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ENVIRONMENT

At Former Military Sites, a Hidden Peril

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MARINA, Calif.—When officials from this seaside community first visited the scrub-covered land the U.S. Army was preparing to hand their city, they thought the site would make a perfect golf course. Golfers could enjoy panoramic views of the area, from the waters of Monterey Bay to the vegetable fields of the Salinas Valley.

The golfers also would have encountered some unusual hazards. In 1994, specialists swept the site and removed 23 live anti-tank bazooka rounds. Local environmental groups worry there could be more unexploded ordnance—or UXO—hidden in the area, and a lawsuit has now led the Army to hold off transferring the land.

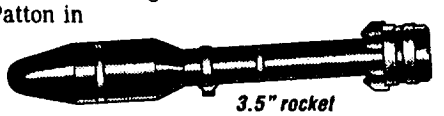
MK2 grenade

The anti-tank range is just a tiny portion of Fort Ord, a base closed in 1994 that sprawls over 28,000 acres—or 44 square miles—of the Monterey Peninsula. And UXO, which consists of dud munitions that failed to explode after being fired or surplus ordnance that soldiers simply buried as a means of disposal, is a huge problem throughout the base, just as it is at hundreds of other former military sites around the country.

"When you train soldiers for war, you need to put them in a live environment, firing live munitions," says Bill Collins, UXO project manager at Fort Ord. But military officials never contemplated that hundreds of firing and bombing ranges across the country might someday be returned to public hands for use as golf courses and hiking trails.

No one knows how much UXO exists, but estimates gathered by a Defense Department task force suggest that more than 15 million acres in the U.S. need to be surveyed for contamination. The sites range from the World War II desert training grounds of Gen. George Patton in California to recently closed bases, like Fort McClellan in Alabama.

Even if just 5% of that acreage needs cleanup, the task force noted in a report last April, costs could exceed $15 billion and take decades to complete using current technology. These estimates don't include huge areas of UXO contamination undersea.



3.5" rocket

At Fort Ord, $36 million had been spent on UXO removal as of Sept. 30, 1998, and Gail Youngblood, the base's environmental coordinator, projects $115 million more will have to be spent to complete the cleanup over the next ten years. Even so, some critics worry that not enough is being done to protect the public.

Reports of people being injured or killed by UXO are rare, but there have been some terrible accidents. In 1983 three boys were playing with a World War II-era shell they found in a San Diego subdivision built on a former military base. The shells—like the anti-tank rounds found at Fort Ord—were designed to explode on impact with a hard object.

The boys may have banged the shell with a rock, and when it exploded, it killed two of the them. The blast disembowled one boy, ripping off a leg and arm, and caused mortal head wounds to the other, says Rick Stauber, a UXO removal specialist who investigated the incident. The third boy was seriously injured.

After filing suit, the boys' families received million-dollar settlements from the city of San Diego and the insurer for the subdivision developer. They, in turn, sued the federal government and received partial reimbursement for their settlement payments.

In 1995 seven boys in Bartlett, Tenn., were injured by a hand grenade that one of them apparently had found on a visit to Fort Sill, Okla., and taken home as a souvenir. Public officials also report numerous instances of children and adults finding ordnance, but not being injured by it.

Dwight Hempel, the military liaison officer at the Bureau of Land Management, notes that the public's exposure to UXO is certain to increase as population expands into once-remote training areas and post-Cold War base closings put increasing amounts of military land into civilian hands.

Fort Ord, about an hour's drive south of Silicon Valley, sits on prime real estate running from beach-side dunes to hills

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Watch Your Step

Hundreds of former military sites may contain unexploded ordnance. A sampling:

- **Graveyard Gulch, Ariz.** Used as Army bombing and gunnery range from about 1940-1957. Hikers recently reported finding munitions.
- **Cape Cod National Seashore, Mass.** Projectiles from former Camp Wellfleet sometimes found on beaches, especially after erosion of coastal bluffs.
- **Pine Ridge Indian Reservation** About 340,000 acres of reservation land once used by Air Force as gunnery and bombing range and by South Dakota National Guard for artillery practice. Residents regularly find ordnance on the land, where some farm and graze livestock. Cleanup process now beginning.
- **Fort McClellan, Ala.** Former site of Army chemical warfare school. Cleanup to begin prior to construction of Interstate highway spur through the closed base.
- **Camp Bonneville, Wash.** Closed base about 12 miles from Portland, Ore. A grenade and anti-tank rocket range being cleaned up now. Full site UXO assessment not yet complete.

81mm mortar

Illustrations by Brad Hamann

At Former Military Sites, a Hidden Explosives Menace

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overlooking the Pacific Coast. One early proposal for reuse of the base contemplated everything from office buildings and resort hotels to a theme park, a zoo and an "ethnic village." The plan even called for homes and parks to be built smack in the middle of Fort Ord's main firing range.

Ultimately, federal and state officials hammered out a reuse plan for the base that sets aside about 75% of the land for open-space recreational use and habitat preservation.

While many military installations are seriously polluted, a number also contain some of the last areas of pristine habitat in the country. UXO is part of the reason, since it has acted as a big deterrent to building on firing and bombing ranges. Fort Ord, for example, contains some of California's last remaining maritime chaparral—a mixture of shrubs and annuals—and deer, bobcats and mountain lions roam its far reaches.

As planners determined what portion of Fort Ord would be developed, they had to keep UXO in mind. "We've tried to stay away from the most impacted areas as much as possible," says Michael Houlemard, director of the Fort Ord Reuse Authority.

That hasn't proved easy. Troops first started training at Fort Ord in 1917. After 75 years of use, the base is littered with the remnants of their preparations for war.

Besides the main firing range, officials have identified 87 areas around the base that may contain unexploded ordnance.

For the last four years, teams of specialists have fanned out over these areas, searching for ordnance with hand-held magnetometers—similar to coin detectors people use at the beach. To date, they have unearthed thousands of live munitions, including mortars, rockets, hand and rifle grenades and other projectiles.

The use of magnetometers is extraordinarily labor-intensive and, as the April Defense Department task-force report noted, "plagued by excessive false alarm rates." Some sites, the report notes, "will have more than 100 subsurface non-ordnance items (clutter) flagged and removed for each actual ordnance item flagged and removed."

Because operators can't tell what it is that registers on their magnetometers, they must spend as much time and care digging up a piece of scrap metal as they do an explosive.

A lawsuit filed against the Army last year by the Boston-based National Environmental Law Center on behalf of California environmental groups alleged that the use of magnetometers to sweep Fort Ord's former anti-tank range wasn't reliable. The suit called for the Army to use more-sophisticated technology.

But Mr. Collins, Fort Ord's UXO project manager, notes that the bazooka rounds found at the site were fired from the shoulder, parallel to the ground, and thus were found at or very near the surface. And even though a cache of live rockets was found buried about 18 inches below ground, Mr. Collins says, "I'm personally comfortable with the use of the [magnetometer] at that site."

Marina officials are anxious to press ahead with their plans for the site, and they have lined up a developer to build the golf course and an adjacent hotel. But in response to the lawsuit, the Army has agreed to delay transferring the property while it considers whether federal law requires a more thorough search for UXO.

Mr. Collins does point out that "no matter what technology we use on the site, there's always the possibility that something will be missed." For that reason, when the Army does transfer land that has been swept for UXO, the transfer documents contain notice that some ordnance might remain. (An Army spokeswoman says the notice doesn't immunize the Defense Department from legal liability.)

The City of Marina has also set up a plan to send property owners within the "ordnance remediation district" annual notices on the issue and to require anyone excavating more than 10 cubic feet to get a permit.

Some portions of the base are already open for activities such as hiking, horseback riding and mountain biking. Trail maps indicate land that hasn't yet been cleared, and signs throughout the base warn of the UXO danger. Mr. Collins says brochures have also been mailed to area residents with pictures of ordnance and warnings in English and Spanish.

"If you discover any object that resembles those shown inside this brochure, do not touch it!" the document cautions. "Instead, mark the location and call the federal police."

Lenny Siegel, a Mountain View, Calif., environmental activist who has focused on cleanup of military sites, worries the measures being taken aren't sufficient. He and others point out that, over time, forces such as erosion or seismic activity tend to bring buried ordnance to the surface, meaning that even areas that have been swept could become dangerous once again.

Mr. Siegel also fears that thrill-seeking students at California State University at Monterey Bay—newly established in former Army buildings on Fort Ord—will search for ordnance, rather than heed signs to avoid it.

Mr. Collins says the Army will do recurring reviews to determine if erosion or other factors require renewed sweeps for UXO.

So far, almost no ordnance clearance has been done on Fort Ord's main firing range, 8,000 hilly acres littered with charred and blasted carcasses of vehicles set up as targets. From various points around the perimeter, soldiers fired all manner of conventional munitions into the center of the range. There are even reports that, decades ago, U.S. Navy ships in Monterey Bay fired 8-inch rounds into the area.

Although an effort will be made to clean up much of the main firing range, some sections are so densely studded with UXO that even the Army is throwing up its hands. About 1,700 acres of land, Mr. Collins says, will simply be surrounded with barbed-wire-topped fence and left until ordnance detection technology improves.