

PUBLIC INVOLVEMENT PLAN

Environmental Investigation at the Formerly Used Defense Site (FUDS)
at the Benicia Arsenal, Benicia, California
FUDS Number: J09CA075600

FINAL



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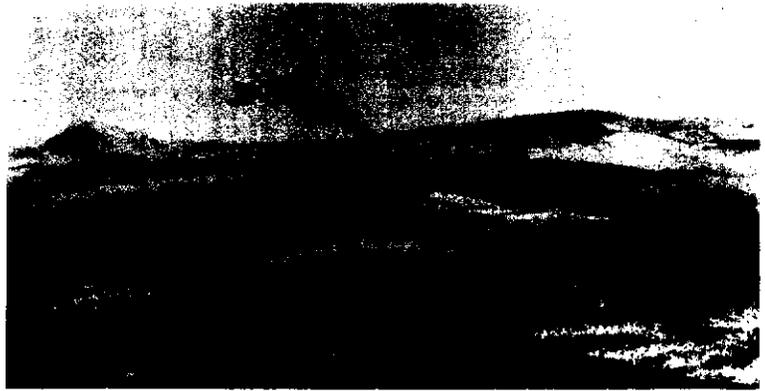
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Section 1. Overview of Public Involvement Plan

U.S. Army Corps of Engineers (USACE) is updating the Community Relations Plan for the former Benicia Arsenal which was completed under an older Formerly Used Defense Site



(FUDS) guidance policy. The restoration program for the former Benicia Arsenal has evolved such that additional community relations programs have been developed. This update is named the Public Involvement Plan, per the new FUDS policy¹ and is written in accordance with Engineering Pamphlet EP 1110-3-8, *Public Participation in the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS)*, dated 9 April 2004.

The Community Relations Plan was prepared for the former Benicia Arsenal in 1998. Since then, numerous activities have been conducted and reported in conformance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)² and the Resource Conservation Recovery Act (RCRA)³. Some of these activities have included a record search, a preliminary assessment, site investigations, and a school outreach program. Other changes that have occurred outside of the USACE's involvement have been the changes to the elected members of the community. This Public Involvement Plan also incorporates community feedback on the Benicia Arsenal program.

The community has been involved since the start of the Benicia Arsenal FUDS program. The USACE involves the community through the distribution of information at the repositories, by attending and commenting at Restoration Advisory Board (RAB) meetings, and accessing the project website. The regulatory agencies are involved through Remedial Project Management and RAB meetings. They provide comments on documents, provide guidance to the USACE and the community, and help make decisions.

USACE is committed to oversee the implementation of this Public Involvement Plan (Plan). This Plan will remain in effect until restoration activities for Department of Defense (DoD) related contaminants have been investigated and treated to meet regulatory standards.

¹ This regulation provides policy and guidance within USACE for the planning, programming, budgeting, execution, management, and reporting of all activities associated with FUDS properties and projects. 10 May 2004. ER-200-3-1. See Appendix I for an introduction into the FUDS program policy.

² CERCLA is an acronym for the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 to 9675 (commonly known as the Superfund), which was enacted by the United States Congress on December 11, 1980. This law created a tax on petroleum and chemical industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

³ The Resource Conservation and Recovery Act (RCRA) is designed to govern the handling and disposal of "hazardous wastes" at sites that are (or were) currently active. It affects sites where such wastes were treated, stored or disposed of since November 19, 1980. (This is in contrast to Superfund, which includes historic as well as current sites, and which governs a broader universe of "hazardous substances".) Thus, typically, any person that generates "hazardous waste" currently is governed, as are persons that treat, store or dispose of hazardous wastes.

The remaining sections of the Plan include the following:

- ◆ Section 2 refers the reader to the Community Relations Plan since no update is necessary. The Community Relations Plan provides an understanding of the history of the former Arsenal, including use, location, size and surroundings. It also includes background on why USACE got involved with the former Benicia Arsenal.
- ◆ Section 3 describes the involvement of the community, which includes past, present, and future community involvement as well as community reaction to USACE involvement. Since no update is needed, this section refers the reader to the Community Relations Plan for a description of the Benicia community demographics and local government, the number and name of the schools in Benicia, Benicia's economy, Benicia's cultural resources, and the origins of the community's interest in the Benicia Arsenal.
- ◆ Section 4 describes USACE's involvement for this Public Involvement Plan.

At the end of this Public Involvement Plan, there are nine appendices. These appendices include examples of fact sheets (Appendix A) and newsletters (Appendix B) that USACE has provided to the community about the status of the Benicia Arsenal project. In addition, there are updated lists for the community to use to contact Benicia Arsenal project personnel (USACE and regulatory agencies) (Appendix C), local, county, state and federal officials (Appendix D), environmental and active citizen groups (Appendix E), and the media (Appendix F). Location and time information about the Benicia Arsenal RAB meetings and repositories are provided in Appendices G and H, respectively. The last appendix, Appendix I, is devoted as a primer for the FUDS program policy.



Section 2. Capsule Benicia Arsenal **Description**

Benicia Arsenal Chronological History and Benicia Community Profile

Please refer to Chapter III Community Profile of the Community Relations Plan for a description of the geography and history of the area and the former Benicia Arsenal.

Recent Site Investigations and Removal Activities at the former Benicia Arsenal

A list of environmental investigations with a brief summary of the events conducted is provided below.

- ◆ In June 1999, an investigation for the Fuel Storage facilities at Buildings 53, 73, 103, and 154 was completed. Up to nine underground storage tanks (USTs) were suspected at these buildings. The investigation focused on determining the existence of the USTs and associated piping, and verifying whether past DoD activities caused environmental impacts to soil or groundwater by fuels and/or lead. Four of the nine suspected USTs and associated piping were identified during this investigation (one 4,000-gallon UST at Building 53, one 15,000-gallon UST at Building 103, and 7,000- and 10,000-gallon USTs at Building 154). In March 2002, the USACE removed the four USTs. There was no evidence indicating the presence of the other USTs. It was assumed that they were never installed or had already been removed.
- ◆ A site investigation was conducted at the 50 Series Complex in September 1999. The 50 Series Complex is located in the southern portion of the former Arsenal. The complex was originally constructed as three separate workshop buildings between 1876 and 1884. The remodeling of these buildings occurred over many phases and included the addition of eight buildings and the removal and relocation of three buildings. This investigation included soil and groundwater sampling beneath and surrounding the Complex.
- ◆ Site investigations were conducted for the Area I Fuel Only Facilities in June 2000. This investigation included Buildings 15, 25, 26, 27, 28, 45, 46B, 53, 54, 73, 103, 118A, 152, 154, and 178. This investigation focused mostly on confirming the existence of fuel storage tanks and associated piping, and verifying whether past DoD activities caused environmental impacts. A UST was confirmed at both Building 26 and 28 and later removed in March 2002. Investigation was not performed at Building 27 because the landowner would not allow access. Otherwise, there was no evidence indicating the presence of any USTs at the other locations. It was assumed that they were never installed or had already been removed.



- ◆ An environmental site inspection was conducted at two fillsites and two quarries (Fillsite 1, Fillsite 2, Quarry 1, and Quarry 3) between November 2000 and October 2002. As part of this inspection, a geophysical evaluation was performed at each site to determine if there was buried debris. Trenching was performed to determine the type of debris identified during the survey. Soil and groundwater samples were collected from the trenches. Refuse, including burnt ash, broken pottery, slag, and Cosmoline (a petroleum derivative) was discovered at one of the fillsites. Otherwise, no buried debris was found.

- ◆ In 2001, EODT (EOD Technology, Inc.) located and removed unexploded ordnance from 135 acres at the former Benicia Arsenal. The types of ordnance items suspected from historical research were fuses, mortars, small arms ammunition, and 37 mm and 75 mm projectiles. A total of 192 ordnance items were located and demilitarized by detonation. Another 8,570 land mine fuses were inspected and removed from a burial pit. The Army had demilitarized these fuses by burning and left them in the pit. No explosive residues remained. The activities were verified by the U.S. Army Engineering and Support Center, Huntsville, Alabama.



- ◆ In April 2004, an Expanded Site Inspection was conducted Arsenal-wide to determine the presence or absence of chemicals that may have impacted the environment from past DoD activities. The Expanded Site Inspection focused primarily on potential groundwater impacts. A geophysical survey, drilling, soil, soil gas and groundwater sampling were all part of this investigation at 53 sites.

- ◆ A Fuel Storage Tank Removal Action was performed at nine of the remaining 12 potential fuel storage tank sites at the Arsenal between May 2004 and August 2004. The 12 suspected fuel storage tank sites were identified from historical information or landowner information as sites with tanks, and consist of two aboveground storage tanks (ASTs) and ten USTs that had potentially not been removed. Two potential AST sites were identified at Building 88 and Building 89. Ten potential UST sites were identified at Buildings CL2, 27, 31, 42, 45, service station west of Building 45, 46(B), 47, 71, and 161. Upon further investigation, it was determined that the ASTs no longer exist and geophysical survey results indicated that USTs were not present at Buildings 42, 45, service station west of Building 45, 46(B), and 71. Two USTs were located and removed at Buildings 31 and 47. Another UST was located at Building 161 but the landowner would not allow access for the removal. Additionally, Buildings CL2 and 27 were not investigated because the landowners would not allow USACE access.



- ◆ In November 2004, a groundwater investigation was conducted downgradient of a buried World War II era General Grant-type tank. The Army gutted the tank and then modified it for

use as a "popping pot" to destroy unserviceable ordnance. A conveyor belt was constructed to feed ordnance to the furnace, and a small fuel line supplied diesel fuel to keep the furnace burning. Burning was stopped periodically to allow the removal of burned fuses and debris. The burned fuses and debris were disposed of adjacent to the tank in a pit. This pit is the location of 8,576 munitions and explosives-related items that were inspected and removed by EODT in 2001. The tank, also referred to as the Armored Fighting Vehicle (AFV), is located on Caltrans property. Fill material up to 15 feet thick and containing boulder-sized sandstone rubble was placed on top of the AFV in 2002. These activities were part of the construction project for the expansion of the Benicia-Martinez Bridge. Due to the fill and access restrictions, the nearest possible sampling location was performed approximately 300 feet downgradient of the AFV. Because of the distance, groundwater samples were the best method to determine if any of the burnt material has impacted groundwater.

The next steps of the environmental restoration at the former Arsenal is to conduct a human health risk assessment and then determine what remedial alternatives will be effective in treating the contaminants that are a risk.

Type of contaminants or safety hazards present

From the investigations listed above, the primary types of DoD related contaminants found at the former Benicia Arsenal are provided below.

- ◆ Trichloroethene and its degradation products (cis-1,2-dichloroethene, trans-1,2-dichloroethene and vinyl chloride)
- ◆ Fuels and fuel related compounds (e.g. diesel fuel, motor oil, gasoline, benzene, polyaromatic hydrocarbons)
- ◆ Metals (e.g. lead)

There is small probability that there could be munitions and explosives (MEC) that remain at the former Arsenal. A clean-up effort was performed in 2001 but it is impossible to remove all the remnants of MEC from a site. Therefore, a school outreach program was developed to educate city public works staff and students since they are most likely to encounter MEC while working or playing in undeveloped areas of the former Benicia Arsenal.

Nature of threat and potential threat to public health and environmental from these contaminants

The sampling at the former Arsenal indicates that contaminants of concern are present. Many of the contaminants detected were likely associated with former DoD activities and still several others were clearly not related to DoD activities. Either way, the soil and groundwater has been impacted.

The potential risk to human health has not been evaluated. However, the areas of impacted soil and groundwater are covered with pavement eliminating direct dermal contact or ingestion. Groundwater in these areas is not suitable for domestic water use and is not being used for this purpose. Any potential risk to human health will likely be to construction workers.

Responsible Agencies for the former Benicia Arsenal

The agencies responsible for these restoration efforts at the former Benicia Arsenal are listed below.

◆ Lead agency responsible

*U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento CA 95814*

◆ Lead regulatory agencies responsible

*Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento CA 95827*

*California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612*

*Solano County Department of Environmental Management
470 Chadbourne Road, Suite 200
Fairfield, CA 94534*

Section 3. Community Background

A description of the Benicia community demographics and local government, the number and name of the schools in Benicia, Benicia's economy, Benicia's cultural resources and the origins of the community's interest in the Benicia Arsenal is provided in the Chapter III Community Profiles of the Community Relations Plan.



Key community concerns

Based on community questions during the RAB meetings, property owners are most concerned about the environmental restoration investigation and clean-up. Their concerns deal with liability regarding the impacts of contaminated soil and groundwater and who will pay for it. Also, they seem concerned primarily with the type of land uses that will be permitted on their properties in the future, and as a result of the USACE investigation and remediation. Many seem to be interested as to how the cleanup at the former Benicia Arsenal may impact economic development and opportunity in Benicia. Very few seem to be concerned with the potential environmental hazards posed by former DoD practices.

Generally, parents are concerned with making sure their children are not harmed by the MEC. The School Outreach Program has done a lot to alleviate this worry.

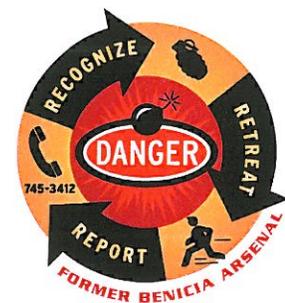
Overall, few members of the community have expressed concern about the project. Unless it directly affects them as a public safety issue or an economic impact, most people have not gotten too involved.

Response to community concerns

Since the implementation of the Community Relations Plan, the MEC removal action occurred. As stated above, parents were concerned about the likelihood that their child would come into contact with MEC. As a result of these concerns, USACE developed and implemented an outreach program for the local area students. Since the City's Public Works staff also would have the potential to encounter MEC during repairs or installation of utilities, they were also provided training to recognize, retreat and report the MEC.

The MEC School Outreach Program was developed to help keep Benicia area children safe. The safety message "Recognize, Retreat, and Report" is presented in a variety of ways.

An activity guide featuring Rusty Raccoon is distributed to the youngest students inviting them to become part of his safety team. An informative and fun DVD "What's OE and What's it Got to do With Me?" featuring animated teenager "Wedge" is shown to the older students. Promotional items such as Frisbee-like flyers, zipper pulls, pencils, and tattoos with the "Recognize, Retreat, and Report" message is distributed to all students.





2004 Contest Winners with
Rusty the Raccoon

A contest for Benicia-area students was also developed to increase the interest level in the MEC Safety Outreach Program and to afford students an additional opportunity for exposure to the program's safety message. A coloring contest is held for school children grades K through 2, a drawing contest for grades 3 and 4, and a design contest for grades 5 and 6. The USACE presents the winners with U.S. savings bonds at a Benicia City Council meeting.

A school outreach evaluation form is distributed to each teacher and school staff member in attendance at each school assembly. The forms are specifically designed to gain input and responses about the assembly presentations and program materials. A similar evaluation form was developed and is distributed to a sampling of students following each assembly. Telephone evaluations are also conducted with Principals. The results of the school evaluation forms and telephone interviews are incorporated into an end-of-school-year evaluation report. This report discusses these results, draws conclusions on the effectiveness of the program, and recommends changes or improvements to the program.

The entire community is involved in supporting the safety message by working with the Benicia City Council and local civic groups, such as the former Benicia Arsenal Restoration Advisory Board (RAB).

Section 4. USACE's Public Involvement Program

This program for public involvement consists of providing information through fact sheets, newsletters, a website, RAB meetings, public availability workshops, school outreach, Benicia City Council Meetings, and the Benicia Arsenal project schedule. A description and a projected schedule of these activities are provided below.

Fact Sheets

Fact sheets are provided when a specific occasion requires special attention (e.g., the school outreach program). A fact sheet was developed to distribute to the schools so that each teacher would be familiar with the material before the scheduled assembly. Three fact sheets are provided in Appendix A.

Newsletters

Newsletters are distributed based on the interested parties' mailing list. This list includes the entire community, elected officials, and anyone requesting to be included on the list (e.g. through the Benicia Arsenal website or at the RAB meetings). This list is updated semi-annually.

Newsletters are provided quarterly or when a significant event occurs (e.g. Field Investigation, Fall School Assemblies). Past and current newsletters are available on the Benicia Arsenal website at <http://www.benicia-arsenal.net/latestnews/newsletters/index.htm>. Twelve newsletters have been released to the public since July 1998. They are provided in Appendix B.

News Releases

News Releases are submitted to the Benicia Herald and benicianews.com. It is the discretion of the news agency to print or modify the release. As a result, the public may not have seen these releases, or seen them in their entirety. Past and current new releases are available on the Benicia Arsenal website at <http://www.benicia-arsenal.net/latestnews/news/index.htm>.

RAB Meetings

A Restoration Advisory Board (RAB) was formed at the request of the community in 2000. The RAB includes various community members and representatives from the USACE and state agencies. The public is invited to attend through the Benicia Herald and the Benicia Arsenal website.

RAB meetings are generally conducted quarterly on the third Wednesday of the month at the Benicia Public Library. A USACE contact can confirm the date, time, and location. These meetings are attended by USACE and the regulators. Meeting agendas and minutes from the previous meetings are available on the Benicia Arsenal website at <http://www.benicia-arsenal.net/htrw/public/rab/index.htm>.

Public Availability Workshops

Public Availability Workshops are held occasionally and are designed to provide specific information on a topic (e.g. example, site investigation results). The timing of these workshops is

based on the amount of information to disseminate to the community and interest from the community. A public availability workshop is advertised in the Benicia Herald approximately one week before the event.

School Outreach Program

Utilizing target audience research as the foundation, the school outreach team developed an assembly format, program identity, program characters, promotional items, and program materials that provide constant reminders to the children about the three Rs (Recognize, Retreat, and Report). The school assembly format was picked as the primary tool to promote the MEC safety message because it reaches the largest number of kindergarten through middle school students in one setting.

When the restoration efforts are concluded at the Benicia Arsenal, the potential of MEC will remain. Therefore, a guide has been developed to provide the City of Benicia the tools to carry on the School Outreach Program without the USACE. This guide provides the information to set up the assembly presentations and contests with detailed descriptions of the presentation components used during the assemblies. Tables are provided to guide the assembly team through the setup, preparation, and implementation of the assembly presentations, along with conducting, judging, and announcing the contest winners.

Benicia City Council Meetings

USACE presents important activities that will impact the Benicia community at these meetings. The Benicia City Council meetings are scheduled for the first and third Tuesday of each month at 7:30 p.m. in the Council Chambers. Copies of Council Agendas and Minutes are available in the City Clerk's office on the Friday afternoon before the Council meeting. The Council Agenda and Minutes are also available at the City's website (<http://www.ci.benicia.ca.us/cityhall.html>) for your convenience.

Benicia Arsenal Project Schedule

At a minimum, the project schedule is updated every month. It is provided to the community at the RAB meetings and the latest schedule can be found on the Benicia Arsenal website at <http://www.benicia-arsenal.net/latestnews/fieldschedule/index.htm>.

Appendix A
Fact Sheets



U.S. Army Corps of Engineers

FACT SHEET

Former Benicia Arsenal School Outreach Program

What is the school outreach program?

The U.S. Army Corps of Engineers (USACE) school outreach program, through school presentations and promotional items, emphasizes the key safety message, “**Recognize, Retreat and Report,**” to teach schoolchildren the dangers of picking up or playing with any parts of old military weapons, or ordnance and explosives (OE). The goal of the program is to teach children how to be safe when playing at the former Benicia Arsenal.

At each assembly, the safety team, made up of USACE representatives and support staff, give a brief presentation about the history of the former Benicia Arsenal and the potential danger of OE that may still be found at the former military installation.

Incorporating feedback received from teachers and students about previous years’ programs, USACE has revised this year’s presentations to include a 3-D animated video “What’s OE got to do with me?” and costumed mascot “Rusty Raccoon.” The video is narrated by pre-teen narrator Wedge and his computer “The Brain 3000.” In addition, USACE will sponsor a coloring/drawing contest to reinforce the safety messages. Students can earn recognition and prizes, including U.S. Savings Bonds.

What is the Benicia Arsenal and why was the school outreach program started?

The Benicia Arsenal first opened in 1849. Until it closed its doors in 1964, it was used as a key military storage and maintenance facility for OE for major military conflicts through the Korean War.

Environmental investigation and cleanup by the USACE began in 1997. Since that time, OE removal activities have included surveying, geotechnical evaluations and disposal of OE found at the former arsenal.

Although the site has been investigated and cleaned, OE may still be found at the former Benicia Arsenal. Therefore, USACE is educating the Benicia community, and particularly young children, about its potential dangers.

The goal of the school outreach program is to teach children how to identify, or recognize, OE, to stay away from it, or retreat from the area, and to report what they find to an adult or the police.

Where will the school safety team present this year?

As a follow-up to assemblies it conducted in the 2002-03 school year, USACE will present assemblies at local elementary schools before and during an official "Former Benicia Arsenal OE Safety Week," September 27 through October 1, as proclaimed by the Benicia City Council. School assemblies will be held at the following schools:

- Mills Elementary scheduled for September 20 at 1:30 p.m.
- Robert Semple Elementary scheduled for September 28 at 9 a.m.
- Mary Farmer Elementary scheduled for October 1 at 9 a.m.
- Matthew Turner Elementary scheduled for September 30 at 9 a.m.
- Joe Henderson Elementary (to be scheduled)

What attention has the program received?

The program has been featured on KGO-TV Channel 7 in addition to numerous local newspaper publications. Because of its success, the program is now a model for other USACE community outreach programs in Northern California.

What can I do to be more involved?

Parents can take the time to educate their children beyond the classroom by checking out the video "What's OE got to do with me?" at the Benicia Public Library reference desk. Look in the mail and local newspapers for announcements of future events and schedules.

How can I get more information?

For more information about the former Benicia Arsenal school outreach program contact:

Michael Mitchener
U.S. Army Corps of Engineers
(916) 557-7366

Meegan Nagy
U.S. Army Corps of Engineers
(916) 557-7257

STOP! DON'T TOUCH!



57mm Projectile
Approximate length is 9 inches



MKII Grenade
Approximate length is 4 inches



37mm Projectile
Approximate length is 5 inches



French Rifle Grenade
Approximate length is 4 inches



Stokes Mortar
Approximate length is 15 inches



75mm Projectile
Approximate length is 10 inches



75mm Armor Piercing Projectile
Approximate length is 12 inches

Questions?

For additional information regarding safety at the former Benicia Arsenal, please contact Michael Mitchener, U.S. Army Corps of Engineers, at (916) 557-7366 or check out www.Benicia-Arsenal.net.



US Army
Corps of Engineers

Ordnance and explosives can be deadly!

Benicia Arsenal History

The former Benicia Arsenal was an important location for the **storage and distribution** of ordnance and explosives (OE) used in WWI and WWII. OE includes items such as bullets, bombs, grenades and shells. These items may still be found in or on the ground around the former Benicia Arsenal and may cause severe bodily injury, even death, if disturbed.

If you find OE, remember to stop, don't touch and follow the three Rs:

Recognize that it may be dangerous.

Retreat—run away.

Report it to an adult or the police.

If you find any OE-like objects in or on the ground that look rusty or old, don't touch!

Tell someone about it!

If you find ordnance or explosives, call the police at 745-3412.

WWI soldiers firing 37mm guns in Europe



WARNING

If you find anything that resembles these items, please do not disturb and call the Benicia Police Department at (707) 745-3412.

57 mm Projectile

Approximate length shown is 9 inches



French Rifle Grenade

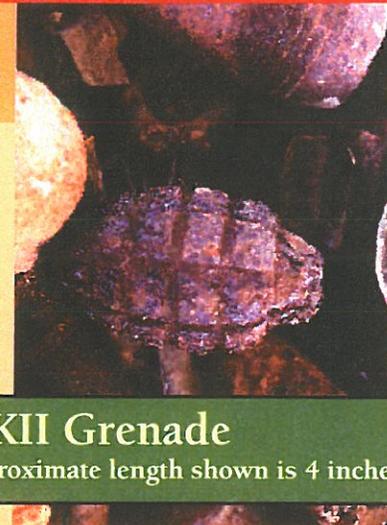
Approximate length shown is 4 inches



Examples of Ordnance & Explosives Found at the Former Benicia Arsenal

MKII Grenade

Approximate length shown is 4 inches



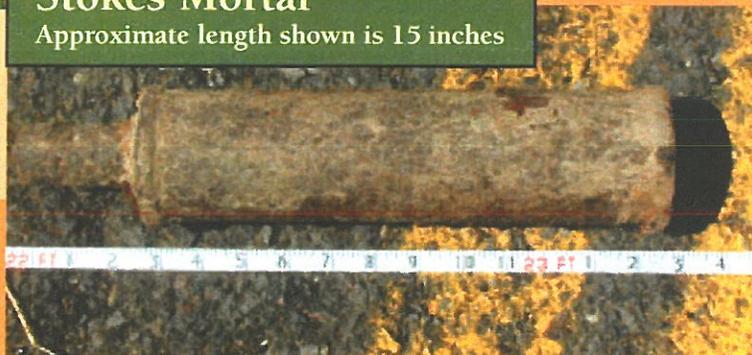
37 mm Projectile

Approximate length shown is 5 inches



Stokes Mortar

Approximate length shown is 15 inches



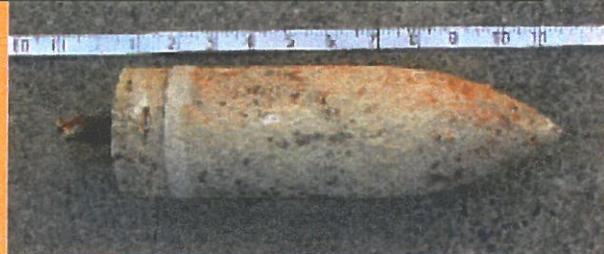
75 mm Projectile

Approximate length shown is 10 inches



75 mm Armor Piercing Projectile

Approximate length shown is 12 inches



For more information, please call Bruce Handel, project manager with the U.S. Army Corps of Engineers at (916) 557-7906, or access the project Web site at

www.beniciaarsenal.net



US Army
Corps of Engineers

Appendix B
Newsletters

AVAILABLE FOR VIEWING IN THE CITY ATTORNEY'S OFFICE.

Arsenal News

Benicia Arsenal FUDS Environmental Studies & Restoration Project

JULY 1998

What to Expect

Our goal is to protect the environment for present and future generations. The Department of Defense (DoD) is committed to reducing, in a timely and cost effective manner, the risk to human health, and the environment, from contamination resulting from past DoD activities at the Benicia Arsenal.

The Corps of Engineers has been directed to use smarter, faster, and less costly methods for environmental restoration at formerly used defense sites (FUDS). This is done in a number of ways starting with maximizing the use of field screening technologies that allow quick and effective evaluation of large areas to determine if identified chemicals are present.

Should contamination be encountered, the key is balance between moving forward too aggressively and getting mired in endlessly gathering data. The data gathering step is called "characterizing" finding out all about whatever is there. Answering the "what, where, how much and how deep" questions in enough detail can take years.

When to quit studying and start doing?

Experience, technical expertise, types of technologies available, cost, and good common sense are all important factors. The decision will be a team effort between the Corps and the regulators with input from the community through feedback from a variety of public avenues.

Once the decision is made that the contamination has been adequately characterized, a risk analysis determines whether corrective action is necessary. If corrective action is necessary, funding is requested from Congress. Risk drives funding for remedial actions. After funding is received the corrective action is designed and implemented.

During this period, I invite you to follow our progress through this newsletter, public availability sessions, and a variety of support materials that will produced on an as needed bases. If you have questions, please contact me. As technical manager for the Benicia Arsenal restoration project, part of my job is to provide information to all interested and affected persons--that's you.

Brenda Pedersen, Technical Manager
US Army Corps of Engineers

Community Concerns

Q How will the study of the Benicia Arsenal affect my business and/or residence?

A The Corps intends to make every effort to minimize impact to the businesses and residents of the Arsenal.

There will be additional vehicles and personnel in the area, which could impact parking. Sampling crews are usually two to six persons and one or two vehicles at one site. Most of the work at the beginning of the study is limited to non-intrusive surveys with magnetometers to locate buried fuel storage tanks.

As the study progresses, we will be taking small diameter (2-4 inch or less) soil samples, and attempting to locate and sample the ground water. Any sampling holes made are completely filled in after testing and surfaces are returned as closely as possible to their pre-sampling condition to minimize long term impacts.

The interior of the buildings will be visually inspected to determine if there are sumps or chambers with standing fluids in them that

Continued on next page ►

AVAILABLE FOR VIEWING IN THE CITY ATTORNEY'S OFFICE.

Arsenal News

Benicia Arsenal FUDS Environmental Studies & Restoration Project

OCTOBER 1998

FUDS a team effort

The Corps is responsible for cleanup of Formerly Used Defense Site (FUDS). The Sacramento District of the Corps covers Northern California, Nevada, Utah and parts of Arizona, and has completed 23 restoration projects, with 12 in progress and 102 in planning stages. The Benicia Arsenal is one of these projects.

Sacramento and Huntsville Corps offices have hired a group of contractors for the Benicia project. Since this may be confusing, we have dedicated the inside pages of this newsletter to trying to explain the relationship between the major agencies and contractors involved with the Benicia Arsenal.

To keep you informed of where we are and what we're doing, we have a second public availability session scheduled for October 27th at the Camel Barn. The team from Huntsville will be there along with the Sacramento folks to answer your questions and explain the various things that we'll be doing.

Our workplans have been approved and we're getting ready to start the "field work." We've sent out requests for rights of entry (ROE in governmentese) to approximately 35 land owners. Since this is a voluntary program, these ROE are very important. It is the landowner's chance to say yes or no to the Corps. Without a right of entry, we will not work on your property.

In an expected ordnance area, the first step is a 'mag' survey which tells us if there are things other than soil beneath the surface. The second step is the data validation step which consists of selecting a statistically significant number of the 'things' beneath the surface and digging them up.

In a non-ordnance area, we start in two directions at once. A 'mag' survey to locate underground storage tanks and soil & groundwater sampling in selected areas to determine if the suspected contamination exists.

If you want to know more, come the meeting on the 27th, call me @ (916) 7-6771, or e-mail me @ Bpedersen@spk.usace.army.mil.

Brenda Pedersen, Technical Manager
US Army Corps of Engineers

Community Concerns

Q Why are the Sacramento District and the Huntsville Office of the Corps of Engineers carrying out parallel studies of the Benicia Arsenal?

A Chemical contamination and ordnance require very different techniques for site restoration. While chemical contamination sometimes moves through the soil, water and air, ordnance (in its explosive form) generally does not. Also, the results of encountering chemical contamination are usually not as immediately dangerous. Chemical contamination can arise from many sources, while contamination from ordnance tends to be found in very specific places. As a result of these differences, the approach to chemical contamination requires a more systematic review of many different types of sites. By contrast, the ordnance investigation is more focused, yet has a very different set of risks to evaluate.

Unexploded Ordnance field studies to begin this fall

The US Army Corps of Engineers invites the Benicia community to its second open-house-style public availability session

October 27
Camel Barn Museum, 1:00-8:00 PM

AVAILABLE FOR VIEWING IN THE CITY ATTORNEY'S OFFICE.

Arsenal News

Benicia Arsenal FUDS Environmental Studies & Restoration Project

VOLUME 1

JUNE, 1999

NO.3

Letter from the Project Manager

Hazardous, Toxic/Radioactive Waste (HTRW) investigative work starts at Benicia Arsenal

The Arsenal-wide investigative startup planning is finished. The *Records Research Report* is done. The *Environmental Evaluation* is done. Both the *Concept and Investigative* (the detailed one) *Workplans* are done. The *Quality Assurance Project Plan* is done. The *Health and Safety Plan* is done. The first round of Field Sampling Investigation Plans (FSIPs) are approved. And, our Web site is functional. After more than a year, and almost 2,000 hours of work, we're finally in the field!

Field work started last week in the Industrial Area at a building we've dubbed the 50-Series Complex. It began life as a group of separate buildings: 55-59, 65, and 66. In the 100-plus years since, they have been added on to and remodeled until these seven buildings have grown into one single, very complex building. We picked the 50-Series Complex building to start for a number of reasons. We had to start somewhere. This is one of the first permanent structures built on the Arsenal. It was used for everything from a pistol target range to gun cleaning, with such things as a leather shop and a blacksmith thrown in for good measure. And, there is a very low risk of finding ordnance or explosives of any sort still at the site. It should be a very interesting starting point.

Work began with geophysics: a non-intrusive mag-survey intended to locate the iron or steel fuel tanks, utility lines, and other underground features that were left by the military when the base closed. Next we'll be doing soil and groundwater sampling in, around, and under the complex.

Brenda Pedersen

Project Manager
US Army Corps of Engineers

Q What does a site investigation involve?

A A site investigation is a process in which an area is studied closely, in order to determine whether contamination exists. The *Records Research Report* provides the historical foundation for investigation, based on past uses and the presence of chemicals that could contaminate the environment. Samples of air, soil and/or groundwater are collected and analyzed for the contaminants.

The locations for sampling are chosen based on the likelihood of contamination. Besides the historical records, other factors determine where sampling takes place; stains on the soil, holes or patches in the basement of a building, and the location of piping or drainageways. Site investigators are a bit like detectives, except that they do not know for certain whether contamination is present. Like a good detective, site investigators must use their knowledge of history, geology, and hydrology, as well as a working-knowledge of human behavior to investigate a site.

AVAILABLE FOR VIEWING IN THE CITY ATTORNEY'S OFFICE.

Arsenal News

Benicia Arsenal FUDS Environmental Studies & Restoration Project

VOLUME 1

JANUARY 2000

NO.4

We're starting a RAB

Restoration projects benefit from public input. Every project is different, and each one should reflect current and future uses by people living and working in the community. That is why the FUDS process includes the formation of a Restoration Advisory Board, or RAB, when the community requests one.

A RAB is a group of community members, US Army Corps of Engineers (Corps) project staff, and representatives of other regulatory agencies who serve as a communication link between the community and the Corps. RAB members review and discuss in detail the plans for restoration prepared by the Corps and its contractors. Serving on a RAB provides an opportunity to learn directly from the Corps and the regulators about the restoration process.

A RAB is formed when the public shows specific interest in being involved in the restoration project. The Corps then requests applications--both for a selection committee, and for the RAB itself. The selection committee reviews the applications and selects the community representatives. Our goal is to obtain a cross-section of the community within the RAB.

A RAB is co-chaired by the Corps project manager and one of the community representatives. The RAB serves without compensation. Its community members are expected to communicate with interested groups as the project develops, and to help convey the wishes and concerns of the public to the Corps.

We are about to form a RAB for the Benicia Arsenal, and hope that you will think about who would be a good representative of your interests and concerns. Please talk to these people, and encourage them to submit an application for the RAB.



Bruce Handel, Project Manager
US Army Corps of Engineers

RAB Facts:

There is no requirement for knowledge of the restoration process in order to serve on the RAB, just a willingness to learn about the process and a desire to communicate with the community about the restoration of the Benicia Arsenal.

RAB comments are reviewed by government decision makers.

A RAB is an advisory body and is not a decision making body.

All community members have an equal voice and provide individual advice to government decision makers.

The purpose of a RAB is to foster two-way communication between the Corps and the community by sharing information about the restoration process.

The remediation project at the Tourtelot property is being lead by the California Department of Toxic Substances Control (DTSC). Public input for the Tourtelot property should be directed to the Community Advisory Group, sponsored by DTSC.

Community RAB representatives are chosen by a selection committee composed of community members.

Continued on back page ►

AVAILABLE FOR VIEWING IN THE CITY ATTORNEY'S OFFICE.

Arsenal News

Benicia Arsenal FUDS Environmental Studies & Restoration Project

VOLUME 1

SEPTEMBER 2000

NO.5

Ordnance & Explosives Program at the former Benicia Arsenal

In our continuing efforts to address the issue of Ordnance and Explosives (OE) at the former Benicia Arsenal, an Engineering Evaluation/Cost Analysis (EE/CA) investigation was performed and reported on in the winter of 2000. The purpose of the EE/CA investigation and subsequent report were to evaluate the location, type, and quantities of OE that may remain at former Arsenal properties. The EE/CA report provided recommendations for cleanup alternatives and was the basis for the decisions contained in the EE/CA Action Memorandum.

The EE/CA Action Memorandum, which was finalized in March 2000, documents the decisions made for each area investigated for Ordnance and Explosives at the former Benicia Arsenal. After establishing the necessary contractual activities, we are now ready to begin implementing the Action Memorandum with the assistance of the US Army Corps of Engineers Huntsville Support Center.

EODT, Inc., of Knoxville, Tennessee, has begun the planning phase and is scheduled to begin field work in November 2000, with the oversight of the US Army Corps of Engineers.



Bruce Handel, Project Manager
US Army Corps of Engineers
(916) 557-7906

*Based on the EE/CA report recommendations,
the Corps has reached a consensus with the California Department of
Toxic Substances Control, the California Regional Water Quality Board,
local government agencies, and affected property
owners on the actions to be taken.*

**DON'T TOUCH!
Report at once!**



If you ever find anything
that looks like it might be
ordnance or related scrap,
report it to:

Benicia Police Department
(707) 745-3412

US Army Corps of Engineers
(916) 557-7906



Former Benicia Arsenal

NEWSLETTER

September 2001

A Little Bit of History

W

ith environmental issues consuming the public's interest, the Department of Defense identified the former Benicia Arsenal as a high priority site for environmental restoration in 1997.

The U.S. Army used the former Benicia Arsenal for 115 years as a principal location for the storage and distribution of ordnance and explosives (OE), as well as many other military supplies. With such a history, it was inevitable that traces of the past would eventually be found. Since OE still exists in the area, a clean-up program, including inventory, investigation and removal activities, is nearing completion.

Recently, the U.S. Army Corps of Engineers began an OE removal project which included mapping, locating and removing OE in sectors 2, 4 and 5 (see map on back). The clean-up effort began in May at the Camel Barn and will be completed in early September.



Clean-up crews sandbag and detonate OE as part of the removal process.

Ordnance and Explosives Found

As expected, the U.S. Army Corps of Engineer's removal activities discovered a variety of military ordnance, including varying size projectiles, World War I French rifle grenades, MKII U.S. hand grenades and Stokes Mortars.

A final report, detailing the results of the OE removal effort, will be available at the Benicia Public Library for public review in November. The U.S. Army Corps of Engineers plans to share a complete synopsis of the OE clean-up effort at the September Restoration Advisory Board (RAB) meeting.

The public is invited to attend the RAB meeting, Sept. 19 from 7-9 p.m. at the Benicia Public Library, and hear information about the OE clean-up effort.

Storage Tank Removal

The U.S. Army used underground storage tanks (USTs) at the former Benicia Arsenal in the early 1900s to hold various fuels such as bunker fuel, fuel oil, diesel, gasoline and kerosene. Historical information indicates that there are approximately 40 USTs installed at the former Benicia Arsenal. The size of these USTs range from small, 250-gallon fuel oil USTs used to fuel boilers in the residence quarters to much larger, 15,000-gallon gasoline and diesel fuel USTs used to service vehicles at the Army service stations.

The U.S. Army Corps of Engineers has developed a program to identify and address each UST. The investigation into the location of these USTs is in the beginning stages. Six USTs have been identified and are scheduled to be removed this fall.

DID YOU KNOW?

What is a Stokes Mortar?



The Stokes Mortar (or Trench Mortar) is a cylinder three or four inches in diameter and approximately 16 inches long. This type of projectile is fired from a tube in a high arc, so it is more effective in trench warfare.

OE = Ordnance and Explosives
Ordnance includes military weapons, ammunition and other explosive devices.

What is a grenade?



A French rifle grenade is a type of projectile that is launched from the end of a standard military rifle barrel. The grenade is approximately two inches in diameter and four inches long. The grenade body is designed to explode on impact, projecting small fragments of metal in all directions.

What is a projectile?



When a gun is fired, the shell cartridge casing remains in the chamber. The part that leaves the barrel is called a projectile and is filled with high explosives or chemicals. When the gun is fired the barrel usually causes the projectile to spin, arming the fuse and stabilizing the projectile so it can accurately strike its target.

Get Involved

The Restoration Advisory Board (RAB) was formed at the request of the community to discuss environmental clean-up plans at the former Benicia Arsenal. The RAB is comprised of community members and representatives from the U.S. Army Corps of Engineers and state agencies. For monthly updates about the former Benicia Arsenal environmental clean-up plans, please attend the RAB meetings, which are typically held every third Wednesday of the month at the Benicia Public Library from 7 to 9 p.m.

Please visit our Web site at www.benicia-arsenal.net for information on RAB meeting agenda topics and dates, times and locations.

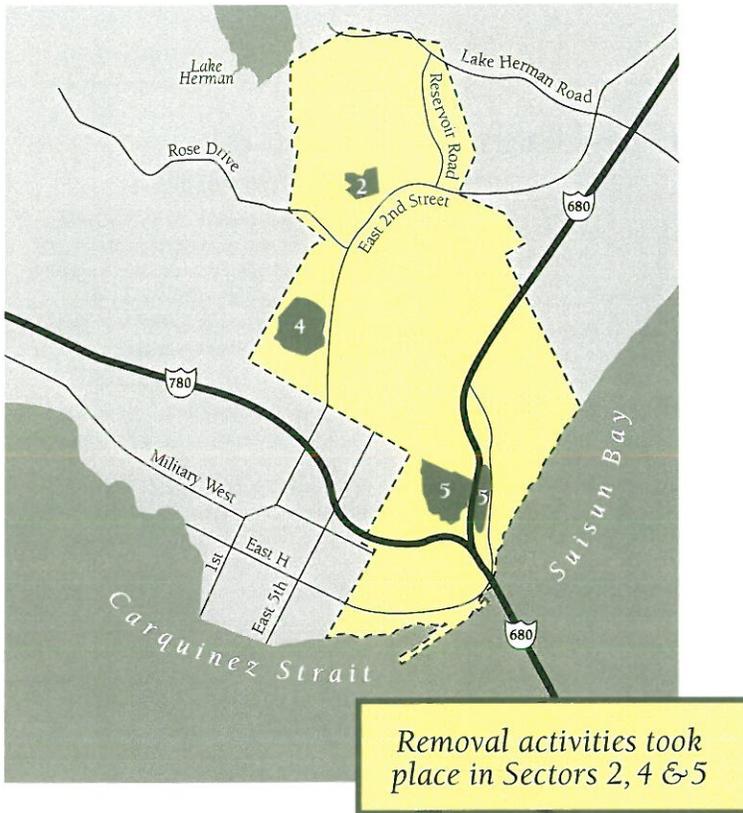
Keeping Benicia Residents Safe!

The U.S. Army Corps of Engineers is developing a community safety program to educate Benicia public safety representatives and the public on how to identify potential OE and what safety precautions should be taken if OE is found. The goal is to ensure that residents and visitors to the former Benicia Arsenal and surrounding areas are knowledgeable and understand proper safety protocols regarding any potential OE that may remain in the area.

The first phase of the safety workshops is planned in September and October and will be targeted to the city of Benicia public safety representatives, including police, fire and public works, and other Benicia staff, as necessary. The second safety workshop, which is tentatively planned for November, will be directed to the general public. The workshop notice will be published in the *Benicia Herald* and *Benicianews.com*. If you would like to be placed on a list to receive more information about the November public safety workshop, please call Bruce Handel at (916) 557-7906.

Where in the World is the Former Benicia Arsenal?

As represented by the dashed line, the former Benicia Arsenal is located in Benicia, California, and encompasses approximately 2,700 acres.



Community Safety Workshop Coming in November!

OE = Ordnance and Explosives
RAB = Restoration Advisory Board

2001 Calendar of Events

September 19	RAB meeting at the Benicia Public Library
September/October	Community Safety Workshop (City of Benicia Officials)
October 17	RAB meeting at the Benicia Public Library
November	Community Safety Workshop (General Public)
November 21	RAB meeting at the Benicia Public Library
December 19	RAB meeting at the Benicia Public Library

Questions?

For additional information regarding the former Benicia Arsenal project or community programs, please contact Bruce Handel, U.S. Army Corps of Engineers project manager, at (916) 557-7906, or check out www.Benicia-Arsenal.net.



US Army
Corps of Engineers

c/o Lucy & Company
1614 19th Street
Sacramento, CA 95814



Former Benicia Arsenal

NEWSLETTER

February 2002

OE=Ordnance & Explosives
Ordnance includes military weapons, ammunitions and other explosive devices.

Safety Comes First!



Last fall, the U.S. Army Corps of Engineers (USACE) and U.S. Army Explosives Ordnance Disposal Team (EOD) held three community safety workshops

to educate Benicia public safety representatives and the public about ordnance and explosives (OE). The following safety protocols were highlighted at the workshops.

How to Spot OE

You do not have to be an expert in OE identification to be safe—just remember that if something looks like a piece of OE, please do not touch it! OE often has a cylindrical shape and may be shiny or rusty. Old OE is not necessarily safe; in fact, it sometimes becomes more dangerous with age.

What to Do

If you see something that might be OE make a careful note of its location and call the Benicia Police Department. City police officers have had special training in the identification of OE and proper safety protocols, and they will determine appropriate measures.

Report Suspected Ordnance to:

Benicia Police Department
(707) 745-3412
or 911 after hours

If you were unable to attend the safety workshop and would like to receive a detailed fact sheet and project magnet, please call Michael Mitchener of the USACE at (916) 557-7366.

Clean-up Activities Continue at the Former Benicia Arsenal

The recent OE investigation and removal activities at the former Benicia Arsenal are just one component of a much larger, long-term plan to clean up the old military site. In addition to the activities associated with removing OE, USACE will be investigating possible soil and groundwater contamination from past military operations and underground storage tanks that still exist on the former Arsenal property.

New Project Manager Leads Clean-up Effort

Michael Mitchener was recently appointed as the new project manager for the USACE environmental restoration efforts at the former Benicia Arsenal. Michael Mitchener replaces Bruce Handel who served the former Benicia Arsenal project for more than two years. Michael comes to the project with extensive experience in project management, geology, hydrogeology, site assessments, remedial investigations, site remediations, preliminary assessments and environmental science.

Come meet Michael at the next RAB meeting. Welcome Michael!

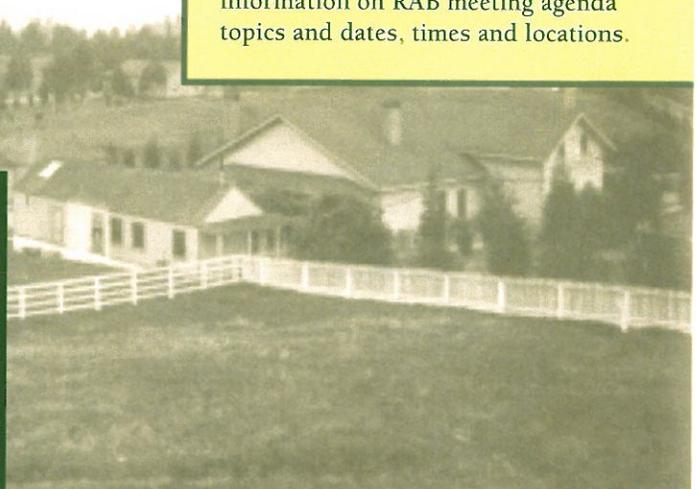
You're Invited to Get Involved!

For monthly updates about the former Benicia Arsenal environmental clean-up plans, please attend the Restoration Advisory Board (RAB) meetings, which are typically held every third Wednesday of the month at the Benicia Public Library from 7 to 9 p.m. The RAB was formed at the request of the community to discuss environmental clean-up plans at the former Benicia Arsenal. The RAB is comprised of community members and representatives from the USACE and state agencies.

Please visit our Web site at www.Benicia-Arsenal.net for information on RAB meeting agenda topics and dates, times and locations.

Clean-up History

The U.S. military used the former Benicia Arsenal for 115 years as a principal location for the storage and distribution of OE as well as many other military supplies. In 1997, the Department of Defense identified the former Benicia Arsenal as a high-priority site for environmental restoration. A clean-up program including records research, inventory, investigation, groundwater studies and removal activities of OE and storage tanks has been underway since 1997.



Groundwater Monitoring Ready to Begin

In January of 2002, the USACE began installing several piezometers — short-term small wells that will be used to identify depth to groundwater in the subsurface soil beneath the Arsenal property. Groundwater is underground water that can be removed by wells. Soil geology will also be noted during the installation of the piezometers. Information gathered from the piezometers will be compiled, leading to the creation of a map identifying where the groundwater exists and in which direction(s) it flows. The groundwater will also be evaluated to determine if it is fresh or saline, turbid or clear, what type of minerals exist in the groundwater, and other general water quality information. (See map to identify piezometer locations)

Underground Storage Tank Removal Update

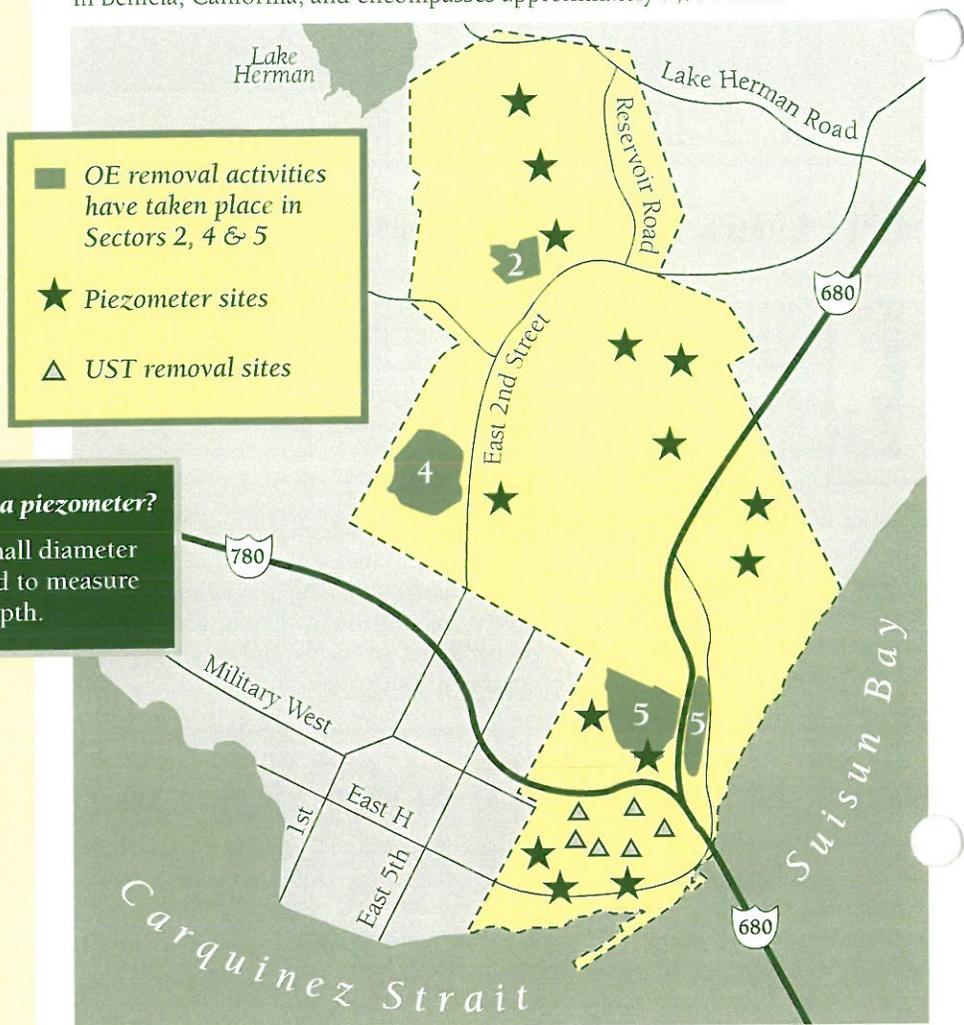
The U.S. Military used underground storage tanks (USTs) at the former Benicia Arsenal in the early 1900s to hold various fuels such as bunker fuel, fuel oil, diesel, gasoline and kerosene. The size of these USTs range from small, 250-gallon USTs to much larger, 15,000-gallon USTs. USACE developed a program to identify and address each UST. Six tanks are scheduled for removal in early 2002 as the first phase of this program begins. Over the entire Arsenal site, there are approximately 40 USTs that will need to be identified and removed.

For More Information

For additional information regarding the former Benicia Arsenal project, community programs or safety measures, please contact Michael Mitchener, U.S. Army Corps of Engineers, at (916) 557-7366, or check out www.Benicia-Arsenal.net.

Former Benicia Arsenal Clean-up Activities

As represented by the yellow area below, the former Benicia Arsenal is located in Benicia, California, and encompasses approximately 2,700 acres.



What is a piezometer?

It is a small diameter well used to measure water depth.

Final OE Report Available for Review

USACE recently completed its report detailing the results of the OE removal effort. A copy of the final report is available for public review at the Benicia Public Library.



US Army
Corps of Engineers

c/o Lucy & Company
1614 19th Street
Sacramento, CA 95814



US Army
Corps of Engineers

Former Benicia Arsenal

NEWSLETTER

June 2002

OE=Ordnance & Explosives

Ordnance includes military weapons, ammunitions and other explosive devices.

Safety Comes First!

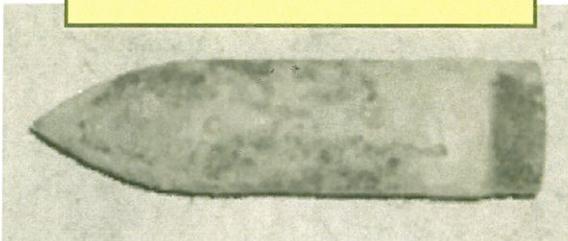
When it comes to ordnance and explosives (OE), knowing what to do and what not to do are equally important.

How to Spot OE

You do not have to be an expert in OE identification to be safe—just remember that if something looks like a piece of OE, do not touch it or handle it in any manner! OE often has a cylindrical shape and may be shiny or rusty. Old OE is not necessarily safe; in fact, it sometimes becomes more dangerous with age.

What to Do

If you see something that might be OE, make a careful note of its location and *call the Benicia Police Department immediately* at (707) 745-3412. City police officers have had special training in the identification of OE and proper safety protocols, and they will determine appropriate removal and disposal measures.



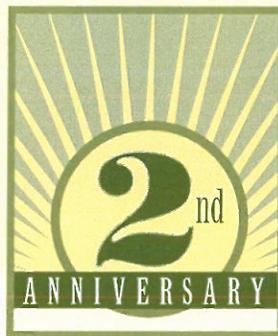
37mm Projectile, approximate length is 3"

RAB Celebrates Two Successful Years

The Restoration Advisory Board (RAB) was formed at the request of the community to discuss environmental clean-up plans at the former Benicia Arsenal.

Fun, food and celebration were on the agenda as the RAB commemorated two years of service to the community on Wednesday, April 17th at the Benicia Public Library.

Dale Cross, RAB co-chair, began the program by welcoming everyone and recapping the RAB's many accomplishments.



"Many things have been accomplished at the former Benicia Arsenal over the last two years, including the successful removal of ordnance and explosives, completion of hydrogeological surveys and soil sampling, and raising community awareness," said Cross.

Community activist and RAB co-founder, Marilyn Bardet, spoke about the RAB's early efforts and history. USACE's Project Manager, Mike Mitchener, recognized current and former RAB members as well as individuals and organizations that have worked hard to make the RAB a success. More than 20 people were honored for two years of dedication to the USACE's clean-up effort at the former Benicia Arsenal. City Attorney Heather McLaughlin, speaking on behalf of the City of Benicia, also thanked the board.

Taking OE Safety Messages to the Schools

Following last year's successful series of community safety workshops, the U.S. Army Corps of Engineers (USACE) is planning several programs to educate children about OE.

"Kids are naturally curious and adventurous," said Michael Mitchener, Project Manager, USACE. "It's important that we reach them and their parents with information about safety measures—how to spot ordnance and explosives, what to do and what not to do—so we help the youngest members of the community stay safe."

USACE plans to schedule safety presentations with Benicia schools this fall.



RAB members enjoy a mile-high anniversary cake. (Left to right) Bonnie Silveria, Beverly Phelan, Marilyn Bardet, Dale Cross (in back), John Woods, Mike Mitchener (in back), Devin Hassett, Heather McLaughlin

YOU'RE INVITED TO GET INVOLVED!

For updates regarding environmental clean-up plans at the former Benicia Arsenal, please attend the RAB meetings, which are currently held quarterly on the third Wednesday of the month at the Benicia Public Library from 7 to 9 p.m. **The next RAB meeting will be August 21.** The RAB is comprised of community members and representatives from the U.S. Army Corps of Engineers and state agencies.

Please visit our Web site at www.Benicia-Arsenal.net for information on RAB meeting agenda topics and to confirm dates, times and locations.

Clean-up Activities Continue

The OE investigation and removal activities conducted last year at the former Benicia Arsenal are just one component of a much larger, long-term plan to clean up the old military site. In addition to the activities associated with removing OE, USACE is investigating possible soil and groundwater contamination as well as identifying and removing underground storage tanks, if found.

Groundwater Monitoring Activity Update

In January of 2002, the USACE began installing piezometers—small, short-term wells that are used to identify groundwater in the subsurface soil beneath the Arsenal property. Water quality information, including mineral content and other water quality characteristics, is compiled to understand the underground hydrology of the area.



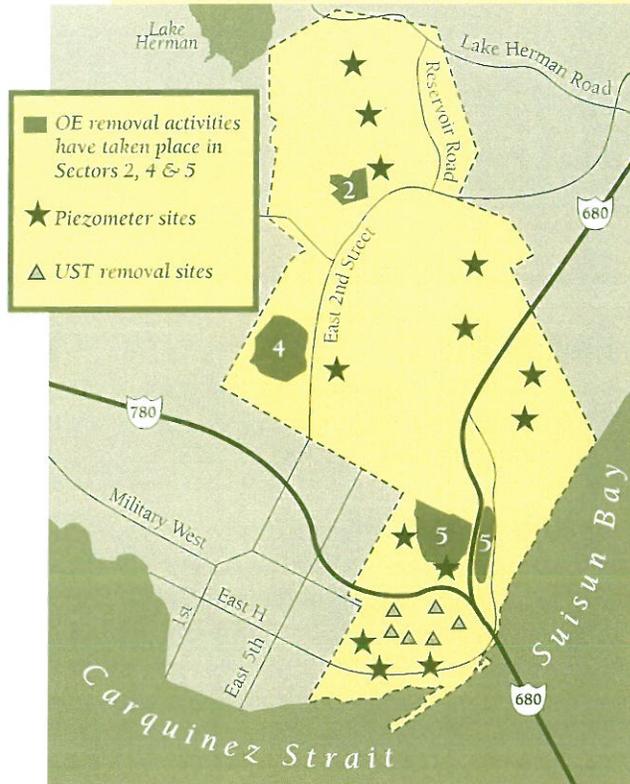
Transducer before it is installed into a piezometer.

COMPLETED

- Installation of 17 piezometers on 13 sites

IN PROGRESS

- Transducer installation—a metal device installed inside the piezometer that records water levels continuously and monitors tidal influence. The transducers will only be installed in piezometers located inland of Suisun Bay.
- Collection of monthly water levels



As shown on the map, the former Benicia Arsenal is located in Benicia, California, and encompasses approximately 2,700 acres.

Underground Storage Tank Removal Update

The U.S. Military used USTs at the former Benicia Arsenal in the early 1900s to hold various fuels such as bunker fuel, fuel oil, diesel, gasoline and kerosene. The size of these USTs ranges from 250 gallons to 15,000 gallons. USACE developed a program to identify and address each UST. It is estimated that 40 USTs may exist.

COMPLETED

- Six tanks and the surrounding soil were removed
- Tanks were recycled and the soil was disposed of at a landfill

IN PROGRESS

- Continued UST search and removal activities

Clean-up History

The U.S. military used the former Benicia Arsenal for 115 years as a principal location for the storage and distribution of OE as well as many other military supplies. In 1997, the Department of Defense identified the former Benicia Arsenal as a high priority site for environmental restoration. A clean-up program including records research, inventory, investigation, groundwater studies and removal activities of OE has been underway since 1997.



US Army
Corps of Engineers

c/o Lucy & Company
1614 19th Street
Sacramento, CA 95814

FOR MORE INFORMATION

For additional information regarding the former Benicia Arsenal project, community programs or safety measures, please contact Michael Mitchener, U.S. Army Corps of Engineers, at (916) 557-7366, or check out www.Benicia-Arsenal.net.



Former Benicia Arsenal

NEWSLETTER

January 2003

OE=Ordnance & Explosives

Ordnance includes military weapons, ammunitions and other explosive devices.

Recognize, Retreat and Report OE Safety Message Reaches Students

To help keep the youngest members of the community safe, the U.S. Army Corps of Engineers (USACE) has implemented an ordnance and explosives (OE) school outreach program emphasizing the key safety message "Recognize, Retreat and Report."

"The Recognize, Retreat and Report OE safety program is fun and educational, and most importantly, it keeps children safe," says Principal Ellen Blaufarb, Mills Elementary School.

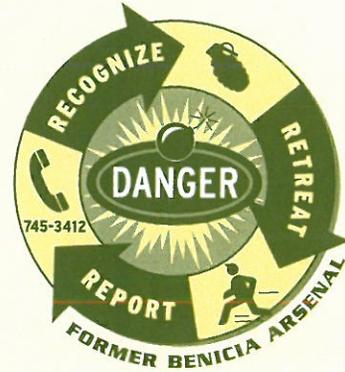
Mills Elementary was the first school to receive the presentation during 16 separate classroom

appearances on October 10. Robert Semple Elementary School followed on October 21 with two separate assemblies combined by grade level (K-3 and 4-5 grades). The third assembly took place at Mary Farmer Elementary School on November 12. The fourth assembly took place at St. Dominic's School on December 6. USACE has another school assembly planned with Matthew Turner Elementary School on January 23.

"It's our goal to teach all children in Benicia the important safety message, Recognize, Retreat and Report," says USACE Project Manager Michael Mitchener. "Through the school outreach program and parent's assistance in helping children understand the potential dangers of OE, accidents associated with OE can be avoided."

The presentations are tailored for each age group, with younger students receiving an interactive activity guide that teaches by coloring and following the instructions of Rusty Raccoon and friends, along with Frisbee-like flyers, pencils and stickers. Older students receive a brochure and magnets in addition to pencils and stickers.

If you would like to schedule a presentation at your child's school, please contact Jessica Mathews at (916) 491-3161. For additional information regarding the school outreach program, please contact Michael Mitchener at (916) 557-7366.

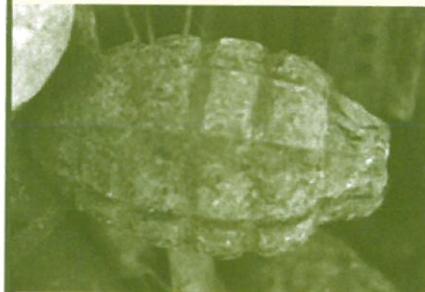


Safety Comes First!

If you find ordnance and explosives (OE), remember to **Recognize, Retreat and Report.**

Recognize OE-Like Objects

You do not have to be an expert in OE identification to be safe—just remember that if something looks like a piece of OE, do not touch it or handle it in any manner! OE includes items such as bullets, bombs, grenades and shells. It often has a cylindrical shape and may be shiny or rusty. Old OE is not necessarily safe; in fact, it sometimes becomes more dangerous with age.



MKII Grenade
Approximate length is 4 inches

YOU'RE INVITED TO GET INVOLVED!

For updates regarding the environmental cleanup plans at the former Benicia Arsenal, you are invited to attend the Restoration Advisory Board (RAB) meetings, which are held quarterly on the third Wednesday of the month at the Benicia Public Library from 7 to 9 p.m. The next RAB meeting will be January 15, 2003.

The RAB was formed at the request of the community to discuss environmental cleanup plans at the former Benicia Arsenal. The RAB is comprised of community members and representatives from the USACE and state agencies.

Please visit our Web site at www.Benicia-Arsenal.net for information on RAB meeting agenda topics, dates, times and locations.

THE NEXT RAB MEETING: JANUARY 15, 2003

WHERE: BENICIA PUBLIC LIBRARY FROM 7 TO 9PM

Retreat & Report

If you **Recognize** something that might be OE, don't touch it. **Retreat** from the area, make a careful note of its location and **Report** it to the Benicia Police Department immediately at (707) 745-3412. City police officers have had special training in the identification of OE and proper safety protocols, and they will determine appropriate removal and disposal measures.

Landfills Investigated for Possible Contamination

Records indicate when the Arsenal was active in the late 1800s and early 1900s, waste may have been disposed of in four different landfills (see Area 1 map). Waste may have included chemicals from metal cleaning activities and refuse from domestic uses. To examine these sites more closely, USACE is conducting an active investigation to assess if waste was disposed of in these landfills. During the investigations, USACE examines the type of waste, the approximate volume of waste and the condition of the soil beneath the waste.

A geophysical survey of each suspected landfill was completed last year to assess the extent of the former landfills. The next step in fieldwork was to trench the area. Trenches are long narrow channels dug into the ground, sometimes up to 20 feet below the surface and 20 feet in length. The purpose of trenching is to confirm the boundaries of the waste, determine the depth of the waste and collect and analyze soil data, which will be compiled into a site investigation report. The report will be available to the public next fall.

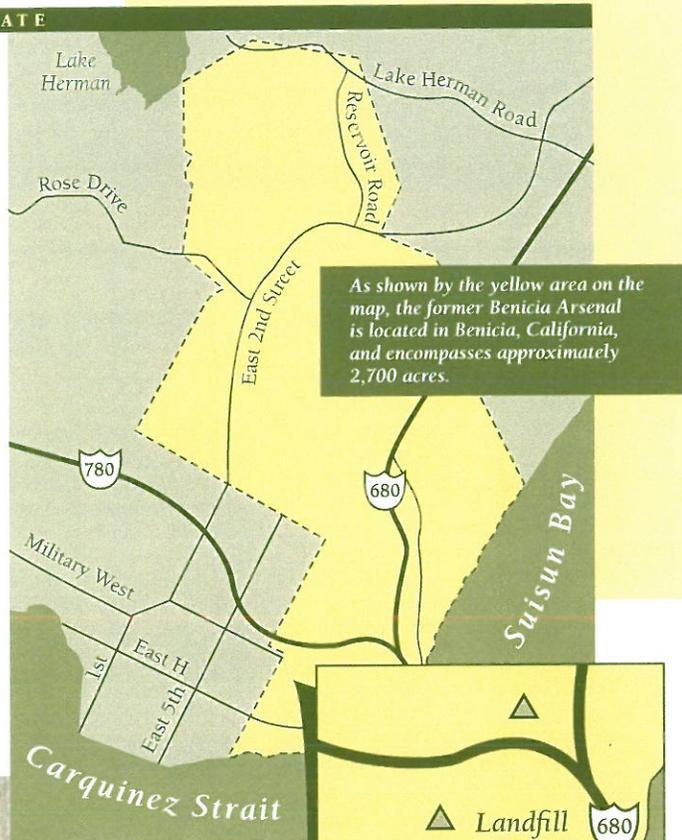
Once studies are complete, the information will be used to determine whether further action to clean up the area is necessary.



Field workers digging deep trenches into the ground.

CLEANUP HISTORY

The U.S. military used the former Benicia Arsenal for 115 years as a principal location for the storage and distribution of OE as well as maintenance of small arms and storage of other military supplies. In 1997, the Department of Defense identified the former Benicia Arsenal as a high priority site for environmental restoration. A cleanup program including records research, inventory, investigation, groundwater studies and removal activities of OE has been underway since 1997. The cleanup effort to remove OE is complete.



As shown by the yellow area on the map, the former Benicia Arsenal is located in Benicia, California, and encompasses approximately 2,700 acres.



UPDATE

50-Series Complex Investigation

The 50-Series Complex is a series of buildings located in Area I (see map for location). These buildings were some of the first permanent structures built on the Arsenal and were used for weapons repair and testing, blacksmithing, welding, and machining. The complex, constructed as three separate buildings, has been remodeled and added onto over the last 100 years.

Since 1999, USACE has conducted various studies to assess if any of the activities performed in this area resulted in soil or groundwater contamination. The site investigations began with geophysical studies to confirm locations of underground storage tanks and exploratory drilling to assess the condition of the soil. Today preliminary field studies are complete and the site investigation report, including all the findings, will be available to the public this spring.

FOR MORE INFORMATION

For additional information regarding the former Benicia Arsenal project, community programs or safety measures, please contact Michael Mitchener, U.S. Army Corps of Engineers, at (916) 557-7366, or check out www.Benicia-Arsenal.net.



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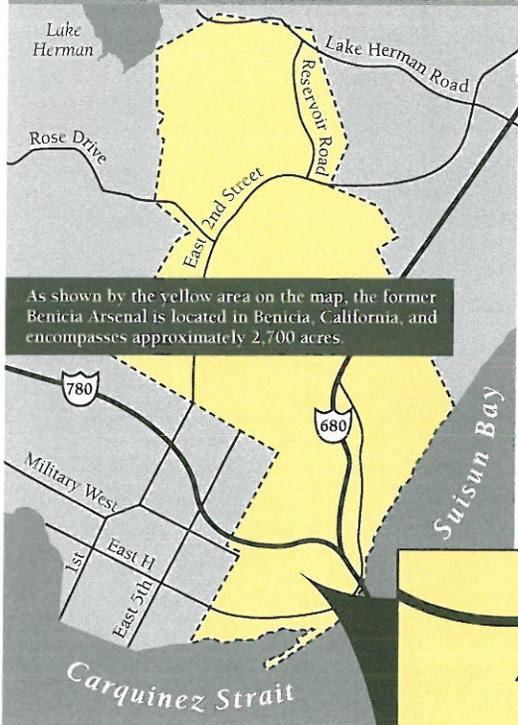
Former Benicia Arsenal

NEWSLETTER

June 2003

OE=Ordnance & Explosives

Ordnance includes military weapons, ammunitions and other explosive devices.



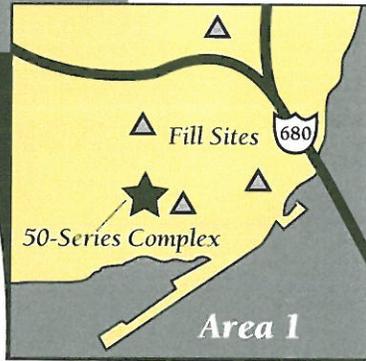
As shown by the yellow area on the map, the former Benicia Arsenal is located in Benicia, California, and encompasses approximately 2,700 acres.

50 SERIES COMPLEX INVESTIGATION

What Is the 50 Series Complex?

The 50 Series Complex is a series of buildings located in Area I of the former Benicia Arsenal (see map for location).

These buildings were some of the first permanent structures built at the Arsenal and were used for weapons repair and testing, blacksmithing, welding and machining.



What Was the Complex Used For?

Constructed as three separate buildings in the late 1800s, the complex has been remodeled and expanded over the last 100 years.

The primary function of the center was to clean, repair and preserve small arms. Other activities at the complex included repair of anti-aircraft artillery, welding, and machining. The 50 Series Complex played an important role in the Spanish-American War, World War I, World War II and through the Korean conflict in the 1950s. Today, the 50 Series Complex is home to residential, commercial and industrial facilities.

Since 1999, the US Army Corps of Engineers (USACE) has conducted various studies to determine if any of the former Army activities performed in this area resulted in impacts to soil or groundwater, and what measures, if necessary, should be taken to clean up the area. A comprehensive site

investigation began with geophysical studies to survey the area. Exploratory drilling and environmental sampling followed to assess the condition of the soil and groundwater. Today, preliminary field studies at the 50 Series Complex are complete. The site investigation report will be available to the public this summer.

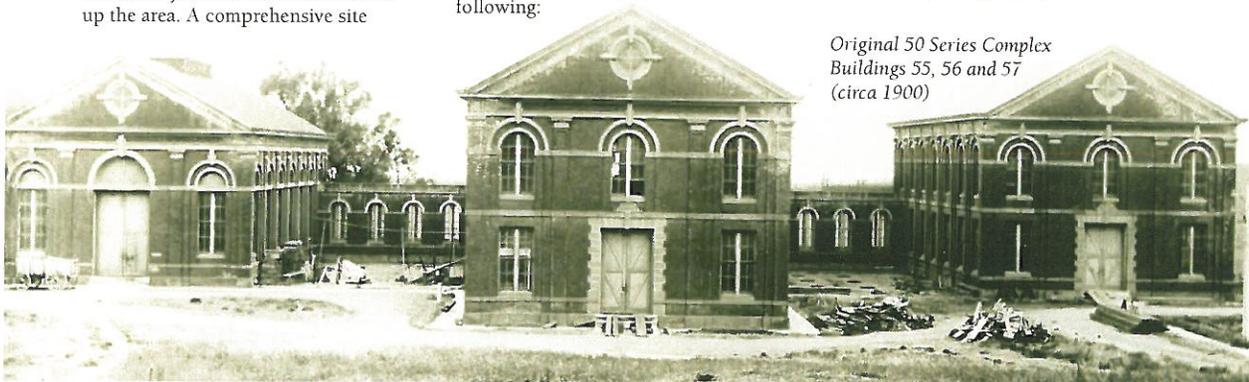
Site Investigation Findings

Based on the findings of the site investigation report, continued research is necessary to further evaluate potential impacts to soil and groundwater. The recommended future research activities will be conducted as an expanded site investigation and will include the following:

- Further evaluation of groundwater conditions, including flow, yield and water quality.
- Additional soil analysis.
- Further investigation into chemicals of interest (COI).

Work crews are anticipated to be in the area beginning in July.

Original 50 Series Complex Buildings 55, 56 and 57 (circa 1900)



Attend Upcoming Public Workshop/Open House and RAB Meeting

You're invited to a public workshop/open house on Wednesday, **June 18**, from 6 to 8 p.m. at the Benicia City Hall (Commission Room). This is your opportunity to learn more about the history of the 50 Series Complex, its many uses, the cleanup efforts and what you can expect in future cleanup activities. In addition, attendees will also learn more about the Benicia Arsenal School Outreach Program.

The workshop/open house will be held from 6 to 8 p.m. with the regularly scheduled Restoration Advisory Board (RAB) meeting to follow from 8 to 9 p.m.

YOU'RE INVITED TO GET INVOLVED!

For regular updates regarding the environmental cleanup plans at the former Benicia Arsenal, you are invited to attend the RAB meetings, which are held quarterly. Please visit our Web site at www.Benicia-Arsenal.net for information on RAB meeting agenda topics, dates, times and locations.

The RAB was formed at the request of the community and is comprised of community members and representatives from the US Army Corps of Engineers and state agencies.

Recognize, Retreat and Report Key Message at Schools

Year one of the Benicia Arsenal School Outreach Program was a tremendous success. Our safety team made presentations at every elementary school in Benicia, including:

- Mills Elementary School
- Robert Semple Elementary School
- Mary Farmer Elementary School
- St. Dominic's School
- Matthew Turner Elementary School
- Benicia Middle School 6th Grade
- Henderson Elementary School



Each presentation was tailored for the age group, with younger students receiving an interactive activity guide that teaches by coloring and following the instructions of Rusty Raccoon and friends. Older students received brochures, magnets and stickers. Each presentation featured the key safety message, "Recognize, Retreat and Report."

The program, developed by USACE, was designed to be a fun and educational way to inform children and young adults about the potential dangers of ordnance and explosives (OE). Recognize, Retreat and Report will continue next year with an exciting new contest.

If you would like to schedule a presentation at your child's school, please contact Jeff Chandler at (916) 491-3161. For additional information regarding the school outreach program, please contact Jerry Vincent, USACE, at (916) 557-7452.

OE=Ordnance & Explosives

Ordnance includes military weapons, ammunitions and other explosive devices.

Recognize, Retreat & Report

If you **Recognize** something that might be OE, don't touch it. **Retreat** from the area, make a careful note of its location and **Report** it to the Benicia Police Department at (707) 745-3412. City police officers have had special training in the identification of OE and proper safety protocols, and they will determine appropriate removal and disposal measures.



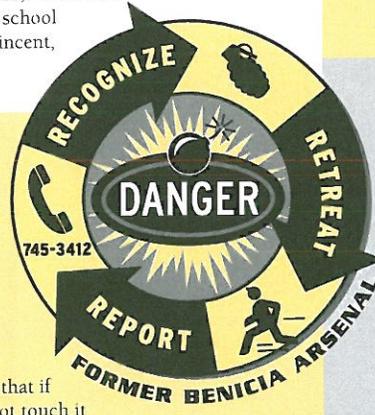
75mm projectile (top)
Shown as discovered by OE specialists (bottom)

Safety Comes First

If you find ordnance and explosives (OE), remember to **Recognize, Retreat and Report.**

Recognize OE-Like Objects

You do not have to be an expert in OE identification to be safe—just remember that if something looks like a piece of OE, do not touch it or handle it in any manner! OE includes items such as bullets, bombs, grenades and shells. It often has a cylindrical shape and can appear either shiny or rusty. Old OE can be more difficult to identify, so if in doubt do not touch.



FORMER BENICIA ARSENAL CLEANUP HISTORY

The U.S. military used the former Benicia Arsenal for 115 years as a principal location for storage and distribution of OE as well as maintenance of small arms and storage of other military supplies. In 1997, the Department of Defense identified the former Benicia Arsenal as a priority site for environmental restoration. A cleanup program including records research, inventory, investigation, groundwater studies and removal activities of OE has been underway since then. **The cleanup effort to remove OE is not complete.** (The last newsletter you received incorrectly stated that the cleanup effort to remove OE is complete).

FOR MORE INFORMATION

For additional information regarding the former Benicia Arsenal project, community programs or safety measures, please contact Jerry Vincent, US Army Corps of Engineers, at (916) 557-7452, or check out www.Benicia-Arsenal.net.



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Join Us
For a Public
Workshop/
Open House

Wednesday, June 18
6 to 8 p.m.

Benicia City Hall
Commission Room
250 East L Street



Former Benicia Arsenal

NEWSLETTER

February 2004

Lesson in Three Rs Returns to Benicia Classrooms

The U.S. Army Corps of Engineers (USACE) has re-designed its school outreach program by developing characters Rusty Raccoon and Wedge to relay the Three Rs: "Recognize, Retreat and Report." The Three Rs help kids know how to be safe should they encounter any old bullets, grenades or explosives at the former arsenal.

To prepare for this school year, the Benicia project team went back to



Rusty Raccoon in the Benicia Christmas Parade.

the drawing board to develop a new program to reach specifically second, fourth and sixth graders, based on feedback received from students and teachers. This year's program includes Rusty Raccoon in person and a new 3-D animated video hosted by pre-teen narrator "Wedge" and his computer "the Brain 3000."



Wedge stars in the new OE safety video.

In 2002, USACE developed the school outreach program to ensure that Benicia children know how to recognize parts of old weapons and ammunitions, which the Army calls ordnance and explosives (OE). Last year, more than 2,500 K-6 grade schoolchildren in Benicia participated in the program.

Although extensive cleanup efforts at the former arsenal have resulted in the removal of OE, there still exists a very small possibility that some remnants still remain on the site. Educating the youngest residents will help keep them out of harm's way.

Rusty and Wedge are Coming to a School or Youth Organization Near You...

The school safety team recently made presentations at St. Dominic's and Matthew Turner Elementary schools. The presentations were a great success, thanks to students and staff. More school visits are planned for the future, including:

Henderson Elementary, Friday, March 30, 1 p.m.

Teachers or after-school program directors can request a presentation. Please call Erica McLean at (916) 491-3161.

What Should I Do if My Children or I Find Something Suspicious?

USACE encourages you to teach your children the Three Rs: Recognize, Retreat and Report. Then, practice what you preach. It is important to remember that ordnance and explosives may be rusty, cylindrical and sometimes fragmented, and not necessarily easily identifiable as a bullet or grenade. (Recognize)

As part of the three-step process, you or your children should try to remember where the OE was found, perhaps by a noticeable landmark. By all means, **do not touch it!** Then, leave the area. (Retreat)

To make sure the OE no longer poses a threat to others, please call the Benicia Police Department at (707) 745-3412. (Report) Do not call 911.



75mm projectile

OE=Ordnance & Explosives

Ordnance includes military weapons, ammunitions and other explosive devices.



CALLING ALL KIDS!

Color, Draw and Design for Prizes in the First 'Three Rs Round-up Contest'

Be creative with the Three Rs: "Recognize, Retreat and Report" safety message and you can win. The contest is open to all first through sixth grade students in Benicia.

- Coloring contest for 1st and 2nd graders
- Drawing contest for 3rd and 4th graders
- Design contest for 5th and 6th graders
- Prizes for each contest:
 - 1st Prize: \$100 savings bond and a certificate
 - 2nd Prize: \$50 savings bond and a certificate

Third through sixth grade winners also will have their work published in the *Benicia Herald*. **BENICIA HERALD**

Get contest entries when the Benicia safety team makes a presentation at your school or download an official entry form by visiting www.Benicia-Arsenal.net and clicking on School Assemblies.

The contest entries will be judged this spring by your neighbors: city officials, local school teachers and administrators, and members of the local business community.



Rusty's Corner

Hi kids! You first met me last year when you worked on your activity guides. Well, your safety is so important to me that I moved to Benicia and now call it my home, just like you. Benicia is a great place to live and there is so much to learn.

This is where I come in. I am here to make sure that you know your **Three Rs: "Recognize, Retreat and Report"** should you encounter a strange object on the former arsenal property. That's right! Say the Three Rs again so you don't forget. Remembering your Three Rs will help keep you and your friends safe.

Please look for me in the future at parades, school events, community festivals and other events in the coming years. I've come to Benicia to stay.

Thanks and I will see you soon.
Rusty



Expanded Site Inspection Gets Underway, Giving New Meaning to 'Living on the Land'

Starting this April, members of the environmental cleanup team will take up temporary residence in Benicia, where they will work out of specially equipped vehicles designed to assist in rapid soil and groundwater sample gathering, data input and analysis. This work will take place as part of the Expanded Site Inspection.



A Cone Penetration Testing (CPT) rig will enhance field work.

Background

To date, USACE has conducted the majority of its field investigations in the industrial area at the former arsenal. This area was assessed first because of the potentially high risk to human health and the environment caused by past Army activities. Fortunately, investigators have found that these sites pose no immediate threat, but do warrant additional investigation (see "Draft Report").



Worker collects soil samples at arsenal.

Next Steps

Now that these initial priority sites have been investigated, this spring USACE will move on to inspect the remaining sites where groundwater or soil quality may have been impacted. The Field Site Investigation Plan that will guide this work is currently under review by regulatory agencies and can be viewed by the general public at the Camel Barn Museum or the Benicia Library. Public comments are welcome prior to the document being finalized in March.

Inspection Streamlined

As the field work is conducted, investigators will employ rapid analysis of samples to verify the data and avoid redundant sample gathering. Contingency plans are in place so that planned field activities can be modified quickly as the investigation proceeds.

The team expects the inspection to be an important milestone in moving the cleanup forward. Since the groundwater is shallow (typically eight feet below the ground), and Army activities in Benicia ceased at least 40 years ago, USACE is confident that any significant spills or run-offs from former military activities would be evident in the groundwater today.

Throughout this phase of the field work, USACE will be able to evaluate the level of contamination at each site and determine whether a site requires further cleanup.

In conjunction with the inspection, the remaining underground storage tanks not removed in 2002 will be investigated.

Draft Report: No Immediate Health Threat

USACE recently completed the Draft Preliminary Assessment Report (PA) and concluded that none of the 389 sites evaluated at the former arsenal pose an imminent health risk.

The PA evaluated several military and non-military research reports and historical records at the former arsenal in an effort to identify potential impact on human health and the environment by former Army activities.

The primary goal of the report is to develop sufficient information to categorize each site within the former arsenal property as one of the following:

- No Department of Defense Action is Indicated
- Further Action Required
- Imminent Health Risk Requiring Immediate Response*

* None of the 389 sites evaluated pose an immediate health risk

Most of the sites that require further action are found in the industrial area, where maintenance and locomotive shops operated. Other sites requiring more investigation include a former maintenance complex, a salvage yard and a vehicle maintenance area, and the remaining underground storage tanks.

The draft report is currently being reviewed by regulatory agencies and can be viewed by the general public at the Camel Barn Museum and the Benicia Public Library. Public comment is welcome until the final report is released this spring.

The Restoration Advisory Board: Your Community Liaison to Cleanup

In 1997, a Restoration Advisory Board (RAB) was formed to

- encourage community involvement.
- foster partnerships between the community and government agencies.
- provide a forum to discuss environmental cleanup at the former Benicia Arsenal.

RAB members include community members, representatives from USACE, the city of Benicia, the California Environmental Protection Agency and local agencies.

The RAB meets quarterly. The next meeting will be in April. The general public is invited. Look for meeting announcements in the *Benicia Herald* or at www.Benicia-Arsenal.net.

FOR MORE INFORMATION

For additional information regarding the former Benicia Arsenal project, community measures, contact Michael Mitchener, U.S. Army Corps of Engineers, at (916) 557-7366, or check out www.Benicia-Arsenal.net.

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Former Benicia Arsenal

NEWSLETTER

March 2005

School Assemblies in 2004 a Success

The 2004 Former Benicia Arsenal School Outreach Program was a tremendous success thanks to the teachers, administrators and the city of Benicia. During

"Former Benicia Arsenal OE Safety Week," the safety team presented assemblies at every public elementary school in Benicia reminding the more than 1,500 students to remember their "Three Rs:" **Recognize, Retreat and Report.**

Program mascot Rusty Raccoon joined the U.S. Army Corps of Engineers (the Corps) at this year's assemblies to remind kids of the Three Rs and invite them to join his safety team. Part of Rusty's training teaches students how to recognize what ordnance and explosives look like, to retreat or runaway from the area and to not touch anything unfamiliar, and to report the location to an adult.

Rusty was not the only character to make this year's cast. Animated teen host "Wedge" and his smart computer "The



Brain 3000" educated and entertained the students with their knowledge about ordnance and explosives (OE) in a video developed specifically for Benicia students. The video uses a combination of 3-D animation and photos to teach children the importance of safety at the former Benicia Arsenal.

The school safety program was developed in 2002 as part of the Corps' ongoing commitment to the Benicia community, with an emphasis on educating young children. Although extensive cleanup efforts at the former arsenal have resulted in the removal of OE, there is still a possibility that some remnants still exist on the site. The Corps believes that educating the youngest residents in our community about old munitions and explosives will help protect them from potential harm.



Congratulations to Our Contest Winners!

Rusty Raccoon with contest winners (from left to right) Ashton Lyle, Megan Osterholt, Amanda Gonyer and Mia de Borja.

In the fall of 2004, to coincide with the assemblies, the Corps sponsored coloring contests for the students participating in Rusty's training. Choosing winners was not easy, but thanks to a wonderful judging panel and some very creative students, we are proud to announce the six winners of the 2004 Benicia Safety Program contest:

- **Ashton Lyle**, Kindergarten, Matthew Turner Elementary
- **Mia de Borja**, 1st grade, Robert Semple Elementary
- **Megan Osterholt**, 2nd grade, Matthew Turner Elementary
- **John Kyle A. Climaco**, 2nd grade, Matthew Turner Elementary
- **Amanda Gonyer**, 5th grade, Mills Elementary
- **Katherine Park**, 5th grade, Matthew Turner Elementary

The Corps presented the winners with U.S. savings bonds at the Benicia City Council meeting on December 7, 2004. More than 200 students participated in the contest, demonstrating what they learned about the Three Rs: "Recognize, Retreat and Report" and how to exercise caution when near the former arsenal.

The Corps thanks all of the parents and the schools for their program support and congratulates all of the contest winners and participants.

Restoration Advisory Board: Community Co-Chair Being Sought

The Restoration Advisory Board (RAB) is seeking a new community co-chair to fill the position left when the former co-chair moved out of state. The RAB is co-chaired by the Corps Project Manager and a community board member. RAB membership is voluntary and requires a commitment of two years. There is no requirement for knowledge of the restoration process in order to serve on the RAB, just a willingness to learn about the process and a desire to communicate with the community.

Since April 2000, the RAB has met quarterly to

- foster partnerships between the community and government agencies.
- encourage community involvement.
- provide a forum to discuss environmental cleanup at the former Benicia Arsenal.
- review, evaluate and provide comments on documents related to environmental restoration activities.

Members of the RAB include community members, representatives from the Corps, the city of Benicia, the California Environmental Protection Agency and local agencies.

If interested, a membership application is available at www.benicia-arsenal.net.

The next meeting will be held on **Wednesday, March 16, 2005 at 7 p.m.** in the Doña Benicia Room at the Benicia Public Library.

Rusty's Corner



Hi kids. I had a lot of fun visiting your schools this year! I was really impressed by your entries to my contest and by your good listening skills during our assemblies. Benicia is lucky to have so many talented students.

Now that you have been trained as members of my safety team, I want to make sure that you remember your Three Rs, especially when you are at the former Benicia Arsenal. Should you find a strange object at the former arsenal property remember what I told you: "**Recognize, Retreat and Report.**" I know I've said it before, but please pass the message along to all of your friends and help teach them the safety measures you already know. Remembering your Three Rs will help keep you and your friends safe.

Now that I'm here to stay, don't forget to say "hi" if you see me at parades, school events or community festivals.

Thanks and I look forward to seeing you again soon.

Rusty Raccoon



Army Corps Propels Cleanup at Former Arsenal Through Expanded Site Investigation

The Corps recently conducted an Arsenal-wide investigation of sites that may be contaminated by former Army activities and is now making recommendations to state regulators about future action in the environmental cleanup process. The investigation focused on the following objectives:

- To sample soil and groundwater in areas indicated by historical records that had materials that could have impacted the environment.
- To test samples in a real-time field lab to determine levels of chemicals in soil and groundwater and assess the potential risk posed to human health and the environment.
- To determine the extent of contamination and to delineate, or place boundaries around, known contaminated areas.
- To use verifiable data to assess which sites require further action and to close the sites that do not pose a risk to human health or the environment.

During the investigation, the Corps completed 117 borings, or direct punctures, into the surface at the former Benicia Arsenal to gather data about subsurface soil conditions. The soil analysis helped the team develop geologic models of the subsurface soil and the location of groundwater zones. Samples were collected to confirm and adjust these models. In the future, the models can be used to determine how contamination might travel through the subsurface. These models can also be used to determine what



Cone Penetration Testing (CPT) rig

measures should be enacted to help contain or remove the contamination source.

Initial findings from the 2004 Expanded Site Inspection (SI) at the former Benicia Arsenal helped identify sites at which the Corps will propose to state regulators no further Department of Defense (Defense) action is indicated. The findings, if agreed upon by the regulators, will help narrow the list of sites to be recommended for further investigation. Once these sites are considered not requiring further Defense action, the Corps can place greater emphasis on the remaining sites that require more data sampling and analysis.

The Corps is currently reviewing a draft of the Expanded SI report, which summarizes the investigation's results. Once the review is complete, the document will be reviewed by state regulators and will be made available to the public. After the review period passes, the next step will be a risk analysis that will determine if there is an impact to human health and the environment.

CONTACT INFORMATION

If you have project questions, please contact:
U.S. Army Corps of Engineers
Mr. Michael Mitchener, Project Manager
(916) 557-7366

Department of Toxic Substances Control
Ms. Chris Parent, Project Manager
(916) 255-3707

Regional Water Quality Control Board
Mr. Gary Riley, Project Manager
(510) 622-2462

UPDATE: Underground Storage Tank Removals

In 2004, in a separate effort from the Expanded SI, the Corps conducted geophysical testing to locate and remove two underground storage tanks (USTs). One UST removal site was cleared of contamination and the Corps will recommend no further action. Contamination remained at the other site, which was inaccessible due to building structures. The Corps will recommend a risk assessment for the remaining contamination at this site.

So far, eight tanks have been removed and another three require investigation. The Corps is continuing to work with property owners to obtain rights of entry to other suspected tanks on the former arsenal. Until access is granted, no further action can occur.

Technology Expedites Expanded SI

In 2004, the Corps implemented innovative technology to expedite the environmental assessment and remediation program currently underway at the former Benicia Arsenal.

Using a Cone Penetration Testing (CPT) rig and a mobile laboratory, investigators obtained real-time analysis on soil and groundwater samples that enabled decisions to be made in the field and greatly reduced the time typically required for data gathering across large acreage.

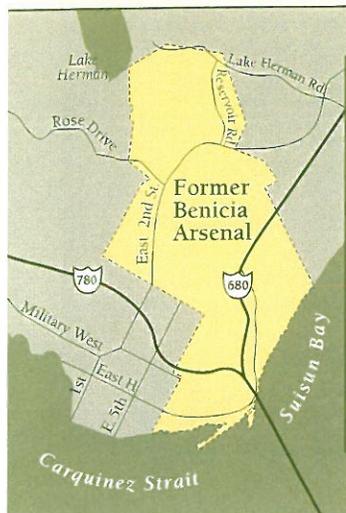
How does a CPT rig work?

The CPT rig helps determine subsurface soil characteristics by pushing a cone-shaped object, attached to a data acquisition system, into the subsurface using a hydraulic-operated rod. Because of the direct force applied, the CPT rig allows for much smaller diameter borings than typical drilling machines, and avoids the need for special handling and disposal of exposed excavation materials.

As the rod is pushed into the earth's subsurface, pressure levels are measured and data are obtained that help geologists characterize the different types of soils, the groundwater location and the depths at which each are found. The rod is pushed to a point of refusal, which coincides with the top of the bedrock. Once the rod can no longer penetrate the soil, it helps geologists determine the depth of the bedrock and develop a model of the overlying subsurface soil and groundwater.

Why is it important to understand the subsurface soil makeup?

When investigating environmental contamination at a given site, the team uses scientific methods to determine the types of soils underground to predict the potential movements, if any, of the contamination plume(s). Geologists can predict if or how a plume might migrate based upon the type of soils in which it is found. For example, certain soils are less permeable than others causing groundwater contamination to travel at a slower rate in the less permeable soils.



FOR MORE INFORMATION

If you have questions about the environmental restoration at the former Benicia Arsenal, please call Mr. Michael Mitchener, Corps Project Manager at (916) 557-7366, or check out www.Benicia-Arsenal.net.



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Appendix C
Benicia Arsenal
U.S. Army Corps of Engineers and Regulatory Contacts

First Name	Last Name	Title	City	State	Zip	Phone
USACE						
Michael	Mitchener	Project Manager	Sacramento	CA	95814	(916) 557-7366
Jerry	Vincent	Senior Program Manager, FUDS	Sacramento	CA	95814	(916) 557-7452

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
Regulatory Agencies							
Christine	Parent	Project Manager	CA Dept. of Toxic Substances Control, Region I	Sacramento	CA	95826	(916) 255-3707
Gary	Riley	Project Manager	CA Regional Water Quality Control Board	Oakland	CA	94612	(510) 622-2462
Michelle	Trotter	Public Participation Specialist	CA Dept. of Toxic Substances Control, Region I	Sacramento	CA	95826	(916) 255-6441
Mike	Rees	Senior Environmental Health Specialist	Solano County Department of Resource Management	Fairfield	CA	94534	(707) 784-6765

Appendix D
Contacts for Local, County, State and Federal Officials

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
Local Officials and City of Benicia							
Steve	Messina	Mayor	Benicia City Council	Benicia	CA	94510	(707) 746-4200
Elizabeth	Patterson	Vice Mayor	Benicia City Council	Benicia	CA	94510	(707) 746-4200
Bill	Whitney	City Council Member/RAB	Benicia City Council	Benicia	CA	94510	(707) 745-5314
Tom	Campbell	City Council Member	Benicia City Council	Benicia	CA	94510	(707) 746-4210
Dan	Smith	City Council Member	Benicia City Council	Benicia	CA	94510	(707) 746-4210
Heather	McLaughlin	City Attorney	City of Benicia	Benicia	CA	94510	(707) 746-4216
Jim	Erickson	City Manager	City of Benicia	Benicia	CA	94510	(707) 746-4210
Lisa	Wolfe	City Clerk	City of Benicia	Benicia	CA	94510	(707) 746-4200
Virginia	Souza	City Treasurer	City of Benicia	Benicia	CA	94510	(707) 746-4225
Karen	Majors	Assistant City Manager	City of Benicia	Benicia	CA	94510	(707) 746-4215
Rob	Sousa	Finance Director	City of Benicia	Benicia	CA	94510	(707) 746-4225
Monique	Le Conge	Library Director	City of Benicia	Benicia	CA	94510	(707)-746-4340
Mike	Alvarez	Director	Parks & Community Services	Benicia	CA	94510	(707) 746-4285
Colette	Meunier	Director of Development	City of Benicia Planning Commission	Benicia	Ca	94510	(707) 746-4280
Dan	Schiada	Director of Public Works	City of Benicia Public Works	Benicia	CA	94510	(707) 746-4240
Diane	O'Connell	Director	City of Benicia Human Resources	Benicia	CA	94510	(707) 746-4208
James	Trimble	Chief of Police	City of Benicia Police Department	Benicia	CA	94510	(707) 745-3412
Ken	Hanley	Fire Chief	City of Benicia Fire Department	Benicia	CA	94510	(707) 746-4275
Viola	Robertson	Executive Director	Benicia Community Action Council	Benicia	CA	94510	(707) 745-0900

Appendix D, continued
Local, County, State and Federal Officials

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
Solano County Officials							
Barbara	Kondylis	Supervisor District 1	Solano County Board of Supervisors	Vallejo	CA	94590	(707) 553-5363
John	Silva	Supervisor District 2	Solano County Board of Supervisors	Vallejo	CA	94590	(707) 553-5364
Duane	Kromm	Supervisor District 3	Solano County Board of Supervisors	Fairfield	CA	94553	(707) 421-6136
John	Vasquez	Supervisor District 4	Solano County Board of Supervisors	Fairfield	CA	94553	(707) 553-6128
Michael	Reagan	Supervisor District 5	Solano County Board of Supervisors	Fairfield	CA	94553	(707) 721-6130
Skip	Thompson	Assessor/Recorder	Solano County Board of Supervisors	Fairfield	CA	94553	(707) 721-6130
Mike	Palmaffy	Board Aide	Solano County Board of Supervisors	Vallejo	CA	94590	(707) 553-5364
Mike	Yankovich	Planning Program Mgr	Solano County Planning Commission	Fairfield	CA	94553	(707) 421-6765
Brigitta	Corsello	Director	Solano County Department of Resource Management	Fairfield	CA	94533	(707) 784-6765
Mike	Rees	Senior Environmental Health Specialist/RAB	Solano County Department of Resource Management	Fairfield	CA	94534	(707) 784-6765
Michael	Johnson	County Administrator	Solano County Administrator Office	Fairfield	CA	94533	(707) 421-6100
Chris	Howell	Manager	Government & Community Affairs	Benicia	CA	94510	(707) 745-7900

Appendix D, continued
Local, County, State and Federal Officials

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
State and Federal Officials							
Barbara	Boxer	Senator	United States Senate	San Francisco	CA	94111	(415) 403-0100
Diane	Feinstein	Senator	United States Senate	San Francisco	CA	94104	(415) 393-0707
Joseph	Simitian	Senator	California State Senate Committee on Environmental Quality	Sacramento	CA	95814	(916) 445-6747
Wesley	Chesebro	Senator	California State Senator	Sacramento	CA	95814	(916) 445-3375
Mike	Machado	Senator	California State Senate	Sacramento	CA	95814	(916) 445-2407
Lois	Wolk	Assembly Member	California State Assembly	Sacramento	CA	95814	(916) 319-2008
George	Miller	Congressman	U. S. House of Representatives, California District 7	Concord	CA	94520	(707) 645-1888
Terri	Roberts	State Clearinghouse Director	Governor's Office of Planning Research	Sacramento	CA	95812	(916) 445-0613
Jacques	Graber	Staff	Integrated Waste Management BD Cal EPA	Sacramento	CA	95814	(916) 341-6353

Appendix E
Environmental and Active Citizen Groups

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
Citizen and Environmental Groups							
Kathryn	Weller-Renfrow	Contact	Arts Benicia	Benicia	CA	94510	(707) 747-0131
Mike	Lamb	Chairman	Benicia Chamber of Commerce	Benicia	CA	94510	(707) 745-2120
Bonnie	Weidel	President	Benicia Community Arts	Benicia	CA	94510	(707) 745-2787
			Benicia Historical Society	Benicia	CA	94510	(707) 745-1822
Libbey	McKendry	Executive Director	Benicia Main Street Program	Benicia	CA	94510	(707) 745-9791
			Benicia Rotary Club	Benicia	CA	94510	(707) 745-2120
Mark	Kessler	Property Manager	Historic Arsenal Park Ltd.	Alamo	CA	99587	(925) 855-8756

**Appendix F
Media Contacts**

First Name	Last Name	Title	Organization Name	City	State	Zip	Phone
Ari	Soglin	Reporter	Benicia News.Com	Benicia	CA	94510	(707) 373-9390
John	Moses	Editor	Benicia Herald	Benicia	CA	94510	(707) 745-0733
Pam	Poppe	Advertising	Benicia Herald	Benicia	CA	94510	Ph: (707) 745-0733 Fx: (707) 745-8583 Benheral@pacbell.net
Dana	Enfinger	Education Reporter	Benicia Herald	Benicia	CA	94510	(707) 745-0733
Greg	Moberly	Benicia Reporter	Vallejo Times-Herald Gmoberly@thnewsnet.com	Vallejo	CA	94510	(707) 553-6833
Sarah	Rohrs	Reporter	Vallejo Times-Herald Srohrs@thnewsnet.com	Vallejo	CA	94590	(707) 644-1141

Appendix G
Meeting Location

Restoration Advisory Board

Benicia Public Library
150 East L Street
Benicia, CA 94510
(707) 746-4343

Doña Benicia Meeting Room

Meeting Time: 7 PM

Meeting Date: Quarterly on the 3rd Wednesday

(Dates change – call a USACE contact for confirmation of date, time and location of next RAB meeting)

Appendix H
Repository Locations

Benicia Public Library
150 East L Street
Benicia, CA 94510
(707) 746-4343

Hours of operation: Mon through Thurs 10:00 a.m. to 9:00 p.m.
Fri 12:00 p.m. to 5:00 p.m.
Sat 10:00 a.m. to 5:00 p.m.
Sun 12:00 p.m. to 6:00 p.m.

Camel Barn Museum
2060 Camel Road
Benicia, CA 94510
(707) 745-5435

Hours of operation: Wed through Sun 1:00 p.m. to 4:00 p.m.

Appendix I
FUDS Program Policy Primer

FUDS Primer

Formerly Used Defense Sites (FUDS) is a voluntary program that evaluates and cleans up properties that were previously owned and operated by the Department of Defense (or historically, the Department of War). By definition, FUDS properties are currently owned by a state or local government, or a private entity.

The U. S. Army Corps of Engineers (Corps) is the agency responsible for executing the FUDS program.

This document introduces the reader to the Formerly Used Defense Sites (FUDS) program described in the *FUDS Program Policy*, ER 200-3-1, published in May 2004 by the U.S. Army Corps of Engineers (Corps). This regulation policy provides information and guidance to the Corps employees. The document summarizes the FUDS program, eligible FUDS projects, No Department of Defense (DoD) Action Indicated (NDAI) criteria and decision making, Corps interaction with state and local regulators at FUDS, and the designation of potentially responsible parties in the FUDS process.

1. DERP-FUDS Program

In December 1983, the Defense Appropriations Act initiated environmental restoration activities at FUDS. Beginning in Fiscal Year 1997, DoD delegated the responsibility for planning, programming and budgeting portions of the Defense Environmental Restoration Program (DERP), which included the FUDS program, to the Military Departments. The Department of the Army delegated execution of the FUDS program to the Corps. Therefore, the Corps is the chief executor for environmental restoration activities at FUDS.

The objective of the DERP-FUDS program is to reduce, in a timely, cost-effective manner, the risk to human health, safety and the environment resulting from past DoD activities. Two of the elements of the program are Installation Restoration and Building Demolition and Debris Removal (BD/DR). Installation Restoration at a FUDS includes identification, investigation, and cleanup/removal of hazardous waste, petroleum, ordnance and explosives (OE), and chemical warfare materials (CWM). BD/DR includes demolition and removal of unsafe buildings or structures at FUDS that have not been beneficially used since they were transferred.

The DERP-FUDS program has three major stages: inventory, investigation, and removal/remediation.

Inventory Stage: consists of property identification; real estate search to verify previous DoD ownership or usage; and preliminary assessment of eligibility (PAE) to determine property and project eligibilities. The conclusions of the PAE are documented by an inventory project report (INPR). The INPR is used to determine property and project eligibility of a DERP-FUDS.

Investigation Stage: may include a site inspection (SI) to confirm the contamination; engineering evaluation and cost analysis (EE/CA) for a removal project; remedial investigation and feasibility study (RI/FS) for a remedial project; and/or litigation, negotiation, and settlement with other parties relative to defining and resolving the DoD liability for a Potentially Responsible Party (PRP) project.

Removal/Remediation Stage: consists of remedial design, remedial action (RD/RA), construction, operations, and long-term monitoring. Remedy In-Place is the milestone when construction is completed. Response Complete is the milestone when the operations and maintenance portion is completed.

The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants.

2. Eligible FUDS Projects

The general definition of an eligible FUDS is a real property that was formerly under the jurisdiction of the DoD. By law, DERP-FUDS funding can only be used to remove waste or clean up contamination that was entirely the result of DoD activities. The DERP-FUDS program can not be used to clean up contamination or waste that was caused in whole or part by property owners after DoD. Five types of eligible FUDS projects are Hazardous, Toxic, and Radioactive Waste (HTRW) projects, Containerized Hazardous, Toxic, and Radioactive Waste (CON/HTRW) projects, Military Munitions Response Program (MMRP) projects, PRP projects, including Third-Party-Sites (TPS), and BD/DR projects.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, and established a trust fund to provide for cleanup when no responsible party could be identified.

HTRW Projects: include environmental response actions related to hazardous substances, pollutants, and contaminants at FUDS, which conform to the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). FUDS funding can be used for restoration activities involving petroleum, even though it may not be subject to regulation under CERCLA. The remedial response actions process for HTRW projects begins with the preliminary assessment of eligibility and INPR (as shown on Figure 1). If a removal response is appropriate, an HTRW project may follow the removal process as shown in Figure 2.

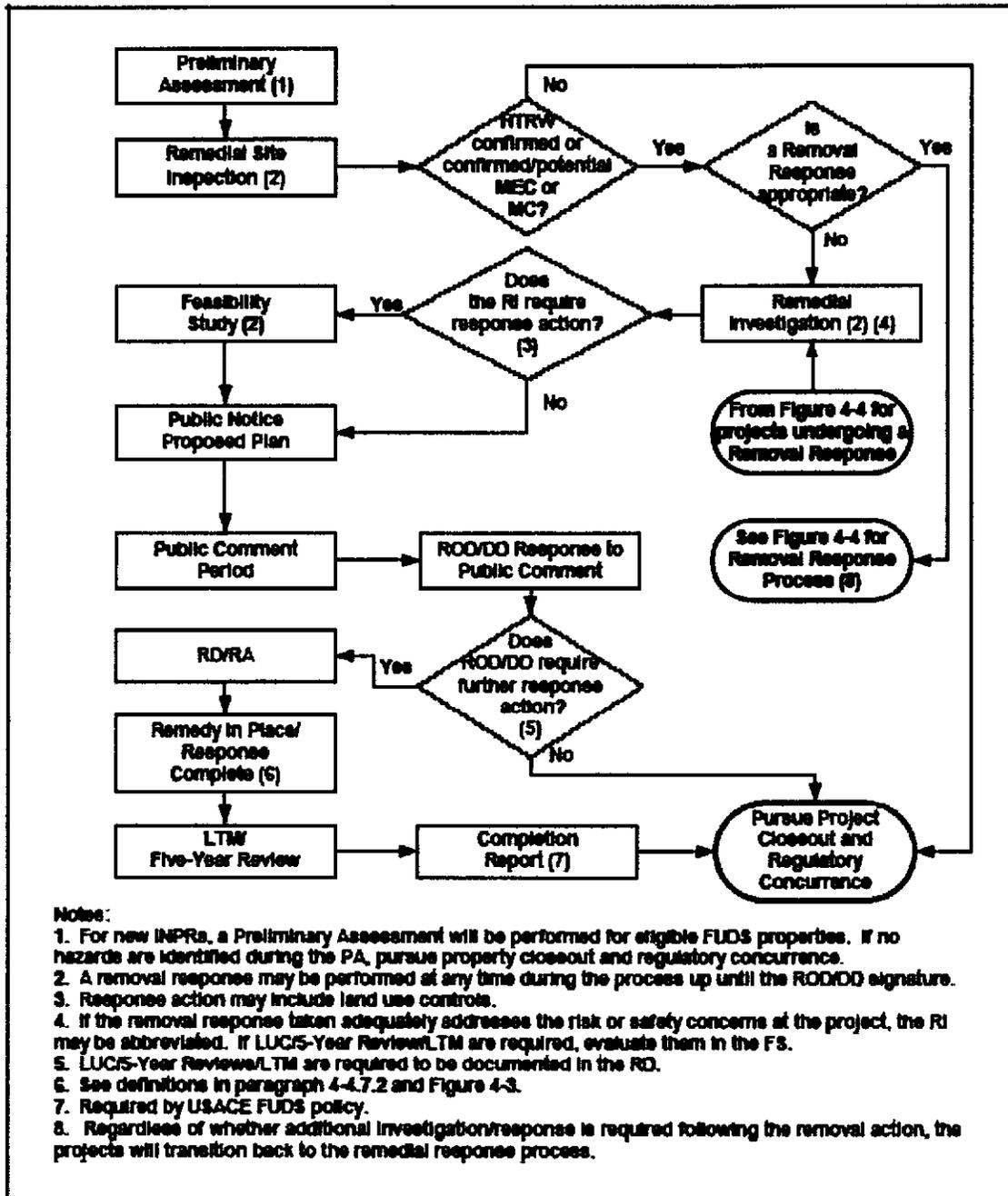
CON/HTRW Projects: include underground storage tanks (USTs), aboveground storage tanks, transformers, hydraulic systems, investigative derived waste, and abandoning of inactive monitoring wells. Projects involving removal of contaminated soils resulting from a leaking UST, or any other container, are also considered CON/HTRW. Projects involving containers which were beneficially used or partially removed by owners subsequent to DoD usage cannot be proposed unless there is evidence of a

release resulting from DoD usage. Note that any required short-term corrective actions are classified as CON/HTRW projects and any required long-term corrective actions are classified as HTRW projects.

MMRP Projects: include response actions at an area of an eligible FUDS property related to military munitions and explosives of concern (MEC) and their constituents (MC) as the result of DoD activities at FUDS. MMRP projects can include response actions for the removal of foreign military munitions if it is incidental to the response addressing DoD military munitions at a FUDS property. In a given area containing both MEC and MC, Army policy requires that imminent human safety threats be addressed first. This does not preclude consideration of other response actions, such as fencing or providing bottled water, that are required to deal with imminent threats to human health and the environment associated with the property.

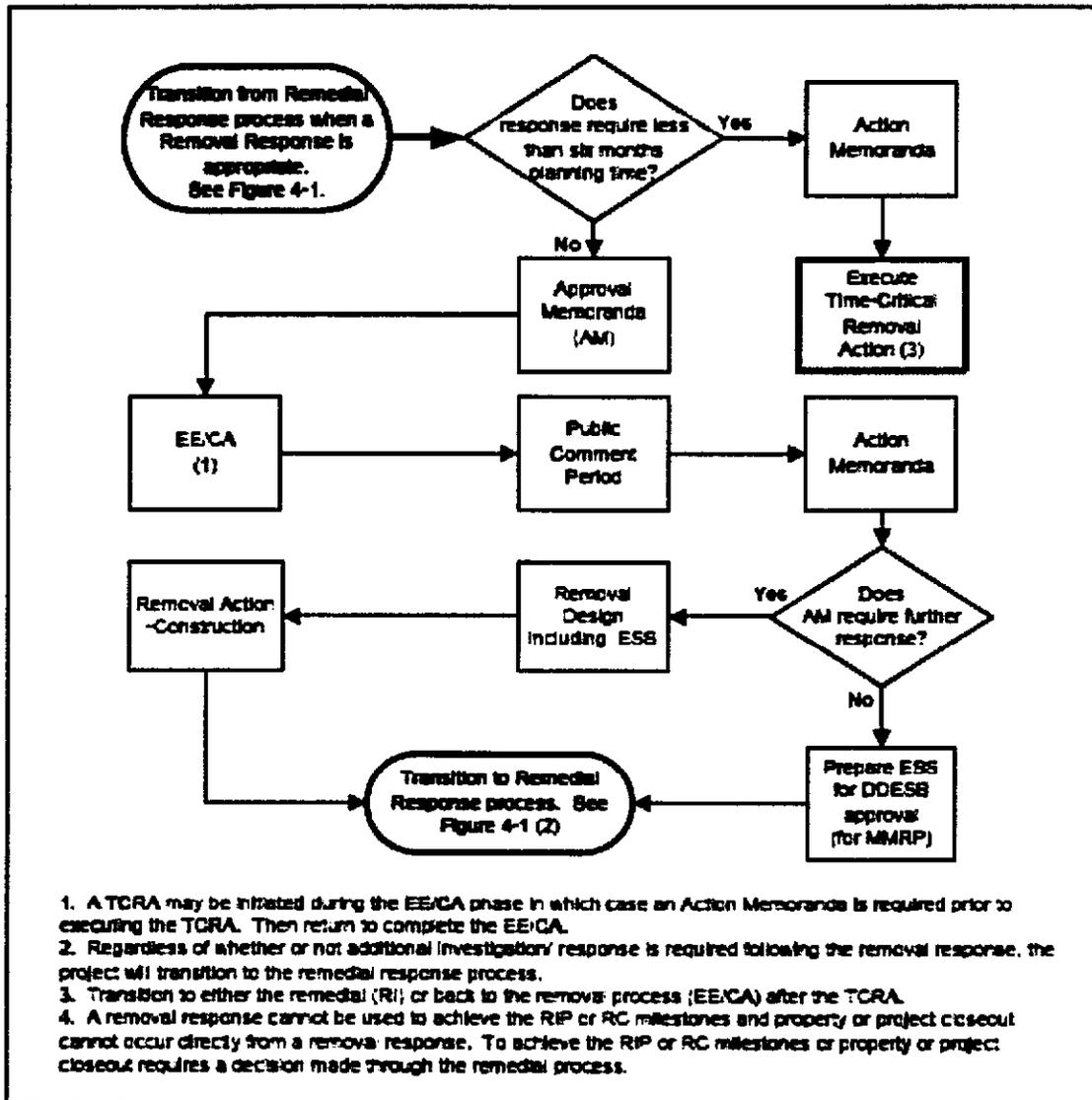
PRP/TPS Projects: involve activities at an area of an eligible FUDS property where DoD may bear potential CERCLA liability for hazards or hazardous substance releases along with other parties. USACE must consider a PRP project on eligible FUDS Properties where contractors conducted activities that contributed to contamination of the property (i.e., government owned/contractor operated properties) unless there is evidence that the contract operator is no longer viable and there are no corporate successors. TPS are properties that are not eligible for response actions under the FUDS program. However, because DoD, along with other parties, may bear potential liability at TPS for DoD hazards or hazardous substance release, a PRP project should be considered. This potential liability may result from actions in disposal, transport, or arranging for transport of DoD hazards or hazardous substances from a eligible FUDS property.

BD/DR Projects: involve response actions at an area of an eligible FUDS property to address the demolition and removal of unsafe buildings and structures and the removal of unsafe debris. For BD/DR projects where hazardous substances are not present, the CERCLA removal action process need not be followed. If a non-incident actual or threatened release of a CERCLA hazardous substance, pollutant or contaminant (including MEC and MC) is identified during the performance of BD/DR program category activities, DoD policy requires that appropriate response action under the installation restoration or military munitions response program categories be conducted.



Source: Figure 4-1 FUDS ER 200-3-1

Figure 1 Remedial Response Process for HTRW and MMRP Projects



Source: Figure 4-4 FUDS ER 200-3-1

Figure 2 Removal Response Process for HTRW and MMRP Projects

3. NDAI Criteria and Decision Making

Eligible projects that do not require removal or remediation action under the FUDS program are classified as NDAI. NDAI classification is a USACE programmatic decision and is intended solely to assist USACE in demonstrating its accomplishment of DERP program goals and objectives to Army and DoD. NDAI determination can directly result in a project closeout without regulatory concurrence only: (i) in the case of BD/DR projects that are based entirely on safety issues, not environmental response actions; or (ii) PRP projects where USACE negotiates a fair and equitable settlement representing DoD's contribution for contamination at the property and response actions are performed by other PRP(s). The categories of NDAI are divided into Category I, II, III, or IV depending upon decision criteria and the stage of the FUDS program. The table below describes the criteria for each of the four NDAI categories.

	NDAI Category I	NDAI Category II	NDAI Category III	NDAI Category IV
Project Stage	PAE (INPR)	SI	RI/FS or EE/CA	RA
NDAI Criteria	No contamination at property or DoD is not liable for the hazardous condition	Contamination not confirmed and remedial/removal response not required	Contamination below risk-based standards and remedial/removal response not required	All remedial/removal actions taken
Progress Close- Out	Response complete or property close-out	Response complete or property/project close-out with regulatory concurrence as appropriate	Response complete or property/project close-out with regulatory concurrence as appropriate	Remedial actions in place or response complete or property/project close-out with regulatory concurrence as appropriate

A building or site that has been "beneficially used" has been used by a state or local government or private party in a way that has the potential to have caused contamination. The "beneficial use" happened after the building or site was owned by the DoD.

In addition, NDAI classification can be applied to eligible projects for which DoD policy precludes DERP-FUDS funds usage. NDAI may be applied to the following:

- Projects identified on Sites where the current property owner refuses right of entry;
- Projects to remedy hazards which resulted from civil works activities rather than military activities;

- Projects for reimbursement to past and current owners who initiated or completed an otherwise eligible FUDS response activity;
- Projects involving asbestos-containing building materials (ACBM) or lead-based paint; and
- CON/HTRW projects involving containers which were beneficially used or partially removed by owners subsequent to DoD usage cannot be proposed unless there is evidence of a release.

Project close-out for a FUDS property occurs when DoD caused contamination or waste has been addressed and no other DoD actions are to be undertaken. Contamination caused by other parties may still exist at the site.

Decisions to categorize suspected or confirmed areas of contamination as NDAI are made on the basis of available information, which is commonly organized in terms of contaminant sources, exposure pathways, and receptors. The decision criteria are based on legal provisions of CERCLA and require that human health and the environment be adequately protected in case of a release or threatened release of a hazardous substance. A NDAI decision is conceptually based on a comparison between the risk characteristics of a project and applicable NDAI criteria. The following four basic questions are addressed to reach a credible NDAI decision for a project.

- What was the original basis for designating the project and what have previous investigations concluded?
- What information about the project characteristics has been developed on which to base the NDAI decision?
- Was the information developed in conformance with data quality objectives (i.e., guidelines and quality standards applicable to the stage of response or investigation)?
- What is the applicable federal or state criterion for making the NDAI decision at this stage of the response or investigation?

Regulatory agencies in California include the Department of Toxic Substances Control (DTSC), the California State Regional Water Quality Control Board (RWQCB), and County governments.

4. Interaction with State and Local Regulators

As chief executor of the DERP-FUDS program, the Corps works closely with Federal, State, and local regulatory agencies in the planning and execution of all FUDS projects. The coordination begins at the inventory stage of the FUDS program. The Corps will notify identified current landowners and appropriate regulatory agencies of proposed actions, when funding is available for the approved project(s) in accordance with the annual work plan. At

such time, information on the approved FUDS is also available, upon request, to the general public. Regulatory agencies are to be provided opportunities to fully participate in the evaluation and oversight of the progress of any subsequent study and removal/remedial phase.

Program activities will be executed consistent with CERCLA, and with applicable requirements and other environmental laws and regulations. The Corps is not strictly obliged to obtain permits or other approvals from federal, state, or local agencies for work at the Site. However, under DERP-FUDS the Corps is obliged to meet the substantive technical requirements of applicable agencies. Site closure under FUDS is a decision that rests with the Corps.

5. Potentially Responsible Parties

A PRP is defined in CERCLA Section 107 as any person related to a property that is a:

- Current owner or operator;
- Past owner or operator at the time of disposal of any hazardous substance, pollutant, or contaminant;
- Person who arranges for disposal, treatment, or transport for disposal or treatment of hazardous substances; or
- Transporter who has selected the site for the disposal of a hazardous substance.

To avoid the need for litigation to recover ER-FUDS program appropriations expended for response actions that deal with other PRPs' contamination on FUDS, USACE focuses its PRP efforts toward settlement of any DoD CERCLA liability with other PRPs, rather than on conducting response actions at properties with other PRPs. The PRP mission goal is to negotiate a fair and equitable settlement with other PRPs who either have or will take the response action in exchange for a release of DoD liability under CERCLA, other applicable environmental laws, and rules of common law. These settlements should reflect any DoD contribution made toward investigating and remediating contamination. USACE coordinates its PRP settlement efforts with the Department of Justice. USACE also seeks, in appropriate cases, recovery from other PRPs of the costs it has expended in response actions related to hazardous substance releases for which other PRPs are liable.