heat inversion or smogginess-while in one location. The characteristics can change as the air mass moves away.

Air Monitoring: (See: monitoring)

Air Plenum: Any space used to convey air in a building, furnace, or structure. The space above a suspended ceiling is often used as an air plenum.

Air Pollutant: Any substance in air that could, in high enough concentration, harm man, other animals, vegetation, or material. Pollutants may include almost any natural or artificial composition of airborne matter capable of being airborne. They may be in the form of solid particles, liquid droplets, gases, or in combination thereof. Generally, they fall into two main groups: (1) those emitted directly from identifiable sources and (2) those produced in the air by interaction between two or more primary pollutants, or by reaction with normal atmospheric constituents, with or without photoactivation. Exclusive of pollen, fog, and dust, which are of natural origin, about 100 contaminants have been identified and fall into the following categories: solids, sulfur compounds, volatile organic chemicals, nitrogen compounds, oxygen compounds, halogen compounds, radioactive compounds, and odors.

Air Pollution Episode: A period of abnormally high concentration of air pollutants, often due to low winds and temperature inversion, that can cause illness and death. (See: episode, pollution.)

Air Pollution Control Device: Mechanism or equipment that cleans emissions generated by an incinerator by removing pollutants that would otherwise be released to the atmosphere.

Air Pollution: The presence of contaminant or pollutant substances in the air that do not disperse properly and interfere with human health or welfare, or produce other harmful environmental effects.

Air Quality Criteria: The levels of pollution and lengths of exposure above which adverse health and welfare effects may occur.

Air Quality Control Region: An area-designated by the federal government-in which communities share a common air pollution problem, sometimes embracing several states.

Air Quality Standards: The level of pollutants prescribed by regulations that may not be exceeded during a given time in a defined area.

Air Stripping: A treatment system that removes volatile organic compounds (VOCs) from contaminated ground water or surface water by forcing an airstream through the water and causing the compounds to evaporate.

Air Toxics: Any air pollutant for which a national ambient air quality standard (NAAQS) does not exist (i.e., excluding ozone, carbon monoxide, PM-10, sulfur dioxide, nitrogen oxide) that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations, or other serious or irreversible chronic or acute health effects in humans.

Airborne Particulates: Total suspended particulate matter found in the atmosphere as solid particles or liquid droplets. Chemical composition of particulates varies widely, depending on location and time of year. Airborne particulates include: windblown dust, emissions from industrial processes, smoke from the burning of wood and coal, and motor vehicle or non-road engine exhausts. exhaust of motor vehicles.

Airborne Release: Release of any chemical into the air.

Alachlor: A herbicide, marketed under the trade name Lasso, used mainly to control weeds in corn and soybean fields.

Alar: Trade name for daminozide, a pesticide that makes apples redder, firmer, and less likely to drop off trees before growers are ready to pick them. It is also used to a lesser extent on peanuts, tart cherries, concord grapes, and other fruits.

Aldicarb: An insecticide sold under the trade name Temik. It is made from ethyl isocyanate.

Algae: Simple rootless plants that grow in sunlit waters in proportion to the amount of available nutrients. They can affect water quality adversely by lowering the dissolved oxygen in the water. They are food for fish and small aquatic animals.

Algal Blooms: Sudden spurts of algal growth, which can affect water quality adversely and indicate potentially hazardous changes in local water chemistry.

Alternate Method: Any method of sampling and analyzing for an air pollutant that is not a reference or equivalent method but that has been demonstrated in specific cases-to EPA's satisfaction-to produce results adequate for compliance monitoring.

Alternative Remedial Contract Strategy Contractors: Government contractors who provide project management and technical services to support remedial response activities at National Priorities List sites.

Ambient Air Quality Standards: (See: Criteria Pollutants and National Ambient Air Quality Standards.)

Ambient Air: Any unconfined portion of the atmosphere: open air, surrounding air.

Anaerobic: A life or process that occurs in, or is not destroyed by, the absence of oxygen.

Anaerobic Decomposition: Reduction of the net energy level and change in chemical composition of organic matter caused by microorganisms in an oxygen-free environment.

Antarctic "Ozone Hole": Refers to the seasonal depletion of ozone in a large area over Antarctica.

Anti-Degradation Clause: Part of federal air quality and water quality requirements prohibiting deterioration where pollution levels are above the legal limit.

Applicable or Appropriate Requirements (ARARs): Any state or federal statute that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a Superfund site.

Aquifer: An underground geological formation, or group of formations, containing usable amounts of groundwater that can supply wells and springs.

Area of Review: In the UIC program, the area surrounding an injection well that is reviewed during the permitting process to determine if flow between aquifers will be induced by the injection operation.

Area Source: Any small source of non-natural air pollution that is released over a relatively small area but which cannot be classified as a point source. Such sources may include vehicles and other small engines, small businesses and household activities.

Aromatics: A type of hydrocarbon, such as benzene or toluene, added to gasoline in order to increase octane. Some aromatics are toxic.

Arsenicals: Pesticides containing arsenic.

Asbestos: A mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. EPA has banned or severely restricted its use in manufacturing and construction.

Asbestos Abatement: Procedures to control fiber release from asbestos-containing materials in a building or to remove them entirely, including removal, encapsulation, repair, enclosure, encasement, and operations and maintenance programs.

Asbestos-Containing Waste Materials (ACWM): Mill tailings or any waste that contains commercial asbestos and is generated by a source covered by the Clean Air Act Asbestos NESHAPS.

Asbestosis: A disease associated with inhalation of asbestos fibers. The disease makes breathing progressively more difficult and can be fatal.

Asbestos Program Manager: A building owner or designated representative who supervises all aspects of the facility asbestos management and control program.

Ash: The mineral content of a product remaining after complete combustion.

Assessment: In the asbestos-in-schools program, the evaluation of the physical condition and potential for damage of all friable asbestos containing materials and thermal insulation systems.

Assimilation: The ability of a body of water to purify itself of pollutants.

Assimilative Capacity: The capacity of a natural body of water to receive wastewaters or toxic materials without deleterious effects and without damage to aquatic life or humans who consume the water.

Attainment Area: An area considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

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

Attractant: A chemical or agent that lures insects or other pests by stimulating their sense of smell.

Attrition: Wearing or grinding down of a substance by friction. Dust from such processes contributes to air pollution.

Availability Session: Informal meeting at a public location where interested citizens can talk with EPA and state officials on a one-to-one basis.

B

Background Level: In air pollution control, the concentration of air pollutants in a definite area during a fixed period of time prior to the starting up or on the stoppage of a source of emission under control. In toxic substances monitoring, the average presence in the environment, originally referring to naturally occurring phenomena.

BACT-Best Available Control Technology: An emission limitation based on the maximum degree of emission reduction (considering energy, environmental, and economic impacts) achievable through application of production processes and available methods, systems, and techniques. BACT does not permit emissions in excess of those allowed under any applicable Clean Air Act provisions. Use of the BACT concept is allowable on a case by case basis for major new or modified emissions sources in attainment areas and applies to each regulated pollutant.

Bacteria: (Singular: bacterium) Microscopic living organisms that can aid in pollution control by metabolizing organic matter in sewage, oil spills or other pollutants. However, bacteria in soil, water or air can also cause human, animal and plant health problems.

Baffle Chamber: In incinerator design, a chamber designed to promote the settling of fly ash and coarse particulate matter by changing the direction and/or reducing the velocity of the gases produced by the combustion of the refuse or sludge.

Baghouse Filter: Large fabric bag, usually made of glass fibers, used to eliminate intermediate and large (greater than 20 microns in diameter) particles. This device operates like the bag of an electric vacuum cleaner, passing the air and smaller particles while entrapping the larger ones.

Baling: Compacting solid waste into blocks to reduce volume and simplify handling.

Ballistic Separator: A machine that sorts organic from inorganic matter for composting.

Band Application: The spreading of chemicals over, or next to, each row of plants in a field.

Banking: A system for recording qualified air emission reductions for later use in bubble, offset, or netting transactions. (See: emissions trading.)

Bar Screen: In wastewater treatment, a device used to remove large solids.

Barrier Coating(s): A layer of a material that obstructs or prevents passage of something through a surface that is to be protected, e.g. grout, caulk, or various sealing compounds; sometimes used with polyurethane membranes to prevent corrosion or oxidation of metal surfaces, chemical impacts on various materials, or, for example, to prevent radon infiltration through walls, cracks, or joints in a house.

Basal Application: In pesticides, the application of a chemical on plant stems or tree trunks just above the soil line.

Bed Load: Sediment particles resting on or near the channel bottom that are pushed or rolled along by the flow of water.

BEN: EPA's computer model for analyzing a violator's economic gain from not complying with the law.

Bench-scale Tests: Laboratory testing of potential cleanup technologies (See: treatability studies.)

Beryllium: An airborne metal hazardous to human health when inhaled. It is discharged by machine shops, ceramic and propellant plants, and foundries.

Best Available Control Measures (BACM): A term used to refer to the most effective measures (according to EPA guidance) for controlling small or dispersed particulates from sources such as roadway dust, soot and ash from woodstoves and open burning of rush, timber, grasslands, or trash.

Best Demonstrated Available Technology (BDAT): As identified by EPA, the most effective commercially available means of treating specific types of hazardous waste. The BDATs may change with advances in treatment technologies.

Best Management Practice (BMP): Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

Bimetal: Beverage containers with steel bodies and aluminum tops; handled differently from pure aluminum in recycling.

Bioaccumulants: Substances that increase in concentration in living organisms as they take in contaminated air, water, or food because the substances are very slowly metabolized or excreted. (See: biological magnification.)

Bioassay: Study of living organisms to measure the effect of a substance, factor, or condition by comparing before-and-after exposure or other data.

Biochemical Oxygen Demand (BOD): A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. The greater the BOD, the greater the degree of pollution.

Biodegradable: Capable of decomposing rapidly under natural conditions.

Biodiversity: Refers to the variety and variability among living organisms and the ecological complexes in which they occur. Diversity can be defined as the number of different items and their relative frequencies. For biological diversity, these items are organized at many levels, ranging from complete ecosystems to the biochemical structures that are the molecular basis of heredity. Thus, the term encompasses different ecosystem, species, and genes.

Biological Control: In pest control, the use of animals and organisms that eat or otherwise kill or out-compete pests.

Biological Magnification: Refers to the process whereby certain substances such as pesticides or heavy metals move up the food chain, work their way into rivers or lakes, and are eaten by aquatic organisms such as fish, which in turn are eaten by large birds, animals or humans. The substances become concentrated in tissues or internal organs as they move up the chain. (See: bioaccumulative.)

Biological Oxidation: Decomposition of complex organic materials by microorganisms. Occurs in self-purification of water bodies and in activated sludge wastewater treatment.

Biological Oxygen Demand (BOD): An indirect measure of the concentration of biologically degradable material present in organic wastes. It usually reflects the amount of oxygen consumed in five days by biological processes breaking down organic waste.

Biological Treatment: A treatment technology that uses bacteria to consume organic waste.

Biologicals: Vaccines, cultures and other preparations made from living organisms and their products, intended for use in diagnosing, immunizing, or treating humans or animals, or in related research.

Biomass: All of the living material in a given area; often refers to vegetation.

Biome: Entire community of living organisms in a single major ecological area. (See: biotic community.)

Biomonitoring: 1. The use of living organisms to test the suitability of effluents for discharge into receiving waters and to test the quality of such waters downstream from the discharge. 2. Analysis of blood, urine, tissues, etc., to measure chemical exposure in humans.

Bioremediation: Use of living organisms to clean up oil spills or remove other pollutants from soil, water, or wastewater; use of organisms such as non-harmful insects to remove agricultural pests or counteract diseases of trees, plants, and garden soil.

Biosphere: The portion of Earth and its atmosphere that can support life.

Biostabilizer: A machine that converts solid waste into compost by grinding and aeration.

Biota: The animal and plant life of a given region.

Biotechnology: Techniques that use living organisms or parts of organisms to produce a variety of products (from medicines to industrial enzymes) to improve plants or animals or to develop microorganisms to remove toxics from bodies of water, or act as pesticides.

Biotic Community: A naturally occurring assemblage of plants and animals that live in the same environment and are mutually sustaining and interdependent. (See: biome.)

Blackwater: Water that contains animal, human, or food waste.

Blood Products: Any product derived from human blood, including but not limited to blood plasma, platelets, red or white corpuscles, and derived licensed products such as interferon.

Bloom: A proliferation of algae and/or higher aquatic plants in a body of water; often related to pollution, especially when pollutants accelerate growth.

BOD5: The amount of dissolved oxygen consumed in five days by biological processes breaking down organic matter.

Bog: A type of wetland that accumulates appreciable peat deposits. Bogs depend primarily on precipitation for their water source, and are usually acidic and rich in plant residue with a conspicuous mat of living green moss.

Boom: 1. A floating device used to contain oil on a body of water. 2. A piece of equipment used to apply pesticides from a tractor or truck. (See: sonic boom.)

Botanical Pesticide: A pesticide whose active ingredient is a plant-produced chemical such as nicotine or strychnine. Also called a plant-derived pesticide.

Bottle Bill: Proposed or enacted legislation which requires a returnable deposit on beer or soda containers and provides for retail store or other redemption. Such legislation is designed to discourage use of throwaway containers.

Bottom Ash: The non-airborne combustion residue from burning pulverized coal in a boiler; the material which falls to the bottom of the boiler and is removed mechanically; a concentration of the non-combustible materials, which may include toxics.

Bottom Land Hardwoods: Forested freshwater wetlands adjacent to rivers in the southeastern United States, especially valuable for wildlife breeding, nesting and habitat.

Brine Mud: Waste material, often associated with well-drilling or mining, composed of mineral salts or other inorganic compounds.

Building Cooling Load: The hourly amount of heat that must be removed from a building to maintain indoor comfort (measured in British Thermal Units BTUs).

Broadcast Application: The spreading of pesticides over an entire area.

Bubble Policy: (See: emissions trading.)

Bubble: A system under which existing emissions sources can propose alternate means to comply with a set of emissions limitations; under the bubble concept, sources can control more than required at one emission point where control costs are relatively low in return for a comparable relaxation of controls at a second emission point where costs are higher.

Buffer Strips: Strips of grass or other erosion-resisting vegetation between or below cultivated strips or fields.

Bulk Sample: A small portion (usually thumbnail size) of a suspect asbestos-containing building material collected by an asbestos inspector for laboratory analysis to determine asbestos content.

Bulky Waste: Large items of waste materials, such as appliances, furniture, large auto parts, trees, stumps.

Burial Ground (Graveyard): A disposal site for radioactive waste materials that uses earth or water as a shield.

By-product: Material, other than the principal product, generated as a consequence of an industrial process.

C

Cadmium (Cd): A heavy metal element that accumulates in the environment.

Cancellation: Refers to Section 6 (b) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) which authorizes cancellation of a pesticide registration if unreasonable adverse effects to the environment and public health develop when a product is used according to widespread and commonly recognized practice, or if its labeling or other material required to be submitted does not comply with FIFRA provisions.

Cap: A layer of clay, or other impermeable material installed over the top of a closed landfill to prevent entry of rainwater and minimize leachate.

Capacity Assurance Plan: A statewide plan which supports a state's ability to manage the hazardous waste generated within its boundaries over a twenty year period.

Capture Efficiency: The fraction of organic vapors generated by a process that are directed to an abatement or recovery device.

Carbon Absorber: An add-on control device that uses activated carbon to absorb volatile organic compounds from a gas stream. (The VOCs are later recovered from the carbon.)

Carbon Adsorption: A treatment system that removes contaminants from ground water or surface water by forcing it through tanks containing activated carbon treated to attract the contaminants. contaminants.

Carbon Monoxide (CO): A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion.

Carboxyhemoglobin: Hemoglobin in which the iron is bound to carbon monoxide (CO) instead of oxygen.

Carcinogen: Any substance that can cause or aggravate cancer.

Carrier: The inert liquid or solid material added to an active ingredient in a pesticide.

Carrying Capacity: 1. In recreation management, the amount of use a recreation area can sustain without loss of quality. 2. In wildlife management, the maximum number of animals an area can support during a given period.

Cask: A thick-walled container (usually lead) used to transport radioactive material. Also called a coffin.

Catalytic Converter: An air pollution abatement device that removes pollutants from motor vehicle exhaust, either by oxidizing them into carbon dioxide and water or reducing them to nitrogen and oxygen.

Catalytic Incinerator: A control device that oxidizes volatile organic compounds (VOCs) by using a catalyst to promote the combustion process. Catalytic incinerators require lower temperatures than conventional thermal incinerators, thus saving fuel and other costs.

Categorical Exclusion: A class of actions which either individually or cumulatively would not have a significant effect on the human environment and therefore would not require preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act (NEPA).

Categorical Pretreatment Standard: A technology-based effluent limitation for an industrial facility discharging into a municipal sewer system. Analogous in stringency to Best Availability Technology (BAT) for direct dischargers.

Cathodic Protection: A technique to prevent corrosion of a metal surface by making it the cathode of an electrochemical cell.

Cells: 1. In solid waste disposal, holes where waste is dumped, compacted, and covered with layers of dirt on a daily basis. 2. The smallest structural part of living matter capable of functioning as an independent unit.

Cementitious: Densely packed and nonfibrous friable materials.

Central Collection Point: Location were a generator of regulated medical waste consolidates wastes originally generated at various locations in his facility. The wastes are gathered together for treatment on-site or for transportation elsewhere for treatment and/or disposal. This term could also apply to community hazardous waste collections, industrial and other waste management systems.

Centrifugal Collector: A mechanical system using centrifugal force to remove aerosols from a gas stream or to de-water sludge.

Channelization: Straightening and deepening streams so water will move faster, a marsh-drainage tactic that can interfere with waste assimilation capacity, disturb fish and wildlife habitats, and aggravate flooding.

Characteristic: Any one of the four categories used in defining hazardous waste: ignitability, corrosivity, reactivity, and toxicity.

Chemical Oxygen Demand (COD): A measure of the oxygen required to oxidize all compounds, both organic and inorganic, in water.

Chemical Treatment: Any one of a variety of technologies that use chemicals or a variety of chemical processes to treat waste.

Chemnet: Mutual aid network of chemical shippers and contractors that assigns a contracted emergency response company to provide technical support if a representative of the firm whose chemicals are involved in an incident is not readily available.

Chemosterilant: A chemical that controls pests by preventing reproduction.

Chemtrec: The industry-sponsored Chemical Transportation Emergency Center; provides information and/or emergency assistance to emergency responders.

Chilling Effect: The lowering of the Earth's temperature because of increased particles in the air blocking the sun's rays. (See: greenhouse effect.)

Chlorinated Hydrocarbons: These include a class of persistent, broad-spectrum insecticides that linger in the environment and accumulate in the food chain. Among them are DDT, aldrin, dieldrin, heptachlor, chlordane, lindane, endrin, mirex, hexachloride, and toxaphene. Other examples include TCE, used as an industrial solvent.

Chlorinated Solvent: An organic solvent containing chlorine atoms, e.g., methylene chloride and 1,1,1-trichloromethane, used in aerosol spray containers and in highway paint.

Chlorination: The application of chlorine to drinking water, sewage, or industrial waste to disinfect or to oxidize undesirable compounds.

Chlorinator: A device that adds chlorine, in gas or liquid form, to water or sewage to kill infectious bacteria.

Chlorine-Contact Chamber: That part of a water treatment plant where effluent is disinfected by chlorine.

Chlorofluorocarbons (CFCs): A family of inert, nontoxic, and easily liquified chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents and aerosol propellants. Because CFCs are not destroyed in the lower atmosphere they drift into the upper atmosphere where their chlorine components destroy ozone.

Chlorosis: Discoloration of normally green plant parts caused by disease, lack of nutrients, or various air pollutants.

Cholinesterase: An enzyme found in animals that regulates nerve impulses. Cholinesterase inhibition is associated with a variety of acute symptoms such as nausea, vomiting, blurred vision, stomach cramps, and rapid heart rate.

Chromium: (See: heavy metals.)

Chronic Effect: An adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period of time.

Chronic Toxicity: The capacity of a substance to cause long-term poisonous human health effects. (See: acute toxicity.)

Clarification: Clearing action that occurs during wastewater treatment when solids settle out. This is often aided by centrifugal action and chemically induced coagulation in wastewater.

Clarifier: A tank in which solids settle to the bottom and are subsequently removed as sludge.

Clay Soil: Soil material containing more than 40 percent clay, less than 45 percent sand, and less than 40 percent silt.

Clean Coal Technology: Any technology not in widespread use prior to the Clean Air Act amendments of 1990. This Act will achieve significant reductions in pollutants associated with the burning of coal.

Clean Fuels: Blends or substitutes for gasoline fuels, including compressed natural gas, methanol, ethanol, liquified petroleum gas, and others.

Cleanup: Actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term "cleanup" is sometimes used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Clear Cut: Harvesting all the trees in one area at one time, a practice that can encourage fast rainfall or snowmelt runoff, erosion, sedimentation of streams and lakes, flooding, and destroys vital habitat.

Cloning: In biotechnology, obtaining a group of genetically identical cells from a single cell; making identical copies of a gene.

Closed-Loop Recycling: Reclaiming or reusing wastewater for non-potable purposes in an enclosed process.

Closure: The procedure a landfill operator must follow when a landfill reaches its legal capacity for solid waste: ceasing acceptance of solid waste and placing a cap on the landfill site.

Coagulation: Clumping of particles in wastewater to settle out impurities, often induced by chemicals such as lime, alum, and iron salts.

Coastal Zone: Lands and waters adjacent to the coast that exert an influence on the uses of the sea and its ecology, or whose uses and ecology are affected by the sea.

Coefficient of Haze (COH): A measurement of visibility interference in the atmosphere.

Coke Oven: An industrial process which converts coal into coke, one of the basic materials used in blast furnaces for the conversion of iron ore into iron.

Cold Temperature CO: A standard for automobile carbon monoxide (CO) emissions to be met at a low temperature (i.e. 20 degrees Fahrenheit). Conventional automobile catalytic convertors are less efficient upon start-up at low temperatures.

Coliform Index: A rating of the purity of water based on a count of fecal bacteria.

Coliform Organism: Microorganisms found in the intestinal tract of humans and animals. Their presence in water indicates fecal pollution and potentially adverse contamination by pathogens.

Collector Sewers: Pipes used to collect and carry wastewater from individual sources to an interceptor sewer that will carry it to a treatment facility.

Combined Sewer Overflows: Discharge of a mixture of storm water and domestic waste when the flow capacity of a sewer system is exceeded during rainstorms.

Combined Sewers: A sewer system that carries both sewage and storm-water runoff. Normally, its entire flow goes to a waste treatment plant, but during a heavy storm, the volume of water may be so great as to cause overflows of untreated mixtures of storm water and sewage into receiving waters. Storm-water runoff may also carry toxic chemicals from industrial areas or streets into the sewer system.

Combustion: 1. Burning, or rapid oxidation, accompanied by release of energy in the form of heat and light. A basic cause of air pollution. 2. Refers to controlled burning of waste, in which heat chemically alters organic compounds, converting into stable inorganics such as carbon dioxide and water.

Combustion Chamber: The actual compartment where waste is burned in an incinerator.

Combustion Product: Substance produced during the burning or oxidation of a material.

Command Post: Facility located at a safe distance upwind from an accident site, where the on-scene coordinator, responders, and technical representatives make response decisions, deploy manpower and equipment, maintain liaison with news media, and handle communications.

Comment Period: Time provided for the public to review and comment on a proposed EPA action or rulemaking after publication in the Federal Register.

Commercial Waste Management Facility: A treatment, storage, disposal, or transfer facility which accepts waste from a variety of sources, as compared to a private facility which normally manages a limited waste stream generated by its own operations.

Commercial Waste: All solid waste emanating from business establishments such as stores, markets, office buildings, restaurants, shopping centers, and theaters.

Commingled Recyclables: Mixed recyclables that are collected together.

Comminuter: A machine that shreds or pulverizes solids to make waste treatment easier.

Comminution: Mechanical shredding or pulverizing of waste. Used in both solid waste management and wastewater treatment.

Community: In ecology, a group of interacting populations in time and space. Sometimes, a particular subgrouping may be specified, such as the fish community in a lake or the soil arthropod community in a forest.

Community Relations: The EPA effort to establish two-way communication with the public to create understanding of EPA programs and related actions, to assure public input into decision-making processes related to affected communities, and to make certain that the Agency is aware of and responsive to public concerns. Specific community relations activities are required in relation to Superfund remedial actions.

Community Water System: A public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Compaction: Reduction of the bulk of solid waste by rolling and tamping.

Compliance Coating: A coating whose volatile organic compound content does not exceed that allowed by regulation.

Compliance Monitoring: Collection and evaluation of data, including self-monitoring reports, and verification to show whether pollutant concentrations and loads contained in permitted discharges are in compliance with the limits and conditions specified in the permit.

Compliance Schedule: A negotiated agreement between a pollution source and a government agency that specifies dates and procedures by which a source will reduce emissions and, thereby, comply with a regulation.

Composite Sample: A series of water samples taken over a given period of time and weighted by flow rate.

Compost: The relatively stable humus material that is produced from a composting process in which bacteria in soil mixed with garbage and degradable trash break down the mixture into organic fertilizer.

Composting: The controlled biological decomposition of organic material in the presence of air to form a humus-like material. Controlled methods of composting include mechanical mixing and aerating, ventilating the materials by dropping them through a vertical series of aerated chambers, or placing the compost in piles out in the open air and mixing it or turning it periodically.

Conditional Registration: Under special circumstances, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) permits registration of pesticide products that is "conditional" upon the submission of additional data. These special circumstances include a finding by the EPA Administrator that a new product or use of an existing pesticide will not significantly increase the risk of unreasonable adverse effects. A product containing a new (previously unregistered) active ingredient may be conditionally registered only if the Administrator finds that such conditional registration is in the public interest, that a reasonable time for conducting the additional studies has not elapsed, and the use of the pesticide for the period of conditional registration will not present an unreasonable risk.

Conditionally Exempt Generators (CE): Persons or enterprises which produce less than 220 pounds of hazardous waste per month. Exempt from most regulation, they are required merely to determine whether their waste is hazardous, notify appropriate state or local agencies, and ship it by permitted facility for proper disposal. (See :an authorized transporter to a small quantity generator.)

Cone of Depression: A depression in the water table that develops around a pumped well.

Confined Aquifer: An aquifer in which ground water is confined under pressure which is significantly greater than atmospheric pressure.

Consent Decree: A legal document, approved by a judge, that formalizes an agreement reached between EPA and potentially responsible parties (PRPs) through which PRPs will conduct all or part of a cleanup action at a Superfund site; cease or correct actions or processes that are polluting the environment; or otherwise comply with EPA initiated regulatory enforcement actions to resolve the contamination at the Superfund site involved. The consent decree describes the actions PRPs will take and may be subject to a public comment period.

Conservation: Preserving and renewing, when possible, human and natural resources. The use, protection, and improvement of natural resources according to principles that will assure their highest economic or social benefits.

Construction and Demolition Waste: Waste building materials, dredging materials, tree stumps, and rubble resulting from construction, remodeling, repair, and demolition of homes, commercial buildings and other structures and pavements. May contain lead, asbestos, or other hazardous substances.

Contact Pesticide: A chemical that kills pests when it touches them, instead of by ingestion. Also, soil that contains the minute skeletons of certain algae that scratch and dehydrate waxy-coated insects.

Contaminant: Any physical, chemical, biological, or radiological substance or matter that has an adverse affect on air, water, or soil.

Contingency Plan: A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accident that releases toxic chemicals, hazardous waste, or radioactive materials that threaten human health or the environment. (See: National Oil and Hazardous Substances Contingency Plan.)

Continuous Discharge: A routine release to the environment that occurs without interruption, except for infrequent shutdowns for maintenance, process changes, etc.

Contour Plowing: Soil tilling method that follows the shape of the land to discourage erosion.

Contract Labs: Laboratories under contract to EPA, which analyze samples taken from waste, soil, air, and water or carry out research projects.

Control Technique Guidelines (CTG): A series of EPA documents designed to assist states in defining reasonable available control technology (RACT) for major sources of volatile organic compounds (VOC).

Controlled Reaction: A chemical reaction under temperature and pressure conditions maintained within safe limits to produce a desired product or process.

Conventional Pollutants: Statutorily listed pollutants understood well by scientists. These may be in the form of organic waste, sediment, acid, bacteria, viruses, nutrients, oil and grease, or heat.

Conventional Systems: Systems that have been traditionally used to collect municipal wastewater in gravity sewers and convey it to a central primary or secondary treatment plant prior to discharge to surface waters.

Conventional Tilling: Tillage operations considered standard for a specific location and crop and that tend to bury the crop residues; usually considered as a base for determining the cost effectiveness of control practices.

Cooling Electricity Use: Amount of electricity used to meet the building cooling load. (See: building cooling load.)

Cooling Tower: A structure that helps remove heat from water used as a coolant; e.g., in electric power generating plants.

Cooperative Agreement: An assistance agreement whereby EPA transfers money, property, services or anything of value to a state for the accomplishment of CERCLA-authorized activities or tasks.

Core: The uranium-containing heart of a nuclear reactor, where energy is released.

Core Program Cooperative Agreement: An assistance agreement whereby EPA supports states or tribal governments with funds to help defray the cost of non-item-specific administrative and training activities.

Corrosion: The dissolution and wearing away of metal caused by a chemical reaction such as between water and the pipes, chemicals touching a metal surface, or contact between two metals.

Corrosive: A chemical agent that reacts with the surface of a material causing it to deteriorate or wear away.

Cost-Effective Alternative: An alternative control or corrective method identified after analysis as being the best available in terms of reliability, performance, and cost. Although costs are one important consideration, regulatory and compliance analysis does not require EPA to choose the least expensive alternative. For example, when selecting a method for cleaning up a site on the Superfund National Priorities List, the Agency balances costs with the long-term effectiveness of the methods proposed.

Cost Recovery: A legal process by which potentially responsible parties who contributed to contamination at a Superfund site can be required to reimburse the Trust Fund for money spent during any cleanup actions by the federal government.

Cover Material: Soil used to cover compacted solid waste in a sanitary landfill.

Cover: Vegetation or other material providing protection as ground cover.

Cradle-to-Grave or Manifest System: A procedure in which hazardous materials are identified and followed as they are produced, treated, transported, and disposed of by a series of permanent, linkable, descriptive documents (e.g., manifests). Commonly referred to as the cradle-to-grave system.

Criteria Pollutants: The 1970 amendments to the Clean Air Act required EPA to set National Ambient Air Quality Standards for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide. The term, "criteria pollutants" derives from the requirement that EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised.

Criteria: Descriptive factors taken into account by EPA in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. When issued by EPA, the criteria provide guidance to the states on how to establish their standards.

Crop Consumptive Use: The amount of water transpired during plant growth plus what evaporated from the soil surface and foliage in the crop area.

Cubic Feet Per Minute (CFM): A measure of the volume of a substance flowing through air within a fixed period of time. With regard to indoor air, refers to the amount of air, in cubic feet, that is exchanged with indoor air in a minute's time, i.e., the air exchange rate.

Cullet: Crushed glass.

Cultural Eutrophication: Increasing rate at which water bodies "die" by pollution from human activities.

Cultures and Stocks: Infectious agents and associated biologicals including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; waste from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures. (See: regulated medical waste.)

Cumulative Working Level Months (CWLM): The sum of lifetime exposure to radon working levels expressed in total working level months.

Curbside Collection: Method of collecting recyclable materials at homes, community districts or businesses.

Cutie-Pie: An instrument used to measure radiation levels.

Cyclone Collector: A device that uses centrifugal force to pull large particles from polluted air.

D

Data Call-In: A part of the Office of Pesticide Programs (OPP) process of developing key required test data, especially on the long-term, chronic effects of existing pesticides, in advance of scheduled Registration Standard reviews. Data Call-In from manufacturers is an adjunct of the Registration Standards program intended to expedite re-registration.

DDT: The first chlorinated hydrocarbon insecticide chemical name: Dichloro-Diphenyl-Trichloroethane). It has a half-life of 15 years and can collect in fatty tissues of certain animals. EPA banned registration and interstate sale of DDT for virtually all but emergency uses in the United States in 1972 because of its persistence in the environment and accumulation in the food chain.

Decay Products: Degraded radioactive materials, often referred to as "daughters" or "progeny"; radon decay products of most concern from a public health standpoint are polonium-214 and polonium-218.

Dechlorination: Removal of chlorine from a substance by chemically replacing it with hydrogen or hydroxide ions in order to detoxify a substances.

Decomposition: The breakdown of matter by bacteria and fungi, changing the chemical makeup and physical appearance of materials.

Decontamination: Removal of harmful substances such as noxious chemicals, harmful bacteria or other organisms, or radioactive material from exposed individuals, rooms and furnishings in buildings, or the exterior environment.

Deep-Well Injection: Deposition of raw or treated, filtered hazardous waste by pumping it into deep wells, where it is contained in the pores of permeable subsurface rock.

Deflocculating Agent: A material added to a suspension to prevent settling.

Defoliant: An herbicide that removes leaves from trees and growing plants.

Delegated State: A state (or other governmental entity such as a tribal government) that has received authority to administer an environmental regulatory program in lieu of a federal counterpart. As used in connection with NPDES, UIC, and PWS programs, the term does not connote any transfer of federal authority to a state.

Delist: Use of the petition process to have a facility's toxic designation rescinded.

Demand-side Waste Management: Prices whereby consumers use purchasing decisions to communicate to product manufacturers that they prefer environmentally sound products packaged with the least amount of waste, made from recycled or recyclable materials, and containing no hazardous substances.

Denitrification: The anaerobic biological reduction of nitrate to nitrogen gas.

Depletion Curve: In hydraulics, a graphical representation of water depletion from storage-stream channels, surface soil, and groundwater. A depletion curve can be drawn for base flow, direct runoff, or total flow.

Depressurization: A condition that occurs when the air pressure inside a structure is lower that the air pressure outside. Depressurization can occur when household appliances such as fireplaces or furnaces, that consume or exhaust house air, are not supplied with enough makeup air. Radon may be drawn into a house more rapidly under depressurized conditions.

Dermal Toxicity: The ability of a pesticide or toxic chemical to poison people or animals by contact with the skin. (See: contact pesticide.)

DES: A synthetic estrogen, diethylstilbestrol is used as a growth stimulant in food animals. Residues in meat are thought to be carcinogenic.

Desalination: [Desalinization] (1) Removing salts from ocean or brackish water by using various technologies. (2) Removal of salts from soil by artificial means, usually leaching.

Desiccant: A chemical agent that absorbs moisture; some desiccants are capable of drying out plants or insects, causing death.

Design Capacity: The average daily flow that a treatment plant or other facility is designed to accommodate.

Designated Pollutant: An air pollutant which is neither a criteria nor hazardous pollutant, as described in the Clean Air Act, but for which new source performance standards exist. The Clean Air Act does require states to control these pollutants, which include acid mist, total reduced sulfur (TRS), and fluorides.

Designated Uses: Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act. Uses can include cold water fisheries, public water supply, irrigation, etc.

Designer Bugs: Popular term for microbes developed through biotechnology that can degrade specific toxic chemicals at their source in toxic waste dumps or in ground water.

Destination Facility: The facility to which regulated medical waste is shipped for treatment and destruction, incineration, and/or disposal.

Destroyed Medical Waste: Regulated medical waste that has been ruined, torn apart, or mutilated through thermal treatment, melting, shredding, grinding, tearing, or breaking, so that it is no longer generally recognized as medical waste, but has not yet been treated (excludes compacted regulated medical waste.)

Destruction and Removal Efficiency (DRE): A percentage that represents the number of molecules of a compound removed or destroyed in an incinerator relative to the number of molecules entered the system (e.g., a DRE of 99.99 percent means that 9,999 molecules are destroyed for every 10,000 that enter; 99.99 percent is known as "four nines." For some pollutants, the RCRA removal requirement may be a stringent as "six nines.")

Destruction Facility: A facility that destroys regulated medical waste by mashing or mutilating it.

Desulfurization: Removal of sulfur from fossil fuels to reduce pollution.

Detectable Leak Rate: The smallest leak (from a storage tank), expressed in terms of gallons-or liters-per-hour, that a test can reliably discern with a certain probability of detection or false alarm.

Detection Criterion: A predetermined rule to ascertain whether a tank is leaking or not. Most volumetric tests use a threshold value as the detection criterion. (See: volumetric tank tests.)

Detergent: Synthetic washing agent that helps to remove dirt and oil. Some contain compounds which kill useful bacteria and encourage algae growth when they are in wastewater that reaches receiving waters.

Development Effects: Adverse effects such as altered growth, structural abnormality, functional deficiency, or death observed in a developing organism.

Diatomaceous Earth (Diatomite): A chalk-like material (fossilized diatoms) used to filter out solid waste in wastewater treatment plants, also used as an active ingredient in some powdered pesticides.

Diazinon: An insecticide. In 1986, EPA banned its use on open areas such as sod farms and golf courses because it posed a danger to migratory birds. The ban did not apply to agricultural, home lawn or commercial establishment uses.

Dibenzofurans: A group of highly toxic organic compounds.

Dicofol: A pesticide used on citrus fruits.

Diffused Air: A type of aeration that forces oxygen into sewage by pumping air through perforated pipes inside a holding tank.

Digester: In wastewater treatment, a closed tank; in solid-waste conversion, a unit in which bacterial action is induced and accelerated in order to break down organic matter and establish the proper carbon to nitrogen ratio.

Digestion: The biochemical decomposition of organic matter, resulting in partial gasification, liquefaction, and mineralization of pollutants.

Dike: A low wall that can act as a barrier to prevent a spill from spreading.

Diluent: Any liquid or solid material used to dilute or carry an active ingredient.

Dilution Ratio: The relationship between the volume of water in a stream and the volume of incoming water. It affects the ability of the stream to assimilate waste.

Dinocap: A fungicide used primarily by apple growers to control summer diseases. EPA proposed restrictions on its use in 1986 when laboratory tests found it caused birth defects in rabbits.

Dinoseb: A herbicide that is also used as a fungicide and insecticide. It was banned by EPA in 1986 because it posed the risk of birth defects and sterility.

Dioxin: Any of a family of compounds known chemically as dibenzo-p-dioxins. Concern about them arises from their potential toxicity and contaminants in commercial products. Tests on laboratory animals indicate that it is one of the more toxic man-made compounds.

Direct Discharger: A municipal or industrial facility which introduces pollution through a defined conveyance or system such as outlet pipes; a point source.

Disinfectant: A chemical or physical process that kills pathogenic organisms in water. Chlorine is often used to disinfect sewage treatment effluent, water supplies, wells, and swimming pools.

Dispersant: A chemical agent used to break up concentrations of organic material such as spilled oil.

Disposables: Consumer products, other items, and packaging used once or a few times and discarded.

Disposal: Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials from removal actions or accidental releases. Disposal may be accomplished through use of approved secure landfills, surface impoundments, land farming, deep-well injection, ocean dumping, or incineration.

Dissolved Oxygen (DO): The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. DO levels are considered a most important indicator of a water body's ability to support desirable aquatic life. Secondary and advanced waste treatment are generally designed to ensure adequate DO in waste-receiving waters.

Dissolved Solids: Disintegrated organic and inorganic material in water. Excessive amounts make water unfit to drink or use in industrial processes.

Distillation: The act of purifying liquids through boiling, so that the steam condenses to a pure liquid and the pollutants remain in a concentrated residue.

Diversion: A channel with a supporting ridge on the lower side constructed across a slope to divert water at a non-erosive velocity to sites where it can be used or disposed of through a stable outlet.

Diversion Rate: The percentage of waste materials diverted from traditional disposal such as landfilling or incineration to be recycled, composted, or re-used.

DNA Hybridization: Use of a segment of DNA, called a DNA probe, to identify its complementary DNA; used to detect specific genes.

Dose Response: How a biological organism's response to a toxic substance quantitatively shifts as its overall exposure to the substance changes (e.g., a small dose of carbon monoxide may cause drowsiness; a large dose can be fatal.)

DOT Reportable Quantity: The quantity of a substance specified in U.S. Department of Transportation regulation that triggers labelling, packaging and other requirements related to shipping such substances.

Draft Permit: A preliminary permit drafted and published by EPA; subject to public review and comment before final action on the application.

Dredging: Removal of mud ~~from~~ the bottom of water bodies. This can disturb the ecosystem and causes silting that kills aquatic life. Dredging of contaminated muds can expose biota to heavy metals and other toxics. Dredging activities may be subject to regulation under Section 404 of the Clean Water Act.

Drop-off: Recyclable materials collection method in which individuals bring them to a designated collection site.

Dump: A site used to dispose of solid waste without environmental controls.

Dustfall Jar: An open container used to collect large particles from the air for measurement and analysis.

Dystrophic Lakes: Acidic, shallow bodies of water that contain much humus and/or other organic matter; contain many plants but few fish.

E

Ecological Impact: The effect that a man-made or natural activity has on living organisms and their non-living (abiotic) environment.

Ecology: The relationship of living things to one another and their environment, or the study of such relationships.

Ecological Indicator: A characteristic of the environment that, when measured, quantifies magnitude of stress, habitat characteristics, degree of exposure to a stressor, or ecological response to exposure. The term is a collective term for response, exposure. The term is a collective term for response, exposure, habitat, and stressor indicators.

Ecological Risk Assessment: The application of a formal framework, analytical process, or model to estimate the effects of human actions(s) on a natural resource and to interpret the significance of those effects in light of the uncertainties identified in each component of the assessment process. Such analysis includes initial hazard identification, exposure and dose-response assessments, and risk characterization.

Economic Poisons: Chemicals used to control pests and to defoliate cash crops such as cotton.

Ecosphere: The "bio-bubble" that contains life on earth, in surface waters, and in the air. (See: biosphere.)

Ecosystem: The interacting system of a biological community and its non-living environmental surroundings.

Ecosystem Structure: Attributes related to instantaneous physical state of an ecosystem; examples include species population density, species richness or evenness, and standing crop biomass.

Ecotone: A habitat created by the juxtaposition of distinctly different habitats; an edge habitat; or an ecological zone or boundary where two or more ecosystems meet.

Effluent: Wastewater-treated or untreated-that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Effluent Guidelines: Technical EPA documents which set effluent limitations for given industries and pollutants.

Effluent Limitation: Restrictions established by a State or EPA on quantities, rates, and concentrations in wastewater discharges.

Effluent Standard: (See effluent limitation.)

Electrodialysis: A process that uses electrical current applied to permeable membranes to remove minerals from water. Often used to desalinize salty or brackish water.

Electrostatic Precipitator (ESP): A device that removes particles from a gas stream (smoke) after combustion occurs. The ESP imparts an electrical charge to the particles, causing them to adhere to metal plates inside the precipitator. Rapping on the plates causes the particles to fall into a hopper for disposal.

Eligible Costs: The construction costs for waste-water treatment works upon which EPA grants are based.

EMAP Data: Environmental monitoring data collected under the auspices of the Environmental Monitoring and Assessment Program. All EMAP data share the common attribute of being of known quality, having been collected in the context of explicit data quality objectives (DQOs) and a consistent quality assurance program.

Emergency (Chemical): A situation created by an accidental release or spill of hazardous chemicals that poses a threat to the safety of workers, residents, the environment, or property.

Emergency Episode: (See: air pollution episode.)

Emergency Response Values: Concentrations of chemicals, published by various groups, defining acceptable levels for short-term exposures in emergencies.

Emission: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.

Emission Factor: The relationship between the amount of pollution produced and the amount of raw material processed. For example, an emission factor for a blast furnace making iron would be the number of pounds of particulates per ton of raw materials.

Emission Inventory: A listing, by source, of the amount of air pollutants discharged into the atmosphere of a community; used to establish emission standards.

Emission Standard: The maximum amount of air polluting discharge legally allowed from a single source, mobile or stationary.

Emissions Trading: EPA policy that allows a plant complex with several facilities to decrease pollution from some facilities while increasing it from others, so long as total results are equal to or better than previous limits. Facilities where this is done are treated as if they exist in a bubble in which total emissions are averaged out. Complexes that reduce emissions substantially may "bank" their "credits" or sell them to other industries. **Encapsulation:** The treatment of asbestos-containing material with a liquid that covers the surface with a protective coating or embeds fibers in an adhesive matrix to prevent their release into the air.

Enclosure: Putting an airtight, impermeable, permanent barrier around asbestos-containing materials to prevent the release of asbestos fibers into the air.

Endangered Species: Animals, birds, fish, plants, or other living organisms threatened with extinction by man-made or natural changes in their environment. Requirements for declaring a species endangered are contained in the Endangered Species Act.

Endangerment Assessment: A study to determine the nature and extent of contamination at a site on the National Priorities List and the risks posed to public health or the environment. EPA or the state conduct the study when a legal action is to be taken to direct potentially responsible parties to clean up a site or pay for it. An endangerment assessment supplements a remedial investigation.

Energy Recovery: Obtaining energy from waste through a variety of processes (e.g., combustion.)

Enforceable Requirements: Conditions or limitations in permits issued under the Clean Water Act ,Section 402 or 404 that, if violated, could result in the issuance of a compliance order or initiation of a civil or criminal action under federal or applicable state laws. If a permit has not been issued, the term includes any requirement which, in the Regional Administrator's judgement, would be included in the permit when issued. Where no permit applies, the term includes any requirement which the RA determines is necessary for the best practical waste treatment technology to meet applicable criteria.

Enforcement: EPA, state, or local legal actions to obtain compliance with environmental laws, rules, regulations, or agreements and/or obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the requirements of different environmental laws and related implementing regulations. Under CERCLA, for example, EPA will seek to require potentially responsible parties to clean up a Superfund site, or pay for the cleanup, whereas under the Clean Air Act the agency may invoke sanctions against cities failing to meet ambient air quality standards that could prevent certain types of construction or federal funding. In other situations, if investigations by EPA and state agencies uncover willful violations, criminal trials and penalties are sought.

Enforcement Decision Document (EDD): A document that provides an explanation to the public of EPA's selection of the cleanup alternative at enforcement sites on the National Priorities List. Similar to a Record of Decision.

Enhanced Inspection and Maintenance (I&M): An improved automobile inspection and maintenance program—aimed at reducing automobile emissions—that contains, at a minimum, more vehicle types and model years, tighter inspection, and better management practices. It may also include annual computerized or centralized inspections, under-the-hood inspection- for signs of tampering with pollution control equipment, and increased repair waiver cost.

Enrichment: The addition of nutrients (e.g., nitrogen, phosphorus, carbon compounds) from sewage effluent or agricultural runoff to surface water, greatly increases the growth potential for algae and other aquatic plants.

Environment: The sum of all external conditions affecting the life, development and survival of an organism.

Environmental Assessment: An environmental analysis prepared pursuant to the National Environmental Policy Act to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Audit: An independent assessment of the current status of a party's compliance with applicable environmental requirements or of a party's environmental compliance policies, practices, and controls.

Environmental Impact Statement: A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and cites alternative actions.

Environmental Indicator: A measurement, statistic or value that provides a proximate gauge or evidence of the effects of environmental management programs or of the state or condition of the environment.

Environmental Response Team: EPA experts located in Edison, N.J., and Cincinnati, OH, who can provide around-the-clock technical assistance to EPA regional offices and states during all types of hazardous waste site emergencies and spills of hazardous substances.

Epidemiology: Study of the distribution of disease, or other health-related states and events in human populations, as related to age, sex, occupation, ethnic, and economic status in order to identify and alleviate health problems and promote better health.

Epilimnion: Upper waters of a thermally stratified lake subject to wind action.

Episode (Pollution): An air pollution incident in a given area caused by a concentration of atmospheric pollutants under meteorological conditions that may result in a significant increase in illnesses or deaths. May also describe water pollution events or hazardous material spills.

Equilibrium: In relation to radiation, the state at which the radioactivity of consecutive elements within a radioactive series is neither increasing nor decreasing.

Equivalent Method: Any method of sampling and analyzing for air pollution which has been demonstrated to the EPA Administrator's satisfaction to be, under specific conditions, an acceptable alternative to normally used reference methods.

Erosion: The wearing away of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

Estuary: Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow mix fresh and salt water. Such areas include bays, mouths of rivers, salt marshes, and lagoons. These brackish water ecosystems shelter and feed marine life, birds, and wildlife. (See: wetlands.)

Ethylene Dibromide (EDB): A chemical used as an agricultural fumigant and in certain industrial processes. Extremely toxic and found to be a carcinogen in laboratory animals, EDB has been banned for most agricultural uses in the United States.

Eutrophic Lakes: Shallow, murky bodies of water with concentrations of plant nutrients causing excessive production of algae. (See: dystrophic lakes.)

Eutrophication: The slow aging process during which a lake, estuary, or bay evolves into a bog or marsh and eventually disappears. During the later stages of eutrophication the water body is choked by abundant plant life due to higher levels of nutritive compounds such as nitrogen and phosphorus. Human activities can accelerate the process.

Evaporation Ponds: Areas where sewage sludge is dumped and dried.

Evapotranspiration: The loss of water from the soil both by evaporation and by transpiration from the plants growing in the soil.

Exceedance: Violation of the pollutant levels permitted by environmental protection standards.

Exclusion: In the asbestos program, one of several situations that permit a Local Education Agency (LEA) to delete one or more of the items required by the Asbestos Hazard Emergency Response Act (AHERA), e.g., records of previous asbestos sample collection and analysis may be used by the accredited inspector in lieu of AHERA bulk sampling.

Exclusionary Ordinance: Zoning that excludes classes of persons or businesses from a particular neighborhood or area.

Exempt Solvent: Specific organic compounds not subject to requirements of regulation because are deemed by EPA to be of negligible photochemical reactivity.

Exempted Aquifer: Underground bodies of water defined in the Underground Injection Control program as aquifers that are potential sources of drinking water though not being used as such, and thus exempted from regulations barring underground injection activities.

Exotic Species: A species that is not indigenous to a region.

Experimental Use Permit: Obtained by manufacturers for testing new pesticides or uses of thereof whenever they conduct experimental field studies to support registration on 10 acres or more on land or one acre or more of water.

Explosive Limits: The amounts of vapor in the air that form explosive mixtures; limits are expressed as lower and upper limits and give the range of vapor concentrations in air that will explode if an ignition source is present.

Exposure: The amount of radiation or pollutant present in a given environment that represents a potential health threat to living organisms.

Exposure Indicator: A characteristic of the environment measured to provide evidence of the occurrence or magnitude of a response indicator's exposure to a chemical or biological stress.

Extraction Procedure (E P Toxic): Determining toxicity by a procedure which simulates leaching; if a certain concentration of a toxic substance can be leached from a waste, that waste is considered hazardous, i.e., "E P Toxic."

Extremely Hazardous Substances: Any of 406 chemicals identified by EPA as toxic, and listed under SARA Title III. The list is subject to periodic revision.

F

Fabric Filter: A cloth device that catches dust particles from industrial emissions.

Facilities Plans: Plans and studies related to the construction of treatment works necessary to comply with the Clean Water Act or RCRA. A facilities plan investigates needs and provides information on the cost effectiveness of alternatives, a recommended plan, an environmental assessment of the recommendations, and descriptions of the treatment works, costs, and a completion schedule.

Facility Emergency Coordinator: Representative of a facility covered by environmental law (e.g. a chemical plant) who participates in the emergency reporting process with the Local Emergency Planning Committee (LEPC).

Feasibility Study: 1. Analysis of the practicability of a proposal; e.g., a description and analysis of potential cleanup alternatives for a site such as one on the National Priorities List. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is underway; together, they are commonly referred to as the "RI/FS". 2. A small-scale investigation of a problem to ascertain whether a proposed research approach is likely to provide useful data.

Fecal Coliform Bacteria: Bacteria found in the intestinal tracts of mammals. Their presence in water or sludge is an indicator of pollution and possible contamination by pathogens.

Federal Implementation Plan: Under current law, a federally implemented plan to achieve attainment of air quality standards, used when a state is unable to develop an adequate plan.

Feedlot: A confined area for the controlled feeding of animals. Tends to concentrate large amounts of animal waste that cannot be absorbed by the soil and, hence, may be carried to nearby streams or lakes by rainfall runoff.

Fen: A type of wetland that accumulates peat deposits. Fens are less acidic than bogs, deriving most of their water from groundwater rich in calcium and magnesium. (See: wetlands.)

FIFRA Pesticide Ingredient: An ingredient of a pesticide that must be registered with EPA under the Federal Insecticide, fungicide, and Rodenticide Act. Products making pesticide claims mst register under FIFRA and may be subject to labeling and use requirements.

Filling: Depositing dirt, mud or other materials into aquatic areas to create more dry land, usually for agricultural or commercial development purposes, often with ruinous ecological consequences.

Filter Strip: Strip or area of vegetation used for removing sediment, organic matter, and other pollutants from runoff and waste water.

Filtration: A treatment process, under the control of qualified operators, for removing solid (particulate) matter from water by means of porous media such as sand or a man-made filter; often used to remove particles that containing pathogens.

Financial Assurance for Closure: Documentation or proof that an owner or operator of a facility such as a landfill or other waste repository is capable of paying the projected costs of closing the facility and monitoring it afterwards as provided in RCRA regulations.

Finding of No Significant Impact: A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement. An FNSI is based on the results of an environmental assessment.

First Draw: The water that comes out when a tap is first opened, likely to have the highest level of lead contamination from plumbing materials.

Flare: A control device that burns hazardous materials to prevent their release into the environment; may operate continuously or intermittently, usually on top a stack.

Floc: A clump of solids formed in sewage by biological or chemical action.

Flocculation: Process by which clumps of solids in water or sewage aggregate through biological or chemical action so they can be separated from water or sewage.

Floor Sweep: Capture of heavier-than-air gases that collect at floor level.

Flow Rate: The rate, expressed in gallons- or liters-per-hour, at which a fluid escapes from a hole or fissure in a tank. Such measurements are also made of liquid waste, effluent, and surface water movement.

Flowmeter: A gauge indicating the velocity of wastewater moving through a treatment plant or of any liquid moving through various industrial processes.

Flue Gas Desulfurization: A technology that employs a sorbent, usually lime or limestone, to remove sulfur dioxide from the gases produced by burning fossil fuels. Flue gas desulfurization is current state-of-the art technology for major SO_2 emitters, like power plants.

Flue Gas: The air coming out of a chimney after combustion in the burner it is venting. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, particles and many chemical pollutants.

Fluidized Bed Incinerator: An incinerator that uses a bed of hot sand or other granular material to transfer heat directly to waste. Used mainly for destroying municipal sludge.

Flume: A natural or man-made channel that diverts water.

Fluorides: Gaseous, solid, or dissolved compounds containing fluorine that result from industrial processes. Excessive amounts in food can lead to fluorosis.

Fluorocarbons (FCs): Any of a number of organic compounds analogous to hydrocarbons in which one or more hydrogen atoms are replaced by fluorine. Once used in the United States as a propellant for domestic aerosols, they are now found mainly in coolants and some industrial processes. FCs containing chlorine are called chlorofluorocarbons (CFCs). They are believed to be modifying the ozone layer in the stratosphere, thereby allowing more harmful solar radiation to reach the Earth's surface.

Flush: 1. To open a cold-water tap to clear out all the water which may have been sitting for a long time in the pipes. In new homes, to flush a system means to send large volumes of water gushing through the unused pipes to remove loose particles of solder and flux. 2. To force large amounts of water through liquid to clean out piping or tubing, storage or process tanks.

Fly Ash: Non-combustible residual particles expelled by flue gas.

Fogging: Applying a pesticide by rapidly heating the liquid chemical so that it forms very fine droplets that resemble smoke or fog. Used to destroy mosquitoes, black flies, and similar pests.

Food Chain: A sequence of organisms, each of which uses the next, lower member of the sequence as a food source.

Formaldehyde: A colorless, pungent, and irritating gas, CH20, used chiefly as a disinfectant and preservative and in synthesizing other compounds like resins.

Formulation: The substances comprising all active and inert ingredients in a pesticide.

Fresh Water: Water that generally contains less than 1,000 milligrams-per-liter of dissolved solids,

Friable Asbestos: Any material containing more than one percent asbestos, and that can be crumbled or reduced to powder by hand pressure. (May include previously non-friable material which becomes broken or damaged by mechanical force.)

Friable: Capable of being crumbled, pulverized, or reduced to powder by hand pressure.

Fuel Economy Standard: The Corporate Average Fuel Economy Standard (CAFE) effective in 1978. It enhanced the national fuel conservation effort imposing a miles-per-gallon floor for motor vehicles.

Fugitive Emissions: Emissions not caught by a capture system.

Fume: Tiny particles trapped in vapor in a gas stream.

Fumigant: A pesticide vaporized to kill pests. Used in buildings and greenhouses.

Functional Equivalent: Term used to describe EPA's decision-making process and its relationship to the environmental review conducted under the National Environmental Policy Act (NEPA). A review is considered functionally equivalent when it addresses the substantive components of a NEPA review.

Fungi: (Singular: Fungus) Molds, mildews, yeasts, mushrooms, and puffballs, a group organisms lacking in chlorophyll (i.e., are not photosynthetic) and which are usually non-mobile, filamentous, and multicellular. Some grow in soil, others attach themselves to decaying trees and other plants whence they obtain nutrients. Some are pathogens, others stabilize sewage and digest composted waste.

Fungicide: Pesticides which are used to control, deter, or destroy fungi.

Fungistat: A chemical that keeps fungi from growing.

Furrow Irrigation: Irrigation method in which water travels through the field by means of small channels between each row or groups of rows.

Future Liability: Refers to potentially responsible parties' obligations to pay for additional response activities beyond those specified in the Record of Decision or Consent Decree.

G

Game Fish: Species like trout, salmon, or bass, caught for sport. Many of them show more sensitivity to environmental change than "rough" fish.

Garbage: Animal and vegetable waste resulting from the handling, storage, sale, preparation, cooking, and serving of foods.

Gas Chromatograph/Mass Spectrometer: Highly sophisticated instrument that identifies the molecular composition and concentrations of various chemicals in water and soil samples.

Gasification: Conversion of solid material such as coal into a gas for use as a fuel.

Gasoline Volatility: The property of gasoline whereby it evaporates into a vapor. Gasoline vapor is a volatile organic compound.

General Permit: A permit applicable to a class or category of dischargers.

General Reporting Facility: A facility having one or more hazardous chemicals above the 10,000 pound threshold for planning quantities. Such facilities must file MSDS and emergency inventory information with the SERC and LEPC and local fire departments.

Generator: 1. A facility or mobile source that emits pollutants into the air or releases hazardous waste into water or soil. 2. Any person, by site, whose act or process produces regulated medical waste or whose act first causes such waste to become subject to regulation. In a case where more than one person (e.g., doctors with separate medical practices) is located in the same building, each business entity is a separate generator.

Genetic Engineering: A process of inserting new genetic information into existing cells in order to modify any organism for the purpose of changing one of its characteristics.

Geographic Information System (GIS): A computer system designed for storing, manipulating, analyzing, and displaying data in a geographic context.

Germicide: Any compound that kills disease-causing microorganisms.

Glovebag: A polyethylene or polyvinyl chloride bag-like enclosure affixed around an asbestos-containing source (most often thermal system insulation) permitting the material to be removed while minimizing release of airborne fibers in the surrounding atmosphere.

Grain Loading: The rate at which particles are emitted from a pollution source. Measurement is made by the number of grains per cubic foot of gas emitted.

Granular Activated Carbon Treatment: A filtering system often used in small water systems and individual homes to remove organics. GAC can be highly effective in removing elevated levels of radon from water.

Grassed Waterway: Natural or constructed watercourse or outlet that is shaped or graded and established in suitable vegetation for the disposal of runoff water without erosion.

Gray Water: Domestic wastewater composed of wash water from kitchen, bathroom, and laundry sinks, tubs, and washers.

Greenhouse Effect: The warming of the Earth's atmosphere attributed to a build-up of carbon dioxide or other gases; some scientists think that this build-up allows the sun's rays to heat the Earth, while infra-red radiation makes the atmosphere opaque to a counterbalancing loss of heat.

Grinder Pump: A mechanical device that shreds solids and raises sewage to a higher elevation through pressure sewers.

Ground Cover: Plants grown to keep soil from eroding.

Ground Water: The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because ground water is a major source of drinking water, there is growing concern over contamination from leaching agricultural or industrial pollutants or leaking underground storage tanks.

Ground-Water Discharge: Ground water entering near coastal waters which has been contaminated by landfill leachate, deep well injection of hazardous wastes, septic tanks, etc.

Gully Erosion: Severe erosion in which trenches are cut to a depth greater than 30 centimeters (a foot). Generally, ditches deep enough to cross with farm equipment are considered gullies.

H

Habitat: The place where a population (e.g., human, animal, plant, microorganism) lives and its surroundings, both living and non-living.

Habitat Indicator: A physical attribute of the environment measured to characterize conditions necessary to support an organism, population, or community in the absence of pollutants, e.g., salinity of estuarine waters or substrate type in streams or lakes.

Half-Life: 1. The time required for a pollutant to lose half its affect on the environment. For example, the biochemical half-life of DDT in the environment is 15 years of Radium. 1,580 years. 2. The time required for half of the atoms of a radioactive element to undergo self-transmutation or decay. 3. The time required for the elimination of one half a total dose from the body.

Halon: Bromine-containing compounds with long atmospheric lifetimes whose breakdown in the stratosphere causes depletion of ozone. Halons are used in firefighting.

Hammermill: A high-speed machine that uses hammers and cutters to crush, grind, chip, or shred solid waste.

Hard Water: Alkaline water containing dissolved salts that interfere with some industrial processes and prevent soap from sudsing.

Hauler: Garbage collection company that offers complete refuse removal service; many also will also collect recyclables.

Hazard Communication Standard: An OSHA regulation that requires chemical manufacturers, suppliers, and importers to assess the hazards of the chemicals that they make, supply, or import, and to inform employers, customers, and workers of these hazards through MSDS sheets.

Hazardous Air Pollutants: Air pollutants which are not covered by ambient air quality standards but which, as defined in the Clean Air Act, may reasonably be expected to cause or contribute to irreversible illness or death. Such pollutants include asbestos, beryllium, mercury, benzene, coke oven emissions, radionuclides, and vinyl chloride.

Hazardous Chemical: An EPA designation for any hazardous material requiring an MSDS under OSHA's Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects like cancer and dermatitis. Hazardous chemicals are distinct from hazardous waste.(See: Hazardous Waste.)

Hazardous Ranking System: The principle screening tool used by EPA to evaluate risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. The HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or ground water, and on other factors such as density and proximity of human population. This score is the primary factor in deciding if the site should be on the National Priorities List and, if so, what ranking it should have compared to other sites on the list.

Hazardous Substance: 1. Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. 2. Any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise released into the environment.

Hazardous Waste: By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Hazardous Waste Landfill: An excavated or engineered site where hazardous waste is deposited and covered.

Hazards Analysis: Procedures used to (1) identify potential sources of release of hazardous materials from fixed facilities or transportation accidents; (2) determine the vulnerability of a geographical area to a release of hazardous materials; and (3) compare hazards to determine which present greater or lesser risks to a community.

Hazards Identification: Providing information on which facilities have extremely hazardous substances, what those chemicals are, how much there is at each facility, how the chemicals are stored, and whether they are used at high temperatures.

Health Assessment: An evaluation of available data on existing or potential risks to human health posed by a Superfund site. The Agency for Toxic Substances and Disease Registry (ATSDR) of the Department of Health and Human Services (DHHS) is required to perform such an assessment at every site on the National Priorities List.

Heat Island Effect: A "dome" of elevated temperatures over an urban area caused by structural and pavement heat fluxes, and pollutant emissions.

Heavy Metals: Metallic elements with high atomic weights, e.g., mercury, chromium, cadmium, arsenic, and lead; can damage living things at low concentrations and tend to accumulate in the food chain.

Heptachlor: An insecticide that was banned on some food products in 1975 and all of them 1978. It was allowed for use in seed treatment until 1983. More recently it was found in milk and other dairy products in Arkansas and Missouri where dairy cattle were illegally fed treated seed.

Herbicide: A chemical pesticide designed to control or destroy plants, weeds, or grasses.

Herbivore: An animal that feeds on plants.

Heterotrophic Organisms: Species that are dependent on organic matter for food.

High-Density Polyethylene: A material used to make plastic bottles and other products that produces toxic fumes when burned.

High-Level Radioactive Waste (HLW): Waste generated in core fuel of a nuclear reactor, found at nuclear reactors or by nuclear fuel reprocessing; is a serious threat to anyone who comes near the waste without shielding. (See: low-level radioactive waste.)

High-Level Nuclear Waste Facility: Plant designed to handle disposal of used nuclear fuel, high-level radioactive waste, and plutonium waste.

Holding Pond: A pond or reservoir, usually made of earth, built to store polluted runoff.

Homeowner Water System: Any water system which supplies piped water to a single residence.

Homogeneous Area: In accordance with Asbestos Hazard and Emergency Response Act (AHERA) definitions, an area of surfacing materials, thermal surface insulation, or miscellaneous material that is uniform in color and texture.

Hood Capture Efficiency: Ratio of the emissions captured by a hood and directed into a control or disposal device, expressed as a percent of all emissions.

Host: 1. In genetics, the organism, typically a bacterium, into which a gene from another organism is transplanted. 2. In medicine, an animal infected or parasitized by another organism.

Household Waste (Domestic Waste): Solid waste, composed of garbage and rubbish, which normally originated in a private home or apartment house. Domestic waste may contain a significant amount of toxic or hazardous waste.

Hydraulic Gradient: In general, the direction of groundwater flow due to changes in the depth of the water table.

Hydrocarbons (HC): Chemical compounds that consist entirely of carbon and hydrogen.

Hydrogen Sulfide (HS): Gas emitted during organic decomposition. Also a by-product of oil refining and burning. Smells like rotten eggs and, in heavy concentration, can kill or cause illness.

Hydrogeology: The geology of ground water, with particular emphasis on the chemistry and movement of water.

Hydrology: The science dealing with the properties,distribution, and circulation of water.

Hypolimnion: Bottom waters of a thermally stratified lake., The hypolimnion of a eutrophic lake is usually low or lacking in oxygen.

I

Identification Code or EPA I.D. Number: The unique code assigned to each generator, transporter, and treatment, storage, or disposal facility by regulating agencies to facilitate identification and tracking of chemicals or hazardous waste.

Ignitable: Capable of burning or causing a fire.

Immediately Dangerous to Life and Health (IDLH): The maximum level to which a healthy individual can be exposed to a chemical for 30 minutes and escape without suffering irreversible health effects or impairing symptoms. Used as a "level of concern." (See: level of concern.)

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Incident Command Post: A facility located at a safe distance from an emergency site, where the incident commander, key staff, and technical representatives can make decisions and deploy emergency manpower and equipment.

Incident Command System (ICS): The organizational arrangement wherein one person, normally the Fire Chief of the impacted district, is in charge of an integrated, comprehensive emergency response organization and the emergency incident site, backed by an Emergency Operations Center staff with resources, informatior and advice.

Incineration: A treatment technology involving destruction of waste by controlled burning at high temperatures, e.g., burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Incineration at Sea: Disposal of waste by burning at sea on specially-designed incinerator ships.

Incinerator: A furnace for burning waste under controlled conditions.

Incompatible Waste: A waste unsuitable for mixing with another waste or material because it may react to form a hazard.

Indicator: In biology, an organism, species, or community whose characteristics show the presence of specific environmental conditions, good or bad.

Indirect Discharge: Introduction of pollutants from a non-domestic source into a publicly owned waste-treatment system. Indirect dischargers can be commercial or industrial facilities whose wastes enter local sewers.

Indoor Air: The breathing air inside habitable structure or conveyance.

Indoor Air Pollution: Chemical, physical, or biological contaminants in indoor air.

Indoor Climate: Temperature, humidity, lighting, and noise levels in a habitable structure or conveyance. Indoor climate can affect indoor air pollution.

Industrial Pollution Prevention: Combination of industrial source reduction and toxic chemical use substitution

Industrial Source Reduction: Practices that reduce the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment; Also reduces the threat to public health and the environment associated with such releases. Term includes equipment or technology modifications, substitution of raw materials, and improvements in housekeeping, maintenance, training or inventory control.

Industrial Waste: Unwanted materials from an industrial operation; may be liquid, sludge, solid, or hazardous waste.

Inert Ingredient: Pesticide components such as solvents, carriers, dispersants,and surfactants that are not active against target pests. Not all inert ingredients are innocuous.

Inertial Separator: A device that uses centrifugal force to separate waste particles.

Infectious Agent: Any organism, such as a virus or bacterium, that is pathogenic and capable of being communicated by invasion and multiplication in body tissues.

Infectious Waste: Hazardous waste with infectious characteristics, including: contaminated animal waste; human blood and blood products; isolation waste, pathological waste; and discarded sharps (needles, scalpels or broken medical instruments.)

Infiltration: 1. The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls. 2. The technique of applying large volumes of waste water to land to penetrate the surface and percolate through the underlying soil. (See: percolation.)

Infiltration Rate: The quantity of water than can enter the soil in a specified time interval.

Inflow: Entry of extraneous rain water into a sewer system from sources other than infiltration, such as basement drains, manholes, storm drains, and street washing.

Influent: Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

Information File: In the Superfund program, a file that contains accurate, up-to-date documents on a Superfund site. The file is usually located in a public building (school, library, or city hall) convenient for local residents.

Injection Well: A well into which fluids are injected for purposes such as waste disposal, improving the recovery of crude oil, or solution mining.

Injection Zone: A geological formation receiving fluids through a well.

Innovative Technologies: New or inventive methods to treat effectively hazardous waste and reduce risks to human health and the environment.

Inoculum: 1. Bacterium placed in compost to start biological action. 2. A medium containing organisms that is introduced into cultures or living organisms.

Inorganic Chemicals: Chemical substances of mineral origin, not of basically carbon structure.

Insecticide: A pesticide compound specifically used to kill or prevent the growth of insects.

Inspection and Maintenance (I/M): 1. Activities to assure that vehicles' emissions-controls work properly. 2. Also applies to wastewater treatment plants and other anti-pollution facilities and processes.

Instream Use: Water use taking place within a stream channel, e.g., hydro-electric power generation, navigation, water quality improvement, fish propagation, recreation.

In-Situ Stripping: Treatment system that remove or "strips" volatile organic compounds from contaminated ground or surface water by forcing an airstream through the water and causing the compounds to evaporate.

Integrated Pest Management (IPM): A mixture of chemical and other, non-pesticide, methods to control pests.

Integrated Waste Management: Using a variety of practices to handle municipal solid waste; can include source reduction, recycling, incineration, and landfilling.

Interceptor Sewers: Large sewer lines that, in a combined system, control the flow of sewage to the treatment plant. In a storm, they allow some of the sewage to flow directly into a receiving stream, thus keeping it from overflowing onto the streets. Also used in separate systems to collect the flows from main and trunk sewers and carry them to treatment points.

Interim (Permit) Status: Period during which treatment, storage and disposal facilities coming under RCRA in 1980 are temporarily permitted to operate while awaiting a permanent permit. Permits issued under these circumstances are usually called "Part A" or "Part B" permits.

Interstate Carrier Water Supply: A source of water for drinking and sanitary use on planes, buses, trains, and ships operating in more than one state. These sources are federally regulated.

Interstate Commerce Clause: A clause of the U.S. Constitution which reserves to the federal government the right to regulate the conduct of business across state lines. Under this clause, for example, the U.S. Supreme Court has ruled that states may not inequitably restrict the disposal out-of-state wastes in their jurisdictions.

Interstate Waters: Waters that flow across or form part of state or international boundaries, e.g., the Great Lakes, the Mississippi River, or coastal waters.

Interstitial Monitoring: The continuous surveillance of the space between the walls of an underground storage tank.

Inventory (TSCA): Inventory of chemicals produced pursuant to Section 8 (b) of the Toxic Substances Control Act.

Inversion: A layer of warm air preventing the rise of cooling air and pollutants trapped beneath it. Can cause an air pollution episode.

Ion: An electrically charged atom that can be drawn from waste water during electrodialysis.

Ion Exchange Treatment: A common water-softening method often found on a large scale at water purification plants that remove some organics and radium by adding calcium oxide or calcium hydroxide to increase the ph to a level where the metals will precipitate out.

Ionization Chamber: A device that measures the intensity of ionizing radiation.

Ionizing Radiation: Radiation that can strip electrons from atoms, i.e., alpha, beta, and gamma radiation.

Irradiated Food: Food subject to brief radioactivity, usually gamma rays, to kill insects, bacteria, and mold, and to permit storage without refrigeration.

Irradiation: Exposure to radiation of wavelengths shorter than those of visible light (gamma, x-ray, or ultraviolet), for medical purposes, to sterilize milk or other foodstuffs, or to induce polymerization of monomers or vulcanization of rubber.

Irrigation: Applying water or wastewater to land areas to supply the water and nutrient needs of plants.

Irrigation Efficiency: The amount of water stored in the crop root zone compared to the amount of irrigation water applied.

Irrigation Return Flow: Surface and subsurface water which leaves the field following application of irrigation water.

Irritant: A substance that can cause irritation of the skin, eyes, or respiratory system. Effects may be acute from a single high level exposure, or chronic from repeated low-level exposures to such compounds as chlorine, nitrogen dioxide, and nitric acid.

Isotope: A variation of an element that has the same atomic number of protons but a different weight because of the number of neutrons. Various isotopes of the same element may have different radioactive behaviors, some are highly unstable..

K

Karst: A geologic formation of irregular limestone deposits with sinks, underground streams, and caverns.

Kinetic Rate Coefficient: A number that describes the rate at which a water constituent such as a biochemical oxygen demand or dissolved oxygen rises or falls.

L

Lagoon: 1. A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater; also used for storage of wastewater or spent nuclear fuel rods. 2. Shallow body of water, often separated from the sea by coral reefs or sandbars.

Land Application: Discharge of wastewater onto the ground for treatment or reuse. (See: irrigation.)

Land Ban: Phasing out of land disposal of most untreated hazardous wastes, as mandated by the 1984 RCRA amendments.

Land Farming (of waste): A disposal process in which hazardous waste deposited on or in the soil is degraded naturally by microbes.

Landfills: 1. Sanitary landfills are disposal sites for non-hazardous solid wastes spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day. 2. Secure chemical landfills are disposal sites for hazardous waste, selected and designed to minimize the chance of release of hazardous substances into the environment.

Landscape: The traits, patterns, and structure of a specific geographic area, including its biological composition, its physical environment, and its anthropogenic or social patterns. An area where interacting ecosystems are grouped and repeated in similar form.

Landscape Characterization: Documentation of the traits and patterns of the essential elements of the landscape.

Landscape Ecology: The study of the distribution patterns of communities and ecosystems, the ecological processes that affect those patterns, and changes in pattern and process over time.

Landscape Indicator: A measurement of the landscape, calculated from mapped or remotely sensed data, used to describe spatial patterns of land use and land cover across a geographic area. Landscape indicators may be useful as measures of certain kinds of environmental degradation such as forest fragmentation.

Large Quantity Generator: Person or facility generating more than 2200 pounds of hazardous waste per month. Such generators produce about 90 percent of the nation's hazardous waste, and are subject to all RCRA requirements.

Lateral Sewers: Pipes that run under city streets and receive the sewage from homes and businesses, as opposed to domestic feeders and main trunk lines.

LC50/Lethal Concentration: Median level concentration, a standard measure of toxicity. It tells how much of a substance is needed to kill half of a group of experimental organisms in a given time. (See: LD50.)

LD 50/ Lethal Dose: The dose of a toxicant that will kill 50 percent of the test organisms within a designated period. The lower the LD 50, the more toxic the compound.

Leachate: Water that collects contaminants as it trickles through wastes, pesticides or fertilizers. Leaching may occur in farming areas, feedlots, and landfills, and may result in hazardous substances entering surface water, ground water, or soil.

Leachate Collection System: A system that gathers leachate and pumps it to the surface for treatment.

Leaching: The process by which soluble constituents are dissolved and filtered through the soil by a percolating fluid. (See: leachate.)

Lead (Pb): A heavy metal that is hazardous to health if breathed or swallowed. Its use in gasoline, paints, and plumbing compounds has been sharply restricted or eliminated by federal laws and regulations. (See: heavy metals.)

Level of Concern (LOC): The concentration in air of an extremely hazardous substance above which there may be serious immediate health effects to anyone exposed to it for short periods **Lift:** In a sanitary landfill, a compacted layer of solid waste and the top layer of cover material.

Lifting Station: (See: pumping station.)

Limestone Scrubbing: Use of a limestone and water solution to remove gaseous stack-pipe sulfur before it reaches the atmosphere.

Limited Degradation: An environmental policy permitting some degradation of natural systems but terminating at a level well beneath an established health standard.

Limiting Factor: A condition whose absence or excessive concentration, is incompatible with the needs or tolerance of a species or population and which may have a negative influence on their ability to thrive. survive.

Limnology: The study of the physical, chemical, hydrological, and biological aspects of fresh water bodies.

Liner: 1. A relatively impermeable barrier designed to keep leachate inside a landfill. Liner materials include plastic and dense clay. 2. An insert or sleeve for sewer pipes to prevent leakage or infiltration.

Lipid Solubility: The maximum concentration of a chemical that will dissolve in fatty substances. Lipid soluble substances are insoluble in water. They will very selectively disperse through the environment via uptake in living tissue.

Liquefaction: Changing a solid into a liquid.

Liquid Injection Incinerator: Commonly used system that relies on high pressure to prepare liquid wastes for incineration breaking them up into tiny droplets to allow easier combustion.

List: Shorthand term for EPA list of violating facilities or firms debarred from obtaining government contracts because they violated certain sections of the Clean Air or Clean Water Acts. The list is maintained by The Office of Enforcement and Compliance Monitoring.

Listed Waste: Wastes listed as hazardous under RCRA but which have not been subjected to the Toxic Characteristics Listing Process because the dangers they present are considered self-evident.

Litter: The highly visible portion of solid waste carelessly discarded outside the regular garbage and trash collection and disposal system.

Local Education Agency (LEA): In the asbestos program, an educational agency at the local level that exists primarily to operate schools or to contract for educational services, including primary and secondary public and private schools. A single, unaffiliated school can be considered an LEA for AHERA purposes.

Local Emergency Planning Committee (LEPC): A committee appointed by the state emergency response commission, as required by SARA Title III, to formulate a comprehensive emergency plan for its jurisdiction.

Low NO^x Burners: One of several combustion technologies used to reduce emissions of Nitrogen Oxides (NO^x.)

Low-Level Radioactive Waste (LLRW): Wastes less hazardous than most of those associated with nuclear reactor; generated by hospitals, research laboratories, and certain industries. The Department of Energy, Nuclear Regulatory Commission, and EPA share responsibilities for managing them. (See: high-level radioactive wastes.)

Lower Explosive Limit (LEL): The concentration of a compound in air below which the mixture will not catch on fire.

Lowest Achievable Emission Rate: Under the Clean Air Act, the rate of emissions that reflects (a) the most stringent emission limitation in the implementation plan of any state for such source unless the owner or operator demonstrates such limitations are not achievable; or (b) the most stringent emissions limitation achieved in practice, whichever is more stringent. A proposed new or modified source may not emit pollutants in excess of existing new source standards.

M

Magnetic Separation: Use of magnets to separate ferrous materials from mixed municipal waste stream.

Mandatory Recycling: Programs which by law require consumers to separate trash so that some or all recyclable materials are recovered for recycling rather than going to landfills.

Manual Separation: Hand sorting of reyclable or compostable materials in waste.

Major Modification: This term is used to define modifications of major stationary sources of emissions with respect to Prevention of Significant Deterioration and New Source Review under the Clean Air Act.

Major Stationary Sources: Term used to determine the applicability of Prevention of Significant Deterioration and new source regulations. In a nonattainment area, any stationary pollutant source with potential to emit more than 100 tons per year is considered a major stationary source. In PSD areas the cutoff level may be either 100 or 250 tons, depending upon the source.

Majors: Larger publicly owned treatment works (POTWs) with flows equal to at least one million gallons per day (mgd) or servicing population equivalent to 10,000 persons; certain other POTWs having significant water quality impacts. (See: minors.)

Management Plan: Under the Asbestos Hazard Emergency Response Act (AHERA), a document that each Local Education Agency is required to prepare, describing all activities planned and undertaken by a school to comply with AHERA regulations, including building inspections to identify asbestos-containing materials, response actions, and operations and maintenance programs to minimize the risk of exposure.

Manifest System: Tracking of hazardous waste from "cradle to grave" (generation through disposal) with accompanying documents known as manifests.(See: Cradle to Grave.)

Manual Separation: Hand separation of compostable or recyclable material from waste.

Manufacturers Formulation: A list of substances or component parts as described by the maker of a coating, pesticide, or other product containing chemicals or other substances.

Marine Sanitation Device: Any equipment or process installed on board a vessel to receive, retain, treat, or discharge sewage.

Marsh: A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh or saltwater, tidal or non-tidal. (See: wetlands.)

Material Category: In the asbestos program, broad classification of materials into thermal surfacing insulation, surfacing material, and miscellaneous material.

Materials Recovery Facility: A facility that processes residentially collected mixed recyclables into new products available for market.

Material Type is classification of suspect material by its specific use or application, e.g., pipe insulation, fireproofing, and floor tile.

Material Safety Data Sheet (MSDS): A compilation of information required under the OSHA Communication Standard on the identity of hazardous chemicals, health, and physical hazards, exposure limits, and precautions. Section 311 of SARA requires facilities to submit MSDSs under certain circumstances.

Materials Recovery Facility (MRF): Facility that processes residentially collected mixed recyclables into new products.

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

Maximum Contaminant Level Goal (MCLG): Under the Safe Drinking Water Act, a non-enforceable concentration of a drinking water contaminant, set at the level at which no known or anticipated adverse effects on human health occur and which allows an adequate safety margin. The MCLG is usually the starting point for determining the regulated Maximum Contaminant Level. (See; Maximum Contaminant Level.)

Mechanical Aeration: Use of mechanical energy to inject air into water to cause a waste stream to absorb oxygen.

Mechanical Separation: Using mechanical means to separate waste into various components.

Mechanical Turbulence: Random irregularities of fluid motion in air caused by buildings or other non-thermal, processes.

Media: Specific environments-air, water, soil-which are the subject of regulatory concern and activities.

Medical Surveillance: A periodic comprehensive review of a worker's health status; acceptable elements of such surveillance program are listed in the Occupational Safety and Health Administration standards for asbestos.

Medical Waste: Any solid waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals, excluding hazardous waste identified or listed under 40 CFR Part 261 or any household waste as defined in 40 CFR Sub-section 261.4 (b)(1)).

Mercury: A heavy metal that can accumulate in the environment and is highly toxic if breathed or swallowed. (See: heavy metals.)

Metabolites: Any substances produced by biological processes, such as those from pesticides.

Methane: A colorless, nonpoisonous, flammable gas created by anaerobic decomposition of organic compounds.

Method 18: An EPA test method which uses gas chromatographic techniques to measure the concentration of volatile organic compounds in a gas stream.

Method 24: An EPA reference method to determine density, water content and total volatile content (water and VOC) of coatings.

Method 25: An EPA reference method to determine the VOC concentration in a gas stream.

Microclimate: The localized climate conditions with in an urban area or neighborhood.

Microbial Pesticide: A microorganism that is used to control a pest, but of minimum toxicity to man.

Million-gallons Per Day (MGD): A measure of water flow.

Minimization: A comprehensive program to minimize or eliminate wastes, usually applied to wastes at their point of origin. (See: waste minimization.)

Minors: Publicly owned treatment works with flows less than 1 million gallons per day. (See: majors.)

Miscellaneous ACM: Interior asbestos-containing building material or structural components, members or fixtures, such as floor and ceiling tiles; does not include surfacing materials or thermal system insulation.

Miscellaneous materials: Interior building materials on structural components, such as floor or ceiling tiles.

Miscible Liquids: Two or more liquids that can be mixed and will remain mixed under normal conditions.

Missed Detection: The situation that occurs when a test indicates that a tank is "tight" when in fact it is leaking.

Mist: Liquid particles measuring 40 to 500 microns, are formed by condensation of vapor. By comparison, fog particles are smaller than 40 microns.

Mitigation: Measures taken to reduce adverse impacts on the environment.

Mixed Funding: Settlements in which potentially responsible parties and EPA share the cost of a response action.

Mixed Liquor: A mixture of activated sludge and water containing organic matter undergoing activated sludge treatment in an aeration tank.

Mobile Incinerator Systems: Hazardous waste incinerators ~~that can be~~ transported from one site to another.

Mobile Source: Any non-stationary source of air pollution such as cars, trucks, motorcycles, buses, airplanes, locomotives.

Model Plant: A hypothetical plant design used for developing economic, environmental, and energy impact analyses as support for regulations or regulatory guidelines; first step in exploring the economic impact of a potential NSPS.

Molten Salt Reactor: A thermal treatment unit that rapidly heats waste in a heat-conducting fluid bath of carbonate salt.

Monitoring Well: 1. A well used to obtain water quality samples or measure ground-water levels. 2. Well drilled at a hazardous waste management facility or Superfund site to collect ground-water samples for the purpose of physical, chemical, or biological analysis to determine the amounts, types, and distribution of contaminants in the ground water beneath the site.

Monitoring: Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements and/or pollutant levels in various media or in humans, plants, and animals.

Monoclonal Antibodies: (Also called MABs and MCAs) 1. Man-made clones of a molecule, produced in quantity for medical or research purposes. 2. Molecules of living organisms that selectively find and attach to other molecules to which their structure conforms exactly. This could also apply to equivalent activity by chemical molecules.

Moratorium: During the negotiation process, a period of 60 to 90 days during which EPA and potentially responsible parties may reach settlement but no site response activities can be conducted.

Morbidity: Rate of disease incidence.

Muck Soils: Earth made from decaying plant materials.

Mulch: A layer of material (wood chips, straw, leaves, etc.) placed around plants to hold moisture, prevent weed growth, and enrich or sterilize the soil.

Multiple Use: Use of land for more than one purpose; i.e., grazing of livestock, watershed and wildlife protection, recreation, and timber production. Also applies to use of bodies of water for recreational purposes, fishing, and water supply.

Multistage Remote Sensing: A strategy for landscape characterization that involves gathering and analyzing information at several geographic scales, ranging from generalized levels of detail at the national level through high levels of detail at the local scale.

Municipal Discharge: Discharge of effluent from waste water treatment plants which receive waste water from households, commercial establishments, and industries in the coastal drainage basin. Combined sewer/separate storm overflows are included in this category.

N

National Ambient Air Quality Standards (NAAQS): Standards established by EPA that apply for outside air throughout the country. (See: criteria pollutants, state implementation plans, emissions trading.)

National Emissions Standards For Hazardous Air Pollutants (NESHAPS): Emissions standards set by EPA for an air pollutant not covered by NAAQS that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness. Primary standards are designed to protect human health, secondary standards to protect public welfare (e.g., building facades, visibility, crops, and domestic animals).

National Estuary Program: A program established under the Clean Water Act Amendments of 1987 to develop and implement conservation and management plans for protecting estuaries and restoring and maintaining their chemical, physical, and biological integrity, as well as controlling point and nonpoint pollution sources.

National Municipal Plan: A policy created in 1984 by EPA and the states in 1984 to bring all publicly owned treatment works (POTWs) into compliance with Clean Water Act requirements.

National Oil and Hazardous Substances Contingency Plan (NOHSCP/NCP): The federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

National Pollutant Discharge Elimination System (NPDES): A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

National Priorities List (NPL): EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once a year. A site must be on the NPL to receive money from the Trust Fund for remedial action.

National Response Team (NRT): Representatives of 13 federal agencies that, as a team, coordinate federal responses to nationally significant incidents of pollution-an oil spill, a major chemical release, or a Superfund response action-and provide advice and technical assistance to the responding agency(ies) before and during a response action.

National Response Center: The federal operations center that receives notifications of all releases of oil and hazardous substances into the environment; open 24 hours a day, is operated by the U.S. Coast Guard, which evaluates all reports and notifies the appropriate agency.

Navigable Waters: Traditionally, waters sufficiently deep and wide for navigation by all, or specified vessels; such waters in the United States come under federal jurisdiction and are protected by certain provisions of the Clean Water Act.

Necrosis: Death of plant or animal cells or tissues. In plants, necrosis can discolor stems or leaves or kill a plant entirely.

Negotiations: (Under Superfund) After potentially responsible parties are identified for a site, EPA coordinates with them to reach a settlement that will result in the PRP paying for or conducting the cleanup under EPA supervision. If negotiations fail, EPA can order the PRP to conduct the cleanup or EPA can pay for the cleanup using Superfund monies and then sue to recover the costs.

Nematocide: A chemical agent which is destructive to nematodes.

Neutralization: Decreasing the acidity or alkalinity of a substance by adding alkaline or acidic materials, respectively.

New Source Performance Standards (NSPS): Uniform national EPA air emission and water effluent standards which limit the amount of pollution allowed from new sources or from modified existing sources.modified.

New Source: Any stationary source built or modified after publication of final or proposed regulations that prescribe a given standard of performance.

Nitrate: A compound containing nitrogen that can exist in the atmosphere or as a dissolved gas in water and which can have harmful effects on humans and animals. Nitrates in water can cause severe illness in infants and domestic animals.

Nitric Oxide (NO): A gas formed by combustion under high temperature and high pressure in an internal combustion engine; changes into nitrogen dioxide in the ambient air and contributes to photochemical smog.

Nitrification: The process whereby ammonia in wastewater is oxidized to nitrite and then to nitrate by bacterial or chemical reactions.

Nitrilotriacetic Acid (NTA): A compound now replacing phosphates in detergents:

Nitrite: 1. An intermediate in the process of nitrification. 2. Nitrous oxide salts used in food preservation

Nitrogen Dioxide (NO_2): The result of nitric oxide combining with oxygen in the atmosphere; major component of photochemical smog.

Nitrogen Oxide (NO_x): Product of combustion from transportation and stationary sources and a major contributor to the formation of ozone in the troposphere and to acid deposition.

Nitrogenous Wastes: Animal or vegetable residues that contain significant amounts of nitrogen.

Nitrophenols: Synthetic organopesticides containing carbon, hydrogen, nitrogen, and oxygen.

No Further Remedial Action Planned: Determination made by EPA following a preliminary assessment that a site does not pose a significant risk and so requires no further activity under CERCLA.

Noise: Product-level or product-volume changes occurring during a test that are not related to a leak but may be mistaken for one.

Non-Attainment Area: Area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act.

Non-Binding Allocations of Responsibility (NBAR): Process for EPA to propose a way for potentially responsible parties to allocate costs among themselves.

Non-Community Water System: A public water system that is not a community water system, e.g., the water supply at a camp site or national park.

Non-Conventional Pollutant: Any pollutant not statutorily listed or which is poorly understood by the scientific community.

No Further Remedial Action Planned: Determination made by EPA following a preliminary assessment that a site does not pose a significant risk and so requires no further activity under CERCLA.

Non-Point Source: Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Non-Contact Cooling Water: Water used for cooling which does not come into direct contact with any raw material, product, byproduct, or waste.

Non-degradation: An environmental policy which disallows any lowering of naturally occurring quality regardless of established health standards.

Non-ionizing Electromagnetic Radiation: 1. Radiation that does not change the structure of atoms but does heat tissue and may cause harmful biological effects. 2. Microwaves, radio waves, and low-frequency electromagnetic fields from high-voltage transmission lines.

Nondischarging Treatment Plant: A treatment plant that does not discharge treated wastewater into any stream or river. Most are pond systems that dispose of the total flow they receive by means of evaporation or percolation to groundwater, or facilities that dispose of their effluent by recycling or reuse (e.g., spray irrigation or groundwater discharge).

Nonfriable Asbestos-containing Materials: Any material containing more than one percent asbestos (as determined by Polarized Light Microscopy) that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Non-Road Emissions: Pollutants emitted by combustion engines on farm and construction equipment, gasoline-powered lawn and garden equipment, and power boats and outboard motors.

Notice of Deficiency: An EPA request to a facility owner or operator requesting additional information before a preliminary decision on a permit application can be made.

Notice of Intent to Deny: Notification by EPA of its preliminary intent to deny a permit application.

No Till: Planting crops without prior seedbed preparation, into an existing cover crop, sod, or crop residues, and eliminating subsequent tillage operations.

Nuclear Reactors and Support Facilities: Uranium mills, commercial power reactors, fuel reprocessing plants, and uranium enrichment facilities.

Nuclear Winter: Prediction by some scientists that smoke and debris rising from massive fires of a nuclear war could block sunlight for weeks or months, cooling the earth's surface and producing climate changes that could, for example, negatively effect world agricultural and weather patterns.

Nutrient: Any substance assimilated by living things that promotes growth. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

O

Ocean Discharge Waiver: A variance from Clean Water Act requirements for discharges into marine waters.

Off-Site Facility: A hazardous waste treatment, storage or disposal area that is located away from the generating site.

Oil Fingerprinting: A method that identifies sources of oil and allows spills to be traced to their source.

Oil Spill: An accidental or intentional discharge of oil which reaches bodies of water. Can be controlled by chemical dispersion, combustion, mechanical containment, and/or adsorption. Spills from tanks and pipelines can also occur away from water bodies, contaminating the soil, getting into sewer systems and threatening underground water sources.

Oligotrophic Lakes: Deep clear lakes with few nutrients, little organic matter and a high dissolved-oxygen level.

On-Scene Coordinator (OSC): The predesignated EPA, Coast Guard, or Department of Defense official who coordinates and directs Superfund removal actions or Clean Water Act oil-or hazardous-spill response actions.

On-Site Facility: A hazardous waste treatment, storage or disposal area that is located on the generating site.

Onboard Controls: Devices placed on vehicles to capture gasoline vapor during refueling and route it to the engines when the vehicle is starting so that it can be efficiently burned.

Opacity: The amount of light obscured by particulate pollution in the air; clear window glass has zero opacity, a brick wall is 100 percent opaque. Opacity is an indicator of changes in performance of particulate control systems.

Open Burning: Uncontrolled fires in an open dump.

Open Dump: An uncovered site used for disposal of waste without environmental controls. (See: dump.)

Operable Unit: Term for each of a number of separate activities undertaken as part of a Superfund site cleanup. A typical operable unit would be removal of drums and tanks from the surface of a site.

Operating Conditions: Conditions specified in a RCRA permit that dictate how an incinerator must operate as it burns different waste types. A trial burn is used to identify operating conditions needed to meet specified performance standards.

Operation And Maintenance: 1. Activities conducted after a Superfund site action is completed to ensure that the action is effective. 2. Actions taken after construction to assure that facilities constructed to treat waste water will be properly operated and maintained to achieve normative efficiency levels and prescribed effluent limitations in an optimum manner. 3. Ongoing asbestos management plan in a school or other public building, including regular inspections, various methods of maintaining asbestos in place, and removal when necessary.

Oral Toxicity: Ability of a pesticide to cause injury when ingested.

Organic: 1. Referring to or derived from living organisms. 2. In chemistry, any compound containing carbon.

Organic Chemicals/Compounds: Animal or plant-produced substances containing mainly carbon, hydrogen, nitrogen, and oxygen.

Organic Matter: Carbonaceous waste contained in plant or animal matter and originating from domestic or industrial sources.

Organophosphates: Pesticides that contain phosphorus; short-lived, but some can be toxic when first applied.

Organotins: Chemical compounds used in anti-foulant paints to protect the hulls of boats and ships, buoys, and pilings from marine organisms such as barnacles.

Original AHERA Inspection/Original Inspection/Inspection: Examination of school buildings arranged by Local Education Agencies to identify asbestos-containing-materials, evaluate their condition, take samples of materials suspected to contain asbestos; performed by EPA-accredited inspectors

Original Generation Point: Where regulated medical or other material first becomes waste.

Outfall: The place where effluent is discharged into receiving waters.

Overburden: Rock and soil cleared away before mining.

Overfire Air: Air forced into the top of an incinerator or boiler to fan the flames.

Overland Flow: A land application technique that cleanses waste water by allowing it to flow over a sloped surface. As the water flows over the surface, contaminants are absorbed and the water is collected at the bottom of the slope for reuse.

Oversized Regulated Medical Waste: Medical waste that is too large for plastic bags or standard containers.

Overturn: One complete cycle of top to bottom mixing of previously stratified water masses. This phenomenon may occur in spring or fall, or after storms, and results in uniformity of chemical and physical properties of water at all depths.

Oxidant: A substance containing oxygen that reacts chemically in air to produce a new substance; the primary ingredient of photochemical smog.

Oxidation: The addition of oxygen that breaks down organic waste or chemicals such as cyanides, phenols, and organic sulfur compounds in sewage by bacterial and chemical means.

Oxidation Pond: A man-made body of water in which waste is consumed by bacteria, used most frequently with other waste-treatment processes; a sewage lagoon.

Oxygenated Fuels: Gasoline which has been blended with alcohols or ethers that contain oxygen in order to reduce carbon monoxide and other emissions.

Oxygenated Solvent: An organic solvent containing oxygen as part of the molecular structure. Alcohols and ketones are oxygenated compounds often used as paint solvents.

Ozone (O^3): Found in two layers of the atmosphere, the stratosphere and the troposphere. In the *stratosphere* (the atmospheric layer 7 to 10 miles or more above the earth's surface) ozone is a natural form of oxygen that provides a protective layer shielding the earth from ultraviolet radiation.In the *troposphere* (the layer extending up 7 to 10 miles from the earth's surface), ozone is a chemical oxidant and major component of photochemical smog. It can seriously impair the respiratory system and is one of the most widespread of all the criteria pollutants for which the Clean Air Act required EPA to set standards. Ozone in the troposphere is produced through complex chemical reactions of nitrogen oxides, which are among the primary pollutants emitted by combustion sources; hydrocarbons, released into the atmosphere through the combustion, handling and processing of petroleum products; and sunlight.

Ozonator: A device that adds ozone to water.

Ozone Depletion: Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.

Ozone Hole: Thinning break in the stratospheric ozone layer. Designation of amount of such depletion as a "ozone hole" is made when detected amount of depletion exceeds fifty percent. seasonal ozone holes have been observed over both the Antarctic region and the Arctic region and part of canada and the extreme northeastern United States.

P

Packaging: The assembly of one or more containers and any other components necessary to assure minimum compliance with a program's storage and shipment packaging requirements. Also, the containers, etc., involved.

Packed Bed Scrubber: An air pollution control device in which emissions pass through alkaline water to neutralize hydrogen chloride gas.

Packed Tower: A pollution control device that forces dirty air through a tower packed with crushed rock or wood chips while liquid is sprayed over the packing material. The pollutants in the air stream either dissolve or chemically react with the liquid.

Pandemic: A Widespread throughout an area, nation or the world.

Parameter: A variable, measurable property whose value is a determinant of the characteristics of a system; e.g., temperature, pressure, and density are parameters of the atmosphere.

Paraquat: A standard herbicide used to kill various types of crops, including marijuana.

Part A Permit, Part B Permit: (See: Interim Permit Status.)

Particulate Loading: The mass of particulates per unit volume of air or water.

Participation Rate: Portion of population participating in a recycling program.

Particulates: Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.

Partition Coefficient: Measure of the sorption phenomenon, whereby a pesticide is divided between the soil and water phase; also referred to as adsorption partition coefficient.

Parts Per Billion (ppb)/Parts Per Million (ppm): Units commonly used to express contamination ratios, as in establishing the maximum permissible amount of a contaminant in water, land, or air.

Pathogens: Microorganisms that can cause disease in other organisms or in humans, animals and plants (e.g., bacteria, viruses, or parasites) found in sewage, in runoff from farms or rural areas populated with domestic and wild animals, and in water used for swimming. Fish and shellfish contaminated by pathogens, or the contaminated water itself, can cause serious illness.

Peak Electricity Demand: The maximum electricity used to meet the cooling load of a building or buildings in a given area.

Peak Levels: Levels of airborne pollutant contaminants much higher than average or occurring for short periods of time in response to sudden releases.

Percolation: The movement of water downward and radially through sub-surface soil layers, usually continuing downward to ground water; can also involve upward movement of water.

Performance Data (for incinerators): Information collected, during a trial burn, on concentrations of designated organic compounds and pollutants found in incinerator emissions. Data analysis must show that the incinerator meets performance standards under operating conditions specified in the RCRA permit. (See: trial burn; performance standards.)

Performance Standards: (1) Regulatory requirements limiting the concentrations of designated organic compounds, particulate matter, and hydrogen chloride in emissions from incinerators. (2) Operating standards established by EPA for various permitted pollution control systems, asbestos inspections, and various program operations and maintenance requirements.

Permeability: The rate at which liquids pass through soil or other materials in a specified direction.

Permit: An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of an environmental regulation; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.

Persistence: Refers to the length of time a compound stays in the environment, once introduced. A compound may persist for less than a second or indefinitely.

Persistent Pesticides: Pesticides that do not break down chemically or break down very slowly and remain in the environment after a growing season.

Personal Air Samples: Air samples taken with a pump is directly attached to the worker with the collecting filter and cassette placed in the worker's breathing zone (required under OSHA asbestos standards and EPA worker protection rule).

Pest: An insect, rodent, nematode, fungus, weed or other form of terrestrial or aquatic plant or animal life that is injurious to

Pesticide Tolerance: The amount of pesticide residue allowed by law to remain in or on a harvested crop. EPA sets these levels well below the point where the compounds might be harmful to consumers.

Pesticide: Substances or mixture there of intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture intended for use as a plant regulator, defoliant, or desiccant.

Phenols: Organic compounds that are byproducts of petroleum refining, tanning, and textile, dye, and resin manufacturing. Low concentrations cause taste and odor problems in water; higher concentrations can kill aquatic life and humans.

Phosphates: Certain chemical compounds containing phosphorus.

Phosphogypsum Piles (stacks): Principal byproduct generated in production of phosphoric acid from phosphate rock. These piles may generate radioactive radon gas.

Phosphorous Plants: Facilities using electric furnaces to produce elemental phosphorous for commercial use, such as high grade phosphoric acid, phosphate-based detergent, and organic chemicals use.

Phosphorus: An essential chemical food element that can contribute to the eutrophication of lakes and other water bodies. Increased phosphorus levels result from discharge of phosphorus-containing materials into surface waters.

Photochemical Oxidants: Air pollutants formed by the action of sunlight on oxides of nitrogen and hydrocarbons.

Photochemical Smog: Air pollution caused by chemical reactions of various pollutants emitted from different sources.

Photosynthesis: The manufacture by plants of carbohydrates and oxygen from carbon dioxide mediated by chlorophyll in the presence if sunlight.

Physical and Chemical Treatment: Processes generally used in large-scale wastewater treatment facilities. Physical processes may include air-stripping or filtration. Chemical treatment includes coagulation, chlorination, or ozonation. The term can also refer to treatment of toxic materials in surface and ground waters, oil spills, and some methods of dealing with hazardous materials on or in the ground.

Phytoplankton: That portion of the plankton community comprised of tiny plants, e.g., algae, diatoms.

Phytotoxic: Harmful to plants.

Picocuries Per Liter pCi/L): A unit of measure for levels of radon gas.

Pilot Tests: Testing a cleanup technology under actual site conditions to identify potential problems prior to full-scale implementation.

Plankton: Tiny plants and animals that live in water.

Plasma-arc Reactor: An incinerator that operates at extremely high temperatures; treats highly toxic wastes that do not burn easily.

Plasmid: A circular piece of DNA that exists apart from the chromosome and replicates independently of it. Bacterial plasmids carry information that renders the bacteria resistant to antibiotics. Plasmids are often used in genetic engineering to carry desired genes into organisms.

Plastics: Non-metallic chemoreactive compounds molded into rigid or pliable construction materials, fabrics, etc.

Plate Tower Scrubber: An air pollution control device that neutralizes hydrogen chloride gas by bubbling alkaline water through holes in a series of metal plates.

Plugging: Act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation.

Plume: 1. A visible or measurable discharge of a contaminant from a given point of origin. Can be visible or thermal in water, or visible in the air as, for example, a plume of smoke. 2 The area of radiation leaking from a damaged reactor. 3. Area downwind within which a release could be dangerous for those exposed to leaking fumes.

Plutonium: A radioactive metallic element chemically similar to uranium.

PM-10: A new standard for measuring the amount of solid or liquid matter suspended in the atmosphere, i.e. the amount of particulate matter over 10 micrometers in diameter; smaller PM-10 particles penetrate to the deeper portions of the lung, affecting sensitive population groups such as children and individuals with respiratory ailments.

Point Source: A stationary location or fixed facility from which pollutants are discharged; any single identifiable source of pollution, e.g., a pipe, ditch, ship, ore pit, factory smokestack.

Pollen: The fertilizing element of flowering plants; background air pollutant.

Pollutant: Generally, any substance introduced into the environment that adversely affects the usefulness of a resource.

Pollution Prevention: The active process of identifying areas, processes, and activities which create excessive waste byproducts for the purpose of substitution, alteration, or elimination of the process to prevent waste generation.

Pollutant Standard Index (PSI): Measure of adverse health effects of air pollution levels in major cities.

Pollution: Generally, the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects. Under the Clean Water Act, for example, the term is defined as the man-made or man-induced alteration of the physical, biological, chemical, and radiological integrity of water.

Polonium: A radioactive element that occurs in pitchblende and other uranium-containing ores.

Polyelectrolytes: Synthetic chemicals that help solids to clump during sewage treatment.

Polymer: Basic molecular ingredients in plastic.

Polyvinyl Chloride (PVC): A tough, environmentally indestructible plastic that releases hydrochloric acid when burned.

Population: A group of interbreeding organisms occupying a particular space; the number of humans or other living creatures in a designated area.

Post-Closure: The time period following the shutdown of a waste management or manufacturing facility; for monitoring purposes, often considered to be 30 years.

Post-Consumer Recycling: Reuse of materials generated from residential and consumer waste, e.g. converting wastepaper from offices into corrugated boxes or newsprint.

Potable Water: Water that is safe for drinking and cooking.

Potentially Responsible Party (PRP): Any individual or company-including owners, operators, transporters or generators-potentially responsible for, or contributing to a spill or other contamination at a Superfund site. Whenever possible, through administrative and legal actions, GPA requires PRPs to clean up hazardous sites they have contaminated.

Precipitate: A solid that separates from a solution.

Precipitation: Removal of hazardous solids from liquid waste to permit safe disposal; removal of particles from airborne emissions.

Precipitator: Pollution control device that collects particles from an air stream.

Precursor: In photochemistry, a compound antecedent to a volatile organic compound (VOC). Precursors react in sunlight to form ozone or other photochemical oxidants.

Preliminary Assessment: The process of collecting and reviewing available information about a known or suspected waste site or release.

Pressure Sewers: A system of pipes in which water, wastewater, or other liquid is pumped to a higher elevation.

Pretreatment: Processes used to reduce, eliminate, or alter the nature of wastewater pollutants from non-domestic sources before they are discharged into publicly owned treatment works (POTWs).

Prevalent Level Samples: Air samples taken under normal conditions (also known as ambient background samples).

Prevalent Levels: Levels of airborne contaminant occurring under normal conditions.

Prevention of Significant Deterioration (PSD): EPA program in which state and/or federal permits are required in order to restrict emissions from new or modified sources in places where air quality already meets or exceeds primary and secondary ambient air quality standards.

Primary Drinking Water Regulation: Applies to public water systems and specifies a contaminant level, which, in the judgment of the EPA Administrator, will not adversely affect human health.

Primary Waste Treatment: First steps in wastewater treatment; screens and sedimentation tanks are used to remove most materials that float or will settle. Primary treatment removes about 30 percent of carbonaceous biochemical oxygen demand from domestic sewage.

Principal Organic Hazardous Constituents (POHCs): Hazardous compounds monitored during an incinerator's trial burn, selected for high concentration in the waste feed and difficulty of combustion.

Probability of Detection : The likelihood, expressed as a percentage, that a test method will correctly identify a leaking tank.

Process Verification: Verifying that process raw materials, water usage, waste treatment processes, production rate and other facts relative to quantity and quality of pollutants contained in discharges are substantially described in the permit application and the issued permit.

Process Wastewater: Any water that comes into contact with any raw material, product, byproduct, or waste.

Process Weight: Total weight of all materials, including fuel, used in a manufacturing process; used to calculate the allowable particulate emission rate.

Product Level: The level of a product in a storage tank.

Products of Incomplete Combustion (PICs): Organic compounds formed by combustion. Usually generated in small amounts and sometimes toxic, PICs are heat-altered versions of the original material fed into the incinerator (e.g., charcoal is a P.C. from burning wood).

Propellant: Liquid in a self-pressurized pesticide product that expels the active ingredient from its container.

Proposed Plan: A plan for a site cleanup that is available to the public for comment.

Proteins: Complex nitrogenous organic compounds of high molecular weight made of amino acids; essential for growth and repair of animal tissue. Many, but not all, proteins are enzymes.

Protocol: A series of formal steps for conducting a test.

Protoplast: A membrane-bound cell from which the outer wall has been partially or completely removed. The term often is applied to plant cells.

Protozoa: One-celled animals that are larger and more complex than bacteria. May cause disease.

Public Comment Period: The time allowed for the public to express its views and concerns regarding an action by EPA (e.g., a *Federal Register* Notice of proposed rulemaking, a public notice of a draft permit, or a Notice of Intent to Deny).

Public Hearing: A formal meeting wherein EPA officials hear the public's views and concerns about an EPA action or proposal. EPA is required to consider such comments when evaluating its actions. Public hearings must be held upon request during the public comment period.

Public Notice: 1. Notification by EPA informing the public of Agency actions such as the issuance of a draft permit or scheduling of a hearing. EPA is required to ensure proper public notice, including publication in newspapers and broadcast over radio stations. 2. In the safe drinking water program, water suppliers are required to publish and broadcast notices when pollution problems are discovered.

Public Water System: A system that provides piped water for human consumption to at least 15 service connections or regularly serves 25 individuals.

Publicly Owned Treatment Works: A waste-treatment works owned by a state, unit of local government, or Indian tribe, usually designed to treat domestic wastewaters.

Pumping Station: Pumping devices installed in sewer or water systems or other liquid-carrying pipelines to move the liquids to a higher level.

Putrescible: Able to rot quickly enough to cause odors and attract flies.

Pyrolysis: Decomposition of a chemical by extreme heat.

Q

Quality Assurance/Quality Control: A system of procedures, checks, audits, and corrective actions to ensure that all EPA research design and performance, environmental monitoring and sampling, other technical and reporting activities of the highest achievable quality.

Quench Tank: A water-filled tank used to cool incinerator residues or hot materials during industrial processes.

R

Radiation Standards: Regulations that set maximum exposure limits for protection of the public from radioactive materials.

Radio Frequency Radiation: (See Nonionizing Radiation.)

Radioactive Substances: Substances that emit ionizing radiation.

Radioisotopes: Chemical variants of an element with potentially oncogenic, teratogenic, and mutagenic effects on the human body.

Radionuclide: Radioactive particle, manmade or natural, with a distinct atomic weight number. Can have a long life as soil or water pollutants.

Radius of Vulnerability Zone: The maximum distance from the point of release of a hazardous substance in which the airborne concentration could reach the level of concern under specified weather conditions.

Radon Decay Products: A term used to refer collectively to the immediate products of the radon decay chain. These include Po-218, Pb-214, Bi-214, and Po-214, which have an average combined half-life of about 30 minutes.

Radon: A colorless naturally occurring, radioactive, inert gas formed by radioactive decay of radium atoms in soil or rocks.

Rasp: A machine that grinds waste into a manageable material and helps prevent odor.

Raw Sewage: Untreated wastewater and its contents.

Raw Water: Intake water prior to any treatment or use.

Reasonably Available Control Measures (RACM): A broadly defined term referring to technological and other measures for pollution control.

Reasonably Available Control Technology (RACT): Control technology that is both reasonably available, and both technologically and economically feasible. Usually applied to existing sources in nonattainment areas; in most cases is less stringent than new source performance standards.

Receiving Waters: A river, lake, ocean, stream or other watercourse into which wastewater or treated effluent is discharged.

Recharge: The process by which water is added to a zone of saturation, usually by percolation from the soil surface, e.g., the recharge of an aquifer.

Recharge Area: A land area in which water reaches the zone of saturation from surface infiltration, e.g., where rainwater soaks through the earth to reach an aquifer.

Recombinant Bacteria: A microorganism whose genetic makeup has been altered by deliberate introduction of new genetic elements. The offspring of these altered bacteria also contain these new genetic elements, i.e. they "breed true."

Recombinant DNA: The new DNA that is formed by combining pieces of DNA from different organisms or cells.

Recommended Maximum Contaminant Level (RMCL): The maximum level of a contaminant in drinking water at which no known or anticipated adverse affect on human health would occur, and that includes an adequate margin of safety. Recommended levels are nonenforceable health goals. (See: maximum contaminant level.)

Reconstructed Source: Facility in which components are replaced to such an extent that the fixed capital cost of the new components exceed 50 percent of the capital cost of constructing a comparable brand-new facility. New-source performance standards may be applied to sources reconstructed after the proposal of the standard if it is technologically and economically feasible to meet the standard.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used at National Priorities List sites where, under CERCLA, Trust Funds pay for the cleanup.

Recovery Rate: Percentage of usable recycled materials that have been removed from the total amount of municipal solid waste generated in a specific area or by a specific business.

Reclamation: (In recycling) Restoration of materials found in the waste stream to a beneficial use which may be for purposes other than the original use.

Recycle/Reuse: Minimizing waste generation by recovering and reprocessing usable products that might otherwise become waste (.i.e. recycling of aluminum cans, paper, and bottles, etc.).

Red Bag Waste: (See: infectious waste.)

Red Border: An EPA document undergoing review before being submitted for final management decision-making.

Red Tide: A proliferation of a marine plankton toxic and often fatal to fish, perhaps stimulated by the addition of nutrients. A tide can be red, green, or brown, depending on the coloration of the plankton.

Reentry Interval: The period of time immediately following the application of a pesticide during which unprotected workers should not enter a field.

Reference Dose (RfD): The concentration of a chemical known to cause health problems; also be referred to as the ADI, or acceptable daily intake.

Reformulated Gasoline: Gasoline with a different composition from conventional gasoline (e.g., lower aromatics content) that cuts air pollutants.

Refuse Reclamation: Conversion of solid waste into useful products, e.g., composting organic wastes to make soil conditioners or separating aluminum and other metals for recycling.

Refuse: (See: solid waste.)

Regeneration: Manipulation of cells to cause them to develop into whole plants.

Regional Response Team (RRT): Representatives of federal, local, and state agencies who may assist in coordination of activities at the request of the On-Scene Coordinator before and during a significant pollution incident such as an oil spill, major chemical release, or a Superfund response.

Registrant: Any manufacturer or formulator who obtains registration for a pesticide active ingredient or product.

Registration: Formal listing with EPA of a new pesticide before it can be sold or distributed. Under the Federal Insecticide, Fungicide, and Rodenticide Act. EPA is responsible for registration (pre-market licensing) of pesticides on the basis of data demonstrating no unreasonable adverse effects on human health or the environment when applied according to approved label directions.

Registration Standards: Published documents which include summary reviews of the data available on a pesticide's active ingredient, data gaps, and the Agency's existing regulatory position on the pesticide.

Regulated Asbestos-Containing Material (RACM): Friable asbestos material or nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or has crumbled, or been pulverized or reduced to powder in the course of demolition or renovation operations.

Regulated Medical Waste: Under the Medical Waste Tracking Act of 1988, any solid waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. Included are cultures and stocks of infectious agents; human blood and blood products; human pathological body wastes from surgery and autopsy; contaminated animal carcasses from medical research; waste from patients with communicable diseases; and all used sharp implements, such as needles and scalpels, etc., and certain unused sharps. (See; treated medical waste; untreated medical waste; destroyed medical waste.)

Release: Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance.

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

Remedial Design: A phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup.

Remedial Investigation: An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site; establish site cleanup criteria; identify preliminary alternatives for remedial action; and support technical and cost analyses of alternatives. The remedial investigation is usually done with the feasibility study. Together they are usually referred to as the "RI/FS".

Remedial Project Manager (RPM): The EPA or state official responsible for overseeing on-site remedial action.

Remedial Response: Long-term action that stops or substantially reduces a release or threat of a release of hazardous substances that is serious but not an immediate threat to public health.

Remediation: 1. Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site; 2. for the Asbestos Hazard Emergency Response program, abatement methods including evaluation, repair, enclosure, encapsulation, or removal of greater than 3 linear feet or square feet of asbestos-containing materials from a building.

Remote Sensing: The collection and interpretation of information about an object without physical contact with the object; e.g., satellite imaging and aerial photograph.

Removal Action: Short-term immediate actions taken to address releases of hazardous substances that require expedited response. (See: cleanup.)

Reportable Quantity (RQ): Quantity of a hazardous substance that triggers reports under CERCLA. If a substance exceeds its RQ, the release must be reported to the National Response Center, the SERC, and community emergency coordinators for areas likely to be affected.

Repowering: Replacement of an existing coal-fired boiler with one or more clean coal technologies in order to achieve significantly greater emission reduction relative to the performance of technology in widespread use at the time the Clean Air Act amendments of 1990 were enacted. (See: Clean coal technology.)

Reregistration: The reevaluation and relicensing of existing pesticides originally registered prior to current scientific and regulatory standards. EPA reregisters pesticides through its Registration Standards Program.

Reserve Capacity: Extra treatment capacity built into solid waste and wastewater treatment plants and interceptor sewers to accommodate flow increases due to future population growth.

Reservoir: Any natural or artificial holding area used to store, regulate, or control water.

Residual: Amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after it passes through a scrubbing or other process.

Residual Risk: The extent of health risk from air pollutants remaining after application of the Maximum Achievable Control Technology (MACT).

Resistance: For plants and animals, the ability to withstand poor environmental conditions or attacks by chemicals or disease. May be inborn or acquired.

Resource Recovery: The process of obtaining matter or energy from materials formerly discarded.

Response Action: 1. Generic term for actions taken in response to actual or potential health-threatening environmental events such as spills, sudden releases, and asbestos abatement/management problems; 2. A CERCLA-authorized action involving either a short-term removal action or a long-term removal response. This may include but is not limited to: removing hazardous materials from a site to an EPA-approved hazardous waste facility for treatment, containment or treating the waste on-site, identifying and removing the sources of ground-water contamination and halting further migration of contaminants; 3. Any of the following actions taken in school buildings in response to AHERA to reduce the risk of exposure to asbestos: removal, encapsulation, enclosure, repair, and operations and maintenance. (See: cleanup).

Responsiveness Summary: A summary of oral and/or written public comments received by EPA during a comment period on key EPA documents, and EPA's response to those comments.

Restoration: Measures taken to return a site to pre-violation conditions.

Restricted Use: A pesticide may be classified (under FIFRA regulations) for restricted use if the it requires special handling because of its toxicity, and, if so, it may be applied only by trained, certified applicators or those under their direct supervision.

Restriction Enzymes: Enzymes that recognize specific regions of a long DNA molecule and cut it at those points.

Reuse: Using a product or component of municipal solid waste in its original form more than once, e.g., refilling a glass bottle that has been returned or using a coffee can to hold nuts and bolts.

Reverse Osmosis: A treatment process used in water systems by adding pressure to force water through a semi-permeable membrane. Reverse osmosis removes most drinking water contaminants. Also used in wastewater treatment. Large-scale reverse osmosis plants are being developed.

Ribonucleic Acid (RNA): A molecule that carries the genetic message from DNA to a cellular protein-producing mechanisms.

Ringlemann Chart: A series of shaded illustrations used to measure the opacity of air pollution emissions, ranging from light grey through black; used to set and enforce emissions standards.

Riparian Habitat: Areas adjacent to rivers and streams with a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

Riparian Rights: Entitlement of a land owner to certain uses of water on or bordering his property, including the right to prevent diversion or misuse of upstream waters. Generally a matter of state law.

Risk: A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

Risk Assessment: Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants.

Risk Communication: The exchange of information about health or environmental risks among risk assessors and managers, the general public, news media, interest groups, etc.

Risk Management: The process of evaluating and selecting alternative regulatory and non-regulatory responses to risk. The selection process necessarily requires the consideration of legal, economic, and behavioral factors.

River Basin: The land area drained by a river and its tributaries.

Rodenticide: A chemical or agent used to destroy rats or other rodent pests, or to prevent them from damaging food, crops, etc.

Rotary Kiln Incinerator: An incinerator with a rotating combustion chamber that keeps waste moving, thereby allowing it to vaporize for easier burning.

Rough Fish: Fish not prized for eating, such as gar and suckers. Most are more tolerant of changing environmental conditions than game species.

Rubbish: Solid waste, excluding food waste and ashes, from homes, institutions, and work-places.

Run-Off: That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other surface-water. It can carry pollutants from the air and land into receiving waters.

S

Safener: A chemical added to a pesticide to keep it from injuring plants.

Salinity: The percentage of salt in water.

Salt Water Intrusion: The invasion of fresh surface or ground water by salt water. If it comes from the ocean it may be called sea water intrusion.

Salts: Minerals that water picks up as it passes through the air, over and under the ground, or from households and industry.

Salvage: The utilization of waste materials.

Sanctions: Actions taken by the federal government for failure to plan or implement a State Improvement Plan (SIP). Such action may be include withholding of highway funds and a ban on construction of new sources of potential pollution.

Sand Filters: Devices that remove some suspended solids from sewage. Air and bacteria decompose additional wastes filtering through the sand so that cleaner water drains from the bed.

Sanitary Landfill: (See: landfills.)

Sanitary Sewers: Underground pipes that carry off only domestic or industrial waste, not storm water.

Sanitary Survey: An on-site review of the water sources, facilities, equipment, operation and maintenance of a public water system to evaluate the adequacy of those elements for producing and distributing safe drinking water.

Sanitary Water (Also known as gray water): Water discharged from sinks, showers, kitchens, or other nonindustrial operations, but not from commodes.

Sanitation: Control of physical factors in the human environment that could harm development, health, or survival.

Saturated Zone: A subsurface area in which all pores and cracks are filled with water under pressure equal to or greater than that of the atmosphere.

Scrap: Materials discarded from manufacturing operations that may be suitable for reprocessing.

Screening: Use of screens to remove coarse floating and suspended solids from sewage.

Science Advisory Board (SAB): A group of external scientists who advise EPA on science and policy.

Scrubber: An air pollution device that uses a spray of water or reactant or a dry process to trap pollutants in emissions.

Secondary Drinking Water Regulations: Non-enforceable regulations applying to public water systems and specifying the maximum contamination levels that, in the judgment of EPA, are required to protect the public welfare. These regulations apply to any contaminants that may adversely affect the odor or appearance of such water and consequently may cause people served by the system to discontinue its use.

Secondary Materials: Materials that have been manufactured and used at least once and are to be used again.

Secondary Treatment: The second step in most publicly owned waste treatment systems in which bacteria consume the organic parts of the waste. It is accomplished by bringing together waste, bacteria, and oxygen in trickling filters or in the activated sludge process. This treatment removes floating and settleable solids and about 90 percent of the oxygen-demanding substances and suspended solids. Disinfection is the final stage of secondary treatment. (See: primary, tertiary treatment.)

Secure Chemical Landfill: (See: landfills.)

Secure Maximum Contaminant Level: Maximum permissible level of a contaminant in water delivered to the free flowing outlet of the ultimate user, or of contamination resulting from corrosion of piping and plumbing caused by water quality.

Sedimentation Tanks: Wastewater tanks in which floating wastes are skimmed off and settled solids are removed for disposal.

Sedimentation: Letting solids settle out of wastewater by gravity during treatment.

Sediments: Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.

Seed Protectant: A chemical applied before planting to protect seeds and seedlings from disease or insects.

Seepage: Percolation of water through the soil from unlined canals, ditches, laterals, watercourses, or water storage facilities.

Selective Pesticide: A chemical designed to affect only certain types of pests, leaving other plants and animals unharmed.

Semi-Confined Aquifer: An aquifer partially confined by soil layers of low permeability through which recharge and discharge can still occur.

Senescence: The aging process. Sometimes used to describe lakes or other bodies of water in advanced stages of eutrophication.

Septic Tank: An underground storage tank for wastes from homes not connected to a sewer line. Waste goes directly from the home to the tank, where it is decomposed by bacteria. The sludge settles to the bottom and is pumped out periodically, but effluent flows into the ground through drains.

Service Connector: The pipe that carries tap water from a public water main to a building.

Settleable Solids: Material heavy enough to sink to the bottom of a wastewater treatment tank.

Settling Chamber: A series of screens placed in the way of flue gases to slow the stream of air, thus helping gravity to pull particles into a collection device.

Settling Tank: A holding area for wastewater, where heavier particles sink to the bottom for removal and disposal.

7Q10: Seven-day, consecutive low flow with a ten year return frequency; the lowest stream flow for seven consecutive days that would be expected to occur once in ten years.

Sewage: The waste and wastewater produced by residential and commercial sources and discharged into sewers.

Sewage Lagoon: (See: lagoon.)

Sewage Sludge: Sludge produced at a Publicly Owned Treatment Works, the disposal of which is regulated under the Clean Water Act.

Sewer: A channel or conduit that carries wastewater and storm-water runoff from the source to a treatment plant or receiving stream. "Sanitary" sewers carry household, industrial, and commercial waste. "Storm" sewers carry runoff from rain or snow. "Combined" sewers handle both.

Sewerage: The entire system of sewage collection, treatment, and disposal.

Sharps: Hypodermic needles, syringes (with or without the attached needle) pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes used in animal or human patient care or treatment, or in medical, research or industrial laboratories. Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips, and unused hypodermic and suture needles, syringes, and scalpel blades.

Signal: The volume or product-level change produced by a leak in a tank.

Signal Words: The words used on a pesticide label-Danger, Warning, Caution-to indicate level of toxicity.

Significant Deterioration: Pollution resulting from a new source in previously "clean" areas. (See: prevention of significant deterioration.)

Significant Municipal Facilities: Those publicly owned sewage treatment plants that discharge a million gallons per day or more and are therefore considered by states to have the potential for to substantially effect the quality of receiving waters.

Significant Non-Compliance: (See Significant Violations.)

Significant Violations: Violations by point source dischargers of sufficient magnitude or duration to be a regulatory priority.

Silviculture: Management of forest land for timber. Sometimes contributes to water pollution, as in clear-cutting.

Sinking: Controlling oil spills by using an agent to trap the oil and sink it to the bottom of the body of water where the agent and the oil are biodegraded.

Site Assessment Program: A means of evaluating hazardous waste sites through preliminary assessments and site inspections to develop a Hazard Ranking System score.

Site Inspection: The collection of information from a Superfund site to determine the extent and severity of hazards posed by the site. It follows and is more extensive than a preliminary assessment. The purpose is to gather information necessary to score the site, using the Hazard Ranking System, and to determine if it presents an immediate threat requiring prompt removal.

Site Safety Plan: A crucial element in all removal actions, it includes information on equipment being used, precautions to be taken, and steps to take in the event of an on-site emergency.

Siting: The process of choosing a location for a facility.

Skimming: Using a machine to remove oil or scum from the surface of the water.

Slow Sand Filtration: Passage of raw water through a bed of sand at low velocity, resulting in substantial removal of chemical and biological contaminants.

Sludge: A semi-solid residue from any of a number of air or water treatment processes; can be a hazardous waste.

Sludge Digester: Tank in which complex organic substances like sewage sludges are biologically dredged. During these reactions, energy is released and much of the sewage is converted to methane, carbon dioxide, and water.

Slurry: A watery mixture of insoluble matter resulting from some pollution control techniques.

Small Quantity Generator (SQG-sometimes referred to as "Squeegee"): Persons or enterprises that produce 220-2200 pounds per month of hazardous waste; are required to keep more records than conditionally exempt generators. The largest category of hazardous waste generators, SQGs include automotive shops, dry cleaners, photographic developers, and a host of other small businesses. (See: conditionally exempt generators).

Smelter: A facility that melts or fuses ore, often with an accompanying chemical change, to separate its metal content. Emissions cause pollution. "Smelting" is the process involved.

Smog: Air pollution associated with oxidants. (See: photochemical smog.)

Smoke: Particles suspended in air after incomplete combustion.

Soft Detergents: Cleaning agents that break down in nature.

Soft Water: Any water that does not contain a significant amount of dissolved minerals such as salts of calcium or magnesium.

Soil Adsorption Field: A sub-surface area containing a trench or bed with clean stones and a system of piping through which treated sewage may seep into the surrounding soil for further treatment and disposal.

Soil and Water Conservation Practices: Control measures consisting of managerial, vegetative, and structural practices to reduce the loss of soil and water.

Soil Conditioner: An organic material like humus or compost that helps soil absorb water, build a bacterial community, and take up mineral nutrients.

Soil Erodibility: An indicator of a soil's susceptibility to raindrop impact, runoff, and other erosive processes.

Soil Gas: Gaseous elements and compounds in the small spaces between particles of the earth and soil. Such gases can be moved or driven out under pressure.

Soil Sterilant: A chemical that temporarily or permanently prevents the growth of all plants and animals. depending on the chemical.

Sole-Source Aquifer: An aquifer that supplies 50-percent or more of the drinking water of an area.

Solid Waste: Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes also include sewage sludge, agricultural refuse, demolition wastes, and mining residues. Technically, solid waste also refers to liquids and gases in containers.

Solid Waste Disposal: The final placement of refuse that is not salvaged or recycled.

Solid Waste Management: Supervised handling of waste materials from their source through recovery processes to disposal.

Solidification and Stabilization: Removal of wastewater from a waste or changing it chemically to make it less permeable and susceptible to transport by water.

Soot: Carbon dust formed by incomplete combustion.

Sorption: The action of soaking up or attracting substances; process used in many pollution control systems.

Source Reduction: Reducing the amount of materials entering the waste stream by redesigning products or patterns of production or consumption (e.g., using returnable beverage containers). Synonymous with waste reduction.

Source Separation: Segregating various wastes at the point of generation (e.g., separation of paper, metal and glass from other wastes to make recycling simpler and more efficient.)

Special Review: Formerly known as Rebuttable Presumption Against Registration (RPAR), this is the regulatory process through which existing pesticides suspected of posing unreasonable risks to human health, non-target organisms, or the environment are referred for review by EPA. Such review requires an intensive risk/benefit analysis with opportunity for public comment. If risk is found to outweigh social and economic benefits, regulatory actions ranging from label revisions and use-restriction to cancellation or suspended registration can be initiated.

Special Waste: Items such as household hazardous waste, bulky wastes (refrigerators, pieces of furniture, etc.) tires, and used oil.

Species: A reproductively isolated aggregate of interbreeding organisms.

Spill Prevention Control and Countermeasures Plan (SPCP): Plan covering the release of hazardous substances as defined in the Clean Water Act.

Spoil: Dirt or rock removed from its original location-destroying the composition of the soil in the process-as in strip-mining, dredging, or construction.

Sprawl: Unplanned development of open land.

Spray Tower Scrubber: A device that sprays alkaline water into a chamber where acid gases present to aid in the neutralizing of the gas.

Stable Air: A motionless mass of air th holds instead of dispersing pollutants.

Stabilization: Conversion of the active organic matter in sludge into inert, harmless material.

Stack: A chimney, smokestack, or vertical pipe that discharges used air.

Stabilization Ponds: (See: lagoon.)

Stack Effect: Air, as in a chimney, that moves upward because it is warmer than the ambient atmosphere.

Stack Gas: (See: flue gas.)

Stage II Controls: Systems placed on service station gasoline pumps to control and capture gasoline vapors during refuelling.

Stagnation: Lack of motion in a mass of air or water that holds pollutants in place.

Standards: Norms that impose limits on the amount of pollutants or emissions produced. EPA establishes minimum standards, but states are allowed to be stricter.

Start of a Response Action: The point in time when there is a guarantee or set-aside of funding either by EPA, other federal agencies, states or Principal Responsible Parties in order to begin response actions at a Superfund site.

State Emergency Response Commission (SERC): Commission appointed by each state governor according to the requirements of SARA Title III. The SERCs designate emergency planning districts, appoint local emergency planning committees, and supervise and coordinate their activities.

State Implementation Plans (SIP): EPA - approved state plans for the establishment, regulation, and enforcement of air pollution standards.

Stationary Source: A fixed-site producer of pollution, mainly power plants and other facilities using industrial combustion processes.

Storage: Temporary holding of waste pending treatment or disposal, as in containers, tanks, waste piles, and surface impoundments.

Storm Sewer: A system of pipes (separate from sanitary sewers) that carries only water runoff from buildings and land surfaces.

Stratification: Separating into layers.

Stratosphere: The portion of the atmosphere 10-to-25 miles above the earth's surface.

Strip-Cropping: Growing crops in a systematic arrangement of strips or bands that serve as barriers to wind and water erosion.

Strip-Mining: A process that uses machines to scrape soil or rock away from mineral deposits just under the earth's surface.

Structural Deformation: Distortion in walls of a tank after liquid has been added or removed.

Sulfur Dioxide (SO_2): A pungent, colorless, gaseous pollutant formed primarily by the combustion of fossil fuels.

Sump: A pit or tank that catches liquid runoff for drainage or disposal.

Supercritical Water: A type of thermal treatment using moderate temperatures and high pressures to enhance the ability of water to break down large organic molecules into smaller, less toxic ones. Oxygen injected during this process combines with simple organic compounds to form carbon dioxide and water.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Superfund Innovative Technology Evaluation: EPA program to promote development and use of innovative treatment technologies in Superfund site cleanups.

Surface Impoundment: Treatment, storage, or disposal of liquid hazardous wastes in ponds.

Surface Uranium Mines: Strip mining operations for removal of uranium-bearing ore.

Surface Water: All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors directly influenced by surface water.

Surfacing ACM: Asbestos-containing material that is sprayed or troweled on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members.

Surfacing Material: Material sprayed or troweled onto structural members (beams, columns, or decking) for fire protection; or on ceilings or walls for fireproofing, acoustical or decorative purposes. Includes textured plaster, and other textured wall and ceiling surfaces.

Surfactant: A detergent compound that promotes lathering.

Surveillance System: A series of monitoring devices designed to check on environmental conditions.

Suspect Material: Building material suspected of containing asbestos, e.g., surfacing material, floor tile, ceiling tile, thermal system insulation, and miscellaneous other materials.

Suspended Loads: Sediment particles maintained in the water column by turbulence and carried with the flow of water.

Suspended Solids: Small particles of solid pollutants that float on the surface of, or are suspended in, sewage or other liquids. They resist removal by conventional means.

Suspension: Suspending the use of a pesticide when EPA deems it necessary to prevent an imminent hazard resulting from its continued use. An emergency suspension takes effect immediately; under an ordinary suspension a registrant can request a hearing before the suspension goes into effect. Such a hearing process might take six months.

Suspension Culture: Cells growing in a liquid nutrient medium.

Swamp: A type of wetland dominated by woody vegetation but without appreciable peat deposits. Swamps may be fresh or salt water and tidal or non-tidal. (See: wetlands.)

Synthetic Organic Chemicals (SOCs): Man-made organic chemicals. Some SOCs are volatile, others tend to stay dissolved in water instead of evaporating.

Systemic Pesticide: A chemical absorbed by an organism that makes the organism toxic to pests.

T

Tailings: Residue of raw material or waste separated out during the processing of crops or mineral ores.

Tail Water: The runoff of irrigation water from the lower end of an irrigated field.

Technical Assistance Grant (TAG): As part of the Superfund program, Technical Assistance Grants of up to $50,000 are provided to citizens' groups to obtain assistance in interpreting information related to cleanups at Superfund sites or those proposed for the National Priorities List. Grants are used by such groups to hire technical advisors to help them understand the site-related technical information for the duration of response activities.

Technology-Based Limitations: Industry-specific effluent limitations applied to a discharge when it will not cause a violation of water quality standards at low stream flows. Usually applied to discharges into large rivers.

Technology-Based Standards: Effluent limitations applicable to direct and indirect sources which are developed on a category-by-category basis using statutory factors, not including water-quality effects.

Terracing: Dikes built along the contour of sloping farm land that hold runoff and sediment to reduce erosion.

Tertiary Treatment: Advanced cleaning of wastewater that goes beyond the secondary or biological stage, removing nutrients such as phosphorus, nitrogen, and most BOD and suspended solids.

Thermal Pollution: Discharge of heated water from industrial processes that can kill or injure aquatic organisms.

Thermal System Insulation (TSI): Asbestos-containing material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.

Thermal Treatment: Use of elevated temperatures to treat hazardous wastes. (See: incineration; pyrolysis.)

Threshold Limit Value (TLV): The concentration of an airborne substance that an average person can be repeatedly exposed to without adverse effects. TLVs may be expressed in three ways: TLV-TWA-Time weighted average, based on an allowable exposure averaged over a normal 8-hour workday or 40-hour workweek; TLV-STEL-Short-term exposure limit or maximum concentration for a brief specified period of time, depending on a specific chemical (TWA must still be met); and TLV-C-Ceiling Exposure Limit or maximum exposure concentration not to be exceeded under any circumstances. (TWA must still be met.)

Threshold Planning Quantity: A quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State Emergency Response Commission that such facilities are subject to emergency planning requirements under SARA Title III.

Tidal Marsh: Low, flat marshlands traversed by channels and tidal hollows, subject to tidal inundation; normally, the only vegetation present is salt-tolerant bushes and grasses. (See: wetlands.)

Time-weighted Average (TWA): In air sampling, the average air concentration of contaminants during a given period.

Tolerances: Permissible residue levels for pesticides in raw agricultural produce and processed foods. Whenever a pesticide is registered for use on a food or a feed crop, a tolerance (or exemption from the tolerance requirement) must be established. EPA establishes the tolerance levels, which are enforced by the Food and Drug Administration and the Department of Agriculture.

Tonnage: The amount of waste that a landfill accepts, usually expressed in tons per month. The rate at which a landfill accepts waste is limited by the landfill's permit.

Topography: The physical features of a surface area including relative elevations and the position of natural and man-made features.

Total Dissolved Phosphorous: The total phosphorous content o all material that will pass through a filter, which is determined as orthophosphate without prior digestion or hydrolysis. Also called soluble P. or ortho P.

Total Dissolved Solids (TDS): All material that passes the standard glass river filter; now called total filtrable reside. Term is used to reflect salinity.

Total Suspended Solids (TSS): A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids." (See: suspended solids.)

Toxic Chemical Release Form: Information form required of facilities that manufacture, process, or use (in quantities above a specific amount) chemicals listed under SARA Title III.

Toxic Chemical: Any chemical listed in EPA rules as "Toxic Chemicals Subject to Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986."

Toxic Chemical Use Substitution: Replacing toxic chemicals with less harmful chemicals in industrial processes.

Toxic Cloud: Airborne plume of gases, vapors, fumes, or aerosols containing toxic materials.

Toxic Pollutants: Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.

Toxic Release Inventory: Database of toxic releases in the United States compiled from SARA Title III section 313 reports.

Toxic Substance: A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

Toxic Waste: A waste that can produce injury if inhaled, swallowed, or absorbed through the skin.

Toxicity Testing: Biological testing (usually with an invertebrate, fish, or small mammal) to determine the adverse effects of a compound or effluent.

Toxicological Profile: An examination, summary, and interpretation of a hazardous substance to determine levels of exposure and associated health effects.

Transpiration: The process by which water vapor is lost to the atmosphere from living plants. The term can also be applied to the quantity of water thus dissipated.

Transportation Control Measures (TCMs): Steps taken by a locality to adjust traffic patterns (e.g., bus lanes, turnout, right turn on red) or reduce vehicle use (ride sharing, high-occupancy vehicle lanes) to cut vehicular emissions.

Trash: Material considered worthless or offensive that is thrown away. Generally defined as dry waste material, but in common usage it is a synonym for garbage, rubbish, or refuse.

Treatability Studies: Tests of potential cleanup technologies conducted in a laboratory (See: bench-scale tests.)

Trash-to-Energy Plan: Burning trash to produce energy.

Treated Regulated Medical Waste: Medical waste treated to substantially reduce or eliminate its pathogenicity, but that has not yet been destroyed.

Treatment Plant: A structure built to treat wastewater before discharging it into the environment.

Treatment, Storage, and Disposal Facility: Site where a hazardous substance is treated, stored, or disposed of. TSD facilities are regulated by EPA and states under RCRA.

Treatment: (1) Any method, technique, or process designed to remove solids and/or pollutants from solid waste, wastestreams, effluents, and air emissions. (2) methods used to change the biological character or composition of any regulated medical waste so as to substantially reduce or eliminate its potential for causing disease.

Trial Burn: An incinerator test in which emissions are monitored for the presence of specific organic compounds, particulates, and hydrogen chloride.

Trichloroethylene (TCE): A stable, low boiling-point colorless liquid, toxic if inhaled. Used as a solvent or metal decreasing agent, and in other industrial applications.

Trickling Filter: A coarse treatment system in which wastewater is trickled over a bed of stones or other material covered with bacteria that break down the organic waste and produce clean water.

Trickle Irrigation: Method in which water drips to the soil from perforated tubes or emitters.

Trihalomethane (THM): One of a family of organic compounds named as derivative of methane. THMs are generally by-products of chlorination of drinking water that contains organic material.

Trust Fund (CERCLA): A fund set up under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to help pay for cleanup of hazardous waste sites and for legal action to force those responsible for the sites to clean them up.

Tundra: A type of ecosystem dominated by lichens, mosses, grasses, and woody plants. Tundra is found at high latitudes (arctic tundra) and high altitudes (alpine tundra). Arctic tundra is underlain by permafrost and is usually saturated. (See: wetlands.)

Turbidimeter: A device that measures the density of suspended solids in a liquid.

Turbidity: 1. Haziness in air caused by the presence of particles and pollutants. 2. A cloudy condition in water due to suspended silt or organic matter.

Ultra Clean Coal (UCC): Coal that is washed, ground into fine particles, then chemically treated to remove sulfur, ash, silicone, and other substances; usually briquetted and coated with a sealant made from coal.

Ultraviolet Rays: Radiation from the sun that can be useful or potentially harmful. UV rays from one part of the spectrum (UV-A) enhance plant life and are useful in some medical and dental procedures; UV rays from other parts of the spectrum (UV-B) can cause skin cancer or other tissue damage. The ozone layer in the atmosphere partly shields us from ultraviolet rays reaching the earth's surface.

Underground Injection Control (UIC): The program under the Safe Drinking Water Act that regulates the use of wells to pump fluids into the ground.

Underground Sources of Drinking Water: Aquifers currently being used as a source of drinking water or those capable of supplying a public water system. They have a total dissolved solids content of 10,000 milligrams per liter or less, and are not "exempted aquifers." (See: exempted aquifer.)

Underground Storage Tank: A tank located at least partially underground and designed to hold gasoline or other petroleum products or chemicals.

Unreasonable Risk: Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), "unreasonable adverse effects" means any unreasonable risk to man or the environment, taking into account the medical, economic, social, and environmental costs and benefits of any pesticide.

Unsaturated Zone: The area above the water table where soil pores are not fully saturated, although some water may be present.

Uranium Mill Tailings Piles: Former uranium ore processing sites that contain leftover radioactive materials (wastes), including radium and unrecovered uranium.

Uranium Mill-Tailings Waste Piles: Licensed active mills with tailings piles and evaporation ponds created by acid or alkaline leaching processes.

Urban Runoff: Storm water from city streets and adjacent domestic or commercial properties that carries pollutants of various kinds into the sewer systems and receiving waters.

Utility Load: The total electricity demand of a utility district.

V

Vapor Capture System: Any combination of hoods and ventilation system that captures or contains organic vapors so they may be directed to an abatement or recovery device.

Vapor Dispersion: The movement of vapor clouds in air due to wind, thermal action, gravity spreading, and mixing.

Vapor Plumes: Flue gases visible because they contain water droplets.

Variance: Government permission for a delay or exception in the application of a given law, ordinance, or regulation.

Vector: 1. An organism, often an insect or rodent, that carries disease. 2. Plasmids, viruses, or bacteria used to transport genes into a host cell. A gene is placed in the vector; the vector then "infects" the bacterium.

Vehicle Miles Travelled (VMT): A measure of the extent of motor vehicle operation; the total number of vehicle miles travelled within a specific geographic area over a given period of time.

Ventilation/Suction: The act of admitting fresh air into a space in order to replace stale or contaminated air; achieved by blowing air into the space. Similarly, suction represents the admission of fresh air into an interior space by lowering the pressure outside of the space, thereby drawing the contaminated air outward.

Venturi Scrubbers: Air pollution control devices that use water to remove particulate matter from emissions.

Vinyl Chloride: A chemical compound, used in producing some plastics, that is believed to be oncogenic.

Virgin Materials: Resources extracted from nature in their raw form, such as timber or metal ore.

Volatile: Any substance that evaporates readily.

Volatile Organic Compound (VOC): Any organic compound that participates in atmospheric photochemical reactions except those designated by EPA as having negligible photochemical reactivity.

Volatile Synthetic Organic Chemicals: Chemicals that tend to volatilize or evaporate.

Volume Reduction: Processing waste materials to decrease the amount of space they occupy, usually by compacting or shredding, incineration, or composting.

Volumetric Tank Test: One of several tests to determine the physical integrity of a storage tank; the volume of fluid in the tank is measured directly or calculated from product-level changes. A marked drop in volume indicates a leak.

Vulnerable Zone: An area over which the airborne concentration of a chemical accidentally released could reach the level of concern.

Vulnerability Analysis: Assessment of elements in the community that are susceptible to damage should a release of hazardous materials occur.

W

Waste: 1. Unwanted materials left over from a manufacturing process. 2. Refuse from places of human or animal habitation.

Waste Characterization: Identification of chemical and microbiological constituents of a waste material.

Waste Exchange: Arrangement in which companies exchange their wastes for the benefit of both parties.

Waste Feed: The continuous or intermittent flow of wastes into an incinerator.

Waste Load Allocation: The maximum load of pollutants each discharger of waste is allowed to release into a particular waterway. Discharge limits are usually required for each specific water quality criterion being, or expected to be, violated. The portion of a stream's total assimilative capacity assigned to an individual discharge.

Waste Minimization: Measures or techniques that reduce the amount of wastes generated during industrial production processes; term is also applied to recycling and other efforts to reduce the amount of waste going into the waste stream.

Waste Reduction: Using source reduction, recycling, or composting to prevent or reduce waste generation.

Waste Stream: The total flow of solid waste from homes, businesses, institutions, and manufacturing plants that are recycled, burned, or disposed of in landfills, or segments thereof such as the "residential waste stream" or the "recyclable waste stream."

Waste Treatment Lagoon: Impoundment made by excavation or earth fill for biological treatment of wastewater.

Waste Treatment Plant: A facility containing a series of tanks, screens, filters and other processes by which pollutants are removed from water.

Waste Treatment Stream: The continuous movement of waste from generator to treater and disposer.

Wastewater: The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

Wastewater Infrastructure: The plan or network for the collection, treatment, and disposal of sewage in a community. The level of treatment will depend on the size of the community, the type of discharge, and/or the designated use of the receiving water.

Wastewater Operations and Maintenance: Actions taken after construction to assure that facilities constructed to treat wastewater will be operated, maintained, and managed to reach prescribed effluent levels in an optimum manner.

Water Pollution: The presence in water of enough harmful or objectionable material to damage the water's quality.

Water Purveyor: A public utility, mutual water company, county water district, or municipality that delivers drinking water to customers.

Water Quality Criteria: Levels of water quality expected to render a body of water suitable for its designated use. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.

Water Quality Standards: State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Water Quality-Based Limitations: Effluent limitations applied to dischargers when mere technology-based limitations would cause violations of water quality standards. Usually applied to discharges into small streams.

Water Quality-Based Permit: A permit with an effluent limit more stringent than one based on technology performance. Such limits may be necessary to protect the designated use of receiving waters (i.e., recreation, irrigation, industry or water supply).

Water Solubility: The maximum possible concentration of a chemical compound dissolved in water. If a substance is water soluble it can very readily disperse through the environment.

Water Supplier: One who owns or operates a public water system.

Water Supply System: The collection, treatment, storage, and distribution of potable water from source to consumer.

Water Table: The level of groundwater.

Watershed: The land area that drains into a stream.

Well Injection: The subsurface emplacement of fluids into a well.

Well Monitoring: Measurement by on-site instruments or laboratory methods of well water quality.

Well Plug: A watertight, gastight seal installed in a bore hole or well to prevent movement of fluids.

Wellhead Protection Area: A protected surface and subsurface zone surrounding a well or wellfield supplying a public water system to keep contaminants from reaching the well water.

Wetlands: An area that is saturated by surface or ground water with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries.

Wildlife Refuge: An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Wood-Burning-Stove Pollution: Air pollution caused by emissions of particulate matter, carbon monoxide, total suspended particulates, and polycyclic organic matter from wood-burning stoves.

Wood Treatment Facility: An industrial facility that treats lumber and other wood products for outdoor use. The process employs chromated copper arsenate, which is regulated as a hazardous material.

Working Level Month (WLM): A unit of measure used to determine cumulative exposure to radon.

Working Level (WL): A unit of measure for documenting exposure to radon decay products, the so-called "daughters". One working level is equal to approximately 200 picocuries per liter.

X Y Z

Xenobiote: Any biotum displaced from its normal habitat; a chemical foreign to a biological system.

Yard Waste: The part of solid waste composed of grass clippings, leaves, twigs, branches, and garden refuse.

Yellow-Boy: Iron oxide flocculent (clumps of solids in waste or water); usually observed as orange-yellow deposits in surface streams with excess iron content. (See: floc, flocculation.)

Z-list: OSHA's tables of toxic and hazardous air contaminants.

Zone of Saturation: (See: saturated zone.)

Zooplankton: Tiny aquatic animals eaten by fish.

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

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

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

I. Mission Statement of the RAB

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

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

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

III. Operating Procedures

A. Membership

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

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

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

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

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

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

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

RAB Membership Responsibilities

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

b. Attend all RAB meetings.

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

d. Serve in a voluntary capacity.

B. RAB Structure

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

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

Community Co-Chair Responsibilities

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

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

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

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

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

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

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

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

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

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

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

RAB Subcommittee

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

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

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

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

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

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

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

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

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

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

IV. Effective Date and Amendments

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

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

V. Terms and Conditions

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

VI. Termination

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

VII. Signatories to the Membership Mission Statement and Operating Procedures

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

_____
MCAS El Toro BRAC Environmental Coordinator

_____
RAB Community Co-Chair

_____
U. S. Environmental Protection Agency RPM

_____
California Department of Toxic Substances Control RPM

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

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

VII. Signatories to the Membership Mission Statement and Operating Procedures

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

_____
MCAS El Toro BRAC Environmental Coordinator

_____
RAB Community Co-Chair

_____
U.S. Environmental Protection Agency RPM

_____
California Department of Toxic Substances Control RPM

MEMBERSHIP APPLICATION

MARINE CORPS AIR STATION EL TORO
RESTORATION ADVISORY BOARD

Conditions for membership:

Restoration Advisory Board (RAB) members are expected to serve a two year term and attend all RAB meetings or designate an alternate. The alternate must be jointly approved by the Department of Defense and Community Co-Chairpersons. If a member fails to attend two consecutive meetings without contacting the RAB, or at least one of the RAB Co-chairs, or fulfill member responsibilities including involvement in a subcommittee, the RAB Co-chairs may ask the member to resign. Duties and responsibilities will include reviewing and commenting on technical documents and activities associated with the environmental restoration at **MARINE CORPS AIR STATION EL TORO.** Members will be expected to be available to community members and groups to facilitate the exchange of information and/or concerns between the community and the RAB.

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

****

Name:_____

Address:_____
Street Apt. # City Zip

Phone: ( )_____ ( )_____ ( )_____
Daytime Home Fax

Group Affiliation:_____

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

_____

_____

_____

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

_____

_____

3. Please indicate if you are interested in being considered for the community co-chairperson position on the RAB by checking the space below:

Yes, I would like to be considered.

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

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

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

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

_____ _____

Applicant Signature Date

Please return your completed application to:

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

(949) 726-5398 or (949) 726-2840

MCAS El Toro -- Meeting Schedule
Full RAB and RAB Subcommittee

The Conference and Training Center (CTC) at Irvine City Hall has been reserved/confirmed for RAB meetings (full RAB) on the last Wednesday of the month (CTC Reserved/Confirmed). Dates listed in *italic* are for RAB Subcommittee meetings.

RAB Meetings (Full RAB)

- **September 27, 2000 (CTC Reserved/Confirmed)**
- **November 29, 2000 (CTC Reserved/Confirmed)**
- **January 31, 2001 (CTC Reserved/Confirmed)**
- **March 28, 2001 (CTC Reserved/Confirmed)**
- **May 30, 2001 (CTC Reserved/Confirmed)**
- **July 25, 2001 (CTC Reserved/Confirmed)**

RAB Subcommittee Meetings

Dates listed here show scheduled subcommittee meetings on the last Wednesday of the month alternating with the regular bimonthly full RAB meeting. Additional RAB Subcommittee meetings, other than the dates listed below, may be scheduled by Subcommittee members.

- *August 30, 2000 (CTC Reserved/Confirmed)*
- *October 25, 2000 (CTC Reserved/Confirmed)*
- *December 27, 2000 (CTC Reserved/Confirmed)*
  [subject to change due to holiday season]
- *February 28, 2001 (CTC Reserved/Confirmed)*
- *April 25, 2001 (CTC Reserved/Confirmed)*
- *June 27, 2001 (CTC Reserved/Confirmed)*
- *August 29, 2001 (CTC Reserved/Confirmed)*

Reminder: All meetings are on the last Wednesday of the month.

For More Information on MCAS El Toro Redevelopment

Mr. Robert L. Richardson
Interim Executive Director

MCAS El Toro
Local Redevelopment Authority
(714) 834-3000

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

ACQUISITION AND TECHNOLOGY

JUL 25 1997

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

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

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

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

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

Attachment

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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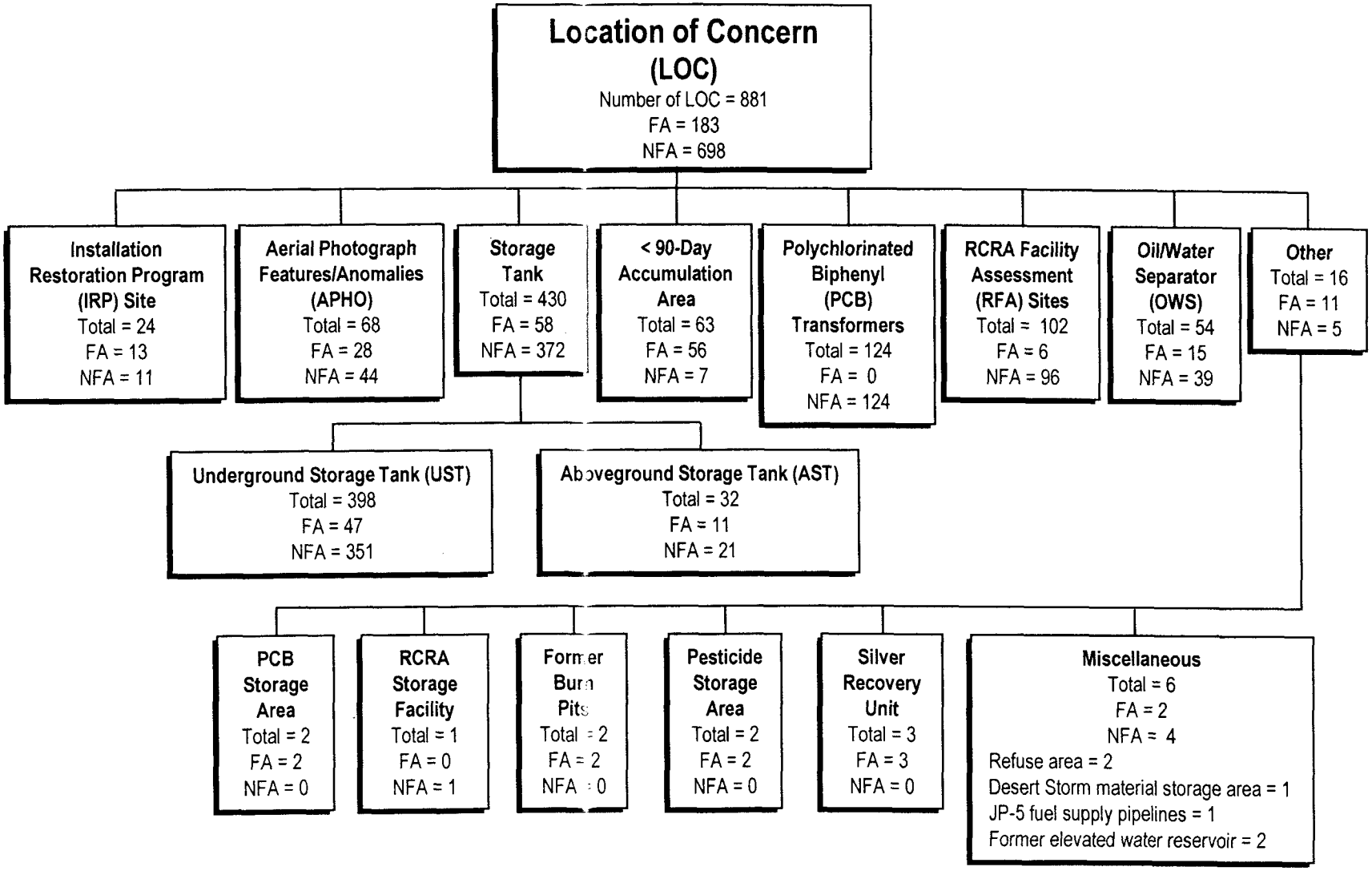
LOCATION OF CONCERN DISTRIBUTION
As of October 5, 2000

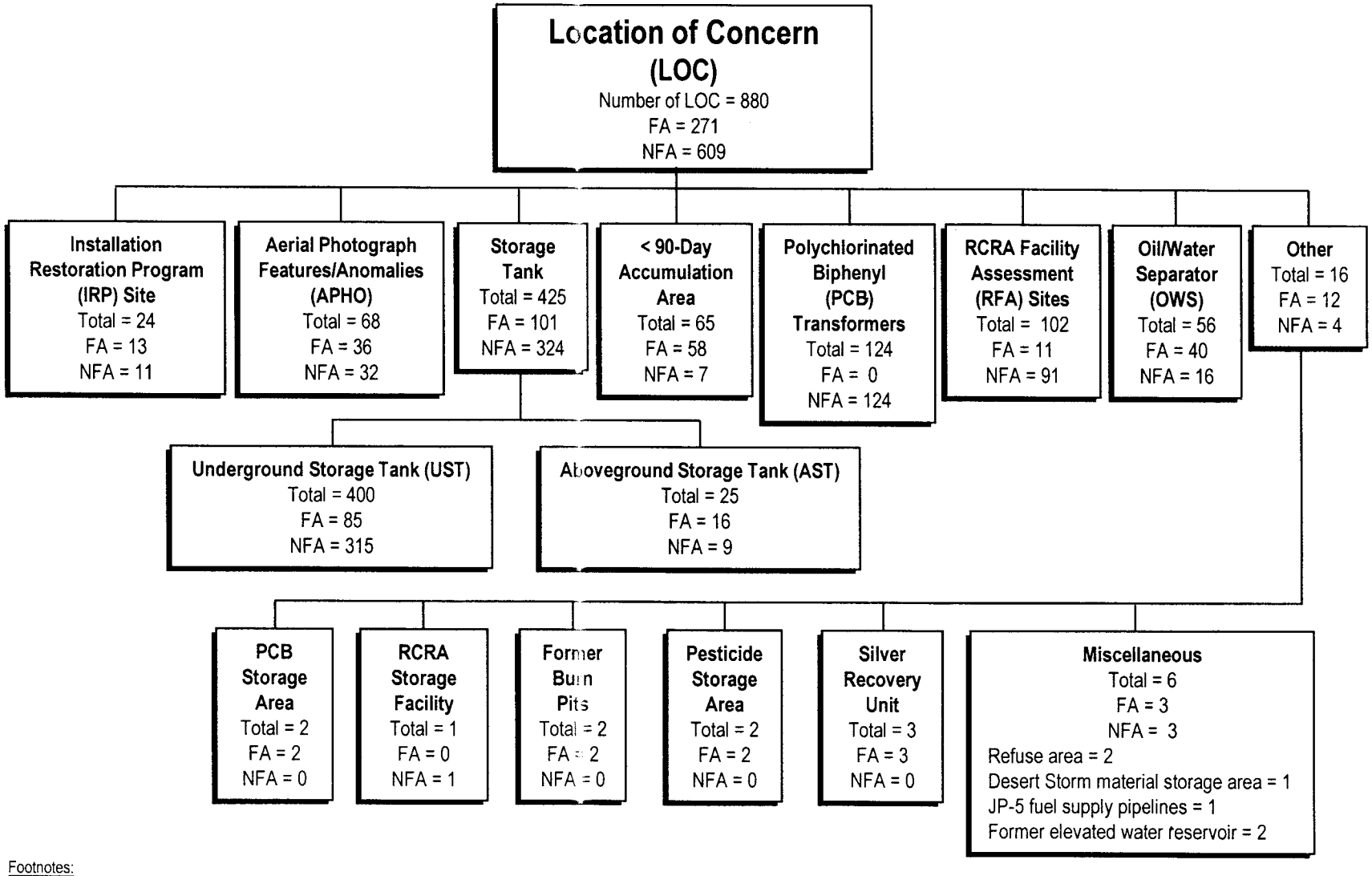


Footnotes:

FA = Further Action or Assessment Required

NFA = No Further Action Required

EXHIBIT 2
LOCATION OF CONCERN DISTRIBUTION



Footnotes:

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NFA = No Further Action Required

Reference: March 2000 Base Realignment and Closure Business Plan, Data as of 12/31/99

STATUS AS OF 31 DECEMBER 1999

INSTALLATION RESTORATION PROGRAM SITES

SITE	DESCRIPTION
1.	EOD RANGE
2.	MAGAZINE ROAD LANDFILL
3.	ORIGINAL LANDFILL
4.	FERROCENE SPILL AREA
5.	PERIMETER ROAD LANDFILL
6.	DROP TANK DRAINAGE AREA NO. 1
7.	DROP TANK DRAINAGE AREA NO. 2
8.	DRMO STORAGE AREA
9.	CRASH CREW PIT NO. 1
10.	PETROLEUM DISPOSAL AREA
11.	TRANSFORMER STORAGE AREA
12.	SLUDGE DRYING BEDS
13.	OIL CHANGE AREA
14.	BATTERY ACID DISPOSAL AREA
15.	SUSPENDED FUEL TANKS
16.	CRASH CREW PIT NO. 2
17.	COMMUNICATION STATION LANDFILL
18.	GROUNDWATER
19.	ACER SITE
20.	HOBBY SHOP
21.	MATERIALS MANAGEMENT GROUP
22.	TACTICAL AIR FUEL DISPENSING SYSTEM
24.	VOLATILE ORGANIC COMPOUND (VOC) SOURCE AREA
25.	MAJOR DRAINAGES

LEGEND

SITE 2 REQUIRE ACTION SITE

SITE 19 NO FURTHER ACTION SITE (AS OF SEPTEMBER 1997)

NOTE: *SITE 18, REGIONAL GROUNDWATER PLUME* IS OFF STATION TO THE WEST.

NOTES:

1. APPROXIMATE DATE OF PHOTOGRAPH 1994

2. THE AERIAL PHOTOGRAPHY HAS NOT BEEN ORTHORECTIFIED, AND THE PHOTOGRAPH FROM WHICH THE IMAGE FILE WAS CREATED WAS NOT CORRECTED FOR PHOTOGRAMMETRIC DISPLACEMENTS SUCH AS THOSE DUE TO TOPOGRAPHY OR THE ATTITUDE OF THE AIRCRAFT AT THE TIME OF THE PHOTOGRAPHIC SURVEY. THEREFORE, LOCATIONS OF FEATURES DETECTED ON THE AERIAL PHOTOGRAPHIC IMAGE ARE NOT EXACT.

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

MCAS EL TORO, CA

INSTALLATION RESTORATION
PROGRAM (IRP) SITES

FILE NO.		DATE
18292504.DWG	FIGURE 4	2/10/00

INTRODUCTION SECTION

United States Marine Corps

Base Realignment and Closure Business Plan

For

Marine Corps Air Station El Toro, CA

March 2000

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

BASE REALIGNMENT AND CLOSURE
(BRAC) BUSINESS PLAN

This BRAC Business Plan provides current summary information on the status of and strategies for the cleanup of the Marine Corps Air Station, El Toro. We, the BRAC Cleanup Team, with consideration of community and stakeholder advice, have cooperatively developed this plan to provide for safe, effective, timely, and cost-efficient environmental restoration and productive reuse of the closed DoD facility. This plan will be updated periodically to reflect new information regarding the environmental condition of property, reuse priorities, and availability of funds.

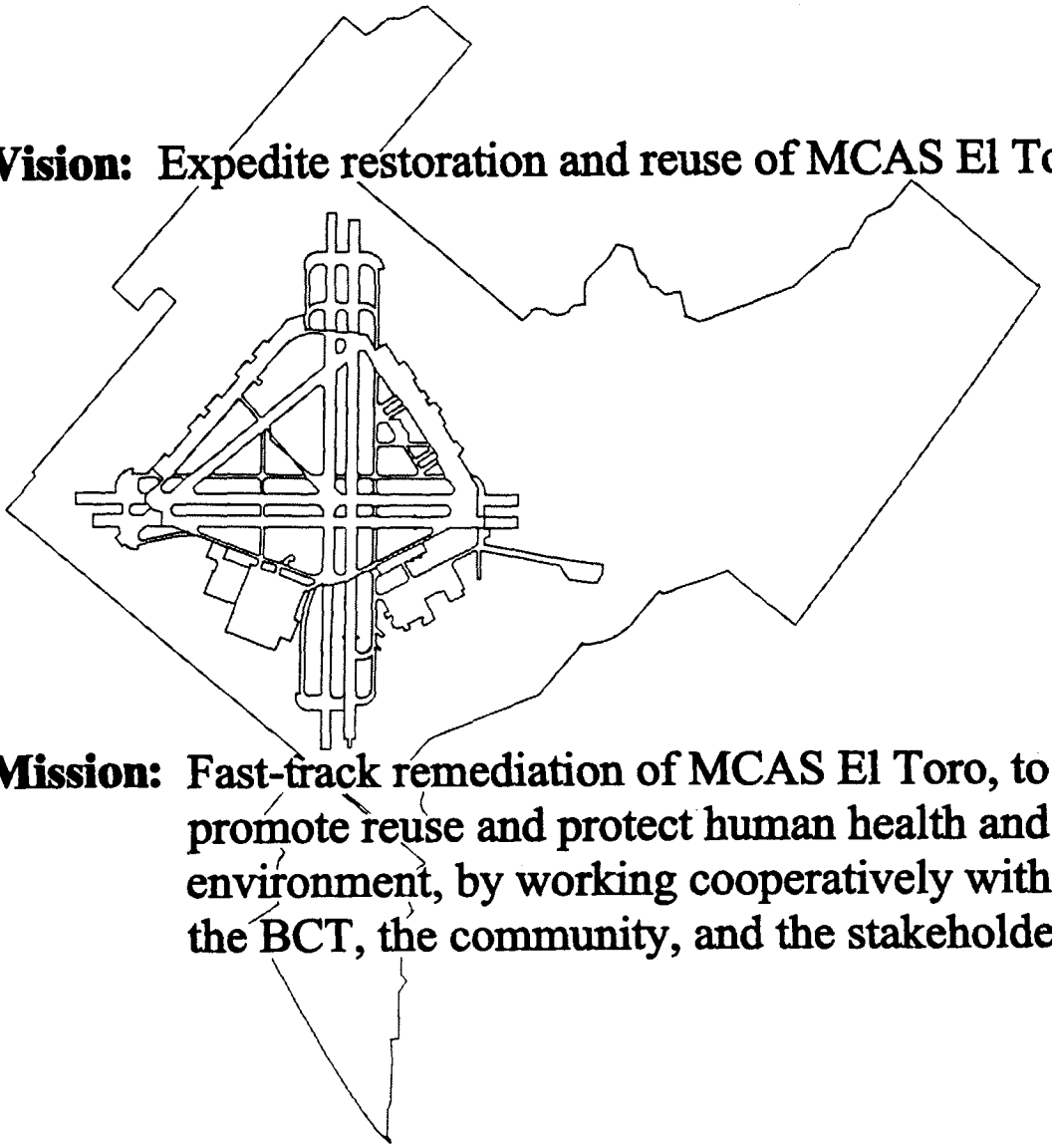
Glenn Kistner
Remedial Project Manager
U.S. Environmental
Protection Agency

Triss Chesney
Remedial Project Manager
Cal-EPA, Department of
Toxic Substances Control

Patricia Hannon
Project Manager
Regional Water Quality
Control Board, Santa Ana Region

Dean Gould
BRAC Environmental Coordinator
MCAS El Toro

Vision and Mission Statements



Vision: Expedite restoration and reuse of MCAS El Toro.

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

NOTE: The Introduction serves as an "Executive Summary" of the complete document. To look at figures and tables referenced in the Introduction, please consult the complete document. It is available at two locations: (1) the Administrative Record File, located at MCAS El Toro – contact Ms. Charly Wiemart at (949) 726-2840 to arrange an appointment; (2) the MCAS El Toro Information Repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, phone number (949) 551-7151.

INTRODUCTION

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

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

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

MCAS El Toro was listed on the National Priority List under CERCLA in February 1990. The Business Plan is a planning document; therefore, the information and assumptions presented may not have complete approval from the federal and state regulatory agencies. The Business Plan is a dynamic document that is updated regularly to reflect the current status of response actions and the changes in strategies or plans that affect the ultimate restoration and disposal of MCAS El Toro property. Comments from various sources, including major claimants, naval activities, and federal and state regulatory agencies, were evaluated and considered for inclusion during the preparation of this Business Plan.

STATUS OF DISPOSAL, REUSE, AND INTERIM LEASE PROCESS

In March 1994, the County of Orange (County), along with the Cities of Irvine and Lake Forest, formed a joint powers authority to develop a reuse plan for MCAS El Toro. In January 1995, the County withdrew from the joint powers authority in response to the passage of Measure A, a

countywide ballot initiative approved by Orange County voters in November 1994. Measure A anticipates that the principal feature of a County-adopted reuse plan for MCAS El Toro should be a commercial airport. Measure A also established the 13-member El Toro Airport Citizens Advisory Commission to advise the Board of Supervisors and Orange County Planning Commission on base reuse.

In April 1995, the Office of Economic Adjustment formally recognized the Orange County Board of Supervisors as the official Local Redevelopment Authority (LRA) for MCAS El Toro. As the recognized LRA, the Board of Supervisors was given sole responsibility for preparing a Community Reuse Plan (CRP) for submittal to the DoN. Eight Department of Defense (DoD) and federal agencies submitted formal applications for MCAS El Toro property during the federal screening process.

The LRA provided its recommendations on each of these requests to the Assistant Secretary of the Navy in early 1995. The LRA has endorsed requests by the Department of Interior (DOI) for the Habitat Reserve, the Federal Aviation Administration, and the California Air National Guard. The LRA recommended that the remaining requests be denied. No surplus property determination has been made. Currently, none of the transfer actions have been approved by the Assistant Secretary of the Navy.

In the March 1995 final Environmental Baseline Survey (EBS) Report (Jacobs Engineering Group, 1995), approximately 63 percent of the total 4,738 acres of real property at the Station was categorized as eligible under CERFA for transfer as uncontaminated property or Environmental Condition of Property (ECP) Type 1. ECP types are described in Exhibit 1.

Exhibit 1. Environmental Condition of Property (ECP) Types

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

Since the 1995 EBS, additional property has been categorized as area type 1. Property designated as area types 1 through 4 is environmentally suitable for transfer by deed. This property type now totals approximately 85 percent of the Station property. The remaining real property is identified as area types 5, 6, and 7. The real extent of land classified as area types 5, 6, and 7 is approximately 76 acres (2 percent), 512 acres (10 percent), and 142 acres (3 percent), respectively.

In the fall of 1995, the LRA conducted the state/local and homeless provider screening process in accordance with the Base Closure Community Redevelopment and Homeless Assistance Act of

1994 and implementing regulations issued by the DoD and the U.S. Department of Housing and Urban Development (HUD) in August 1995.

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

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

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

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

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

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

In June 1999, a cooperative agreement for caretaker services on MCAS El Toro was negotiated with the County of Orange. Caretaker services consist of activities necessary to protect, secure, and maintain the facility.

DoN prepared a Finding of Suitability to Lease (FOSL) and entered into a lease with the County of Orange in July 1999 for post-closure use of the following areas: the Golf Course (approximately 225 acres); the Child Development Center (Buildings 656 and 873); the Officers' Club (Building 791); the Horse Stables (approximately 30 acres); the Recreational Vehicle (RV) Storage Area; the Indoor Training Pool (Building 839); and Building 83.

In December 1999, the County of Orange issued the Draft Environmental Impact Report (EIR 573) for the reuse of the former Marine Corps Air Station, El Toro. The proposed land use designations from EIR 573 have been incorporated into selected Figures and Tables in the Business Plan.

STATUS OF ENVIRONMENTAL RESTORATION PROGRAM

A total of 880 environmental Locations of Concern (LOCs), including twenty-four (24) Installation Restoration Program Sites (Sites), have been identified at MCAS El Toro. A LOC is defined as any identified location or area that is potentially contaminated or is a potential source of contamination. Several new LOCs were added to the program during 1999: Underground Storage Tank (UST) 155, Oil/Water Separator (OWS) 806, OWS 850E, OWS 862, and fifteen (15) aerial photograph anomaly sites (APHOs).

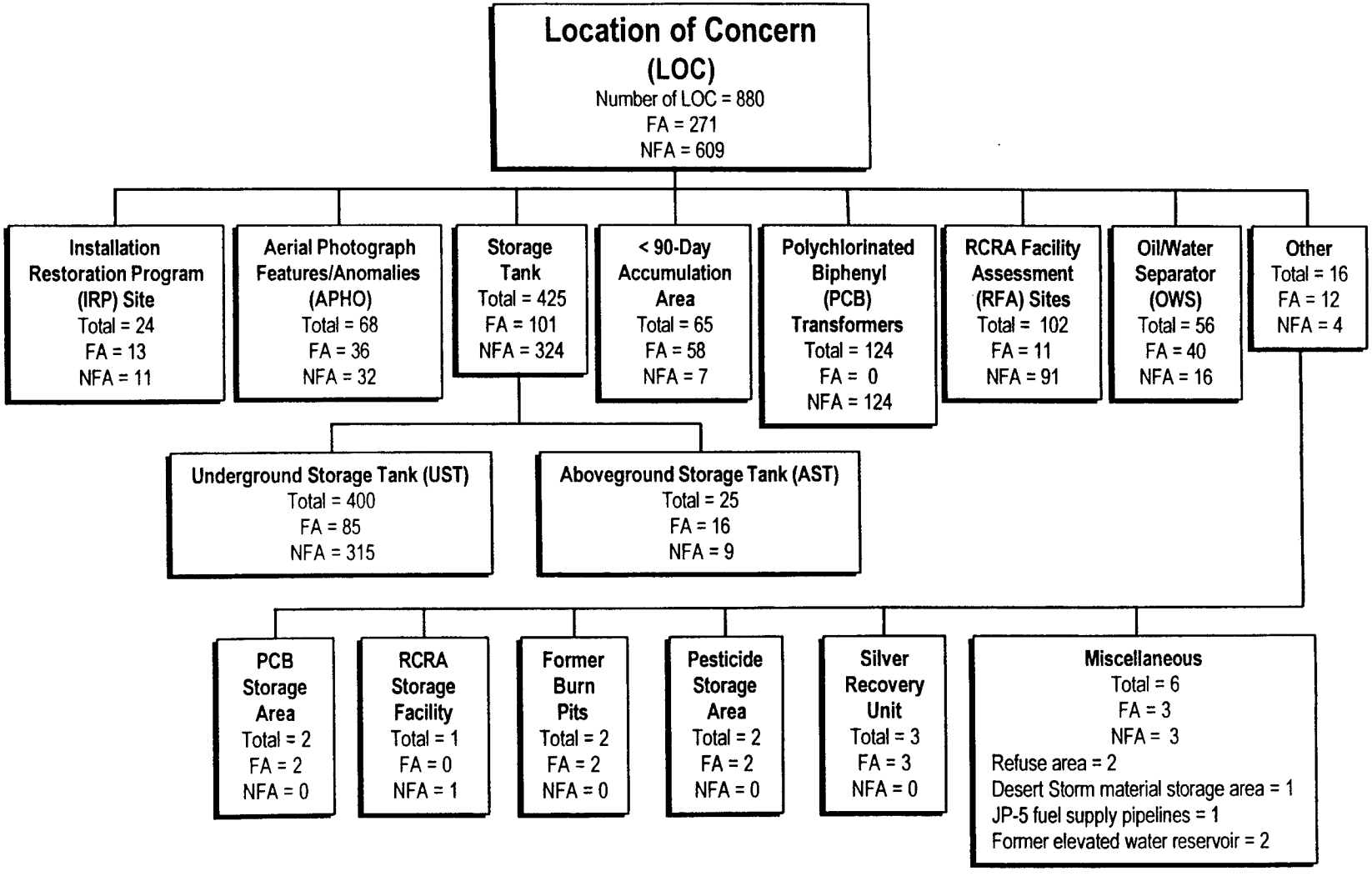
Nineteen (19) Temporary Accumulation Areas (TAAs), eight (8) OWSs, three (3) USTs, and two (2) Solid Waste Management Units (SWMUs) were deleted from the program as phantom or non-existent LOCs. Record search activities, visual inspections, and cognizant regulatory agency concurrence were documented prior to deleting the LOCs from the program. Regulatory agency correspondence pertaining to the phantom LOCs has been placed in the Administrative Record. Deleted were the following LOCs: TAA 19, TAA 114, TAA 242, TAA 298, TAA 317, TAA 357, TAA 359A, TAA 386, TAA 398, TAA 442, TAA 443, TAA 445, TAA 447, TAA 456, TAA 534, TAA 602, TAA 693, TAA 746, TAA 747, OWS 244, OWS 388C, OWS 392, OWS 602, OWS 606C, OWS 652, OWS 671, OWS 676, UST 278A, UST 380B, UST 673B, SWMU 273, and SWMU 8.

Exhibits 2, 3 and 4 summarize the types, numbers, and status of different LOCs at the Station as of 31 December 1999.

Historical Radiological Assessment (HRA). The DoN is in the process of conducting a Historical Radiological Assessment (HRA) at MCAS El Toro. The HRA addresses general radioactive material (G-RAM), which includes Radiological Affairs Support Program (RASP) material and unregulated consumer products. Aircraft containing radioactive equipment and safety devices had been stationed and worked on at MCAS El Toro. The HRA included the review of historical records and documents, interviews with current and former Station employees, and inspections of various sites. The findings, conclusions, and recommendations were published in the Draft Final Historical Radiological Assessment in November 1999.

NOTE: The Introduction serves as an "Executive Summary" of the complete document. To look at figures and tables referenced in the Introduction, please consult the complete document. It is available at two locations: (1) the Administrative Record File, located at MCAS El Toro – contact Ms. Charly Wiemart at (949) 726-2840 to arrange an appointment; (2) the MCAS El Toro Information Repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, phone number (949) 551-7151.

EXHIBIT 2
LOCATION OF CONCERN DISTRIBUTION



Footnotes:

FA = Further Action or Assessment Required

NFA = No Further Action Required

Exhibit 3 – Distribution of 880 LOCs

	IRP SITES	APHO SITES	STORAGE TANK SITES	<90-DAY ACCUMU-LATION AREAS (TAAs)	PCB TRANS-FORMERS	RFA SITES	OIL/WATER SEPARATOR SITES	OTHER
TOTAL	**24**	**68**	**425**	**65**	**124**	**102**	**56**	**16**
NFA	11	32	324	7	124	91	16	4
NFA Decision Documents in Review		10	52	8		9	28	1

Exhibit 4 – New Sites Added during 1999 and Phantom Sites Deleted during 1998-1999

Description	APHO SITES	UNDER-GROUND STORAGE TANKS	ABOVE-GROUND STORAGE TANKS	<90-DAY ACCUMU-LATION AREAS (TAAs)	RFA SITES	OIL/WATER SEPARATOR SITES
New Sites	**15**	**1**				**3**
Phantom Sites		3		19	2	8

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

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

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

- OU-1 addresses contaminated groundwater on- and off-Station and consists of one IRP site (Site 18). The final interim RI/FS report for OU-1 was submitted in August 1996.

- OU-2 consists of three subunits (OU-2A, OU-2B, and OU-2C) and addresses potential source areas of groundwater contamination.

  - **OU-2A:** OU-2A includes Site 24 (the Volatile Organic Compound (VOC) Source Area) and Site 25 (the Major Drainages). **Site 24**: RI and Draft Phase II FS Reports for Site 24 were submitted in June and August 1996, respectively. Site 24 – the Volatile Organic Compound (VOC) Source Area – encompasses approximately 200 acres in the southwestern section of the Station. The planned reuse for Site 24 is cargo storage. The VOCs at Site 24 may have come from solvents containing trichloroethene (TCE) or perchloroethene (PCE) that were used at Site 24 until approximately 1975. Primary sources include degreaser tanks, storm drains and industrial waste sewers, and washracks. Pilot studies utilizing portable soil vapor extraction (SVE) treatment units were conducted during the period from approximately 1996 through 1998. The interim ROD (vadoze zone) for Site 24 was signed in September 1997, and implementation of the final remedy – SVE treatment - commenced in 1999. The draft ROD for OU-2A and OU-1, which will finalize the remedial decision and will address groundwater, is scheduled to be prepared in the year 2000. **Site 25** includes the four major drainage channels that flow through the Station: Agua Chinon Wash, Bee Canyon Wash, Borrego Canyon Wash, and Marshburn Channel. The Draft Final RI Report was completed in 1997, and the Draft Final ROD for no action was signed on 30 September 1997.

  - **OU-2B**: OU-2B addresses inactive landfill **Site 2** (Magazine Road Landfill) and **Site 17** (Communication Station Landfill). Sites 2 and 17 are located in the northeastern section of the Station in an area designated for future use as a habitat area. The former operational landfill units at Site 2 encompass approximately 27 acres, and the former operational landfill unit at Site 17 encompasses approximately 11 acres. Solid wastes from MCAS El Toro were disposed of at Sites 2 and 17. Suspected types of wastes include construction debris, municipal waste, batteries, waste oils, hydraulic fluids, paint residues, transformers, and waste solvents. It is also possible that equipment painted with radium paint or other low-level radiological materials consistent with Station operations could have been disposed of into the Site 2 and 17 landfills. TCE and PCE have been detected in the groundwater at Site 2. The Draft Final Phase II RI and draft FS Reports were both submitted in September 1996. Draft Final FS reports were submitted in September 1997, and a Draft Proposed Plan was submitted to the BCT in November 1997. The Draft Proposed Plan identified the preferred remedy for the former operational landfill areas at Sites 2 and 17 – source containment through the construction of a four-foot thick single-layer

soil cover. Source containment is considered a presumptive remedy by U.S. EPA. The Proposed Plan was provided for public review in May 1998. The Draft ROD for soil at Site 2 was submitted in October 1998 to the BCT for review. The Draft Final ROD for soil is expected to be completed in the year 2000, and the groundwater at Site 2 will be addressed in a separate ROD or amendment to the ROD for soil.

- **OU-2C**: OU-2C addresses inactive landfill **Site 3** (Original Landfill) and **Site 5** (Perimeter Road Landfill). Site 3 encompasses approximately 11 acres in the northeastern section of the Station. Site 5 encompasses approximately 1.8 acres in the southeastern section of the Station. Site 3 is designated for future reuse as open space, and Site 5 is designated for future reuse as a golf course. Reportedly, any waste generated on the Station could have been disposed of at these sites. The wastes are likely to have included municipal solid waste, fuels, and solvents. It is also possible that equipment painted with radium paint or other low-level radiological materials consistent with Station operations could have been disposed of into the Site 3 and 5 landfills. Site 3 included an incinerator, and incinerator ash was probably disposed of within the landfill. The Draft Final Phase II RI and draft FS Reports were both submitted in October 1996. Draft Final FS reports were submitted in September 1997. Based on BCT concurrence with the FS reports, a Draft Proposed Plan was submitted to the BCT in November 1997 and to the public in May 1998. The Proposed Plan identified the preferred remedy for the former operational landfill areas at Sites 3 and 5 – source containment through the construction of a four-foot thick single-layer soil cover. Source containment is considered a presumptive remedy by U.S. EPA. Following the receipt of public comments, the preferred remedy was changed to a single-barrier cap with a two-foot foundation layer, a flexible membrane liner (FML), and a two-foot soil cover. The single-barrier cap design allows for future irrigation of the landfill cover. The Draft ROD was completed in March 1999, and the Draft Final ROD is expected to be completed in the year 2000.

- OU-3 addresses the remaining 7 sites that still require further investigation/action. Portions of three sites (Sites 15, 19, and 20) are no longer part of the IRP; they have been withdrawn via the CERCLA petroleum exclusion and are managed with state or local environmental program oversight. IRP Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, and 22 were addressed in the ROD for no action sites in 1997. IRP Sites 1, 7, 14, and 16 are in the remedial investigation/feasibility study phase, IRP Site 11 is in the remedial design/remedial action phase, and a Draft Final ROD for IRP Sites 8 and 12 is in development.

RCRA Facility Assessment Sites. A RCRA Facility Assessment (RFA) was performed at the Station between 1990 and 1993. The RFA included the investigation of 305 solid waste

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

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

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

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

Status of USTs:

- 24 inactive USTs (6%);
- 371 removed USTs (93%); and
- 5 abandoned USTs (1%).

Status of Aerial Photograph Anomaly (APHO) Sites:

- 32 No Further Action sites (47%);
- 36 sites with work in progress (53%).

Status of Less-Than-90-Day Accumulation Areas: The BCT agreed to delete 19 TAAs as phantom (or non-existent) sites from the inventory of Locations of Concern during calendar year 1999.

- 60 inactive sites (92%);
- 5 closed sites (8%).

Status of PCB-Containing Transformers: 124 No Further Action sites (100%).

Status of Oil/Water Separators:

- 24 removed OWSs (43%);
- 22 abandoned OWSs (41%)
- 5 inactive OWSs (9%); and
- 4 active OWSs (7%).

The status of the remaining types of LOCs (aboveground storage tanks, PCB storage sites, burn pits, silver recovery units, JP-5 pipeline, pesticide storage sites, and other) is shown on Exhibit 2. Business Plan updates will continue to summarize both the number and status of all LOCs at MCAS El Toro.

INITIATIVES FOR ACCELERATING CLEANUP

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

1. **Technology Review.** Publications such as Treatment Technologies Applications Matrix for Base Closure Activities, prepared by the California Base Closure Environmental Committee, dated November 1994 (CBCEC 1994a) and the latest information from the United States and California Environmental Protection Agencies (U.S. EPA and Cal-EPA) and DoD will be reviewed as part of the evaluations performed in selecting technologies.

2. **Removal Actions.** A UST Tiger Team addressed the management of USTs during the 1995-1997 time period, and the Tiger Team worked to identify USTs that could be taken out of service without adversely impacting Station operations. All tanks within the former Tank Farms 1, 2, 3, 4, 5, and 6 have been removed, and most of the tank sites have been closed by the regulatory oversight agencies. Soil vapor extraction technology was utilized to remediate the vadose zone at Tank Farm 2, and the closure documentation for Tank Farm 2 is in regulatory agency review as of December 1999. The remaining 24 inactive USTs are scheduled to be removed in early 2000.

   A time-critical removal action memorandum was submitted for public review in October 1996 for IRP Sites 2 and 17 (former landfills). The removal actions, that included the installation of perimeter fencing to restrict public access, the removal of surface metallic debris and other debris from the landfill vicinity, and the construction of erosion protection structures, were completed in 1997. A non-time-critical action memorandum was also submitted for public review in October 1996 for IRP Site 19 (Unit 2). These removal actions were designed to reduce the risk to human health and the environment and to expedite cost-effective cleanup.

3. **Clean Properties.** A basewide EBS for MCAS El Toro was submitted to the United States Environmental Protection Agency (U.S. EPA) and California Environmental Protection Agency (Cal-EPA) on 1 April 1995. The Navy, Marine Corps, and regulators have concurred on the designation of area type 1 parcels as Environmental Condition of Property, Category 1. The EBS designated approximately 2,982 acres of land as Environmental Condition of Property, Category 1. Review of information available since April 1995 indicates that approximately 3,175 acres of land are currently Environmental Condition of Property, Category 1. The BCT and the LRA will work together to determine how to transfer properties expeditiously.

4. **Overlapping Phases.** As an ongoing effort, the BCT will continue to identify phases of the cleanup process that can be overlapped to reduce the time required for completion. Areas of overlap at MCAS El Toro include the following:

- the RFA was conducted concurrently with the Phase I RI during the period from 1991 through 1994;
- Phase II RI/FS activities for the volatile organic compound (VOC) source area, landfills, and OU-3 sites were conducted simultaneously during the period from approximately 1995 through 1997;
- Integration of Comprehensive Long-Term Environmental Action Navy (CLEAN)/Remedial Action (RAC) and other contractors to facilitate the design and implementation of field work has occurred and continues to occur during the remediation of the vadose zone and groundwater at Site 24; and
- Planning for additional demonstration projects for groundwater remediation at Site 24 and other sites to facilitate site remediation during the development of the Records of Decision.

5. **Contracting Procedures**. SWDIV management of the CLEAN, RAC, and indefinite-quantity contracts has been based on a cooperative and interactive approach, and the following contractors have participated in environmental restoration and/or compliance program projects during 1999: ARINC; Bechtel National, Incorporated; CDM Federal Programs Corporation; Earth Tech; Foster Wheeler; Geofon; Integrated Environmental Management; The IT Group; and Roy F. Weston. Active participation by the Project Team results in a bias for action.

6. **Community Reuse Interface.** In an effort to carry out strategies for environmental restoration activities, while assuring proactive community involvement, the Station has adopted an approach to meet the needs of the public as well as the requirements of NEPA, CERCLA, CERFA, and the California Health and Safety Code Section

25356.1. The approach provides for a number of services to inform interested parties (e.g., the city of Irvine, the city of Lake Forest, and the County of Orange) of environmental restoration activities while maintaining a commitment for efficient and cost-effective cleanup at MCAS El Toro.

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

8. **Presumptive Remedies.** Presumptive remedies are preferred technologies for common categories of sites, based on previous remedy selection and U.S. EPA scientific and engineering evaluation of performance data on technology implementation. The presumptive remedy approach is one tool used to accelerate cleanup under the Superfund Accelerated Cleanup Model. Presumptive remedies are expected to assure consistency in remedy selection and reduce time and cost required to clean up similar types of sites. Currently, presumptive remedies are recognized by U.S. EPA for VOC remedies and municipal and military landfill remedies. Presumptive remedies have been selected for the four landfill sites (Sites 2, 3, 5, and 17) and the VOC source area (Site 24).

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

> We, the MCAS El Toro partners, commit to effectively working together to maximize restoration and reuse of MCAS El Toro by 1999. We will accomplish this goal through teamwork, dedicated and focused participation, our ethics outlined below, and effective communication between all partners.
>
> We want the project to be enjoyable to work on and will work together with trust and respect, and will ensure that all team members' interests impact decisions. Problems will be resolved quickly or escalated if appropriate by team members closest to the issue. As partners, we commit to communicating our mission and partnership goals to new project members and encourage them to embrace this partnership.

Our mutually agreed upon ethical standards are listed below.

CODE OF ETHICS

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

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

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

SUMMARY OF CURRENT AND PLANNED BCT ACTION ITEMS

The BCT has coordinated and managed a number of tasks relating to the BRAC cleanup activities at MCAS El Toro during the past year. A brief list of accomplishments for 1999 includes:

Environmental Program Highlights for 1999.

- continued progress on an agreement between Orange County and Irvine Ranch Water Districts and the United States (represented by the Department of Justice) in support of a multipurpose project to remediate regional groundwater contaminated with volatile organic compounds;
- conducted CERCLA groundwater monitoring activities and initiated investigations of perchlorates and radionuclides in groundwater at selected locations;
- conducted routine Restoration Advisory Board meetings and a public meeting for the Proposed Plan for Sites 8, 11, and 12;
- completed the Draft ROD for Sites 3 and 5;
- completed the Draft Final ROD for Site 11 and began planning for site remediation;
- completed the Draft Remedial Investigation Report for Sites 7 and 14;
- completed Draft Final Historical Radiological Assessment (HRA) and began planning for the radiological survey;
- expeditious start-up of Soil Vapor Extraction treatment activities at Site 24, including the construction of more than 50 vapor extraction wells and/or monitoring points by July 1999, resulted in substantial reduction of vapor-phase vadose zone volatile organic compound contamination to near or below target cleanup levels by late 1999;
- continued operation of Soil Vapor Extraction (SVE) treatment system at Tank 398 Area with removal of more than 150,000 pounds of petroleum hydrocarbon mass in

the vapor phase and removal of over 11,600 gallons (to date) of free-phase petroleum product from the water table at the Tank 398 Area;

- regulatory closure of 315 USTs to date (30 closures during calendar year 1999) and removal of 25 inactive USTs during calendar year 1999;
- conducted removal of inactive OWSs and ASTs and initiated planning for cleaning, testing, and final closure of on-Station JP-5 pipelines; and
- site verification sampling activities were completed at more than 40 LOCs (UST sites, AST sites, OWS sites, aerial photograph anomaly (APHO) sites), and closure documentation was completed for more than 150 LOCs.

Planned Goals for Year 2000:

- complete the agreement between Orange County and Irvine Ranch Water District and MCAS El Toro in support of a multipurpose project to remediate regional groundwater contaminated with volatile organic compounds;
- develop strategies for land use covenants for the former landfills – Sites 2, 3, 5, and 17;
- complete draft final RODs for Sites 2 and 17 and Sites 8 and 12;
- complete draft ROD for Sites 18 and 24;
- complete strategy for remediation of Site 11;
- conduct radiological surveys;
- begin design of landfill covers for Sites 2 and 17;
- complete draft final ROD for Sites 3 and 5;
- procure services for the design of landfill covers for Sites 3 and 5;
- conduct CERCLA groundwater monitoring activities;
- provide opportunities for stakeholders to be involved in the post-ROD phases, and
- complete the removal or closure in place of inactive USTs, OWSs, and ASTs.

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

Tables 2 and 3 identify the status of each LOC, and Table 4 identifies the buildings with known asbestos. The reuse parcel identifiers for the Concept B Reuse Plan of 1999 (identical to the land use designations from EIR 573) are included for each LOC in Tables 2, 3, and 4. Figures 1, 2, and 3 show the vicinity of the Station and information pertaining to the most current reuse plan (preferred land use plan (Concept B)). Figures 4 through 12 show each type of LOC, Figure 13

shows the IRP Site boundaries with the preferred land use plan, and Figures 14 and 15 show the environmental condition of property categories for soil and groundwater.

SCHEDULE/CRITICAL MILESTONES

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

Critical milestones for the environmental restoration program are presented in Table 5.

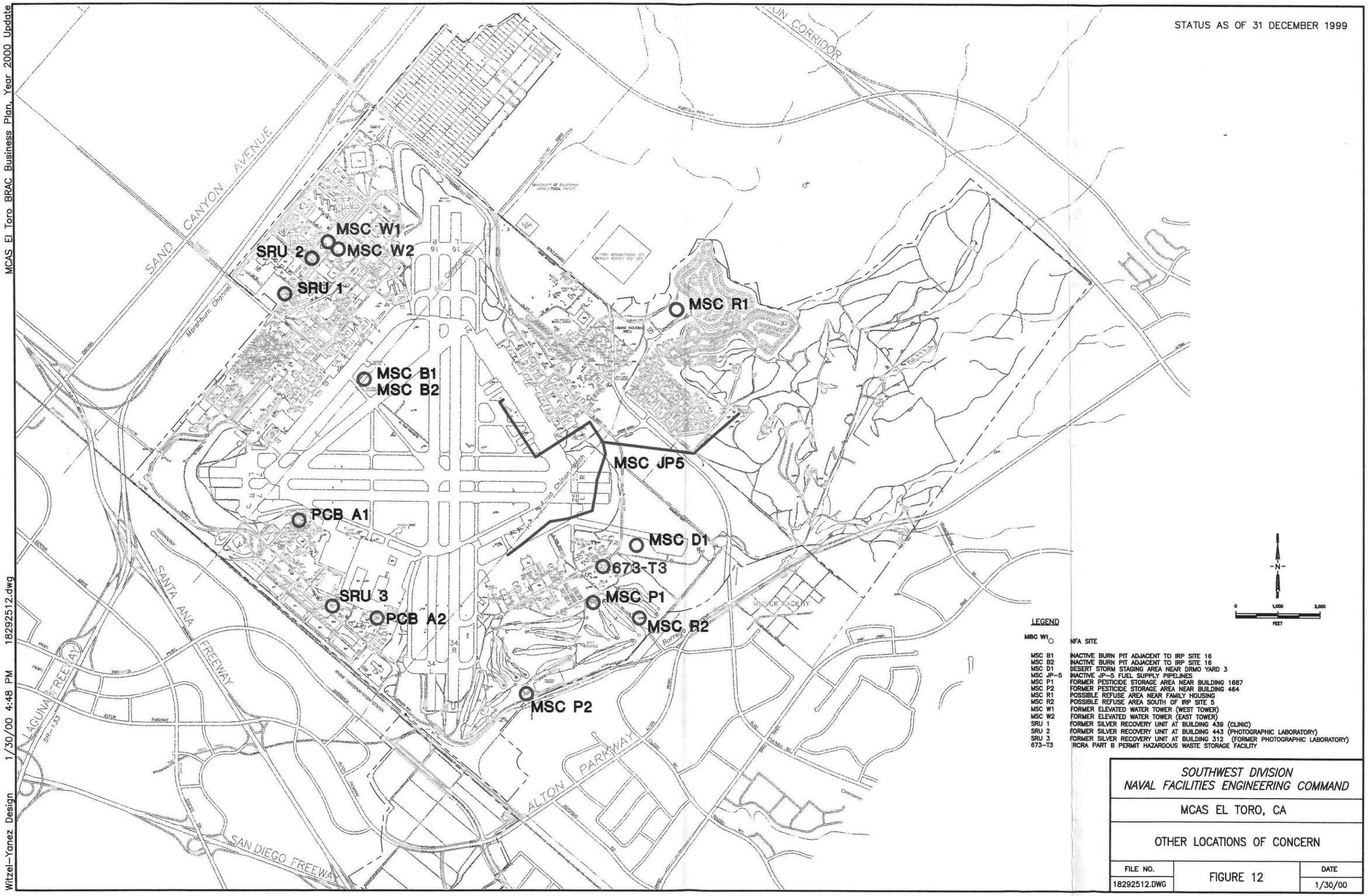
Historical information pertaining to the expenditures for each Installation Restoration Program Site is presented in Table 6.

INTRODUCTION SECTION

NOTE: The Introduction serves as an "Executive Summary" of the complete document. To look at figures and tables referenced in the Introduction, please consult the complete document. It is available at two locations: (1) the Administrative Record File, located at MCAS El Toro – contact Ms. Charly Wiemart at (949) 726-2840 to arrange an appointment; (2) the MCAS El Toro Information Repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, phone number (949) 551-7151.

Figures

STATUS AS OF 31 DECEMBER 1999



LEGEND

MSC W1 ○ NFA SITE

MSC B1	INACTIVE BURN PIT ADJACENT TO IRP SITE 16
MSC B2	INACTIVE BURN PIT ADJACENT TO IRP SITE 16
MSC D1	DESERT STORM STAGING AREA NEAR DRMO YARD 3
MSC JP-5	INACTIVE JP-5 FUEL SUPPLY PIPELINES
MSC P1	FORMER PESTICIDE STORAGE AREA NEAR BUILDING 1687
MSC P2	FORMER PESTICIDE STORAGE AREA NEAR BUILDING 464
MSC R1	POSSIBLE REFUSE AREA NEAR FAMILY HOUSING
MSC R2	POSSIBLE REFUSE AREA SOUTH OF IRP SITE 5
MSC W1	FORMER ELEVATED WATER TOWER (WEST TOWER)
MSC W2	FORMER ELEVATED WATER TOWER (EAST TOWER)
SRU 1	FORMER SILVER RECOVERY UNIT AT BUILDING 439 (CLINIC)
SRU 2	FORMER SILVER RECOVERY UNIT AT BUILDING 443 (PHOTOGRAPHIC LABORATORY)
SRU 3	FORMER SILVER RECOVERY UNIT AT BUILDING 312 (FORMER PHOTOGRAPHIC LABORATORY)
673-T3	RCRA PART B PERMIT HAZARDOUS WASTE STORAGE FACILITY

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

MCAS EL TORO, CA

OTHER LOCATIONS OF CONCERN

FILE NO.		DATE
18292512.DWG	FIGURE 12	1/30/00

STATUS AS OF 29 FEBRUARY 2000

REGULATORY CLOSURES OF UNDERGROUND STORAGE TANK SITES CALENDAR YEAR TOTALS

CALENDAR YEAR	NUMBER OF REGULATORY CLOSURES
1995	9
1996	162
1997	81
1998	33
1999	30
2000	18
TOTAL AS OF 19 JULY 2000	333

EXPLANATION:

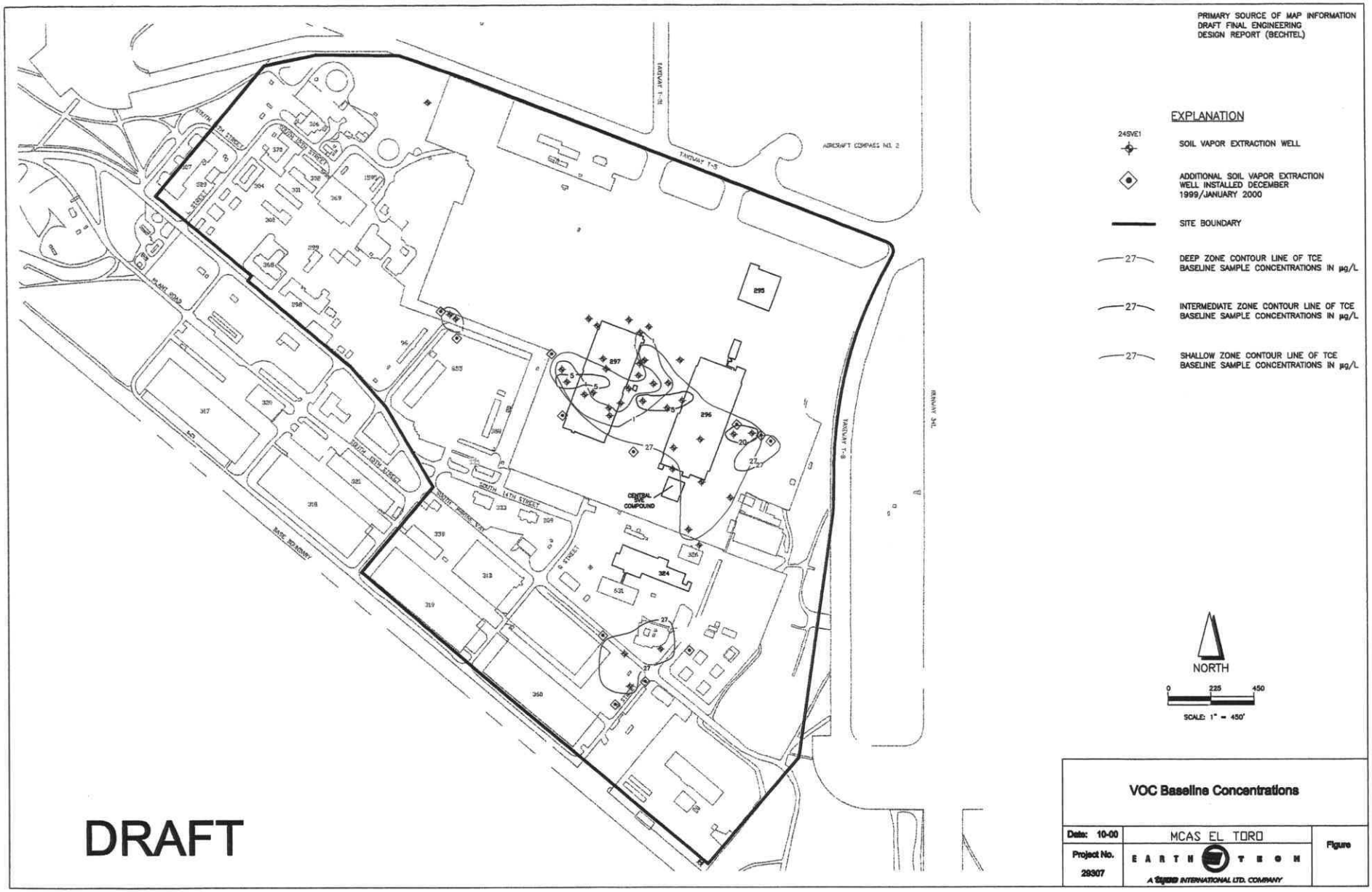
- UNDERGROUND STORAGE TANKS (UST)
- CLOSED UNDERGROUND STORAGE TANKS

REFERENCE:
BECHTEL NATIONAL INC. DRAWING
FILE NO. 075U1703

GRAPHIC SCALE
1,000 0 500 1,000
(IN FEET)

SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND		
MCAS EL TORO, CA		
UNDERGROUND STORAGE TANK PROGRAM MAP		
FILE NO.	FIGURE 1	DATE
17486166.DWG		7/25/00

Witzel-Yanez Design 7/25/00 3:43 PM 17486166.dwg



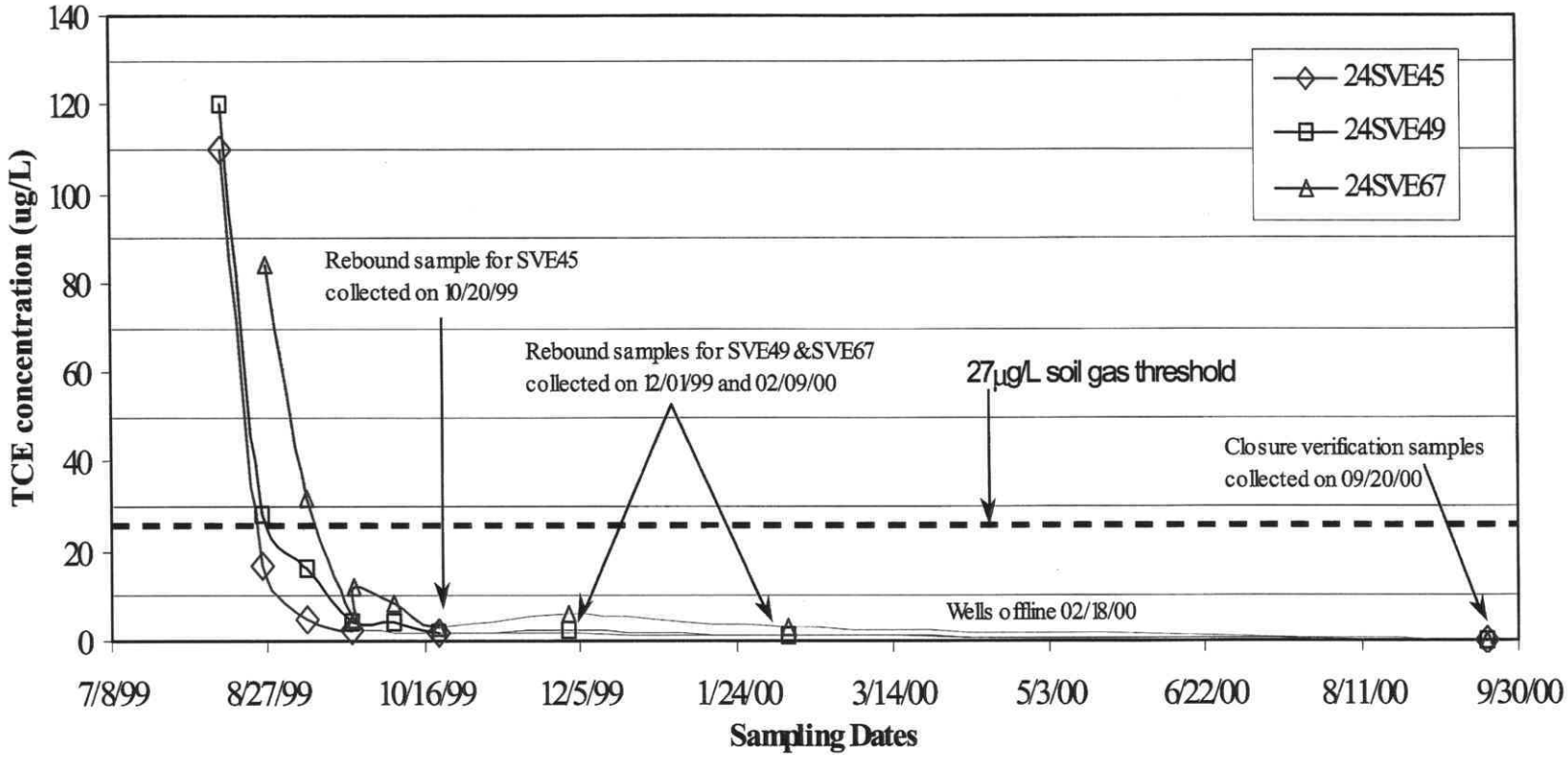
VOC Baseline Concentrations

Date: 10-00	MCAS EL TORO	Figure
Project No. 29307	EARTH TECH A TETRA TECH INTERNATIONAL LTD. COMPANY	

Typical Vapor Concentration Decline

Vadose Zone Remediation - IRP Site 24

Building 297



Note:

Typical Operation Sequence:

- Extracted vapor concentration collected every two weeks.
- Extraction well turned off for 30 days after 3 consecutive samples are below soil gas threshold value.
- Rebound samples collected after 30 days.

Building 297		
IRP Site 24		
Date: 10-00	MCAS EL TORO	Figure
Project No. 29307	EARTH TECH A Tyco INTERNATIONAL LTD. COMPANY	

Proposed Plan for Operable Unit 3 Sites 7 and 14 at Marine Corps Air Station El Toro

MCAS EL TORO

Final—September 2000

Marine Corps Proposes No Further Action at Sites 7 and 14

The Marine Corps is requesting comments from the public on the proposal for no further action at Installation Restoration Program (IRP) Operable Unit 3 Sites 7 and 14 at Marine Corps Air Station (MCAS) El Toro. Site 7 (a former drop tank drainage area) and Site 14 (a former battery acid disposal area) are sites of low-level soil contamination resulting from past activities at the base.

This Proposed Plan provides the results of the environmental investigation of these two sites, and explains the basis for the proposal for no further cleanup action for soil and groundwater. More detailed information on these investigations and the analyses that led to the proposal are presented in the Final Remedial Investigation Report. This report is available at the Heritage Park Regional Library in Irvine, and is part of the MCAS El Toro IRP Administrative Record file (see page 7). For information on the public comment process, see the text box at the bottom of this page.

The Marine Corps recommends that no further action is necessary at Site 7 (Units 1, 2, 3, 4, and 5) and Site 14 (Unit 1 and the catch basin) because of the low concentrations of contaminants present. The risks to human health at Sites 7 and 14 are considered within the U.S. Environmental Protection Agency (U.S. EPA) allowable risks range or risk management range/ generally allowable risks range under residential or industrial reuse scenarios (page 5). Risks that fall within the risk management range may not require remedial action, depending upon site-specific circumstances. This recommendation is based on the results of extensive field investigations, laboratory analyses, fate-and-transport evaluations, and a thorough assessment of potential human health risks at the two sites. Because of the lack of plant and wildlife habitats at Sites 7 and 14, an ecological risk assessment was not performed.

On July 2, 1999, operational closure of all military activities at MCAS El Toro was completed. The Marine Corps' mission at the Station was incorporated into Marine Corp Air Station Miramar operations in San Diego, California

The extent of contamination at Sites 7 and 14 is confined to shallow soil (soil less than 10 feet below ground surface). The analytical data and site conditions determined that contaminants present in soil (principally, polynuclear aromatic hydrocarbons [PAHs] and metals) do not pose a risk to people coming in direct contact with soil and are not a threat to groundwater. However, Sites 7 and 14 are located above a large area of groundwater contaminated with volatile organic compounds (VOCs) that originates from OU-2A (Site 24) that is present in areas both on- and off-Station. Sites 7 and 14 are still considered to be no further action sites because the need for any groundwater cleanup would be addressed as part of OU-2A (Site 24). (See the box on page 3 for a description of Operable Units at MCAS El Toro).

The MCAS El Toro Base Realignment and Closure (BRAC) Cleanup Team, made up of representatives of the Marine Corps/ Navy, U.S. EPA, and California Environmental Protection Agency (Cal-EPA), has carefully evaluated the remedial investigation results and concurs that no cleanup action is necessary to protect human health and the environment.

Public Meeting Wednesday, October 25, 2000 6:30-9:30 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 no further action recommendation at Installation Restoration Program Operable Unit 3 Sites 7 and 14 at MCAS El Toro. Marine Corps representatives will provide visual displays and information on the environmental investigations and the risk assessment conducted for these sites. You will also have the opportunity to formally comment on the recommendation for no further action at the meeting.

Public Comment Period October 10–November 8, 2000

We encourage you to comment on this Proposed Plan and site-related documents during the 30-day public comment period. You may submit written comments by mail postmarked no later than **November 8, 2000** to: Mr. Dean Gould, Base Realignment and Closure (BRAC) Environmental Coordinator, Environmental Division, MCAS El Toro, P.O. Box 51718, Irvine, CA 92619-1718. Comments may also be sent to Mr. Gould by fax (949) 726-6586. Public comments received during this period, or in person at the public meeting, will be incorporated into the Responsiveness Summary portion of the Record of Decision and will be considered in the final decision for these sites.

Environmental Investigation Overview

Introduction

This Proposed Plan presents brief descriptions of the conditions at Sites 7 and 14, results of the remedial investigation and the human health risk assessment conducted for each site, and results of the evaluation process leading to the recommendation for no further action. The map on page 3 shows the locations of these sites and units that comprise them.

Sites 7 and 14 were identified through a series of environmental studies and evaluations that examined past use of hazardous substances, including fuels, oils, and solvents, at MCAS El Toro. Following the initial studies, Sites 7 and 14 were subjected to detailed field investigations and evaluations to determine the nature and extent of contamination present. Descriptions of the chemical terms discussed in this Proposed Plan are presented on page 5. These items are highlighted in bold the first time they are used.

Investigation Approach

Extensive soil sampling was performed to collect data to assess environmental conditions at these sites. The investigation focused on shallow soil (from 0 to 10 feet below ground surface [bgs]) but included soil sampling to depths of 100 feet bgs. It was not necessary to collect groundwater data because soil sampling showed chemicals associated with Sites 7 and 14 were localized in the shallow soil and did not extend to groundwater. The depth to groundwater is approximately 100 feet or more at these sites.

The human-health risk values used to evaluate the need for remedial action at Sites 7 and 14 were based on the assumption of future residential use of the property for a period of 30 years. This assumption was used by the Marine Corps to provide a conservative estimate of potential future risk. For a detailed explanation of the risk assessment results for each site, please read the Human Health Risk Assessment discussion on pages 4 and 5 and refer to the summary table on page 6.

Habitat surveys were performed at Sites 7 and 14 and it was concluded no significant plant and wildlife habitats are present. Thus, it was determined that ecological risk assessments to evaluate potential effects on plants and animals from exposure to chemicals at the sites were not necessary.

A "fate-and-transport" analysis was conducted for the contaminants present at Sites 7 and 14. This evaluation examined potential future ways chemicals could move or migrate off the sites.

Site Descriptions

Site 7 – Drop Tank Drainage Area No. 2

Site 7 was used for aircraft drop tank storage and drainage from approximately 1969 to 1983. To facilitate the investigation, the site was divided into five units based on common historical activities, aerial photograph reviews, and relative locations. The five units are: 1) North Pavement Edge; 2) Old East Pavement Edge; 3) New East Pavement Edge; 4) Drainage Ditch; and 5) Open Dirt Area south of Building 296.

Aircraft drop tanks were drained and washed on a concrete apron at Units 1, 2, and 3. The mixture of residual fuel and washwater drained off the edge of the concrete apron onto the adjacent grassy areas. In addition, between 1972 and 1983 at Units 2 and 3, soil areas near the aircraft hangars (Buildings 296 and 297) are suspected to have been sprayed with lubrication oil and JP-5 jet fuel for dust control. Unit 4, a drainage ditch, conveyed surface drainage from the site to the south towards Agua Chinon Wash. The area comprising Unit 5 served as an unpaved parking lot from 1972 to 1978 and was also sprayed with lubricant oils for dust control. According to the Community Reuse Plan developed by the Orange County Local Redevelopment Agency in 1996, Site 7 is in an area designated for future use for handling airline cargo.

Site 14 – Battery Acid Disposal Area

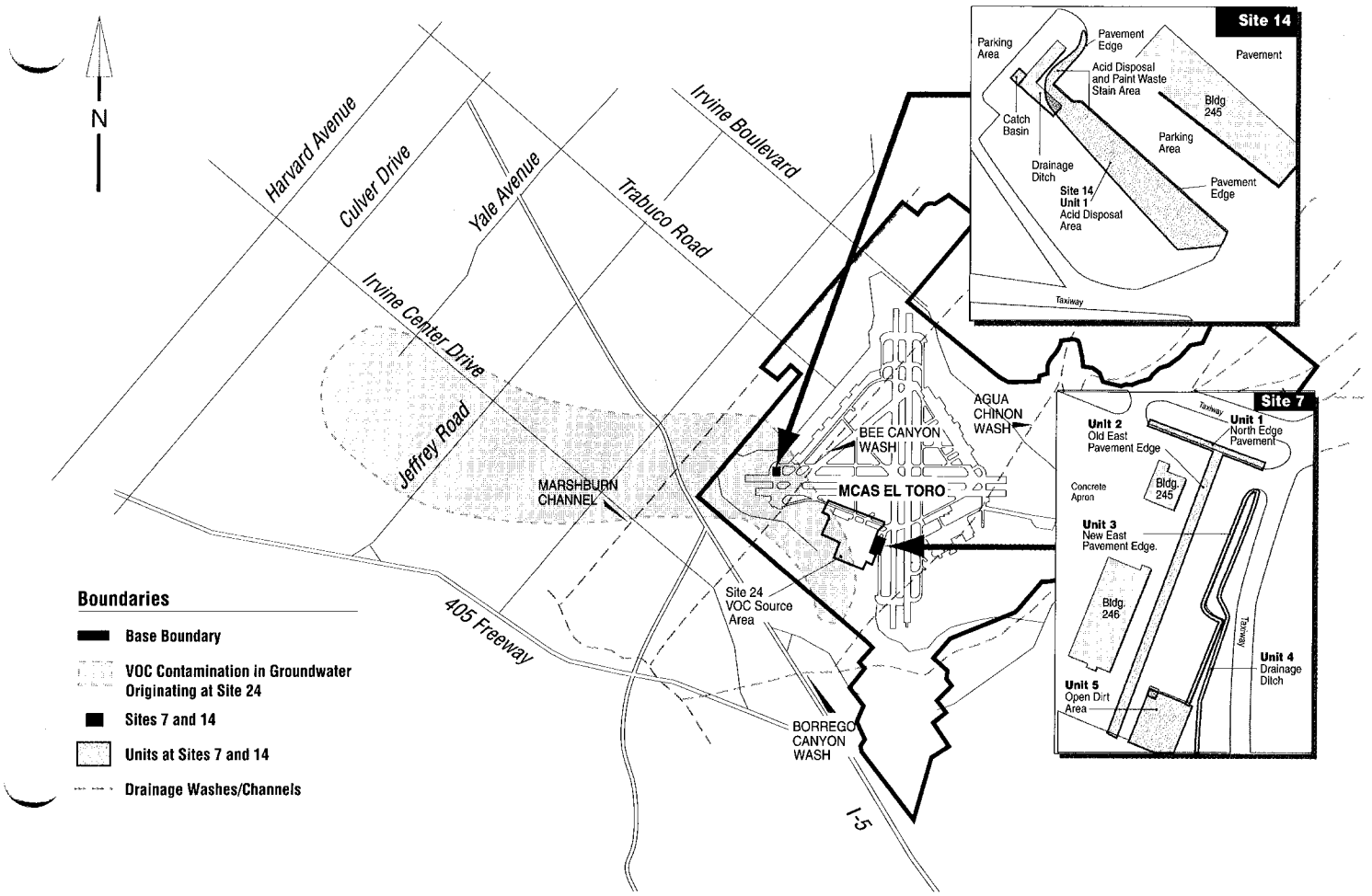
Site 14 consists of Unit 1, a battery acid disposal area associated with Building 245, and a separate catch basin. Building 245 was used as a heavy equipment maintenance shop. An asphalt parking area extends from Building 245 south to the edge of Site 14. From 1977 through 1983, fluids from batteries from facility vehicles, paints, and associated paint wastes were drained onto the unpaved ground surface beyond the edge of the parking area. Suspected contaminants included lead, other metals, waste oils, and solvents from paint products and paint strippers. When the asphalt parking area was washed down, contaminated surface water runoff drained over the edge of the pavement onto an unpaved area. This unpaved area sloped to a culvert that drains to Marshburn Channel. A separate catch basin near the battery acid disposal area was also investigated. Site 14 is designated as the future site of an airline terminal complex in accordance with the Community Reuse Plan developed by the Orange County Local Redevelopment Agency in 1996.

Investigation Results

The remedial investigation of Sites 7 and 14 showed that low levels of contaminants were present in shallow soil at each site. Chemicals of potential concern at both Sites 7 and 14 included **total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs)** including **polynuclear aromatic hydrocarbons (PAHs),** and **metals. Pesticides** were also present in shallow soil throughout Site 7. At both sites, PAHs and metals are the most widely distributed classes of chemicals in shallow soil. The highest concentrations of contamination were generally limited to areas very near the surface, usually between 0 to 4 feet bgs. Concentrations of PAHs were reported to a depth of approximately 4 feet bgs. Except for metals, these chemicals generally diminished to trace concentrations at depths greater than 5 feet bgs.

The fate-and-transport analysis showed that the two potential migration pathways are air and surface water. However, it was also concluded that contaminants in the shallow soil are not

Figure 1 – MCAS El Toro Site Location Map, Sites 7 and 14



readily mobilized and transported off-site. Because of the soil conditions at the site and the physical characteristics of PAHs and metals in soil, infiltration of chemicals downward in the soil is also negligible. The analytical data, site conditions, and the fate-and-transport analysis verify that contaminants found at Sites 7 and 14 do not pose a risk to people coming in direct contact with soil and are not a threat to groundwater.

Installation Restoration Program Scope and Role of OU-3 – Sites 7 and 14

The no further action decision for Installation Restoration Program (IRP) Sites 7 and 14 represents one component of the comprehensive environmental investigation and cleanup program under way 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. To effectively manage the overall cleanup effort, the Marine Corps organized the IRP sites into Operable Units or OUs.

- OU-1 addresses the VOC 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. The Interim Record of Decision (ROD) for Sites 2 and 17 was finalized in July 2000.
- OU-3 includes the remaining IRP sites at the Station. **Sites 7 and 14 are the focus of this Proposed Plan.** A ROD for no action addressed Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, and 22 in 1997. Site 11 is in the remedial design/remedial action phase. The Draft Final ROD for Sites 8 and 12 is being developed. Sites 1 and 16 are in the remedial investigation/feasibility study stage.

For information on Proposed Plans and Records of Decisions issued by the Marine Corps for the OUs at MCAS El Toro, contact Mr. Dean Gould, BRAC Environmental Coordinator (see page 7).

Human Health Risk Assessment

The Marine Corps conducted human health risk assessments for Sites 7 and 14 in accordance with Federal and State guidelines. An ecological risk assessment was not conducted because the results of a habitat assessment indicated an absence of plant and wildlife habitat. A human health risk assessment estimates the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the human health risks at each site the Marine Corps undertook a four-step process.

- **Step 1 – Analyze Contamination**
- **Step 2 – Estimate Exposure**
- **Step 3 – Assess Potential Health Dangers**
- **Step 4 – Characterize Site Risk**

Identifying Chemicals of Potential Concern

In Step 1, the Marine Corps looked at concentrations of contaminants found at a site as well as past scientific studies on the effects these chemicals have had on people (or animals, when human studies are unavailable). The types and quantities of chemicals present in the soil at the two sites (VOCs, SVOCs, PAHs, and metals) were investigated under the two-phase remedial investigation conducted at MCAS El Toro.

A comparison of the concentrations of the metals arsenic and manganese with concentrations of these metals at sites throughout MCAS El Toro, showed that the concentrations at Sites 7 and 14 appear to reflect the natural variation both on- and off-Station. This is based on the results of the Final Technical Memorandum on Background and Reference Levels for MCAS El Toro developed in 1996. This document discusses sampling results of geological formations for background metals nearby and at the Station. Investigators concluded that the presence of these metals in soils at Sites 7 and 14 is not a result of past activities conducted at the Station.

Identifying Exposure Pathways

In Step 2, the Marine Corps considered the different ways that people might be exposed to the chemicals identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure.

To establish the most conservative or a "worst case scenario," the Marine Corps calculated health risks assuming that residents would live at the sites for a period of 30 years and would be exposed to the chemicals identified in the soil at the sites daily. Residents were assumed to be exposed to chemicals in soil through ingestion (eating), inhalation of vapors or dust (breathing), and direct skin contact (touching).

Estimating Health Hazards

In Step 3, the Marine Corps used the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. U.S. EPA considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from chemicals at a site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance."

In other words, for every 10,000 people that could be exposed, one extra cancer case may occur as a result of exposure to site contaminants continuously for 30 years. *One additional cancer case means that one more person could get cancer from chemicals present at a site than would normally be expected to from all other causes.*

For non-cancer health effects, U.S. EPA calculates a "hazard index." *A hazard index of 1 or greater indicates that a lifetime of exposure to the chemical(s) may have potential for causing adverse health effects (e.g., respiratory distress) and should be evaluated further.*

Calculated risk levels are an indication of potential risk assuming people would live at the sites for 30 years. These are not absolute predictions that risk will occur at a certain level. Actual human exposures to chemicals (eating, breathing, and touching) and associated risks are likely to be less than those calculated for the risk assessment. Assumptions made during the conservative risk assessment process are designed to lead to an over-estimation of potential risk and provide a margin of safety to protect public health and the environment.

Characterizing Site Risks and Results

In Step 4, the Marine Corps and regulatory agencies deter

Factors Considered When Making a Risk Management Decision

Many factors were considered when making the no further action recommendation or proposal at Sites 7 and 14. The Marine Corps and regulatory agencies (also known as the BRAC Cleanup Team or BCT) incorporated input from specialists in the field, the Restoration Advisory Board (RAB), and the public into their decision-making process.

The BCT also carefully evaluated the following site-specific conditions of each property:

- The type, location, and concentration of chemicals observed in the environment
- The nature of the contamination – manmade or naturally occurring
- The potential for off-site movement or migration of chemicals
- The natural degradation of certain types of chemicals in the environment over time
- The quality of the data provided by the studies
- The planned future uses of the property
- The results from the conservative risk estimates

Table 1: Risk Ranges to Protect Human Health

Health Risks	Unacceptable Risks	Risk Management Range/ Generally Allowable Risks	Allowable Risks
Cancer	More than 1 additional cancer case in a population of 10,000 (greater than $1x10^{-4}$)	1 additional cancer case in a population of 10,000 to 1 additional cancer case in a population of 1,000,000 ($1x10^{-4}$ through $1x10^{-6}$)	Less than 1 additional cancer case in a population of 1,000,000 (less than or equal to $1x10^{-6}$)
Non-cancer	A hazard index greater than 1 should be evaluated further.	A hazard index of 1	A hazard index less than 1

mine whether site risks are great enough to cause health problems for people at or near the sites. The results of the three previous steps are combined, evaluated, and summarized.

The U.S. EPA provides guidelines to be used to assess the types of chemicals, degree of exposure to the chemicals, and potential toxic effects of the chemicals of concern. To assist with the risk management decision, the U.S. EPA has established the risk ranges to protect human health. These ranges, presented in Table 1 above, are for a residential reuse scenario. Risks for an industrial reuse scenario are lower.

The health risks calculated for Sites 7 and 14 are presented on Table 2 on page 6. This table provides cancer and non-cancer risks for each of the units at Sites 7 and 14. It also explains the risk management considerations pertaining to each site unit.

The risk assessment showed that all cancer risks were either in the risk management range/generally allowable risks or in the allowable risks range. Arsenic and PAHs were the main contributors to cancer risk at these sites. Non-cancer risks exceeded 1 at Site 7, Unit 1. However, the largest contributors to non-cancer risk were the naturally occuring metals manganese and arsenic. No site-related activities involved use of these metals. PAHs were present at low concentrations and do not have a tendency to move off-site. For these reasons, the Marine Corps has recommended all units at both sites for no further action.

No Impact on Groundwater

The extent of impacted soil at Sites 7 and 14 is confined to shallow soil and does not pose a threat to groundwater present approximately 100 feet below the ground surface. However, Sites 7 and 14 are located above a large plume of groundwater contaminated with volatile organic compounds (VOCs) that originates from Site 24, the VOC Source Area. The need for remedial action for groundwater associated with Site 24 is not due to activities that occurred at Sites 7 and 14. Sites 7 and 14 are still considered to be no further action sites.

Description of Chemical Terms

- **Metals** found at the sites that may pose a risk to human health include arsenic and manganese. Arsenic is known to cause cancer. Manganese is a non-cancer-causing chemical that can affect the nervous system and the respiratory system. Arsenic and manganese are found in the soils native to areas on and off MCAS El Toro property and are not related to site-specific activities.
- **Pesticides and herbicides** were used to control insects and vegetation. Depending on the specific chemicals used for this purpose, they could be cancer causing or non-cancer causing.
- **PAHs (polynuclear aromatic hydrocarbons)** are a specific class or group of SVOCs, and some are suspected as cancer-causing compounds. They are commonly associated with non-combusted fuels and waste oil. At MCAS El Toro, historical activities included spraying waste oil on the ground surface to control dust. (Note: polynuclear is a term that means multi-ringed hydrocarbon.)
- **SVOCs (semivolatile organic compounds)** make up a general category of organic (carbon-containing) compounds. These compounds evaporate at a slower rate than VOCs. As with VOCs, there are known cancer-causing compounds within the category of SVOCs.
- **TPH (total petroleum hydrocarbons) and TRPH (total recoverable petroleum hydrocarbons)** are chemical components of fuels. The individual compounds that make up TPH or TRPH are evaluated for potential health effects.
- **VOCs (volatile organic compounds)** comprise another general category of organic compounds that evaporate easily at room temperature. They are commonly used for machinery and parts degreasing, paint stripping, and other industrial operations. At MCAS El Toro, historical activities have included more than 40 years of aircraft maintenance that used industrial solvents, like trichloroethene (TCE), that are categorized as VOCs. Within the category of VOCs, there are known cancer-causing compounds.

Table 2: Summary of Risk Results, Risk Management Considerations, and Recommendations for No Further Action

Site/Unit	Cancer Risk Residential Scenario	Non-cancer Risk Residential Scenario/ Hazard Index	Risk Management Considerations	Recommended Actions
Site 7, Unit 1	3 additional cases in 100,000	1.4*	The risk drivers present include arsenic, manganese, and PAHs. No site related activities involved the use of arsenic and manganese. PAHs are present in low concentrations and are not mobile.	No Further Action
Site 7, Unit 3	2 additional cases in 100,000	1.0	The risk drivers present include arsenic and PAHs. No site related activities involved the use of arsenic. PAHs are present in low concentrations and are not mobile.	No Further Action
Site 7, Unit 4	2 additional cases in 1,000,000	0.5	The only risk driver present is one PAH (benzo[a]pyrene). Benzo[a]pyrene is present in low concentrations and is not mobile.	No Further Action
Site 7, Unit 5	2 additional cases in 100,000	0.55	The risk drivers present include arsenic and PAHs. No site related activities involved the use of arsenic. PAHs are present in low concentrations and are not mobile.	No Further Action
Site 14, Unit 1	4 additional cases in 100,000	0.94	The risk drivers present include arsenic and PAHs. No site related activities involved the use of arsenic. PAHs are present in low concentrations and are not mobile.	No Further Action
Site 14, Catch Basin	6 additional cases in 10,000,000	0.0088	No risk drivers were identified.	No Further Action

*Over half of the risk associated with the hazard index at Site 7, Unit 1 is attributed to manganese and arsenic, which are naturally occuring metals in native soil on and off MCAS El Toro property, and are not associated with past site activities.

Multi-Agency Team Concurs on No Further Action

The Base Realignment and Closure (BRAC) Cleanup Team (BCT), composed of the Marine Corps, the U.S. EPA, and the Cal-EPA, was established when MCAS El Toro was designated for closure. The primary goals of the BCT are to protect human health and the environment, to expedite the environmental cleanup, and to coordinate the environmental investigations and cleanup at the Station.

The team also serves as the primary forum for assessing cleanup priorities and progress. The BCT obtains a consensus on issues regarding the Station's environmental activities and makes a concerted effort to integrate reuse into the cleanup decisions.

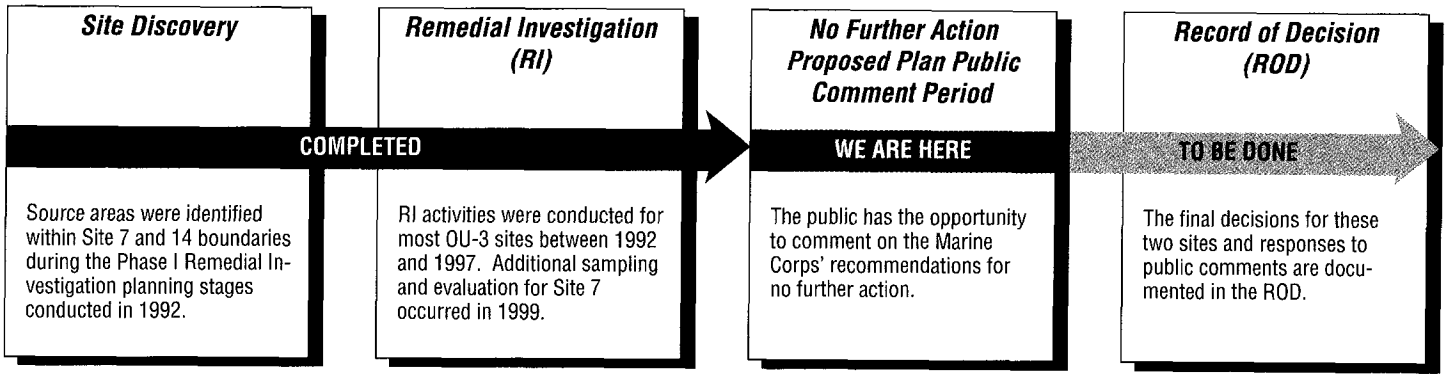
The team completed its review of the *Phase II Remedial Investigation Report – Attachments O and P, OU-3B Sites 7 and 14, MCAS El Toro.* Discussions were held regarding the findings of the field investigations, the results of human health risk assessments, site closure plans and contamination cleanup level(s), and the recommendations presented by the Marine Corps.

Based on these discussions, the BCT concurred that the potential human health risks (cancer and non-cancer) at the two sites presented in this Proposed Plan are within the risk management range/generally allowable risks or the allowable risk range and no further evaluations or cleanup actions are required.

The Next Step

Public comments on this Proposed Plan received during the period of October 10-November 8, 2000 will be considered in the final environmental determination for Sites 7 and 14. Responses to comments will be addressed in a Responsiveness Summary. The Responsiveness Summary will be part of the Record of Decision, which will formally document the specific environmental determination for Sites 7 and 14. For more information on opportunities to comment on this Proposed Plan see page 1.

MCAS El Toro Installation Restoration Program



Where to Get More Information

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. Dean Gould*
RAC Environmental Coordinator
Base Realignment and Closure,
Environmental Division
MCAS El Toro
P.O. Box 51718
Irvine, CA 92619-1718
(949) 726-5398 or (619) 532-0784

Mr. Andrew Bain
Community Involvement
Coordinator
Superfund Division
U.S. EPA, Region IX
75 Hawthorne St. (SFD-3)
San Francisco, CA 94105
(800) 231-3075

Ms. Kim Foreman
Public Participation Specialist
Cal-EPA, Department of Toxic
Substances Control
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5324

Mr. Glenn Kistner*
Project Manager
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San Francisco, CA 94105
(415) 744-2210

Ms. Triss Chesney*
Project Manager
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5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5395

Mr. John Broderick*
Project Manager
Cal-EPA, Regional Water Quality
Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3339
(909) 782-4494

BRAC Cleanup Team (BCT) Member

- **Investigation Reports and Risk Assessment Results Available for Review and Comment:** The collection of reports and historical documents used by the Marine Corps in the selection of cleanup or environmental management alternatives is the Administrative Record (AR). The AR file provides a record of decisions and actions taken by the Marine Corps for these two sites. A site-specific AR file has been compiled for Operable Unit 3B Sites 7 and 14. It includes key documents such as the Phase I and Phase II Remedial Investigation Reports.
- **Administrative Record File Location:** The complete AR file collection of documents for MCAS El Toro and an index of the file are available for review at MCAS El Toro. A site-specific AR index for Sites 7 and 14 is also available. To schedule a time to review documents at the Station during the public comment period, contact Mr. Dean Gould at (949) 726-5398 or 726-2840, or at (619) 532-0784.
- **Information Repository Location:** Copies of Remedial Investigation 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 the Information Repository at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, California 92714. The telephone number is (949) 551-7151. Current hours of operation are: 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.

See Inside . . .

Proposed Plan

No Further Action Recommended at Sites 7 and 14

Marine Corps Air Station El Toro

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 and mail to: Commanding Officer, Base Realignment and Closure, Attn: Mr. Dean Gould, Base Realignment and Closure, Environmental Division, MCAS El Toro, P.O. Box 51718, Irvine, CA 92619-1718.

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

☐ Send me information on Restoration Advisory Board membership.

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Street _____

City _____ State _____ Zip Code _____

Affiliation (optional) _____ Telephone _____

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Attn: Mr. Dean Gould
BRAC Environmental Coordinator
Base Realignment and Closure, Environmental Division
MCAS El Toro
P.O. Box 51718
Irvine, CA 92619-1718

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MCAS EL TORO
Public Meeting

Proposed Plan
No Further Action
Operable Unit 3 - Sites 7 and 14

October 25, 2000

6:30-9:30 p.m.

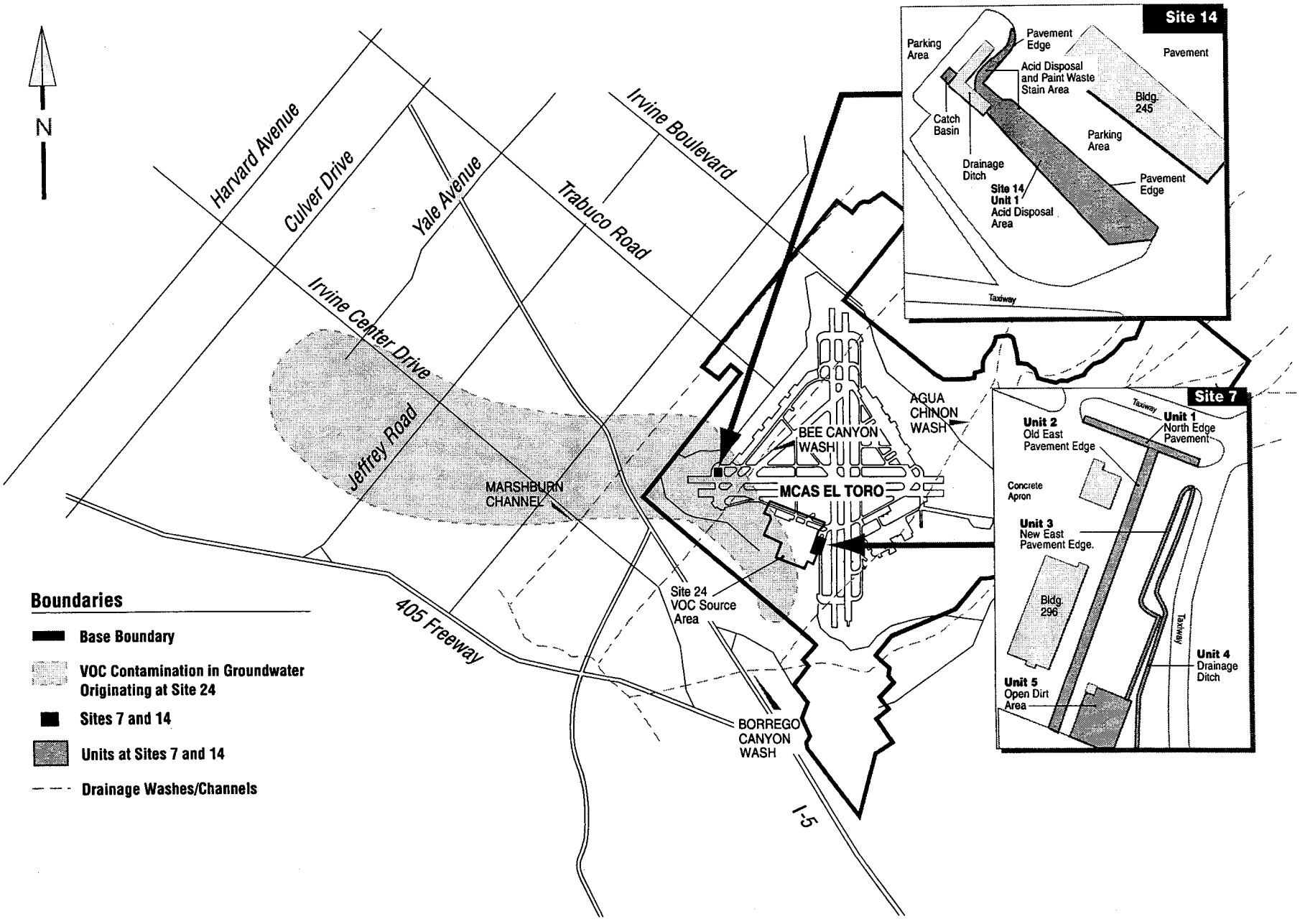
Purpose of Public Meeting

- Present the Proposed Plan for Sites 7 and 14 to the community
- Held during the Proposed Plan Public Comment Period (Oct. 10-Nov. 8)
- Opportunity for community members to:
  - discuss Sites 7 and 14
  - ask questions, provide comments

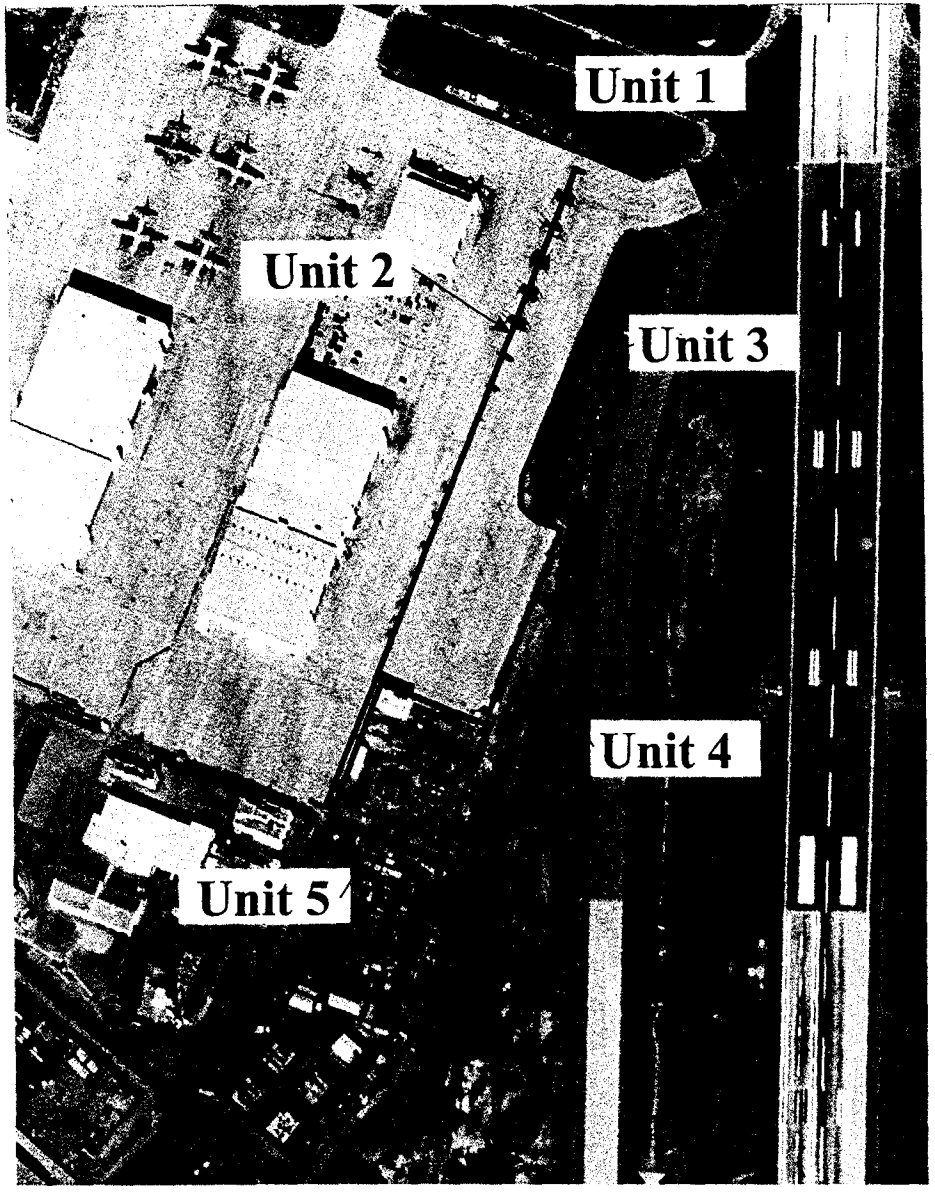
MCAS El Toro Installation Restoration Program—Sites 7 and 14

Site Discovery	*Remedial Investigation (RI)*	*No Further Action Proposed Plan Public Comment Period*	*Record of Decision (ROD)*
COMPLETED		WE ARE HERE	TO BE DONE
Areas with potential contamination were identified within Site 7 and 14 boundaries during the Remedial Investigation planning stages conducted in 1992.	RI activities were conducted between 1992 and 1999.	The public has the opportunity to comment on the Marine Corps' recommendations for no further action.	The final decisions for these two sites and responses to public comments are documented in the ROD.

MCAS El Toro Site Location Map, Sites 7 and 14



Site 7 - Drop Tank Drainage Area No. 2



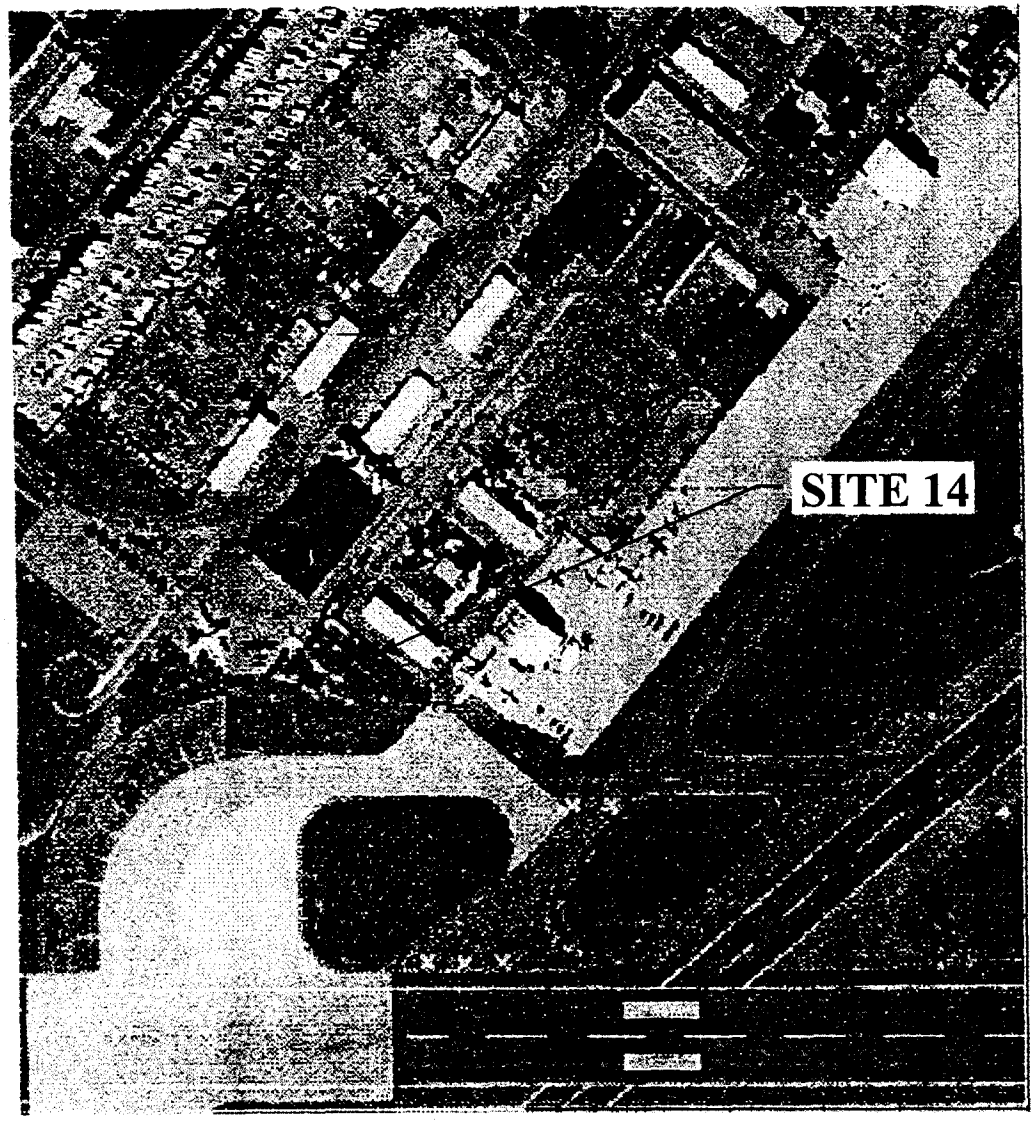
- Used for aircraft drop tank storage and drainage.

- Aircraft drop tanks were drained and washed on a concrete apron. The mixture of residual fuel and wash water drained off the apron edge on to adjacent grassy areas.

- Soil contaminants reported at the site include:
  - PAHs - polynuclear aromatic hydrocarbons
  - pesticides
  - metals
  - SVOCs - semivolatile organic compounds
  - TPH - total petroleum hydrocarbons
  - VOCs - volatile organic compounds

- Approximate site area - 4.6 acres

Site 14 - Battery Acid Disposal Area



- Approximate site area - 0.5 acres

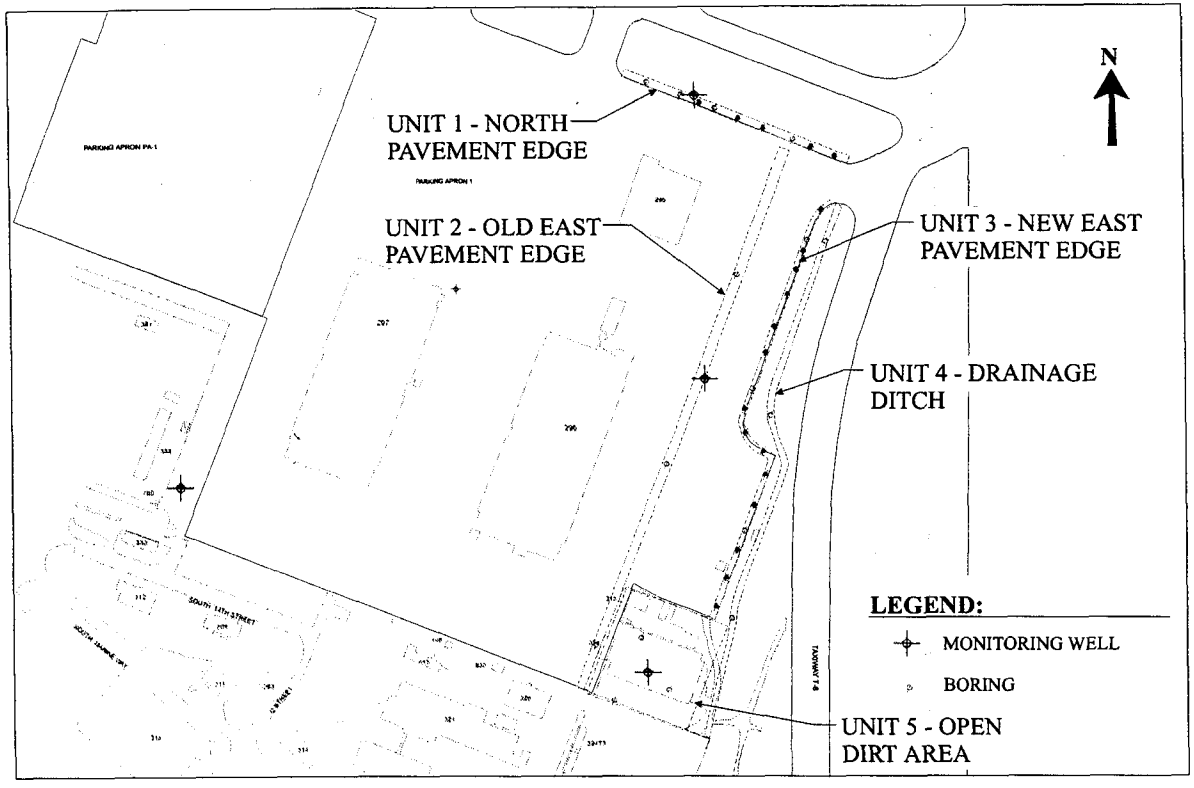
- Area where fluids from batteries of facility vehicles, paints, and associated paint wastes were drained onto the unpaved ground surface beyond the edge of the parking area south of Building 245.

- Soil contaminants reported at the site include:
  - metals
  - pesticides
  - SVOCs - semivolatile organic compounds
  - TPH - total petroleum hydrocarbons
  - VOCs - volatile organic compounds

Purpose and Focus of Remedial Investigation

- Initial investigation effort
  - aerial photo survey, personal interviews, initial soil gas surveys
- Extensive field investigation -- environmental sampling performed to evaluate presence, nature and extent of contamination
- Baseline risk assessments performed

Site 7 - Drop Tank Drainage Area No. 2

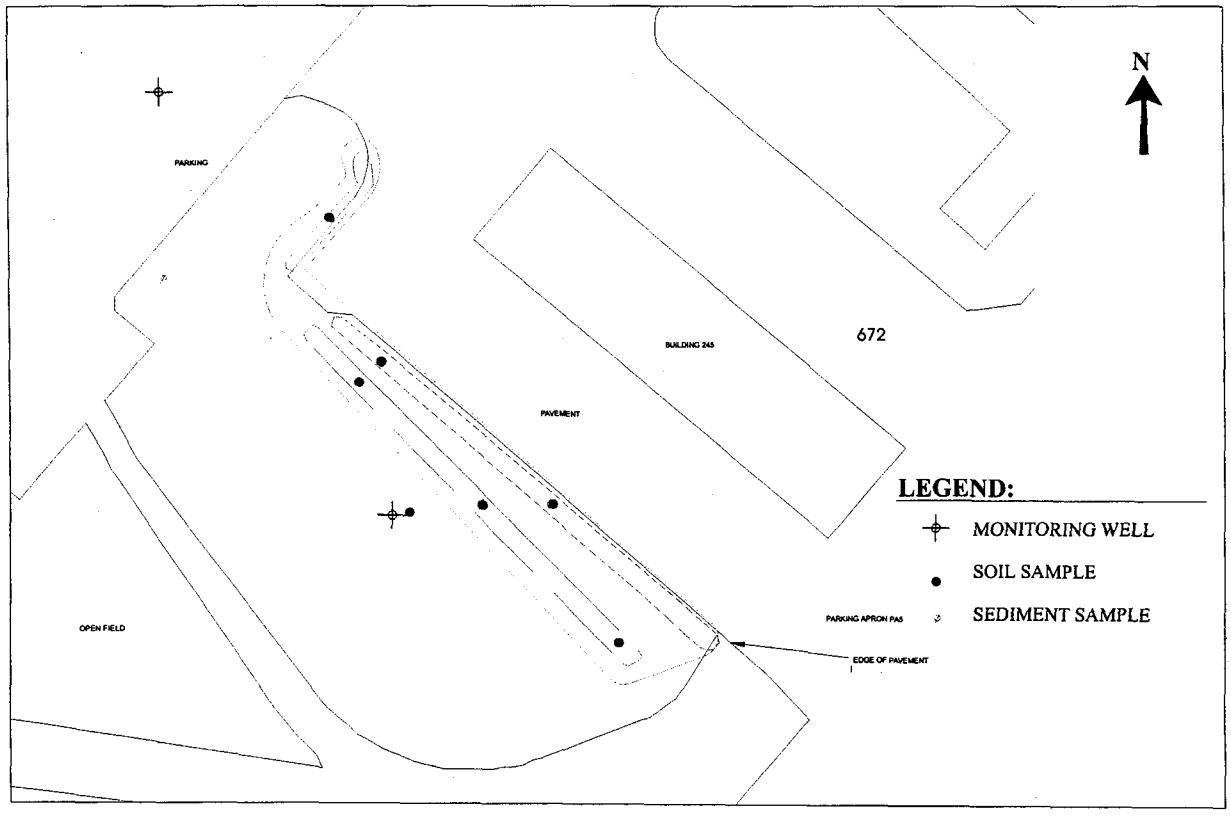


- 141 soil samples from 36 locations

Remedial Investigation Conclusions

- The chemicals of concern were generally limited to areas very near the surface, usually between 0 to 4 feet below ground surface.
- PAHs and metals are the most widely distributed classes of chemicals at Site 7.
- These contaminants are not readily mobilized and transported off-site.
- Because of the physical characteristics of PAHs and metals present at Site 7 infiltration of these chemicals downward in the soil is negligible.

Site 14 - Battery Acid Disposal Area



- 14 soil samples from 7 locations (including a catch basin)

Remedial Investigation Conclusions

- The chemicals of concern were generally limited to areas very near the surface, usually between 0 to 4 feet below ground surface.
- SVOCs and metals are the most widely distributed classes of chemicals at Site 14.
- These contaminants are not readily mobilized and transported off-site.
- Because of the physical characteristics of the SVOCs and metals present at Site 14 infiltration of these chemicals downward in the soil is negligible.

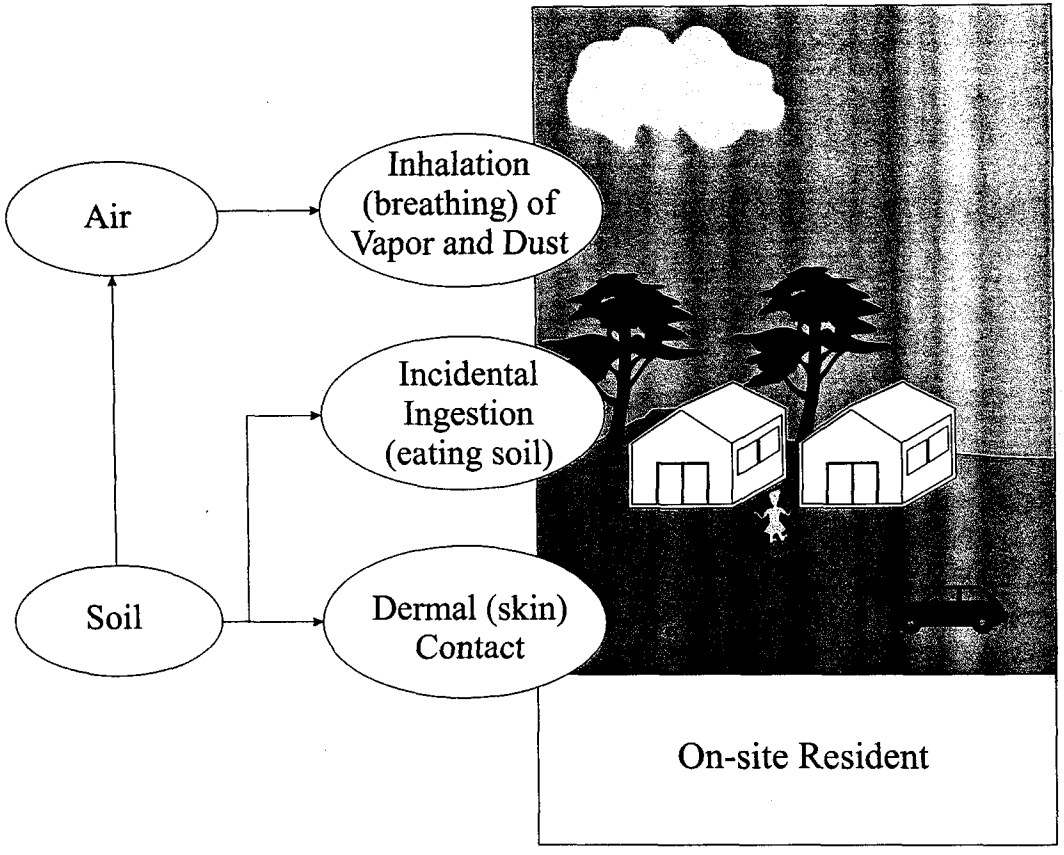
Reasons for Conducting a Baseline Risk Assessment

- Key component of the remedial investigation
- To estimate potential adverse effects on human health and the environment at the sites
- To determine if cleanup is necessary

How a Baseline Risk Assessment is Done

- Determine contaminants of potential concern
- Determine who could be exposed and how exposure could occur
- Use contaminant concentration data in a mathematical model
- Conservative approach is applied to overestimate risk to provide a margin of safety

On-site Exposure Routes



- Exposure routes or pathways show how people could come in contact with contaminants in surface soil.

- Contaminants in soil do not extend to groundwater.

Risk Assessment Exposure <u>Assumptions</u> for Adults and Children (On-site Residents) Exposed to Soil

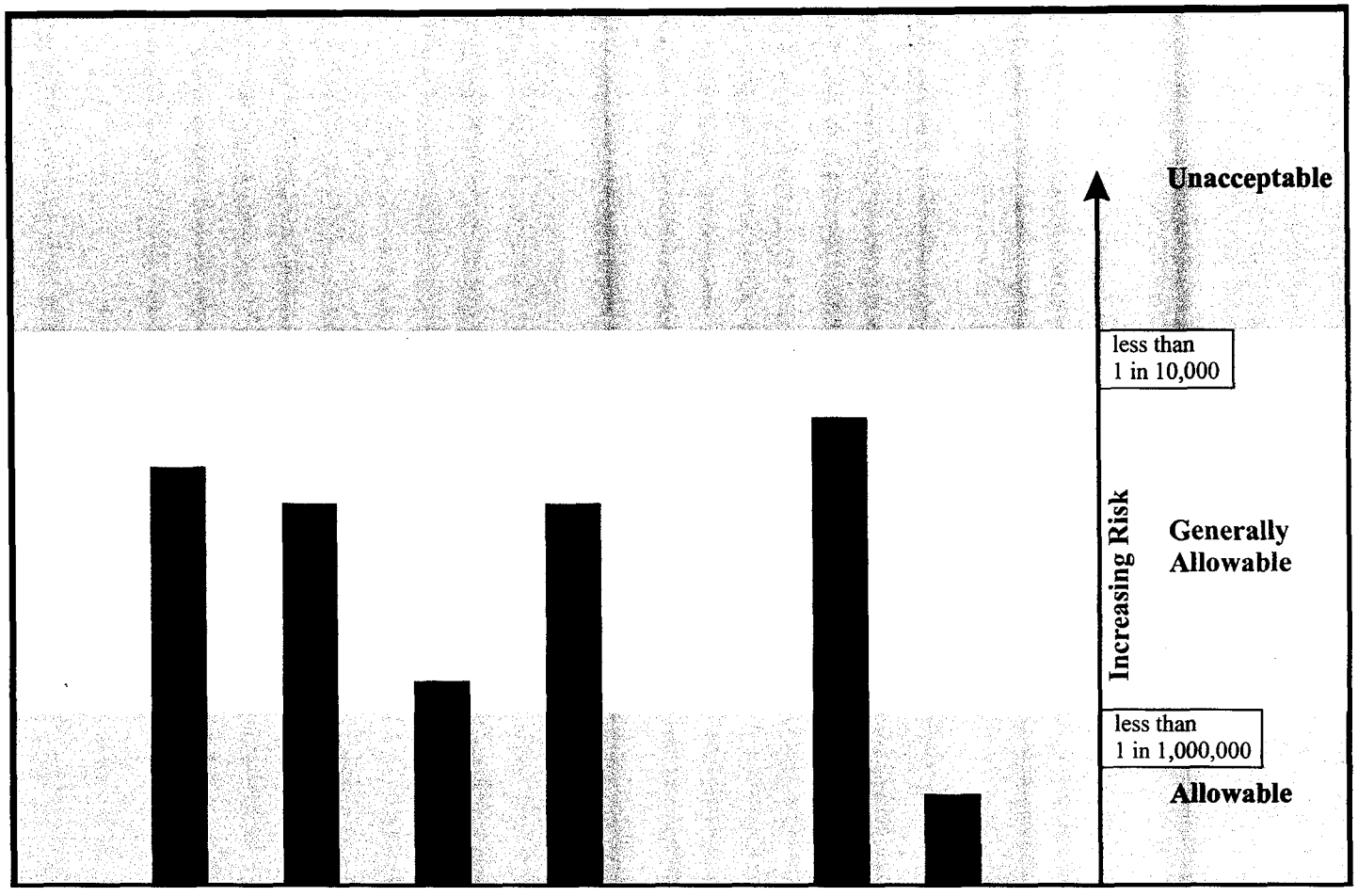
- Adult exposure was assumed for a total of 30 years, 6 years as a child and 24 years as an adult (child exposure was assumed to be 6 years).
- Inhalation of soil particulates and gases was assumed to occur 24 hours a day, 350 days a year.
- A soil ingestion rate of 100 milligrams a day was assumed for a 70-kilogram adult and 200 milligrams a day for a 15-kilogram child (age 1-6 years), 350 days a year.
- For dermal exposure, 25 percent of the resident's skin was in contact with soil for 100 days a year.

Risk Ranges to Protect Human Health

Health Risks	Unacceptable Risks	Risk Management Range/ Generally Allowable Risks	Allowable Risks
Cancer	More than 1 additional cancer case in a population of 10,000 (greater than $1x10^{-4}$)	1 additional cancer case in a population of 10,000 to 1 additional cancer case in a population of 1,000,000 ($1x10^{-4}$ through $1x10^{-6}$)	Less than 1 additional cancer case in a population of 1,000,000 (less than or equal to $1x10^{-6}$)
Non-cancer	A hazard index greater than 1 should be evaluated further.	A hazard index of 1	A hazard index less than 1

Soil Cancer Risk

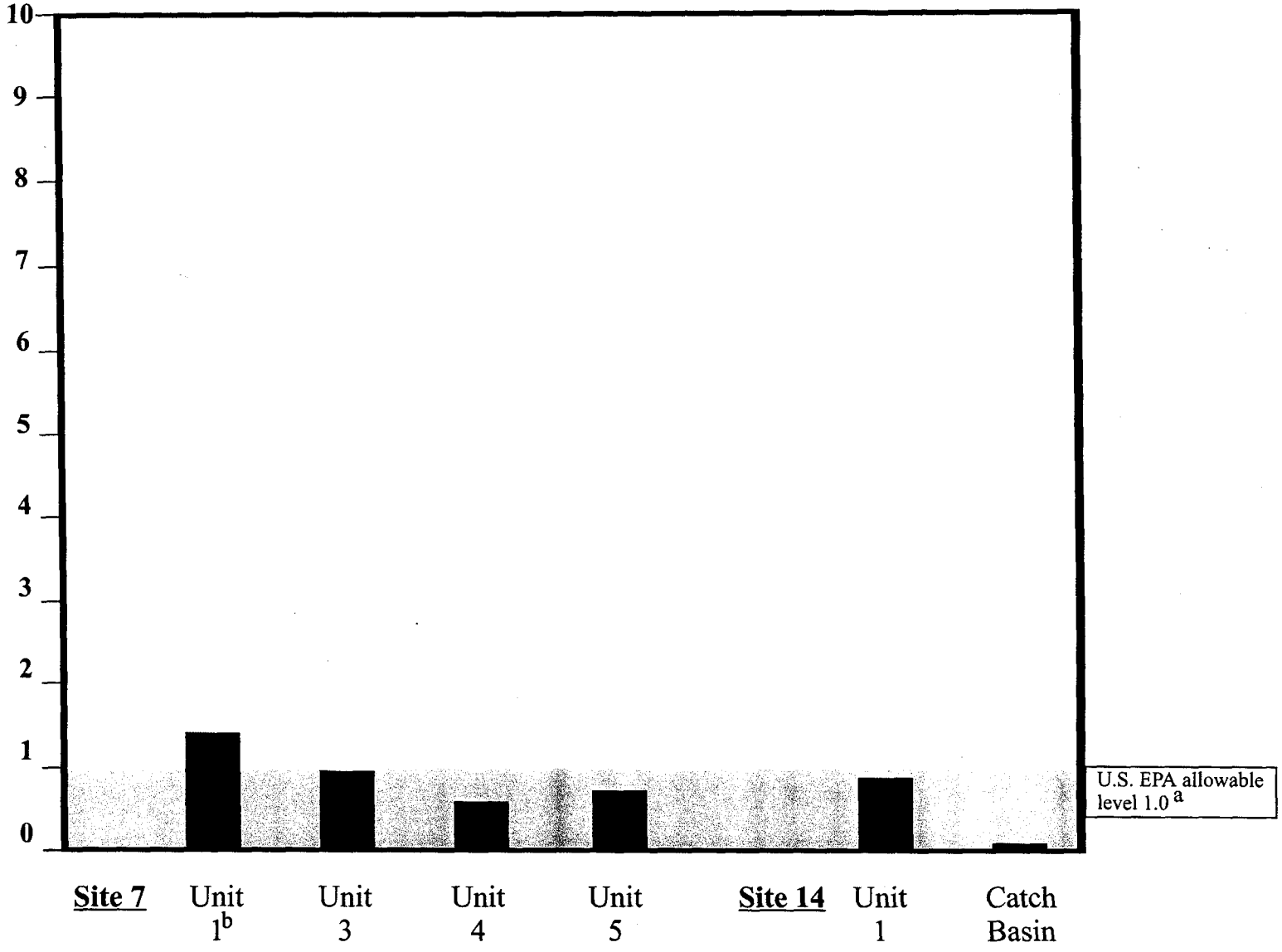
Hypothetical Residential Use



Recommended for No Further Action

Soil Hazard Index - Noncancer Risk

Hypothetical Residential Use



Recommended for No Further Action

[a] A site unit with a hazard index greater than 1 does not by itself require remedial action, but indicates the need to account for types of chemicals, historical activities, and potential toxic effects of chemicals of potential concern.

[b] Over half of the risk associated with the hazard index at Site 7, Unit 1 is attributed to manganese and arsenic, which are naturally occuring metals in native soil on and off MCAS El Toro property, and are not associated with past site activities.

Factors Considered When Making a Risk Management Decision

The BCT carefully evaluated the following site-specific conditions of each site unit:

- Type, location and concentration of chemicals in the environment
- Nature of the contamination
- Potential for off-site movement or migration of chemicals
- Natural degradation of chemicals
- Quality of the data provided by the studies
- Planned future uses
- Results from conservative risk estimates

Proposed Plan Synopsis

- MCAS El Toro Base Realignment and Closure Team (BCT) concurs that No Further Action (no additional investigation or cleanup) is warranted for Sites 7 and 14.
- Environmental investigation data characterized nature and extent at both sites.
- Conditions at Sites 7 and 14 are protective of public health and the environment.

MCAS El Toro Installation Restoration Program—Sites 7 and 14

Site Discovery	Remedial Investigation (RI)	No Further Action Proposed Plan Public Comment Period	Record of Decision (ROD)
COMPLETED		WE ARE HERE	TO BE DONE
Areas with potential contamination were identified within Site 7 and 14 boundaries during the Remedial Investigation planning stages conducted in 1992.	RI activities were conducted between 1992 and 1999.	The public has the opportunity to comment on the Marine Corps' recommendations for no further action.	The final decisions for these two sites and responses to public comments are documented in the ROD.

The Next Step

Public comments on this Proposed Plan received during the period of October 10-November 8, 2000 will be considered in the final environmental determination for Sites 7 and 14. Responses to comments will be addressed in a Responsiveness Summary. The Responsiveness Summary will be part of the Record of Decision, which will formally document the specific environmental determination for Sites 7 and 14.

MARINE CORPS AIR STATION EL TORO

PROPOSED PLAN - NO FURTHER ACTION

OPERABLE UNIT 3, SITES 7 AND 14

CERTIFIED COPY

FORMAL PRESENTATION/PUBLIC COMMENT MEETING

Wednesday, October 25, 2000

7:45 p.m.

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

Reported By: Jeanine Burgner, CSR No. 6653

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Orange, California 92868
(714) 937-1032

MICHAEL BROWN
Consultant to the City of Irvine
850 Cathedral Vista
Santa Barbara, California 93110

* * *

Wednesday, October 25, 2000

* * *

(The following comments were made on the record:)

MR. DEAN GOULD: Okay. If we could please begin to take our seats, we can go ahead and get started with the formal portion.

Good evening, everyone. This is the Public Meeting for the Proposed Plan for Operable Unit 3, Sites 7 and 14, at Marine Corps Air Station El Toro. Tonight is the formal Public Meeting, which is part of the CERCLA (Comprehensive Environmental Response, Compensation And Liability Act) process that we are bound to follow to make sure that all of the sites that have been identified are addressed appropriately and closed out.

Let me just back up a little bit as far as this evening goes.

What you missed by not being here earlier were a panel of experts, and you can certainly see who's seated here, representatives from both regulatory

1 agencies; we have a number of contractual
2 representatives, as well; we have a toxicologist; we
3 have remedial experts. We have just about everything
4 you could possibly hope for to address any questions you
5 might have on the site. And while it is certainly not
6 too late to have questions responded to, the beginning
7 hour or so is certainly a very good time to have your
8 questions posed to any of these panel of experts.
9 As you can see, the way the room is oriented,
10 we have general environmental information. And your
11 questions don't have to be specific to Sites 7 to 14,
12 although I'll get into that in a second. And then, we
13 have remedial investigation with regards to Sites 7 and
14 14 and risk assessment and the Proposed Plan itself. As
15 you can see, with Sites 7 and 14, the table is going to
16 stop with the Proposed Plan. And we'll get into that a
17 little bit more.
18 But for these particular sites -- These two
19 sites are going to be proposed to you, the public, as no
20 further action sites. What that means is that over the
21 past few years, through our investigations, our research
22 and in cooperation with regulatory agencies, we have
23 reached the mutual conclusion that we feel no further
24 action will be required at these sites in order to have
25 them achieve the goals to make them safe for future use.

1 So that's certainly very, very encouraging news for
2 everybody.
3 What else are we going to cover tonight?
4 Well, I want to remind everybody here that
5 this meeting is almost a midway point in the Proposed
6 Plan public comment process. The Proposed Plan -- If
7 you have not received a copy of it, there's a stack of
8 them right up there on the table for your review. That
9 is, by all means, for you to take home. If you need
10 any, feel free.
11 Anybody that may not be on our mailing list, I
12 encourage them to review it and provide written comments
13 to us by November 8th. At that time, we'll consolidate
14 the comments. We'll be responding to all of them. And
15 anybody who would like to have a set of the responses to
16 those comments, be sure we have your mailing address, as
17 I suspect we have everyone's address. But I can confirm
18 that or anybody on the outside that may be getting this
19 plan, make sure that they include their mailing
20 address.
21 Tonight, what we'll be doing in this formal
22 presentation, and then afterwards, we'll be staying
23 around, as we typically do for the RAB (Restoratioin
24 Advisory Board) meetings, to respond to any questions
25 that you might have. But I do want to say that the

1 formal presentation, I will ask that you please hold on
2 to your questions or, better yet, please write them
3 down. There is a box for those questions to be
4 submitted. But what we'll be doing will be to -- at the
5 end of the formal presentation, you'll be submitting
6 your comment or question.
7 And as you can see, we have a Court Reporter
8 here, busily typing -- busily annotating everything
9 that's being said. So rest assured that the comments
10 made are officially recorded.
11 In as much as the meeting is specifically for
12 Sites 7 and 14, we do ask that you keep the comments
13 within that focus. If you have questions or concerns
14 about other sites or other areas of the Base, feel free
15 to ask them. We certainly have enough people, I think,
16 to at least get started on the questions. But do try to
17 keep your questions to Sites 7 and 14 for the official
18 portion of this evening.
19 How did we get here tonight?
20 You can see the process. Site discovery for
21 Sites 7 and 14, investigation planning stages conducted
22 in '92, on to the RI, all the way up to last year.
23 Right now, through that investigation -- And I'm not
24 going to get into the technical side too much. That's
25 why we have the experts here on technical sides, to

1 brief that to you. But a determination has been made
2 that no further action will be required at these sites
3 in order for them to be available for unrestricted reuse
4 down the road.
5 So next comes the ROD (Record of Decision).
6 The reason it stops there, because there won't be a
7 necessity for remedial action or remedial design.
8 So at this time, I think it will be an
9 appropriate time for Content Arnold, the Lead Remedial
10 Project Manager for Marine Corps El Toro and Tustin, to
11 come up and begin the technical briefing to you.
12 MS. CONTENT ARNOLD: Thanks, Dean.
13 I'd like to start off first by showing you
14 where the sites are tonight. We're talking about
15 Sites 7 and 14. And Site 7 is located right here, and
16 here's Site 14.
17 I'd also like to point out some other
18 landmarks here. We do have the VOC plume that extends
19 off station here, and also the VOC (volatile organic
20 compound) source area. Now, though the sites are
21 located geographically above Sites 18 and 24, Sites 7
22 and 14 did not contribute to the contamination at Sites
23 18 and 24. So, please, rest assured that these sites
24 are recommended for no further action for both soil and
25 groundwater. And the contamination of the groundwater

1 for Sites 18 and 24 will be handled in the ROD for
2 Sites 18 and 24.
3 Let's talk about Site 7.
4 Site 7 is the Drop Tank Drainage Area No. 2.
5 And as the name implies, it was used for aircraft drop
6 tank storage and drainage. The aircraft drop tanks were
7 drained and washed on the concrete apron at Units 1, 2
8 and 3. The mixture of residual fuel and wash water
9 drained off the edge of the concrete apron onto the
10 adjacent grassy areas.
11 Now, to facilitate the investigation, the site
12 was divided up into five separate units.
13 And, Bob, could you put up that slide for more
14 detail. Thanks.
15 We have Unit 1 here, the northern pavement
16 area; Unit 2 the old east pavement area; Unit 3, over
17 here, the new east pavement area; Unit 4, the drainage
18 ditch; and Unit 5, the open dirt area, over here.
19 The chemicals of concern at the site were
20 VOCs (volatile organic compounds), SVOCs (semivolatile
21 organic compounds), TPHs (total petroleum hydrocarbons),
22 metals, pesticides and polynuclear aromatic
23 hydrocarbons. In total, the site is about 4.6 acres.
24 Site 14 is the Battery Acid Disposal Area.
25 And it was associated with operations at Building 245,

1 which is the heavy equipment maintenance shop.
2 Historically, this area was used to drain fluids from
3 batteries at the facility, vehicles, paints and
4 associated paint wastes.
5 Now, this site -- if you could put up the
6 detail -- was divided into two areas. We have the acid
7 disposal area here and, also, the catch basin right
8 here.
9 Chemicals of concern at this site will
10 included VOCs, SVOCs, TPH, metals, and pesticides. And
11 the site is approximately a half an acre.
12 Now, leading up to the RI (Remedial
13 Investigation), we did an initial investigation effort.
14 This included an aerial photo survey, personal
15 interviews and, also, an initial soil gas survey.
16 Included, though, in the aerial survey -- the
17 purpose of that was really to identify staining,
18 location of tanks and flow of liquids.
19 The personal interviews, we interviewed active
20 and retired personnel who had extensive knowledge of
21 what went on at these sites.
22 And the initial soil gas survey was conducted
23 in conjunction with the soil gas survey at Site 24.
24 So before we even went to the field, we took
25 all this information; and then, we put together an RI

1 work plan. And that RI work plan was reviewed by,
2 hopefully, some of you folks, as well as the BCT (BRAC
3 Cleanup Team). And that was approved before we went to
4 the field.
5 And the purpose of the RI was, one, to
6 identify what was at the site; and what was the extent
7 of any contamination at the site. And we just went over
8 what the chemicals of concern were. It was also to
9 determine if initial studies were needed to develop
10 cleanup options. From all this information we got, we
11 put together a baseline risk assessment. And
12 Dr. Temeshy will be addressing that a little bit later
13 this evening.
14 So, okay. What was done during the RI?
15 Well, what we did was we took a hundred and
16 forty-one soil samples from thirty-six locations. And
17 those locations, although a little bit difficult to see,
18 are noted here in the figure and, also, on your
19 handouts. The samples were taken at various depths,
20 from zero to ten feet. And I should mention the depth
21 to groundwater at the site is about a hundred twenty
22 feet below ground surface.
23 The conclusions from the remedial
24 investigation were generally, the chemicals of concern
25 were limited to very shallow soil. I'm talking from

1 zero to four feet below ground surface. And, also, the
2 concentrations were not very high. Polynuclear aromatic
3 hydrocarbons and metals were the most widely distributed
4 chemicals. PAHs are generally waste oils and
5 noncombustible fuels. These contaminants are not
6 readily mobilized and transported off-site.
7 And what that means is generally, the
8 chemicals like to sorb to the soil; so they're not going
9 to go anywhere. Because of these physical
10 characteristics, migration and transportation through
11 soil and ultimately to groundwater is negligible.
12 To summarize what we did at Site 14, we took
13 fourteen soil samples from seven locations. And depth
14 to groundwater at this site is approximately a hundred
15 fifteen feet below ground surface. Once again, the
16 results were also similar to Site 7. We found that the
17 chemicals of concern were generally limited to the upper
18 four feet of soil. The chemicals that were most widely
19 distributed at the site were SVOCs and metals.
20 And what semivolatile organic compounds are
21 is -- they're organic compounds. That means they
22 contain carbon. And these compounds evaporate slower
23 than volatile organic compounds. These chemicals are
24 not mobile or transported off the site. Migration and
25 leaching through the soil to the groundwater is very

1 limited.

2 At this point, I'd like to hand off the

3 presentation to Dr. Temeshy. And she's going to be

4 talking about the Risk Assessment.

5 DR. ANDREA TEMESHY: Well, good evening. I see

6 some familiar faces. Don is an expert in my Risk

7 Assessment discussions. But I see some new faces, so

8 I'm going to go through three different issues

9 tonight.

10 The first thing is let me tell you why we do a

11 risk assessment. Secondly, it's a quick overview as to

12 how we do it. And, third, I'm going to show you what

13 results we got from performing the risk assessment on

14 Sites 7 and 14.

15 And, basically, why we do a Risk Assessment is

16 it's a key component of the remedial investigation

17 process.

18 Secondly, it's the way for us to calculate,

19 estimate, what the risk is in association with exposure

20 to chemicals at Sites 7 and 14.

21 What we're trying to do is determine if

22 there's an adverse health effect from being exposed to

23 chemicals; in this case, the soils at Sites 7 and 14.

24 And what would take place after this is the

25 decision-makers would take a look at these results and

1 determine if there is a need for an action or not. So
2 that is how we're using the Risk Assessment results.
3 Can you all hear me okay?
4 Now, the next thing is how do we do this risk
5 assessment?
6 At Sites 7 and 14, we did the remedial
7 investigation results. So the first thing is we're
8 going to looking at the analytical data of those
9 results. And we are going to be addressing the
10 concentrations of all the contaminants that were
11 detected at both sites. So that's the very first thing,
12 we determine the concentrations of all chemicals that
13 were identified at Sites 7 and 14. So that's the very
14 first step.
15 Secondly is we are addressing the risk to
16 human health. So what kind of exposure, who is exposed
17 to these contaminants?
18 And you can flip over to the next page.
19 Right.
20 And that is we want to figure out who is
21 exposed to -- potentially to these soil contaminants at
22 Sites 7 and 14. And what we are going to be addressing
23 tonight is hypothetical risks. And that is your most
24 conservative scenario.
25 And what if a person is exposed to the soil

1 contaminants, an individual, a hypothetical person has a
2 house on-site, right on top of the sites, either one.
3 So now, we've got somebody that is living there, and a
4 child, an adult. It's a hypothetical situation. And we
5 have a resident exposed to these two sites.
6 Can we flip back to the first one?
7 Well, I'll -- It's hypothetical. I'll just
8 keep talking with this one.
9 This hypothetical resident is going to be
10 exposed to the soil.
11 And how is this exposure going to take place?
12 Well, we've got a person that could be
13 touching the soil -- So we'll have dermal contact; all
14 right? -- and/or incidental ingestion. So those are two
15 routes of exposure that we're going to be addressing in
16 this risk assessment.
17 There is another way of exposure, and that is
18 contaminants could be released from the soil to the
19 air. And that is wind, and then we'll have dust. So we
20 are going to also be analyzing what the exposure would
21 be for inhaling either vapors or dust. So now, we've
22 got this resident that is going to be exposed to soil
23 via all of these potential pathways.
24 Now, one more issue that I want to bring to
25 your attention is that we are going to -- in addressing

1 this residential -- hypothetical resident on-site, we
2 are going to be using defaults, exposure defaults that
3 are standard EPA (U.S. Environmental Protection Agency)
4 defaults that are going to basically be representing a
5 residential scenario.
6 Now, what they imply is we've got somebody for
7 thirty years on-site. And what that means is this
8 person is going to be there twenty-four hours a day, for
9 thirty years. And what that implies is that that person
10 never leaves that house for thirty years. So there is a
11 tremendous amount of conservatism that is applied to
12 this residential scenario. And this is to assure that
13 the risk is never underestimated, but overestimated.
14 So, again, when we do a hypothetical resident,
15 please keep in mind that this is somebody that for a
16 period of thirty years never leaves that house. So
17 we've got somebody exposed to contaminants
18 twenty-four hours a day for those thirty years, never
19 goes to school, never goes to work. I want to have
20 that -- I want to be that person.
21 MR. DON ZWEIFEL: And, also, we're talking about a
22 dirty kid.
23 DR. ANDREA TEMESHY: Yes, this kid likes to roll
24 in the dirt, never takes a shower, never goes
25 shopping -- I don't want to be that person now.

1 Now, moving on to the next step, what we're
2 doing, now, with this information that we've presented
3 so far, we've got contaminants at both sites; and we
4 have the hypothetical scenario for a person, and a dirty
5 kid. And we're going to integrate these factors to
6 calculate risk.
7 And when we talk about risk, we're talking
8 about two end points. We're going to look at those
9 chemicals and address if they have the potential for
10 developing cancer. But there are other effects besides
11 cancer that could be in association with being exposed
12 to chemicals. And we are going to call those the
13 noncancer. And what that implies is anything from a
14 rash to a headache, to asthma, to any respiratory
15 distress, to liver damage.
16 So when we look at risk, we're looking at both
17 end points:
18 Would it have the potential for the
19 development of cancer?
20 Or could it have the potential to have other
21 side effects besides cancer that are noncancer-type
22 effects?
23 And we are going to be calling those hazard
24 index. Okay?
25 And, again, hazard index is in association

1 with the noncancer effects.

2 Now, what -- How do we measure this cancer

3 risk and noncancer risk?

4 We're going to use standard guidelines by the

5 regulatory agencies. And I'm going to be showing you

6 the results for both sites with respect to these

7 measures by regulatory agencies. And they're both for

8 cancer and noncancer.

9 And the very first row is the cancer effects.

10 This is the cancer risk. One -- Less than one

11 additional cancer case in a population of a million,

12 it's considered allowable. There is a risk range of one

13 additional cancer case, which is the middle row, in a

14 population of ten thousand, to one case in a population

15 of one million. And that is what is generally allowed.

16 And that is when other factors are taken into

17 consideration besides just the risk result.

18 And one of the reasons is because of what I

19 just went through earlier. And that is we are never

20 underestimating the risk, but we are basically

21 overestimating by assuming that this person doesn't

22 leave the house for thirty years and he's exposed to it

23 twenty-four hours a day.

24 Plus, there are other factors for that

25 particular site to take into consideration when making a

1 decision for action versus no action.

2 Then, what is considered unacceptable is if

3 it's one additional cancer case in a population of ten

4 thousand.

5 So we've got the three different things that

6 we're looking at when we are discussing the result in

7 association with the cancer end point:

8 And that is less than one additional cancer

9 case in one million; then, we have that range of one in

10 a million to one in ten thousand; and the greater than

11 ten thousand is not acceptable.

12 And I'll go through these in a diagram.

13 Now, for the noncancer effects, it's a little

14 simpler. We have one point only. And that is if we

15 have a noncancer risk of one or less, it's considered

16 acceptable. That is, the likelihood of developing a

17 noncancer effect is going to be low. If it's greater

18 than one, the measure of one indicates that toxicity

19 could, in effect, be developed. And it could be, again,

20 anything from a rash to some sort of damage to any other

21 part of the body, depending on what target that

22 particular chemical would be affecting.

23 So for the noncancer effects, we have the one

24 as the measure for the potential of toxicity to develop.

25 Okay. So these are the actual results for

1 both Sites 7 and 14.

2 If I go through this site first, this is the

3 cancer risk for the hypothetical resident. And this

4 portion right here is the one in less than a million.

5 And that is the allowable range.

6 This is the generally allowable.

7 And this is the unacceptable.

8 And as you can see for both Sites 7 and 14,

9 none of the risks are in the unacceptable zone. We've

10 got risks that are in the generally allowable or in the

11 allowable range.

12 Now, each of these bars is the summation of

13 all the chemicals that were detected at these sites.

14 So for Site 7, Unit 5, this is the cancer

15 risk, the sum of all individual cancer risks for all of

16 the chemicals detected. There are three chemicals that

17 contribute to the majority of this bar.

18 And the same is true for all of this.

19 Now, the three chemicals are arsenic and two

20 of the PAHs (polynuclear aromatic hydrocarbons),

21 benzo(a)pyrene and dibenzo(a,h)pyrene.

22 And arsenic contributes to approximately half

23 of this bar in all of these cases. Now, these arsenic

24 levels are equivalent to the background levels. So

25 that's something that the decision-makers will have --

1 will take into consideration, which chemicals are
2 contributing to the bars and at what levels.
3 Again, we don't have any risks in the
4 unallowable area. They're all within the generally
5 allowable or the allowable risk range.
6 Now, for the end point that measures noncancer
7 effects for, again, a hypothetical residential scenario,
8 the measure of one -- which is at this bar right here,
9 one and greater -- has the likelihood of potential
10 adverse health effects. Below one, we don't have any of
11 that potential.
12 Site 7, Unit 1 measures at 1.4. So it's
13 slightly over one. And what's causing it to be 1.4,
14 half of this bar, is attributable to one metal; and that
15 is manganese.
16 Now, what I want to -- This is in the
17 Proposed Plan. And now, the risk assessment --
18 MR. DON ZWEIFEL: Do we have that?
19 DR. ANDREA TEMESHY: It's actually in the plan,
20 and it's also on the board.
21 And what this shows -- I know it's a very busy
22 table, but it's a presentation -- or, it's a summary of
23 the results I showed on the diagram.
24 But I want to leave you with this: The risk
25 results for the individual sites on the units were then

1 taken into consideration with other factors to make the
2 decision of the recommended action of no further
3 action. And these are some of the considerations.
4 And I'm going to use Site 7, Unit 1 as an
5 example. And that is we've got just a few risk
6 drivers. We've got arsenic and PAHs for the cancer risk
7 and manganese for the hazard index.
8 Now, there was no site-related activity that
9 involved the use of the metals, either arsenic or
10 manganese. And as I mentioned before, these two metals
11 were within background. And in addition, as Content
12 mentioned earlier, the PAHs are low concentrations and
13 they're not going to be migrating on-site or off-site.
14 So this is part of the information that the regulators
15 and the Navy used in order to have the decision of no
16 further action decision.
17 I'm going to then pass it to Content to
18 discuss some of the other factors that are used in the
19 no further action.
20 MR. DON ZWEIFEL: I have a question here, real
21 quick. Could I?
22 You're not going to restrict me; are you?
23 MR. DEAN GOULD: Yes.
24 MS. CONTENT ARNOLD: Thanks.
25 Dr. Temeshy touched upon some of the factors

1 that we need to consider when making a risk management
2 decision. As she mentioned, there are some risks that
3 are in the generally allowable range.
4 So what do we look at once we are within that
5 range?
6 Well, the BCT and the Navy carefully evaluate
7 the type, location and concentrations of the chemicals.
8 The types that we've discussed earlier are PAHs, metals,
9 and semivolatile organic compounds. Also, we look at
10 the nature of the contamination: Is it manmade, or is
11 it naturally occurring?
12 As we've also discussed tonight, some of the
13 risk drivers were naturally occurring. We've discussed
14 both the arsenic and the manganese. Additionally, we
15 look at the potential for off-site movement or
16 migration.
17 We've also noted tonight that a lot of these
18 chemicals have a tendency -- because of their physical
19 properties, have a tendency to stay in place and sorb to
20 the soil particles.
21 We also look at the natural degradation of
22 certain chemicals in the environment over time: Will
23 these chemicals break down, essentially?
24 Additionally, we look at the quality of data.
25 And as I mentioned before, before we even go out into

1 the field, we always have a work plan. And this work
2 plan is not only reviewed by the Navy, but also the BCT.
3 And, also, you folks have reviewed some of these work
4 plans.
5 In this case, we did a residential risk
6 scenario, to be very conservative. And, also, we look
7 at the results from the conservative risk assessment, as
8 I just mentioned.
9 So to summarize, the BCT -- And, remember:
10 That includes the Navy, Marine Corps, U.S. EPA,
11 Department of Toxic Substances Control (DTSC), and the
12 Regional Water Quality Control Board -- have concluded
13 no further action; that is, for both soil and
14 groundwater at Sites 7 and 14.
15 And, please, remember that the groundwater
16 underneath these sites will be taken care of in the ROD
17 for Sites 18 and 24. Groundwater for Sites 7 and 14 are
18 recommended for no further action. That is the
19 environmental data for both what's at the site and where
20 it is at the site is considered.
21 Additionally, Sites 7 and 14 are protective of
22 human health and the environment.
23 So, once again, just to let you know where we
24 are in the process, we are at the Proposed Plan stage.
25 We are announcing to the public our recommendation for

1 no further action at Sites 7 and 14.

2 Any comments received here this evening, as

3 well as until November 8th, will be provided in the

4 responsiveness summary of the ROD. So I invite you all

5 to comment tonight, or send us comments, or fax them to

6 Dean before November 8th.

7 Before we start the public comment segment,

8 though, I'll pass it off to Dean.

9 MR. DEAN GOULD: Just a couple more quick orders

10 of business before we get into the comment session.

11 I just wanted to ask if anyone wants to

12 provide comments on behalf of the agencies. From EPA,

13 Mr. Kistner, or, Dr. Paull, would you like to make any

14 comment?

15 DR. JEFFREY PAULL: Actually, I'd welcome any

16 questions.

17 MR. GLENN KISTNER: The only thing I have is the

18 EPA fully supports the no further action recommendation

19 for Sites 7 and 14.

20 MR. DEAN GOULD: And we also have Ms. Chesney here

21 on behalf of DTSC.

22 MS. TRISS CHESNEY: The DTSC concurs with the

23 recommendation for no further action.

24 MR. DEAN GOULD: Let me make a couple more

25 statements, and then we'll get to the public comment

1 section.

2 Why do we have to be so formal about this?

3 Because this is the formal public comment

4 portion, as the sign says. The comments we will receive

5 tonight and up till the 8th are official comments. And

6 those will be incorporated into our selection. And so,

7 this public comment period is actually a fairly serious

8 matter.

9 And let me just put out a plea, if I could,

10 for future public meetings. This is certainly not the

11 last one; we're going to have a number of them down the

12 road. And for those of you who are in the community

13 here, I ask, on behalf of the BCT and the RAB in

14 general, that you please invite as many folks as you can

15 to attend these public meetings. It really is a

16 critical step in the overall CERCLA (Comprehensive

17 Environmental Response, Compensation And Liability Act)

18 process. Some of you folks are key players in the

19 community here, so I encourage you to invite as many of

20 your constituents as you can to the next Proposed Plan

21 meeting.

22 Having said that, please keep in mind that we

23 have an official Reporter here. If you could please

24 state your name and then your comment, that way, we can

25 be sure to align the comment with who you are. Because

1 we are going to be responding to these very formally,
2 just as we would if a regulatory agency were reviewing
3 one of the documents and we have to provide a review
4 back to them. And I think for all the folks here this
5 evening, we do have your mailing address; so that should
6 not be an issue.
7 Bob, do you see anybody whose mailing address
8 we do not have?
9 MR. ROBERT COLEMAN: No.
10 MR. DEAN GOULD: So if you'll please state your
11 name and your question and your comment.
12 DR. CHARLES BENNETT: Charles Bennett,
13 B-e-n-n-e-t-t.
14 My question is directed at
15 Ms. Triss Chesney. In a gas station cleanup, where the
16 soil contamination was greater than ten thousand parts
17 per million, would that be -- would the closure of that
18 be dependent upon a risk assessment, as we see here, or
19 are there other criteria at play for that kind of
20 remediation?
21 Or either of our other people.
22 I'm using that as an example, because it's
23 really a California-driven thing, when you're talking
24 about closing gas stations. So it may not be as easily
25 answered by the --

1 MR. DEAN GOULD: Let me preface a couple things,
2 if I could.
3 One, what we're really doing is just gathering
4 questions here tonight. I would not expect to be
5 providing verbal responses to you. And the reason for
6 that is these questions -- As I mentioned, these are
7 formal comments that we're obtaining. And this will be
8 responded to, in kind, by formal process.
9 And I'll ask that you will focus on Sites 7
10 and 14 specifically.
11 DR. CHARLES BENNETT: The question would relate
12 more to Sites 7 and 14, but it was looking at criteria
13 being used and applied to Sites 7 and 14 and comparing
14 it to other sites that might have similarities.
15 MR. DEAN GOULD: I believe we have that question
16 down.
17 DR. CHARLES BENNETT: And I have a second question
18 that would be directed to Dr. Temeshy. And that is:
19 How were the COCs (chemicals of concern) chosen, or
20 selected?
21 MR. DEAN GOULD: Great. Thank you.
22 MR. JERRY WERNER: Jerry Werner.
23 Question is -- There's another obvious method
24 of ingestion. And this would be from a vegetable
25 garden, where the contaminants would get into the food

1 supply that a person would have. Has that been
2 considered in the risk assessment?
3 MR. DEAN GOULD: Okay. If there is to be
4 vegetables or some type of gardening done at these
5 sites, would the products in the gardening be
6 consumable.
7 MR. JERRY WERNER: Yeah.
8 MR. DEAN GOULD: I thank you.
9 Come on. Bring 'em on.
10 MR. DON ZWEIFEL: Well, I've got a comment to
11 make, just a clarification.
12 Let me read this, if I might. Now, this is
13 from the Proposed Plan.
14 MR. DEAN GOULD: Yes.
15 MR. DON ZWEIFEL: Okay. Now, please note this --
16 I'm quoting on Page 6, in the footnote:
17 "Over half of the risk associated with the
18 hazard index at Site 7, Unit 1 is attributed to
19 manganese and arsenic" --
20 Not just manganese, but "and arsenic."
21 Maybe it's a misprint, or something. But
22 that's what I read in here.
23 And, by the way, I disagree. I think -- If I
24 may say this, I think Chuck Bennett and I both disagree
25 that we do not concur that they are naturally

1 occurring. I imagine they are naturally occurring. But
2 we think there is a -- There has been additional
3 contamination over and above and beyond what is
4 naturally occurring in the soil sampling.
5 Anyway, it says:
6 -- "which are naturally occurring metals in
7 native soil on and off MCAS El Toro property, and are
8 not associated with past site activities."
9 I think we have to disagree with that,
10 respectfully. I believe we do have some evidence -- And
11 I believe you do, too -- that they are more -- that they
12 are not just -- Well, see: We don't know precisely know
13 the disposal effect.
14 I've talked to employees on the Base, on the
15 former Base. And they told me that they disposed of all
16 kinds of things in these landfills. And I'm talking
17 specifically about Site 7 and all the other sites.
18 There are many chemicals disposed of. And these
19 employees -- I can name you names -- that --
20 Millard Jackson. He was the -- worked in the physical
21 plant. Remember that name. He told me where the -- As
22 you probably heard this before, Dean, forgive me. There
23 was -- If you remember, they would have the annual IG
24 (Inspector General) inspections. They would bury a lot
25 of chemicals and other items. Because if they did -- If

1 they had them during the inspection, that means that
2 they wouldn't -- Let's say it's half full, a half-full
3 barrel of arsenic, let's say, for instance. Then, they
4 would have to dispose of that, or else they wouldn't get
5 it the next
6 time around. There are annual appropriations.
7 That's the problem, you see. So what I'm
8 saying tonight, just before maybe a week or two before
9 the actual IG inspection, they would go -- every year,
10 they would do this. Millard Jackson was on this Base
11 for many years. Now, you know it and I know it. That
12 happened.
13 MR. DEAN GOULD: I think we have the intent of
14 your question here.
15 Let me just comment: To our knowledge, we
16 don't believe these were the sites.
17 Let me just ask one question to you, and that
18 would respond to your statement.
19 You mentioned you had evidence.
20 Could you site any references?
21 MR. DON ZWEIFEL: No.
22 I'm only saying -- Nothing tangible, other
23 than -- The only thing tangible would be these employees
24 that would be -- My, God -- getting pretty old now. And
25 I don't even know if they can recollect a -- precisely

1 what was buried.

2 But there were quite a number of employees

3 that have worked on the Base over a period of time that

4 might have some type of recollection as to what was

5 buried in the Base. But it's a matter of were they

6 excavated and transported.

7 That is a good question. Thank you for asking

8 that, Dean. And I think that may be a viable question.

9 MR. DEAN GOULD: Do you know how to get in contact

10 with the one individual you did mention?

11 MR. DON ZWEIFEL: I don't even know if he's alive

12 anymore, to tell you the truth. I haven't seen him for

13 five, six years. My gosh, he'd be probably close to

14 eighty now. And, again, he was not in good health. So

15 I don't know. Like I said, his name is Millard Jackson.

16 He lives in Costa Mesa. He might still be alive. I

17 hope he is.

18 We lost one gentleman, a former master gunnery

19 sergeant that worked on the base, Chuck Randolph. And

20 he's no longer with us. Chuck would have -- I know

21 Chuck well. And that particular gunny would be very

22 helpful. Unfortunately, he can't testify anymore for us

23 on this subject.

24 MR. DEAN GOULD: Yes, Mr. Werner.

25 MR. JERRY WERNER: For the record, are you

1 contemplating any land use controls over the
2 restrictions of the use of property?
3 MR. DEAN GOULD: I'm tempted to answer your
4 question, but in keeping with our format --
5 MR. JERRY WERNER: Right. I understand your
6 probable answer, but let's get it down.
7 MR. DEAN GOULD: Yes, Marsha.
8 MS. MARCIA RUDOLPH: Okay. Marsha Rudolph.
9 Couple things:
10 No. 1, the two hazard indexes -- cancer risk
11 and noncancer risk, and hypothetical residential use,
12 and all, that it would be nice if the two tables would
13 compute together. I'm trying to find a relationship.
14 I'm not. Maybe I'm looking at the wrong thing.
15 No. 2, I note that in the notes to index,
16 noncancer risk for Site 14 -- or, basically, for both of
17 them, I guess, it states that manganese and arsenic are
18 attributed to being naturally-occurring metals in soil
19 on and off Base.
20 Where was the assessment done off Base?
21 I thought the Navy didn't do any assessments
22 off Base.
23 And the third point: On your on-site exposure
24 risk table, it says that the contaminants in the soil
25 did not extend to groundwater.

1 Is that specific to this site, or is that a
2 general observation?
3 If it's a general observation -- Excuse me?
4 I think -- Whatever.
5 MR. DEAN GOULD: I was going to comment: Very
6 good questions. Thank you. I appreciate it.
7 MR. MICHAEL BROWN: Michael Brown.
8 Couple questions:
9 One, what about, in particular, the arsenic
10 issue?
11 And where is the comparison with the off-site
12 concentrations of arsenic?
13 Are those, in particular, agricultural sites?
14 Arsenic was used very commonly prior to
15 World War II as a pesticide, particularly in this area,
16 particularly in citrus use -- orchards.
17 Also, given that you do have risks greater
18 than one in a million, does that trigger a Prop 65
19 warning?
20 And would that require the Navy to extend a
21 warning to -- upon transfer, under Prop 65?
22 MR. DEAN GOULD: Very good. Thank you.
23 DR. CHARLES BENNETT: I'm waiting for everyone
24 else to have the chance.
25 MR. DEAN GOULD: Short of Dr. Bennett, are there

1 any other questions or comments?

2 MR. DON ZWEIFEL: Yes.

3 In regards to the arsenic that was utilized on

4 citrus orchards and fields -- Well, see: We have to

5 have farmers. And as you know, this Base wasn't built

6 till 1943. Now, maybe, perhaps -- I don't know how long

7 we've had -- Now, here's a good question: How long have

8 we had tenant farmers on the Base; since 1943, when the

9 Base was built?

10 And how long has arsenic, how long was arsenic

11 utilized for agricultural uses.

12 Now, the thing is, here's a great way for

13 Southwest Div. to get off the hook. And it may be

14 Irvine Company in particular; maybe they're culpable.

15 I've said this for years, you know, that -- Dean, and

16 others in this room -- The Irvine Company could be

17 liable on this, could be guilty.

18 And also, your tenant farmers, if they've used

19 arsenic agriculturally, then, by God, this could be a

20 contributing factor. Then, Southwest Div. is not

21 culpable, unless you did not monitor your tenant farmers

22 in their insecticides, fungicides, herbicides that they

23 put down.

24 Maybe the Department of Navy is culpable. You

25 know -- I mean, you have to consider somebody's got to

1 be culpable.
2 Thank you.
3 MS. MARCIA RUDOLPH: One more. Then -- When I'm
4 looking at the overmap that was given, sort of risk
5 management. I'm looking at Site 7. And it states --
6 Since I didn't have the document, and I just -- it's not
7 an intelligent question.
8 It mentions a drainage ditch.
9 Is this drainage ditch one that would be
10 connected to one of the washes that was Site 25, no
11 further action? Or is there a relationship between
12 those?
13 I mean, I see drainage, I think -- Then, we
14 think of solvent studies. But I won't even go there.
15 But I'm concerned about drainage ditch. And
16 is this close to Agua Chinon?
17 I mean, it seems consistent that you can have
18 no further action in drainage ditch and no further
19 action here.
20 Is that where this is, or am I seeing it in
21 the wrong place?
22 MR. DEAN GOULD: I'm sure we can clarify that.
23 Mr. Werner.
24 MR. JERRY WERNER: With respect to the issue of
25 the Record of Decision that goes along with a no further

1 action, is that sort of the last step that needs to be
2 taken before property transfer, or are there some
3 additional steps beyond the Record of Decision?
4 MR. DEAN GOULD: Thank you.
5 MR. JERRY WERNER: You're welcome.
6 DR. CHARLES BENNETT: I have a comment I'd like to
7 make.
8 Charles Bennett.
9 In regards to my earlier questions with
10 VOCs -- This is not a question.
11 My concern is not for sins of commission; it's
12 for sins of omission.
13 And the concern is whether there have been
14 species that have been neglected, for one reason or
15 another. I'm quite confident that your risk assessment
16 is correctly done, soundly done, by standard methods,
17 particularly because they indicate that the manganese
18 and the arsenic are drivers. And my concern is there
19 may be other things that, for reasons I don't completely
20 understand why, are not included as potential
21 contaminants of concern, and the methods that were used
22 to say what's there and what was not there.
23 Specifically, my concern is in the analysis at
24 Site 7, at Unit 4 and at Unit 1, was adequate testing
25 done to determine the presence of other potential

1 contaminants of concern?

2 These would include, obviously, the

3 chlorinated solvents that could have been in those

4 areas. There were small amounts of samples that showed

5 these things present. And they -- I do not know whether

6 they were put into the computation for the risk

7 assessment or not.

8 So, that is my comment.

9 MR. DEAN GOULD: Very good.

10 Any others?

11 MR. DON ZWEIFEL: I have one. Yeah.

12 Again, Don Zweifel.

13 Chuck Bennett just pointed out to me, a minute

14 ago, that in regards to Site 7 -- evidently Unit 4, the

15 drainage ditch; the Unit 1, the north pavement; Unit 3,

16 the old -- new east pavement edge; Unit 4 -- Unit 5, the

17 open dirt area -- and, in particular, the Unit 4,

18 drainage ditch -- all dumped into the Agua Chinon Wash.

19 Now, the thing is, I believe -- It is my

20 opinion that there are contaminants in that wash. Now,

21 the thing is, of course, there have been many rains

22 since. And the chances are -- What I'm referring to is

23 the Upper Newport Bay. All of this contamination will

24 ultimately end up in Upper Newport Bay. Ultimately,

25 it's a fact.

1 I say that the Navy has an obligation to
2 examine -- In fact, I think I told you, Dean, earlier,
3 that I have a hydrographic survey of Upper Newport Bay
4 provided to me by the County that I would like to know
5 if you have. And if you do -- If you have that survey,
6 I won't -- But do you have it? Would you like to see
7 it?
8 MR. DEAN GOULD: I can check and see if we have
9 that.
10 MR. DON ZWEIFEL: All right. What I'm referring
11 to -- What I'd like to do is have the Department of the
12 Navy do some samplings of the soils, of the sludge in
13 Upper Newport Bay. And, hopefully, it's still there.
14 Of course, there's been a lot of tidal action -- my,
15 God -- over the years.
16 MR. DEAN GOULD: Keep in mind we're focusing on
17 Sites 7 and 14.
18 MR. DON ZWEIFEL: Yes. I know.
19 What I'm saying is ultimately, the point
20 source contamination eventually will end up in Upper
21 Newport Bay, from the Marine Corps Station El Toro, from
22 Site 7 and other sites. The Borrego Canyon one, I
23 know.
24 What I'm saying is I believe -- And maybe I'm
25 a lone voice here. But I think that the Upper Newport

1 Bay needs to be sampled. Because ultimately -- You know
2 what I'm referring to, the City of Irvine.
3 MS. MARCIA RUDOLPH: Don, that's the Upper Newport
4 Bay water study. I agree with you.
5 I'm not sure if it belongs here. They don't
6 do off-site sampling anyway.
7 MR. DEAN GOULD: We'll respond to your question,
8 but it will be in the context of Site 7.
9 MR. DON ZWEIFEL: Okay. Thank you.
10 MR. DEAN GOULD: Any other questions during the
11 formal portion?
12 DR. CHARLES BENNETT: Following on with
13 Don Zweifel --
14 This is Charles Bennett.
15 I'm looking at specifically Unit 1 of Site 7.
16 And the analysis on Table 4-2 of the RI/FS (Remedial
17 Investigation/Feasibility Study) -- or, appears to be
18 RI/FS, regarding TRPH analysis. TRPH is total
19 recoverable hydrocarbons. And there were values on the
20 surface of the drainage ditch of TRPH over three
21 thousand part per million.
22 Now, what that indicates is that petroleum
23 hydrocarbons went down the drainage ditch. And Don is
24 absolutely right, the drainage ditch feeds into the
25 Agua Chinon. So what the data shows, there are high

1 hydrocarbons that could lead from Site 7 to Site 25,
2 the drainage ditch.
3 But I'm supporting his position in that
4 regard. Really, that's just a comment on the data at
5 hand.
6 MR. DEAN GOULD: All right. Any more comments
7 during the formal portion?
8 MR. DON ZWEIFEL: I may have one more.
9 You held us up on the Q-and-A part. During
10 the dog-and-pony show, you couldn't do Q and A. You
11 know you said that. Ladies and gentlemen, you know how
12 I feel about this. Triss, you know how I feel,
13 perhaps.
14 What I'm referring to specifically, if we can
15 ask questions during the presentation, then it jogs our
16 memory. We can make notes. Then, if we hold the
17 questions until after the dog-and-pony show is over,
18 then I forget to ask.
19 I do apologize to the Reporter. I probably
20 forgot some of the questions I was going to ask and,
21 thereby, make a statement in those questions.
22 MR. DEAN GOULD: Might I suggest you write those
23 questions down prior to the meeting or, perhaps, as we
24 go along.
25 MR. DON ZWEIFEL: It's hard for me to do that.I

1 think I'm a bit disabled in that regard.

2 DR. CHARLES BENNETT: My final comment -- And if

3 Don comes in again, I've got nothing left.

4 This Public Meeting is a step forward from the

5 previous Public Meeting. It's allowed a degree of

6 interaction that is an improvement on the past ones.

7 MR. DEAN GOULD: Very good.

8 MS. MARCIA RUDOLPH: Marsha Rudolph.

9 It was unclear -- Perhaps, this is something

10 you will actually answer -- what will happen to these

11 questions.

12 Are we going to get some kind of a document

13 that will tell us the answers, or are you just going to

14 have the Court Reporter list all the questions?

15 I think a lot of us, because we live in

16 California, are used to the CEQA (California

17 Environmental Quality Act) process, where those answers

18 are put someplace and they're required to be there.

19 Will we see these answers before the document

20 is ROD'd?

21 MR. DEAN GOULD: Yes, I have to answer your

22 question, only because I already did. And that is when

23 I was speaking earlier, I mentioned that please make

24 sure that we have your addresses. I believe we do.

25 That's why we wanted to make clear your name prior to

1 your comment, because we will be glad to mail out a
2 complete set of responses to the comments from this
3 evening to all those that would like that. So anybody
4 who made specific comments, I think we can easily mail
5 those comments.
6 MS. MARCIA RUDOLPH: Before the ROD is filed.
7 MR. DEAN GOULD: Before the ROD is filed.
8 MS. MARCIA RUDOLPH: Thank you.
9 God, I actually got an answer. One for me.
10 MR. DEAN GOULD: Is that the last question?
11 MR. DON ZWEIFEL: No.
12 Content said something, by the way. And I was
13 concerned about it.
14 This is Don Zweifel here.
15 Having to do with my -- She said -- quote --
16 migration is very limited. And in regards to Site 14, I
17 believe --
18 Didn't you say the battery acid?
19 And I would be very concerned. I would like
20 to see -- I would like to see more proof that that
21 might -- that there hasn't been some vertical or
22 horizontal migration in regards to that.
23 Now, Content is saying there's very limited.
24 But what does "very limited" mean?
25 You didn't say. So maybe Content could

1 clarify.

2 What does "very limited" mean; a hundred feet,

3 a thousand feet, ten thousand feet, thirty thousand

4 feet?

5 I mean, the question is what is "very

6 limited."

7 And so, that really doesn't -- If you'll

8 forgive me, Content, I'd sure like to have a

9 clarification.

10 MR. DEAN GOULD: Very good question. Specific,

11 and related to Sites 7 and 14. Thank you.

12 I can see research going on. If you suspect

13 there will be more questions, we can hold on a couple

14 minutes. Otherwise, we can close out the formal

15 portion.

16 I have to ask: Mr. Zweifel, any more formal

17 questions?

18 MR. DON ZWEIFEL: Content said one thing, by the

19 way. I have a quote from her in regards to factors

20 considered when making the risk management decision.

21 And maybe this goes to Dr. Temeshy, also, regarding

22 planned future uses -- quote -- potential -- The

23 potential residential risk scenarios will be

24 implemented. And I think that -- In other words, if --

25 I guess, the question is if we're going to have -- if

1 the risk assessment is going to be all over the Base or,
2 in particular, these particular sites will be for the
3 dirt-eating kid.
4 Is that what you're referring to? Is that
5 what you're attesting to? Is that correct?
6 MS. CONTENT ARNOLD: We can chat afterwards, if
7 you like.
8 MR. DEAN GOULD: You understand what his actual
9 question is, so we can respond to it formally?
10 MS. CONTENT ARNOLD: Yeah.
11 MR. DEAN GOULD: Okay.
12 MR. JERRY WERNER: One last one, I think.
13 What is the correlation between the chemical
14 levels in the soil and the concentration plugged?
15 I assume the ultimate question will tell the
16 effect on the mortality is related to the concentration
17 as measured in the blood sample.
18 Is there -- What's the correlation?
19 MR. DEAN GOULD: Okay. Thank you.
20 MR. MICHAEL BROWN: One more, just the issue of
21 lead at Site 14. And there's one significant hit
22 along -- a little over nine hundred milligrams -- or
23 kilograms, and whether or not that is a significant
24 level --
25 MR. DEAN GOULD: Can you cite that?

1 MR. MICHAEL BROWN: It's Table 4.2 for Site 14.
2 DR. CHARLES BENNETT: Appendix B.
3 MR. MICHAEL BROWN: And in the context of lead --
4 Lead, in particular, is over background in just about
5 every sample taken. So even whether or not above the
6 action level, it appears that there's certainly
7 extensive lead contamination at that site.
8 And again, we were very curious, listening to
9 the presentation, that it was not considered to be a
10 risk driver, and particularly in the hazard index.
11 Again, lead, being a reproductive toxin, under
12 normal circumstances, would trigger a Prop 65 warning.
13 So I'm not clear why this isn't a significant
14 issue on your risk assessment.
15 MR. DEAN GOULD: Very good. Thank you.
16 DR. CHARLES BENNETT: Excellent question,
17 excellent.
18 MR. DON ZWEIFEL: I had one here regarding Site 7,
19 Unit 4, two additional cases of one million under cancer
20 risk residential scenario. It looks like -- There's a
21 statement here:
22 "The only risk driver present is one PAH,
23 benzo(a)pyrene. Benzo(a)pyrene is present in low
24 concentrations and is not mobile."
25 I don't -- I don't know how you can come to

1 the conclusion that it's not mobile.

2 I mean, it's assumed to nonmobile. It is

3 stationary. It cannot -- Is precipitation going to

4 cause mobility, downgrading? Is it going to cause a

5 horizontal? Is it going to hydraulic horizontally?

6 These are important questions.

7 MR. DEAN GOULD: I concur.

8 MR. DON ZWEIFEL: Thank you.

9 Ms. Rudolph? Anyone?

10 Well, that ends this formal portion of it.

11 And unless there's anyone else that wants to make a

12 comment, this wraps up this portion of the meeting.

13 Now, afterwards, for those who would like to

14 make additional comments, please feel free to sit with

15 the Reporter or either submit them in writing or submit

16 them verbally.

17 Any preference?

18 THE REPORTER: Whichever they prefer.

19 MR. DEAN GOULD: By all means, it's an excellent

20 opportunity to do so.

21 So with that, thank you for your attendance

22 this evening.

23 We have a lot of experts here. Take advantage

24 of their presence.

25 And, please, do encourage your constituents to

1 come to the next proposed meeting.

2 Thank you very much.

3

4 (The Formal Presentation/Public Comment

5 Meeting concluded at 8:55 p.m.)

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20 Jeanine Bungner
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MARINE CORPS AIR STATION EL TORO

PROPOSED PLAN - NO FURTHER ACTION

OPERABLE UNIT 3, SITES 7 AND 14

CERTIFIED COPY

COMMENTS SUBMITTED TO REPORTER

Wednesday, October 25, 2000

9:00 p.m.

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

Reported By: Jeanine Burgner, CSR No. 6653

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I N D E X

COMMENTS BY:

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(949) 830-9816

1 * * *

2 Wednesday, October 25, 2000

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6 (The following comments were made on the

7 record:)

8

9 MS. MARCIA RUDOLPH: The Navy has categorically

10 refused to do off-site background testing of

11 radionuclides. Yet, in the summary on Sites 7 and 14,

12 as I've seen tonight, the comment was made relative to

13 arsenic and manganese, that these are natural based upon

14 off-site numbers. The genesis of those numbers is not

15 given.

16 I believe it is incumbent upon the Navy to

17 provide the source for their opinion that the arsenic

18 and manganese, as seen in the numbers that they

19 generated for Site 7 and 14, are indeed consistent with

20 those numbers off-site, especially giving a map showing

21 location of those off-site sources that they are using

22 for their reference points.

23 I continue to be suspicious of the location of

24 Site 7 in relation to the Agua Chinon Wash, and the fact

25 that the Navy has -- had decided in 1997, on a no

further action for that site, along with the other two washes that come off the Base.

I continue to believe that a reexamination of Site 25 at the washes is prudent in light of TMDL (total maximum daily load) and the issues of contamination runoff from MCAS El Toro.

(This concludes the Comments Submitted To Reporter.)

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