

SITE OE-32B

OIL WELL ROAD TRAINING AREA II

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SITE OE-32B – OIL WELL ROAD TRAINING AREA II

3.32B Site OE-32B (Oil Well Road Training Area II)

A summary report for Site OE-32B is provided below. This report consists of two parts. The first part, contained in Sections 3.32B.1 through 3.32B.5, includes a presentation and assessment of archival data. Specific elements include a review of site history and development, evaluation of potential ordnance at the site, a summary of previous ordnance and explosives (OE) investigations, and a conceptual site model. The above-mentioned information was used to support the second part of this report, which is the Site Evaluation (Section 3.32B.6). The Site Evaluation was conducted in accordance with the procedures described in the *Final Plan for Evaluation of Previous Work (Harding Lawson Associates [HLA], 2000b)* and may restate some information presented previously. The Site Evaluation discusses the evaluation of the literature review process (Section 3.32B.6.1), and an evaluation of the sampling process(es) (Section 3.32B.6.2). These discussions are based upon information from standardized literature review and reconnaissance review checklists (Attachment 32B-A). Section 3.32B.7 provides conclusions and recommendations for the site. References are provided in Section 3.32B.8.

3.32B.1 Site Description

Site OE-32B is approximately 47 acres and is located in the southeastern portion of the former Fort Ord (Plate 32B-1). The surrounding area is undeveloped open space. This site was identified during interviews conducted during the Preliminary Assessment/Site Investigation (PA/SI) phase of the Archives Search Report (ASR; *U.S. Army Engineer Division, Huntsville [USAEDH], 1997*).

3.32B.2 Site History and Development

The following presents a summary of the site history and development that is based on archival research and review of historical training maps and aerial photographs. Plates have been prepared that present pertinent features digitized from historical training maps and scanned aerial photographs reviewed by Harding ESE. It should be noted that minor discrepancies between source maps, combined with the natural degradation of older source maps and photographs, has resulted in misalignment of some map features. In addition, camera angle and lens distortion introduced into older aerial photographs, combined with changes in vegetation and site features over time may contribute to the misalignment of some map features with respect to the aerial photographs.

Pre-1940s

This site lies within a tract of land purchased from private landowners by the government after July 1940 (*Arthur D. Little, Inc. [ADL], 1994*). During interviews with former Fort Ord personnel in 1994, a location in the vicinity of Site OE-32B was identified as a 1930s era training area (*HLA, 1994*). During that time the area would have been utilized by troops stationed at the Presidio of Monterey and training at nearby Camp Huffman (*HLA, 2000a*).

1940s Era

Documentation of 1940s era use of this area by the Army for training is presented in training facilities and topographic maps of the area. Topographic maps of the area from 1944 through 1946 were reviewed. No training areas or other features were identified within this area. An “Anti-Tank” range and a “Bazooka

Demonstration” area were noted within the Multi-Range Area (MRA), on the 1945 and 1946 training facilities maps. The MRA is located to the west of Site OE-32B (Plate 32B-1).

- No specific training areas are present in the site vicinity on the 1945 and 1946 maps. The site is within the larger training area “C-2” (*U.S. Army [Army], 1945 and 1946*).

1950s Era

Review of 1950s training maps indicates that Oil Well Road Training Area was active from 1954 through 1956 (Plate 32B-2). A Tank Gunnery Range is shown within the west boundary of Site OE-32B. According to an interview with Mr. Fred Stephani, a tank hull was used in the 1950s and 1960s as a target for ordnance training including shoulder launched projectiles. The following identifies more specific data from the 1950s historical review:

- The circa 1954 and 1956 training maps identify the site within the larger Oil Well Road Training Area (*Army, 1954 and 1956*). The site area is also within the larger training area used by the “Division Artillery.”
- The 1956 training map shows a Tank Gunnery Range just west of the site (*Army, 1956*). The map indicates the range fan pointing towards the northwest, indicating that firing was directed away from the site toward the northwest.
- The 1957 and 1958 training maps show a Tank Gunnery Range bordering Sites OE-32A and OE-32B (Plate 32B-2). The site is within the larger training area used by the “1st Brigade” (*Army, 1957 and 1958*).
- The Oil Well Road Training Area is shown on the Army 1954 map, the 1956 map, and the U.S. Army Corps of Engineers (USACE) 1958 map (*USACE, 1958*). The Oil Well Road Training Area does not appear on the 1961 USACE map or any other available Fort Ord maps thereafter.
- Ranges used for the firing of antitank weapons, including rockets, bazookas, and recoilless rifles, were present within the MRA and are shown on the 1946, circa 1954, 1956, 1957, 1958, 1961, and the 1964 training maps.

1960s Era

Review of 1960s Fort Ord training maps indicates that the area south of the site was used for aviation training. Site OE-32B is within larger training area “R (G-3)” on the 1964 through 1972 field training maps. More specific data are provided below:

- The 1964 field training map shows “RWD 3, 4” just north of Site OE-32B. The type of activity associated with “RWD 3, 4” is unknown. The 1964 and 1968 maps show aviation training areas south and southwest of the site (*Army, 1964; USACE, 1968*). According to the Fort Ord Range Control Officer present at Fort Ord from 1970 through 1990, training at the aviation training areas included helicopters landing and taking off as part of a practice emergency evacuation scenario and did not involve the use of OE (*Strickler, 2003*).
- No evidence of training was observed on the 1966 and 1999 (Plate 32B-2) aerial photographs.

1970s To Present

The 1970s training maps show that aviation training continued into the early 1970s. Site OE-32B is included within the larger training area “N (1st Brigade)” on the 1976 through 1987 training maps.

- The 1967 and 1972 training maps show “H (helipads)” south and southwest of the site (*Army, 1967; USACE, 1972*). Site OE-32A is located on the 1972 map within a larger training maneuver area “R (G-3).”
- No training areas are seen in the site vicinity on historical training maps after 1972.

Proposed Future Land Use

Proposed future land use includes habitat reserve and development with reserve or restrictions (*USACE, 1997*). A portion of Site OE-32B lies on property that was transferred to the Bureau of Land Management (BLM) in 1996 and will be maintained as habitat reserve (*USACE, 1997*). The remainder of the site will be transferred to Monterey County to be used as an overflow parking area for the Laguna Seca Raceway.

3.32B.3 Potential Ordnance based on Historical Use of the Area

This section describes the types of training devices that could have been used at a tank gunnery or antitank range in the 1950s. Information on tank weaponry in use immediately following World War II was obtained from *The American Arsenal, The World War II Official Standard Ordnance Catalog of Small Arms, Tanks, Armored Cars, Artillery, Antiaircraft Guns, Ammunition, Grenades, Mines, etcetera* (*Hogg, 2001*). Information on antitank weapons used in the 1950s was obtained from Field Manual (FM) 23-11 (*Army, 1965*), from Army Regulation (AR) 385-63 (*Army, 1983*), *The American Arsenal* (*Hogg, 2001*), and interviews (*Stoner, 2002*).

Tank weaponry in use at the end of World War II included 75mm, 76mm, and 90mm guns. Ordnance fired may have included target practice, high explosive (HE), HE antitank (HEAT), smoke, armor-piercing (AP), and AP Capped (APC).

Shoulder-launched projectiles, (antitank weapons) in use in the 1950s included the 3.5-inch rocket and recoilless rifles. The M20 3.5-inch rocket launcher is a two-piece, smooth bore, open-tube weapon that is fired electrically. The weapon can be fired from a sitting, kneeling, standing, or prone position. A magneto-type firing device in the trigger grip provides the current for igniting the rockets. Ordnance fired from the M20 included the M28A2 HEAT rocket, M29A2 practice rocket, and the M30 white phosphorous (WP), smoke rocket. Recoilless rifles are portable antitank weapons that were either shoulder- or ground-fired and in some cases could be fired by either method. The recoilless rifle was developed during WW II and saw limited action by war’s end. The weapon was used extensively during the Korean War. Recoilless rifles in use by the Army in the mid-1950s include the M18 57mm, the M20 75mm, the M40 106mm, and the truck-mounted M27 105mm (*Stoner, 2002*). The M18 and M67 could be fired from the shoulder (*Hall, 2003*). Explosive ammunition used in the M18 and M67 recoilless rifles included HEAT, white phosphorous (WP) smoke, and canister (antipersonnel) in the M18; and HEAT, high explosive plastic (HEP), and APERS (flechette antipersonnel) in the M67. Additionally, target practice (TP) or drill rounds were also used in all models of recoilless rifles.

The projectiles that may have been fired at this site would have been fired roughly parallel to the ground and would be expected to be located at or near the surface.

Additionally, because this area was within a larger troop training and maneuver area the possibility exists that blank small arms ammunition and pyrotechnics may be present at this site.

3.32B.4 History of OE Investigations

The following describes the OE investigations that have been conducted at Site OE-32B.

1993 Archives Search Report (ASR)

The purpose of the archives search conducted at Fort Ord was to gather and review historical information to determine the types of munitions used at the site, identify possible disposal areas, identify unknown training areas and recommend follow-up actions. Guidance for conducting archives searches did not exist prior to 1995. The 1993 ASR was completed based on the Scope of Work provided to the St. Louis Corps of Engineers by the Huntsville Corps of Engineers and on archive search reports completed at other military installations. The archives search included a Preliminary Assessment/Site Investigation (PA/SI) consisting of interviews with individuals familiar with the sites, visits to previously established sites, reconnaissance of newly identified training areas, and the review of data collected during sampling or removal actions. Requirements for the preparation of an ASR are described in Section 2.0 of this report.

This area was identified on training maps from the mid-1950s first as the Oil Well Road Training Area (circa 1954) and as a Tank Gunnery Range (1956, 1957, and 1958). The 1993 ASR recommended further investigation into these areas (*USAEDH, 1993*).

UXB International Inc. Investigation

Sampling of Site OE-32B was conducted in 1995 by UXB International Inc. (UXB) (*UXB, 1995b*). The USACE, Huntsville Division, provided the site boundary. The UXB sampling methodology is discussed in Section 3.32B.6.2. The site was subdivided into a total of two hundred 100- by 100-foot sample grids, twenty of which were selected at random for sampling (200,000 square feet). The grids were geophysically investigated along search lanes of a maximum 5-foot width using the Schonstedt Model GA-52/Cx magnetometer. All magnetic anomalies were excavated using hand tools by the UXB UXO Safety Specialist until an item was located, the magnetic signal was lost, or a depth of 4 feet was achieved. Two hundred and sixty-six items were found and removed. Two hundred and sixty-three of the items were live small arms blanks. Three expended OE items were found during grid sampling, including a grenade safety lever, a hand smoke grenade (M18 Series), and a ground illumination signal (M125 Series). No information regarding the depths at which the smoke grenade and the illumination signal were found was provided in the UXB after action report. Information regarding the location of where the items were found within the grids was documented by UXB; however, the orientation of the grids (with respect to north and south) was not provided so the accuracy of the location of the items found is to the sample grid only. No evidence was found to support the used of shoulder-launched projectiles or tanks. On the basis of the sampling results, no further OE response was recommended by UXB (*UXB, 1995b*). A summary of the sampling operations conducted at Site OE-32B is provided in Table 32B-1.

CMS Investigation

CMS Environmental (CMS) did not sample Site OE-32B, but did conduct sampling in 1995 through 1996 and a limited removal action in 1997 at adjacent Site OE-32C. Site OE-32C lies within the footprint of the Tank Gunnery Range as depicted on Fort Ord Training Facilities maps from the 1950s. No evidence

of OE associated with a tank gunnery range was found during the sampling of Site OE-32C (*USA Environmental Inc. [USA], 2000*).

1997 Revised Archives Search Report

The site was identified as the Oil Well Road Training Area and includes Sites OE-32A, -32B, and -32C. These sites are immediately adjacent to and partially surround Site OE-27U (Training Site 21). Interviews conducted as part of the archives search indicated that the area includes targets for shoulder-launched projectiles and armor-piercing projectiles (*USAEDH, 1997*). Sampling was conducted at this site and no evidence of the use of tanks or the firing of shoulder launched projectiles was found. The revised ASR included a review of the sampling investigation conducted by UXB at Site OE-32B, as well as at adjacent Site OE-32A. Based on the sampling results (no OE found), the 1997 revised ASR recommended no further OE-related investigation at Site OE-32A (*USAEDH, 1997*). The revised ASR was completed in accordance with U.S. Army Corps of Engineers guidance (*USAESCH, 1995*).

3.32B.5 Conceptual Site Model

Conceptual site models (CSMs) are generally developed during the preliminary site characterization phase of work to provide a basis for the sampling design and identification of potential release (functioning of the OE item; e.g., detonation) and exposure routes. CSMs usually incorporate information regarding the physical features and limits of the area of concern (the site), nature and source of the contamination (in this case OE), and exposure routes (potential scenarios that may result in contact with OE).

The CSM for Site OE-32B is based on currently available site-specific and general information including literature reviews, sampling results, aerial photographs, maps, technical manuals, field observations, and the information shown on Plate 32B-2. It is provided to help evaluate the adequacy of the investigation completed to date and to identify potential release and exposure pathways. Two models were developed for this range, one for use as a Tank Gunnery Range (Plate 32B-3) and one for use as an area where shoulder-launched weapons were used (Plate 32B-4). A description range design for weapons that could have been used is described below.

3.32B.5.1 Training Practices

A description of range design and training practices associated is discussed below to provide information on the types of OE that may have been used at the site and the possible location of OE potentially remaining at the site.

Tank Gunnery Range

A tank gunnery range used for direct fire from a static position includes an impact area around the target and ricochet areas to either side of the target. The minimum direct fire distance to a target (impact) for a 90mm gun is 550 meters. Direct fire distances are the minimum required to protect exposed personnel from hazardous fragments resulting from the firing of high explosive projectiles at hard or fragment producing targets (Army, 1983). The maximum extent of the range safety fan displayed on the 1950's training areas maps is not large enough to accommodate the minimum direct fire distance requirements for a 90mm tank gun (550 meters). One possible explanation for the presence of the Tank Gunnery Range is that it was used for firing tank mounted .30 caliber and/or .50 caliber machine guns rather than tank guns.

Recoilless Weapons Range

Safety design requirements for a recoilless weapons range are presented in the *Policies and Procedures For Firing Ammunition for Training, Target Practice, and Combat* (Army, 1983). The surface danger zone for a recoilless weapons range is composed of an impact area (primary danger area), a ricochet area (provided to contain ricochet projectiles), a secondary danger area paralleling the impact area laterally (to contain fragments on the right or left edge of the impact area), a secondary danger area on the downrange side of the impact area (to contain fragments from items exploding on the far edge of the impact area), and a rear danger zone impacted by the effects of the weapon being fired. Depending on the model of the recoilless weapon used, range safety requirements include a minimum distance to impact of 250 to 300 meters, and a maximum range of approximately 2,200 to 8,600 meters. The minimum distance to impact may be reduced by 75 percent if firing non-explosive projectiles from unprotected positions (Army, 1983).

3.5-inch Rocket Range

A 3.5-inch rocket range includes an impact area (primary danger area), ricochet areas to the side and behind the impact area, secondary danger zones located outside of the ricochet areas to contain fragments from items exploding or ricocheting on the right or left edge, and on the far edge of the impact area and a rear danger zone immediately to the rear of a weapon endangered by the effects of the weapon being fired. Minimum distance to impacts is 250 meters and range length from firing point to the end of the impact area is 950 meters (Army, 1983).

3.32B.5.2 Site Features

Site OE-32B was identified on historical training maps (circa 1954 and 1956) as the “Oil Well Road Training Area.” A Tank Gunnery Range is also shown on the 1956 map immediately to the west of the training area. The Oil Well Road Training Area is not identified on the 1957 and 1958 training maps. However, the Tank Gunnery Range is shown on the 1957 and 1958 maps and what may have been the firing line for the range is located within the former location of Oil Well Road Training Area. No specific training area is shown in this location on the 1964 or subsequent training maps. The former locations of the Oil Well Road Training Area and the Tank Gunnery Range lie within larger Training and Maneuver Area identified on training maps from the 1960s to the 1970s.

The possible location of the firing position for the Tank Gunnery Range was located along Oil Well Road. From the firing point, the terrain slopes gently to the northeast with the range fan pointing toward a ridge to the west-northwest that rises approximately 170 to 200 feet above the firing point. The MRA is located approximately 8,000 feet beyond the firing point. There is no developed land between the Tank Gunnery Range firing point and the MRA.

3.32B.5.3 Potential Sources and Location of OE

A portion of Site OE-32B was reportedly used as a Tank Gunnery Range in the 1950s and the site may have been used for firing of shoulder-launched projectiles (USAEDH, 1997). Based on site use, the types of OE that may be expected include projectiles (57mm, 75mm, 3-inch, and 90mm) and rockets (3.5-inch). Based on the design and use of these items, they would normally be found at the surface. No OE or evidence of tank or shoulder-launched projectiles (fragments) or shell casings was found at this site or in surrounding sites (OE-32A and OE-32C) during sampling. The range safety distance requirements needed for the firing of tank and/or shoulder launched projectiles are not met by the dimensions of the range safety fan depicted on the 1950s era facilities training maps. OE scrap (smoke grenade,

illumination signal, and grenade safety lever) and live blank small arms rounds were found indicating that the site was used for troop training and maneuvers.

One expended M18 Series smoke grenade and one expended M125 Series illumination signal was found during sampling at Site OE-32B. The smoke grenade is used for ground-to-air or ground-to-ground signaling and the illumination signal is used primarily as a communication signal, but can also be used for illuminating small areas for short periods. Both items by design are non-penetrating and if still present would be located at or near the ground surface. Additional information on the illumination signal and the smoke grenade are provided in Attachments 27Y-A2 and 32A-A2, respectively.

3.32B.5.4 Potential Exposure Routes

A portion of this site is within land transferred to the Bureau of Land Management (BLM) and is open to the public for hiking, biking, and horseback riding. Use is restricted to marked trails. The remainder of the site will be transferred to Monterey County and used as an overflow parking area for the Laguna Seca Raceway. The public has had access to this area for approximately 6 years. To date, no instances of OE items being found in this area have been reported. Because no OE items were discovered during sampling or reported previously, it is unlikely that OE exists at the surface in this area. However, because the site was not 100 percent investigated and OE scrap was found during sampling, the possibility exists that a recreational user or future construction worker could come into contact with surface OE.

Although no OE items were found at Site OE-32B a brief discussion of the potential injuries that could result from contact with illumination and smoke signals are provided below. These items were selected for discussion, because a scrap illumination signal (M125 Series) and a scrap smoke signal (M18 Series) were found during sampling.

For each of the OE items potentially remaining at the site, the following discussions provide information on: (1) how the item was designed to function, (2) the likelihood the item would function if found onsite and handled, and (3) the type of injury the item could cause if it functions. Additional information on these items is provided in Attachments 27Y-A2 and 32A-A2.

Signals, Illumination, Ground, Clusters: Green Star, M125A1; Red Star, M158; White Star, M159.

These signals were designed for daytime and nighttime signaling. Star cluster signals consist of 5-star illuminant assemblies and a rocket motor propulsion assembly combined in a hand-held aluminum launching tube. The base of the launching tube contains a primer and an initiating charge. As shipped, the firing pin cap is assembled to the forward end and must be reversed for firing. Stabilizing fins on the tail assembly of the rocket are folded parallel to the axis of the signal. A bolt, which also transfers the initiating charge flash to the propellant, extends into the center of the solid propellant, which fills the propulsion assembly. The illuminant assembly is mounted on top of the propulsion assembly with a delay assembly and an expelling charge between. It was functioned by striking the primer with the firing pin, which ignites the initiating charge to ignite the rocket propellant. As the rocket emerges from the tube, the fins unfold for flight stability. Before rocket motor burnout, at 200 feet, the black powder expelling charge is ignited performing a two-fold purpose of expelling and igniting the 5-star illuminant assemblies. Burn time is 6 to 10 seconds with burnout occurring at 250 to 300 feet above the ground (*Army, 1977a*). It is unlikely that incidental contact could cause a signal to function as the cap must be removed, placed over the base and struck sharply. If caused to function, the type of injury that could be sustained would be burns from the initiating charge and possibly the rocket motor.

Summary: It is unlikely that a person could cause a signal to function through casual contact if one were found at the site and be burned, because it: (1) would require precise placement of components and a hard

blow to function, and (2) would have been exposed to moisture, degradation, and weathering for at least 10 years, which could decrease the effectiveness of the components that cause it to function.

Grenade, Hand, Smoke, M18. The M18 is a colored smoke hand grenade used for ground to air or ground to ground signaling. The grenades may be filled with any one of four smoke colors: red, green, yellow, or violet. Each grenade will emit smoke for 50 to 90 seconds. The grenade body is of thin sheet metal and is filled with smoke composition and topped with a starter mixture. The hand grenade fuze M201A1 is a pyrotechnic delay igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever, and safety pin with pull ring. The grenade weighs 19 ounces and contains 11.5 ounces of smoke composition. It was functioned when a soldier removed the safety pin from the safety lever and threw the grenade allowing the safety lever to fly free, releasing the spring-loaded striker to strike the primer. The percussion primer ignited the first fire mixture. The fuze delay element, which burns for 0.7 to 2 seconds, ignition mixture, and grenade starter mixture and filler, are ignited by the preceding component. The pressure sensitive tape is blown off the emission holes from which the colored smoke emits (*Army, 1977b*). Assuming an M18 smoke grenade was discovered in an unfired condition and caused to function, the type of injuries that could be sustained would be burns from the burning smoke composition. Due to the heat generated, it is unlikely that a person who found a grenade and caused it to function would hold onto it after ignition. Given that these items have been exposed to the elements for many years, moisture can penetrate and degrade the pressure sensitive tape, the smoke composition, and the condition of the sheet metal case of the grenade.

Summary: It is possible that a person could cause the smoke grenade to function if one were found at the site and be burned, but it would have been exposed to moisture, degradation, and weathering for at least 10 years, which could decrease the effectiveness of the components that cause it to function.

3.32B.6 Site Evaluation

The available data (e.g., archival and reconnaissance data) regarding Site OE-32B were reviewed and evaluated according to procedures described in the *Final Plan for Evaluation of Previous Work (HLA, 2000b)*. The evaluation process is documented through the completion of a series of checklists. Copies of the checklist are provided as Attachment 32B-A. This section presents a summary of the results of the checklist evaluation. It is divided into two sections, an assessment of the literature review and an assessment of the sampling performed at the site.

3.32B.6.1 Literature Review

Type of Training and OE Expected

As discussed previously, the site area was identified as the “Oil Well Road Training Area” on training maps from the mid-1950s. A Tank Gunnery Range was also delineated in this vicinity on 1956, 1957, and 1958 training maps. The range fan for the Tank Gunnery Range portrayed on the training maps indicates that the firing point would have been located within the western portion of Site OE-32B with firing directed away from the site toward the northwest. The UXB After Action Report states that this area was suspected of being used as impact area for 7- and 8-inch naval gun projectiles (*UXB, 1995*). The Data Summary and Work Plan Site 39 – Inland Ranges indicates that the impact area for the 7- and 8-inch projectiles was approximately 7000 feet to the west of Site OE-32B (*HLA, 1994*). Based on evidence indicating use of the site for a Tank Gunnery Range, it is possible that projectiles and rockets might have been used for firing. Site OE-32B is included within larger training and maneuver areas on training maps dating from the 1960s.

As part of the archives search, an interview was conducted with Mr. Fred Stephani. Mr. Stephani served as a Fort Ord fire fighter from 1942 until 1944 at which time he left the Fort Ord fire department and joined the Army. Mr. Stephani returned to the Fort Ord fire department in 1947 where he worked until he retired as Fire Chief in 1978. Mr. Stephani stated that shoulder-launched projectiles were fired in a canyon in the area. The firing direction was reported to have been “from north to south.” The location identified for this training roughly corresponds to the location of Site OE-27U (Training Site 21), approximately 2000 feet to the northeast of Site OE-32B. The Revised Archives Search Report also discusses the area to the south of Site OE-27U. This area is identified as “Area S” in interviews conducted during the archives search. The area was reported to have included “many target areas for shoulder fired projectiles, armor piercing projectiles, and possibly mortar. The firing points were located along the Oil Well Road Extension and along the south edge of the area.” The activity was reported to have taken place in the early 1950s. Area S is located partially within the current boundary of Site OE-32C and does not include any portion of the boundary of Site OE-32B. However, according to the description provided in the Revised Archives Search Report, some of the firing points associated with Area S may have been located within Site OE-32B.

Training maps from the 1960s and early 1970s show that the area in the vicinity of the site was used for aviation training and included helipad areas. Training within 50 feet of any helicopter pad was not authorized, unless an aircraft or emergency evacuation was in progress (*Army, 1980*). Site OE-32B is included within larger Training Maneuver area and training area “R (G-3)” as indicated on USACE training maps dating from the 1964 through 1972. Site OE-32B is located within a larger training area “N”, used by the 1st Brigade as indicated on Army training maps from 1976 to 1987. OE scrap items found to-date at the site (expended illumination signal, expended smoke grenade, grenade safety lever), and the presence of live blank small arms ammunition, support use of the site as a maneuver area. Based on what was found during sampling, pyrotechnics might have been used as part of training.

Subsequent Use of the Area

Approximately half of Site OE-32B was transferred to the BLM in 1996 and will remain undeveloped. The land is open to the public for recreational use such as hiking, biking, and horseback riding. The remainder of the site will be transferred to Monterey County and used for parking for the Laguna Seca Raceway.

Establishment of Site Boundaries

Site OE-32B was identified from the review of Fort Ord training facility maps conducted by the USACE as part of the archives search. Additional information about training in areas adjacent to Site OE-32B was acquired through interviews. Following initial sampling of the site USACE personnel, including the UXO Safety Specialist, developed the final site boundary. No additional information was found as a result of the literature review to warrant changes to the current boundary of Site OE-32B. The northwestern portion of Site OE-32B is located in the general vicinity of what would have been the approximate location of the firing point(s) for the range. The boundary of Site OE-32B does not include the portion of the Tank Gunnery Range that would have included the range targets.

Summary of Literature Review Analysis

Based on a review of site literature, there was sufficient historical evidence to warrant sampling of this site. The historical information indicates that a portion of Site OE-32B is located within the location of the former Tank Gunnery Range shown on 1956, 1957, and 1958 training maps. Based on the range fan location presented on the training maps it appears that Site OE-32B would have included a small portion

of the firing line, but not the target locations associated with the range. Training maps indicate that the direction of fire at the Tank Gunnery Range would have been toward the west away from the site. Based on the range size requirements for the firing of 75mm, 76mm and 90mm tank weapons, the Tank Gunnery Range may have been used for the firing of tank mounted .30 caliber and/or .50 caliber machine guns.

3.32B.6.2 Sampling Review

This section describes the items that were found during sampling and how these items support historical information concerning past use of the site. Site boundaries are associated in terms of the items found. There is also a discussion regarding sampling equipment, methods, and quality control measures used during prior OE sampling.

Sampling Results (Items Found)

UXB conducted sampling at Site OE-32B in 1995. Three OE scrap items and live blank small arms ammunition were found and removed (UXB, 1995b). The three OE scrap items (grenade spoon, hand smoke grenade, and ground illumination signal) were found in Grids 03G, 12S, and 09T, respectively (Plate 32B-3). The hand grenade was a colored smoke Model M18 Series used for ground-to-air or ground-to-ground signaling (Army, 1977b). The illumination signal was a hand-held Model M125 Series used for daytime or nighttime signaling (Army, 1977a). The type of grenade that the grenade safety lever came from is not known. Additionally, live blank ammunition (.30 cal, 5.56mm, and 7.62mm) was found on the ground surface in Grids 03R, 06H, 09Q, 12N, 12S, and 18T. All sample grids were placed within the site boundaries. No evidence of practice or high explosive projectiles was found within the boundary of Site OE-32B. No evidence was found during sampling to suggest that Site OE-32B was used for firing tank or antitank weapons. The items found during sampling (scrap pyrotechnics) are consistent with use as a training and maneuver area. A summary of the sample results for Site OE-32B is provided in Table 32B-2.

Site Boundaries Review

The site boundary was provided by the U.S. Army Corps of Engineers, Huntsville Division and documented in the ASR (USAEDH, 1997). A review of the sampling results indicates that the OE scrap and blank small arms rounds found were scattered throughout the site. The sampling results indicate that Site OE-32B was part of a larger troop training and maneuver area. No evidence of tank firing was found at Site OE-32B. All grids were completed within the Site OE-32B boundaries established by the USACE. Based on the results of sampling no modification of the Site OE-32B boundary is necessary.

Equipment Review

UXB used the Schonstedt Model GA-52/Cx magnetometer to conduct the geophysical investigation of Site OE-32B. The magnetometer is hand held and swung from side to side, generating a maximum search lane width of 5 feet. The Schonstedt instruments are passive dual flux-gate magnetometers--highly sensitive magnetic locators that detect ferrous (iron) metal objects; however, they cannot detect non-ferrous metal objects (e.g., lead, brass, copper, aluminum). Magnetometers make passive measurements of the earth's natural magnetic field; ferrous metal objects (and rocks) are detected because they produce localized distortions (anomalies) in the magnetic field. The Schonstedt magnetometers actually detect slight differences in the magnetic field (the "gradient") by means of two sensors mounted a fixed distance apart within the instruments' staff. Because the magnetic response falls off (changes) greatly even over a short distance, gradient magnetometers like the Schonstedt GA-52/Cx is especially sensitive to smaller, near-surface ferro-metal objects (Breiner, 1973).

The performance of the GA-52/Cx was evaluated as part of the Ordnance Detection and Discrimination Study (ODDS; *Parsons Infrastructure & Technology Group, Inc. [Parsons], 2001*). As part of the ODDS, studies were performed to evaluate:

- Signatures of inert OE items suspended in air at varying orientations and distances from the geophysical sensor (static tests).
- The ability of various geophysical instruments to detect and discriminate between different OE items buried at various depths (seeded tests).
- Geophysical instrument performance at actual OE sites (field trial site testing).

The Schonstedt tools were not evaluated during the static test; therefore, only the seeded test results and field trial tests are discussed herein. It is recognized that the ODDS study areas may not represent the same field conditions as are present at Site OE-32B; therefore, differences in field conditions, if applicable, should be considered when using information from the ODDS.

During the seeded test the Schonstedt Model GA-52/Cx located between 64 and 85 percent of the Type II items (3.5-inch rockets), between 39 and 80 percent of the Type III items (90mm projectiles) and between 34 and 84 percent of the Type V items (75mm projectiles), which may have been used at the site. The items were buried at depths approaching each item's maximum calculated penetration depth (up to 4 feet for the 75mm projectile). For non-penetrating items (Type I) found at the site (signal flare and smoke grenade), between 56 and 67 percent were detected by the Schonstedt Model GA-52/Cx, buried at depths ranging from just below the surface to 1 foot. The detection rate percentages presented in the ODDS vary according to the search radius used for the analysis (either 1.6 or 3.3 feet) and assume a 5-foot wide search lane. A standard search radius for investigating anomalies was not specified in the OE contractor work plan or the after action report; therefore detection ranges for the different search radii are presented above. A search lane width of 5 feet was used by UXB at Site OE-32B. Results for the 3-foot wide search lane were not included in the detection percentages presented above, because 3-foot search lanes were not used during the geophysical investigation of Site OE-32A. These detection rates are considered conservative because in addition to the calculated penetration depth of the item, 1 foot was added to the depth to allow for the deposition of soil with time. Because the field conditions at the seeded test site and orientations of buried items may not be comparable to the Site OE-32B conditions, the results should be used to indicate that in general, the equipment is capable of detecting the same types of items at depths exceeding the items maximum calculated depth of penetration.

Results of the ODDS Field Trials Sites (FTS) were also reviewed for potential use in evaluating instrument performance at Site OE-32B. Detection rates for the Schonstedt GA-52/Cx were calculated for 4 of the 6 test sites; the remaining sites did not have enough OE detected to allow calculation of site statistics. The calculated detection rates for the combined sites ranged from 97 to 100 percent depending on the search radius used for the calculation. A standard search radius for investigating anomalies was not specified in the OE contractor work plan or the after action report; therefore detection ranges for the different search radii (1.6 and 3.3 feet) are presented above. It should be noted that the ODDS field trial sites were selected to represent areas with high ordnance density. In comparison, Track 1 sites are expected to have very low densities of OE scrap. Therefore, the field trial results may not be applicable to Track 1 sites.

Results of the ODDS field test trials for the field test site closest in OE item density (FTS-3) to Site OE-32B were also reviewed. Five OE items were located during the investigation. No additional OE items were found during sifting 10 percent of each grid (final Quality Control [QC] sampling). This

indicates that it is unlikely that OE items would remain at FTS-3. Similar results could be expected at other sites (such as Site OE-32B) after survey and clearance using a Schonstedt GA-52/Cx magnetometer.

Although not directly comparable to Site OE-32B, the results of the ODDS indicate that all models of the Schonstedts used at this site are capable of detecting the ferrous surface and subsurface OE expected at this site. Small arms ammunition is non-ferrous and cannot be detected with a magnetometer.

Sampling Methods Discussion

Approximately 4 1/2 acres were sampled at Site OE-32B including twenty 100- by 100-foot grids. To provide maximum dispersion of the sample grids, the grids were spaced no closer than 200 feet from one another. Site perimeters and grid separation could be modified by the U.S. Army Corps of Engineers Huntsville Division (CEHND) Safety Specialist if needed. Once the sample grid locations were established each grid was divided into 5-foot wide search lanes. Each lane was investigated visually while simultaneously searching for subsurface anomalies. The sampling method used was 100 percent grid sampling, all magnetic anomalies detected were marked (flagged) and excavated using hand tools to a depth of 4 feet (*UXB, 1995a*). As noted above, only non-penetrating OE scrap items (expended pyrotechnics) and blank small arms ammunition were identified.

Quality Assurance/Quality Control

The Quality Assurance/Quality Control (QA/QC) procedures are described below.

Field Sampling

UXB conducted sampling at Site OE-32B from January 26, 1995 through March 21, 1995. QA/QC was performed throughout field sampling and is documented in the Site OE-32B Final Primary Report and the Final After Action Report (*UXB, 1995a and 1995b*). According to the reports, to insure that OE sampling was done properly, QC checks were performed by UXB QC specialists on each sample grid. QC checks were performed on 10 percent of each grid after all OE operations were complete. Sample grids were required to cover at least 10 percent of the total area of the site to be sampled. Following the completion of QC checks, the U.S. Army Corps of Engineers Huntsville Division (CEHND) Safety Specialist conducted a QA check. The QA check included a 10 percent check of the site (sampled grids) prior to acceptance of the sample data. The QA check was completed using a Forester Mark 26 magnetometer.

Magnetometers were inspected and tested daily to ensure that the magnetometers were operating within specification. A seeded test area was established by burying an inert (OE scrap) item (81mm mortar) at a depth of 4 feet. On December 20, 1994 two additional inert OE items (2.36-inch rocket and 105mm projectile) were also buried at a depth of 4 feet at the seeded test area. This area was used by teams to check their magnetometer and by the QC officer to randomly QC teams on their procedures (*UXB, 1995a*).

Data Management

Parsons, the current OE contractor, performed a 100 percent QC review of the data associated with the site. This review followed guidelines presented in the Standard Operating Procedures (SOP) provided as Appendix A. This evaluation included a review of field grid records (if available) and the database created by the OE contractor. The USACE followed the QC review with a 10 percent QA of the Parsons' data review. The requirements of the QA review are described in the USACE SOP provided as Appendix B in this report. The purpose of the QC/QA review was to complete a 100 percent check of all

available grid records to identify discrepancies between the after action reports and the grid records. Discrepancies were then researched and corrections made, if appropriate, prior to loading the data into the project database. No discrepancies between the after action report and the grid records were identified for this site.

For this site the following conclusions can be made regarding the quality of the data:

- The sample data collected by UXB are useful in providing information concerning the type of items present and in identifying areas where OE is not likely at Site OE-32B.
- Following sampling, UXB performed QC checks on at least 10 percent of each of the sample grids. Following completion of the QC, the CEHND Safety Specialist conducted a 10 percent QA inspection
- Depth information was not reported by UXB
- The location of any item found was reported within an accuracy of 5 feet, however, QC of the data indicates that the orientation of the grid in relationship to north and south was not documented resulting in a location accuracy that is to the grid only
- No discrepancies between the after action report and the grid records were identified.

3.32B.7 Conclusions and Recommendations

The following section presents conclusions and recommendations for this site based on the review and analysis of data associated with historical information and sampling performed at the site.

3.32B.7.1 Conclusions

Site Use

On the basis of 1950s training maps, Site OE-32B appears to have been partially within a possible tank gunnery range. Based on the training maps, target locations for the tank gunnery range would have been located to the northwest and outside of the site boundary. A portion of the firing line/points may have been located within Site OE-32B. No indication of tank firing was found within Site OE-32B during sampling (e.g., OE fragments). It is possible that the Tank Gunnery Range was used for firing tank mounted .30 caliber and/or .50 caliber machine guns. Based on interviews conducted as part of the archives search, shoulder-launched projectiles may have been used in this area in the 1950s and 1960s; however, no evidence of the use of shoulder-launched projectiles was found within Site OE-32B during sampling. Based on the sampling results and on the review of Fort Ord training maps, Site OE-32B was used as a troop training and maneuver area from the 1950s through the 1980s.

Sampling Adequacy and Data Quality

- The Schonstedt Model GA-52/Cx was used for the geophysical investigations of Site OE-32B. The instrument was evaluated as part of the ODDS and is capable of detecting the type of OE items expected at this site (with the exception of non-ferrous small arms ammunition). A numerical value for the detection of items cannot be calculated for an individual site.
- Sampling and evaluation of previous work followed published work plans and SOPs.

- The data collected by UXB are useful in providing information concerning the type of items present at Site OE-32B. The presence of the expended illumination signal, expended smoke grenades and live small arms blank ammunition is consistent with the types of items authorized for use in training and maneuver areas. The specific location of where these items were found was not provided so the accuracy of the location of the items found is to the sample grid only. Additionally, the depth at which the items were found was not recorded. However, all anomalies were excavated up to a depth of 4 feet.
- Based on historical use of the site and materials found at the site, it is unlikely OE is present at the site. However, the following OE items, if present at the site, are considered to pose an acceptable risk if encountered for the following reasons:

Signals, Illumination, Ground, Clusters: Green Star, M125A1; Red Star, M158; White Star, M159. It is unlikely that a person could cause a signal to function through casual contact if one were found at the site and be burned, because it: (1) would require precise placement of components and a hard blow to function, and (2) would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

Grenade, Hand, Smoke, M18. It is possible that a person could cause the smoke grenade to function if one were found at the site and be burned, but it would have been exposed to moisture, degradation, and weathering for many years, which could decrease the effectiveness of the components that cause it to function.

- Although the previous OE sampling efforts performed at Site OE-32B are not consistent with requirements in place today, the quantity and quality of the available information is sufficient to make an informed decision regarding the site. The entire site was not sampled, however, the sampling methods were sufficient to confirm the types of OE items used. Additionally, because there was no OE found in previous investigations and the OE items potentially remaining at Site OE-32B pose an acceptable risk if encountered, further effort to refine the site boundaries or conduct 100 percent sampling of the site would not add significantly to the understanding of the site or change the conclusions of this report.

3.32B.7.2 Recommendations

Based on the review of existing data:

- It is not anticipated that OE will be found at Site OE-32B, and no further OE-related investigation is recommended. However, because OE was used throughout the history of Fort Ord and because OE scrap was found during sampling, the potential for OE to remain at Site OE-32B cannot be ruled out.
- This site qualifies as a Track 1, Category 3 site because it was used for training. OE items that potentially remain pose an acceptable risk based on site-specific evaluations conducted in the RI/FS.

Upon approval of the proposed remedy (no further OE-related investigation), Site OE-32B will be incorporated into the basewide OE RI/FS 5-year review schedule. The purpose of the 5-year review is to determine whether the remedy at Site OE-32B continues to be protective of human health and the environment. The 5-year review will also document any newly identified site-related data or issues identified during the review, and will identify recommendations to address them as appropriate.

3.32B.8 References

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TABLES

Table 32B-1. Sampling Operations, Site OE-32B
Track 1 Ordnance and Explosives Remedial Investigation/Feasibility Study
Former Fort Ord, California

Site	Grid ID	Operation Type	Contractor	Geophysical Instrument Used	Grid Completion Date
OE-32B -- Oil Well Road II	OE-32B_(00 E)	Sampling	UXB	SCHONSTEDT GA-52CX	2/1/1995
OE-32B -- Oil Well Road II	OE-32B_(00 H)	Sampling	UXB	SCHONSTEDT GA-52CX	2/16/1995
OE-32B -- Oil Well Road II	OE-32B_(00 L)	Sampling	UXB	SCHONSTEDT GA-52CX	2/28/1995
OE-32B -- Oil Well Road II	OE-32B_(03 G)	Sampling	UXB	SCHONSTEDT GA-52CX	1/31/1995
OE-32B -- Oil Well Road II	OE-32B_(03 K)	Sampling	UXB	SCHONSTEDT GA-52CX	2/17/1995
OE-32B -- Oil Well Road II	OE-32B_(03 N)	Sampling	UXB	SCHONSTEDT GA-52CX	2/27/1995
OE-32B -- Oil Well Road II	OE-32B_(03 R)	Sampling	UXB	SCHONSTEDT GA-52CX	2/24/1995
OE-32B -- Oil Well Road II	OE-32B_(06 H)	Sampling	UXB	SCHONSTEDT GA-52CX	2/3/1995
OE-32B -- Oil Well Road II	OE-32B_(06 L)	Sampling	UXB	SCHONSTEDT GA-52CX	2/17/1995
OE-32B -- Oil Well Road II	OE-32B_(06 P)	Sampling	UXB	SCHONSTEDT GA-52CX	2/27/1995
OE-32B -- Oil Well Road II	OE-32B_(06 P)	Sampling	UXB	SCHONSTEDT GA-52CX	2/28/1995
OE-32B -- Oil Well Road II	OE-32B_(06 S)	Sampling	UXB	SCHONSTEDT GA-52CX	2/23/1995
OE-32B -- Oil Well Road II	OE-32B_(09 J)	Sampling	UXB	SCHONSTEDT GA-52CX	2/3/1995
OE-32B -- Oil Well Road II	OE-32B_(09 M)	Sampling	UXB	SCHONSTEDT GA-52CX	2/21/1995
OE-32B -- Oil Well Road II	OE-32B_(09 Q)	Sampling	UXB	SCHONSTEDT GA-52CX	2/21/1995
OE-32B -- Oil Well Road II	OE-32B_(09 T)	Sampling	UXB	SCHONSTEDT GA-52CX	2/22/1995
OE-32B -- Oil Well Road II	OE-32B_(09 T)	Sampling	UXB	SCHONSTEDT GA-52CX	2/23/1995
OE-32B -- Oil Well Road II	OE-32B_(12 N)	Sampling	UXB	SCHONSTEDT GA-52CX	2/6/1995
OE-32B -- Oil Well Road II	OE-32B_(12 N)	Sampling	UXB	SCHONSTEDT GA-52CX	2/7/1995
OE-32B -- Oil Well Road II	OE-32B_(12 N)	Sampling	UXB	SCHONSTEDT GA-52CX	2/8/1995
OE-32B -- Oil Well Road II	OE-32B_(12 S)	Sampling	UXB	SCHONSTEDT GA-52CX	2/14/1995
OE-32B -- Oil Well Road II	OE-32B_(12 S)	Sampling	UXB	SCHONSTEDT GA-52CX	2/15/1995
OE-32B -- Oil Well Road II	OE-32B_(12 S)	Sampling	UXB	SCHONSTEDT GA-52CX	2/16/1995
OE-32B -- Oil Well Road II	OE-32B_(15 T)	Sampling	UXB	SCHONSTEDT GA-52CX	2/14/1995

**Table 32B-1. Sampling Operations, Site OE-32B
Track 1 Ordnance and Explosives Remedial Investigation/Feasibility Study
Former Fort Ord, California**

Site	Grid ID	Operation Type	Contractor	Geophysical Instrument Used	Grid Completion Date
OE-32B -- Oil Well Road II	OE-32B_(18 T)	Sampling	UXB	SCHONSTEDT GA-52CX	2/13/1995
OE-32B -- Oil Well Road II	OE-32B_(21 T)	Sampling	UXB	SCHONSTEDT GA-52CX	2/13/1995

Grid ID = Only the portion of the grid ID within parenthesis is posted on Plate 32B-2.

Sampling = 100 percent of anomalies detected were excavated to a minimum depth of 4 feet. Deeper anomalies were investigated if directed by the USACE.

UXB = UXB International Inc.

Grid Completion Date = Work may have been conducted within a particular grid on more than one date.

**Table 32B-2. OE Scrap Found During Sampling, Site OE-32B
Track 1 Ordnance and Explosives Remedial Investigation/Feasibility Study
Former Fort Ord, California**

Site	Grid ID	OE Items	Status	Depth (in)	Quantity
OE-32B -- Oil Well Road II	OE-32B_(03 G)	UNKNOWN MODEL: GRENADE SPOON (OE Model Unknown)	Inert	Not available	1
OE-32B -- Oil Well Road II	OE-32B_(09 T)	Signal, illumination, ground, M125 series	Inert	Not available	1
OE-32B -- Oil Well Road II	OE-32B_(12 S)	Grenade, hand, smoke, M18 series	Inert	Not available	1

Site = OE Site Number.

Grid ID = Grid where item was found. Only the portion of the grid ID within parenthesis is posted on Plate 32B-2.

Status = Condition of item, either live or inert. Inert indicates no OE hazard (i.e., OE Scrap).

Depth = Inches below ground surface that the item was found.

Quantity = Number of like items found.

Note: A field with the annotation "not available" is a null field in the OE database.

PLATES

Disclaimer

The following plates have been prepared to present pertinent features digitized from historical training maps and scanned aerial photographs. It should be noted that minor discrepancies between source maps, combined with the natural degradation of older source maps and photographs, has resulted in misalignment of some map features. In addition, camera angle and lens distortion introduced into older aerial photographs, combined with changes in vegetation and site features over time may contribute to misalignments of some map features with respect to the aerial photographs.

ATTACHMENT

32B-A

ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32-B
EVALUATION CHECKLIST PART 1: LITERATURE REVIEW

Yes No Inconclusive

TYPE OF TRAINING AND OE EXPECTED

1. Is there evidence that the site was used as an impact area (i.e., fired OE such as mortars, projectiles, rifle grenades or other launched ordnance)?

	No	
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Sources reviewed and comments

The general area (Sites OE-32A, OE-32B and OE-32C) is referenced as an impact area in the After Action Report which states "7 and 8 inch naval gun projectiles were also suspected to have impacted in this area" (UXB, 1995a). However, information gathered as part of the Data Summary and Work Plan, Site 39 - Inland Ranges (HLA, 1994) indicates that impact area for the naval gun projectiles was on the "west slope of Lookout Ridge" approximately 7000 feet west of Site OE-32A. Interviews conducted as part of the Archives Search (USAEDH, 1997) indicated that a canyon within Site OE-32 was used in the 1950s and 1960s as a firing area for "shoulder launched projectiles and rifle grenades." The Oilwell Road Training Area first appears on the circa 1954 map. The boundary is a large circular area with a dashed boundary. The Oilwell Road Training Area is shown as a large rectangular area on the '56 map. A Tank Gunnery Range also is shown on this map just west of the training

The Oilwell Road Training Area does not appear on the maps from 1957 and 1958. The Tank Gunnery Range however is still present and what would have been the firing line for the ranges is located within the former location of the training area. No specific training site defined in 1964, however does include "RWD 3,4" location. No specific training area defined on any maps after this time (1964). The Oilwell Road area is included in larger training areas. March 1968 the area falls within a large area identified as "Training Maneuver Area." From 1976 to 1988 the Oilwell Road area lies within a large area defined as Training Area N which includes several training sites.

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32-B
EVALUATION CHECKLIST PART 1: LITERATURE REVIEW**

Yes No Inconclusive

2. Is there historical evidence that training involved use of High Explosive (HE) or Low Explosive (LE) items?

Yes		
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Sources reviewed and comments

Interview records and training maps indicate potential use of HE and LE items. Sampling results included live blank small arms ammunition. (USAEDH 1997; Review of Fort Ord facilities and training maps, UXB, 1995a).

3. Is there historical evidence that training involved use of pyrotechnic and/or smoke producing items (e.g., simulators, flares, smoke grenades) but not explosives?

Yes		
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Sources reviewed and comments

Items found during sampling included one expended smoke grenade, one expended illumination signal and one grenade spoon and blank small arms (USAEDH 1997; Review of Fort Ord facilities and training maps, UXB, 1995a).

DEVELOPMENT AND USE OF THE SURROUNDING AREA

4. Does subsequent development or use of the area indicate that OE would have been used at the site?

	No	
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Sources reviewed and comments

No development or use of the site has occurred

5. Does use of area surrounding the site indicate that OE would have been used at the site?

	No	
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Sources reviewed and comments

A 1956 map shows a Tank Gunnery Range adjacent/partly within the site. No evidence of OE related to the firing of tanks or tank weapons was found during the sampling of Sites OE-32A, -32B, or 32C (UXB, 1995a, 1995b, USA, 2000).

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32-B
EVALUATION CHECKLIST PART 1: LITERATURE REVIEW**

Yes No Inconclusive

ESTABLISHMENT OF SITE BOUNDARIES

6. Is there evidence of training areas on aerial photographs that could be used to establish boundaries?

	No	
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Sources reviewed and comments

No aerial coverage of this area until Oilwell Road Training Area was no longer in use.

7. Is there evidence of training on historical training maps that could be used to establish boundaries?

Yes		
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Sources reviewed and comments

Oil Well Road Training Area boundary defined on the circa 1954 map and the 1956 map.

8. Should current boundaries be revised?

	No	
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Sources reviewed and comments

It appears that the majority of the Oilwell Road Training Area is covered by one of the three Oilwell Road OE sites (32A, 32B, and 32C). The Tank Gunnery Range should be included as a site.

RESULTS OF LITERATURE EVALUATION

Does the literature review provide sufficient evidence to warrant further investigation?

	No	
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Comments

Results of the literature review indicate that this site was used for training that included the use of OE; however, no OE items associated with tank or shoulder-launched projectiles were found during sampling. Most of the former training site is included in the existing site boundary for Site OE-32A, -32B, and -32C.

ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32-B
EVALUATION CHECKLIST PART 1: LITERATURE REVIEW

Yes No Inconclusive

References

USAEDH, 1997. Revised Archives Search Report, Former Fort Ord, California, Monterey County, California. Prepared by U.S. Army Corps of Engineers St. Louis District.

UXB, 1995a. Final Report for Ordnance and Explosives Removal Action Fort Ord, California Oil Well Road II (OWR2) November 1.

UXB, 1995b. Final Report for Ordnance and Explosives Removal Action Fort Ord, California Oil Well Road I (OWR1) November 1.

USA, 2000. After Action Report Limited Removal, Inland Range Contract, Former Fort Ord, California Site OE-32C (OW3). January 31.

Circa 1954, Training Areas That Cannot be Used at the Same Time.

1956, Fort Ord Training Areas and Facilities, December 20.

1957, Map of Fort Ord Training Areas and Facilities, July 15.

LR13: Map of Fort Ord Training Areas and Facilities

1964, Field training Areas and range Map, April 27.

1967, Back Country Roads, January.

1968, Training Facilities Map, Basic Information, March.

1976, Topo map with tng fac notes.

1976, Training Facilities Plan Future Development,

1977, Training Facilities Plan, Future Development, June 1.

1984, Training Facilities Map, Basic Information Maps, Master Plan, June.

1987, Ranges and Training Area Overlay, Fort Ord and Vicinity, November 15.

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION**

Yes No Inconclusive

1. Is there evidence that the site was used as an impact area (i.e., fired OE such as mortars, projectiles, rifle grenades and other launched ordnance)?

	No	
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Sources reviewed and comments

After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997.

2. Is there evidence that training involved use of High Explosive (HE) or Low Explosive (LE) items?

Yes		
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Sources reviewed and comments

The After Action Report states that small arms blanks were found during sampling (After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997).

3. Is there evidence that training involved use of pyrotechnic and/or smoke producing items (e.g., simulators, flares, smoke grenades) but not explosives?

Yes		
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Sources reviewed and comments

and small arms blanks were found during sampling, however, the database QC review noted that an illumination signal and a grenade spoon were reported in the Operations Journals (After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997).

4. Was sampling and/or reconnaissance performed within the appropriate area?

Yes		
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Sources reviewed and comments

If you combine all three Oil Well Road sites (32A, 32B, and 32C) sampling covers the training area as was depicted on the Circa 1954 map (After Action Reports - UXB, 1995a, 1995b, USA, 2000).

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION**

5. Does sampling indicate OE and/or ordnance-related scrap are present at the site?

Yes	No	Inconclusive
Yes		

Sources reviewed and comments

OE scrap, including one expended smoke grenade, one expended illumination signal, and small arms blanks were found during sampling. QC review also found an illumination signal and a grenade spoon mentioned in Operations Journals, but not reported in the AAR (After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997).

6. Were the type(s) of items found consistent with the type of training identified for the site?

Yes		
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Sources reviewed and comments

Specific training in this area unknown, however, OE items found to date are consistent with other Fort Ord training areas (e.g. flares, smoke grenades, and small arms). After Action Report - UXB, 1995a.

7. Were the type(s) of items found consistent with the era(s) in which training was identified?

Yes		
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Sources reviewed and comments

Consistent with a training and maneuver area from the 1950s through base closure.

8. Was HE fragmentation found?

	No	
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Sources reviewed and comments

No HE fragmentation identified/found (After Action Report - UXB, 1995a).

9. Was HE found?

	No	
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Sources reviewed and comments

No HE found (After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997).

ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION

	Yes	No	Inconclusive
10. Were LE found?	Yes		

Sources reviewed and comments

Live small arms blank ammunition found (After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997).

11. Were pyrotechnics found?	No		
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Sources reviewed and comments

Only an expended illumination signal (OE scrap) (After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997).

12. Were smoke producing items found?	No		
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Sources reviewed and comments

Only an expended smoke grenade (OE scrap) (After Action Report - UXB, 1995a, Revised Archives Search Report (ASR), USAEDH 1997).

13. Were explosive items found (e.g. rocket motors with explosive components, fuzes with explosive components)?	No		
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Sources reviewed and comments

After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997.

14. Do items found in the area indicate training would have included use of training items with energetic components?	Yes		
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Sources reviewed and comments

Expended illumination signal and smoke grenade; After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997.

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION**

15. Were items found in a localized area (possibly the remnants of a cleanup action)?

Yes	No	Inconclusive
	No	

Sources reviewed and comments

After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997.

16. Has the site been divided into sectors to focus on areas of common usage, similar topography and vegetation, and/other unique site features?

	No	
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Sources reviewed and comments

After Action Report - UXB, 1995a; Revised Archives Search Report (ASR), USAEDH 1997.

17. Should current site boundaries be revised?

	No	
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Sources reviewed and comments

In combination with Sites OE-32B and OE-32C most of the former training site is covered.

18. Was equipment used capable of detecting items suspected at the site at the maximum expected depth?

Yes		
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Sources reviewed and comments

are surface items and do not penetrate (Type I, ODDS items). Except for small arms ammunition, non-ferrous items were not expected based on the literature review. Small arms ammunition can not be detected by the Schonstedt. After Action Report - UXB, 1995a; USAESCH, 1997; Parsons, 2001.

19. Was equipment used capable of detecting the types of items (e.g., non-ferrous) suspected at the site?

Yes		
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Sources reviewed and comments

Schonstedt model GA-52/Cx was used (After Action Report - UXB, 1995a) and is capable of detecting the suspected items. Schonstedt not capable of detecting non-ferrous small arms ammunition. Except for small arms ammunition, non-ferrous items were not expected based on the literature review.

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION**

20. Do the results of the ODDS indicate that items suspected at the site would have been detected by the instrument used at the time of investigation?

Yes	No	Inconclusive
Yes		

Sources reviewed and comments

Site was sampled to a depth of 4 feet. Items found do not penetrate (Type I, ODDS items). To be conservative a foot was added to the 0 penetration depth to account for burial potential as part of the ODDS seeded test study. Although not directly comparable to Site OE-32B, the results of the ODDS indicate that the Schonstedt Model GA-52/Cx is capable of detecting the ferrous OE items expected at this site (After Action Report - UXB, 1995a; USAESCH, 1997; Parsons, 2001).

21. Do results of the investigation indicate that suspected items could be detected with a high level of confidence at observed and expected depth ranges?

Yes		
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Sources reviewed and comments

If you take out the burial factor (e.g., foot added to the penetration depth in seeded test) the results are better. The results of the field trials indicate that detection rates for the field trials were better than the seeded test.

22. Were all the instruments used to evaluate the site maintained and calibrated in accordance with associated work plan and manufacturer's specifications?

Yes		
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Sources reviewed and comments

Reports indicate instruments were used according to the workplan (After Action Report - UXB, 1995a).

23. Based on the anticipated target density (UXO items per acre) has the minimal amount of sampling acreage been completed in accordance with the scope of work or contractor work plan?

Yes		
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Sources reviewed and comments

"Sample grids were required to cover at least 10% of the total area of the site to be sampled" (After Action Report - UXB, 1995a). No UXO was detected; therefore, UXO density cannot be calculated.

**ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION**

24. Based on sampling procedure (e.g., grids, transects, and/or random walks) was a percentage of the site completed to provide 95% confidence in a UXO density estimate, and if so provide total area investigated and the UXO density estimate.

Yes	No	Inconclusive
		Inconclusive

Sources reviewed and comments

200,000 square feet (approximately 4.6 acres) sampled based on 20 100x100-foot grids. After Action Report - UXB, 1995a. No UXO was detected; therefore the UXO density can not be calculated.

Total Area: 200,000 sq ft
UXO Density: Not calculated

25. What percentage of the anomalies were intrusively investigated?

Sources reviewed and comments

"Every magnetic anomaly was marked and excavated." After Action Report - UXB, 1995a

Total % of anomalies investigated:	100%
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26. Was the appropriate data processing scheme used for the site, how was the data processed?

Sources reviewed and comments

Not applicable, no digital geophysical data was collected.

		Not applicable
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27. Has the field data been collected and managed in accordance with quality control standards established for the project?

Sources reviewed and comments

Quality Control "(QC) checks were performed on each grid after all UXO operations were complete. UXB QC specialists checked a minimum of 10 percent of each grid to insure that OE removal was done properly. After this QC check the CEHND Safety Specialist performed a QA check of the site prior to accepting it." After Action Report - UXB, 1995a

Yes		
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Result of Sampling Evaluation

Does the sampling evaluation provide sufficient evidence to warrant further investigation?

	No	
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ATTACHMENT 32B - A
EVALUATION OF PREVIOUS WORK: SITE OE-32B
EVALUATION CHECKLIST PART 2: SAMPLING EVALUATION

Yes No Inconclusive

Comments

The results of the sampling evaluation indicate that the data are usable. Only non-penetrating OE scrap and blank small arms ammunition were identified during sampling. No evidence that the site was used for shoulder launched projectile training or a tank gunnery range was identified. The OE scrap items indicate that the site was used as a maneuver and training area. No further OE-related evaluation of Site OE-32B is warranted.

References

UXB, 1995a. Final Report for Ordnance and Explosives Removal Action Fort Ord, California Oil Well Road I (OWR1) November 1.

UXB, 1995b. Final Report for Ordnance and Explosives Removal Action Fort Ord, California Oil Well Road II (OWR2) November 1.

USA, 2000. After Action Report Limited Removal, Inland Range Contract, Former Fort Ord, California Site OE-32C (OW3). January 31.

USAEDH, 1997. Revised Archives Search Report, Former Fort Ord, California, Monterey County, California. Prepared by US Army Corps of Engineers St. Louis District.

Parsons, 2001. Draft Final Ordnance Detection And Discrimination Study, Volume I Text, Former Fort Ord, California, Presidio of Monterey, California. Prepared for US Army Corps of Engineers Sacramento District. December.

USAESCH, 1997. Penetration of Projectiles Into Earth, An Analysis of UXO Clearance Depths at Ft. Ord. September 10. Appendix F of the Phase 2 EE/CA.