

SITE OE-66

SIGNAL CORPS SMALL ARMS

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## SITE OE-66 – SIGNAL CORPS SMALL ARMS

### 3.66 Site OE-66 (Signal Corps Small Arms)

This summary report consists of two parts. The first part, contained in Sections 3.66.1 through 3.66.5, 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 3.66.6). The Site Evaluation was conducted in accordance with the procedures described in the *Final Plan for Evaluation of Previous Work (Harding Lawson Associates [HLA], 2000)* and may restate some information presented previously. The Site Evaluation discusses the evaluation of the literature review process (Section 3.66.6.1), an evaluation of the sampling process(es) (Section 3.66.6.2) and an evaluation of the reconnaissance process(es) (Section 3.66.6.3). These discussions are based upon information from standardized literature review and reconnaissance review checklists (Attachment 66-A). Section 3.66.7 provides conclusions and recommendations for the site. References are provided in Section 3.66.8.

#### 3.66.1 Site Description

Site OE-66 is approximately 41 acres and is located in the northeastern portion of Fort Ord (Plate 66-1). Site OE-66 was identified during interviews conducted during the Preliminary Assessment/Site Investigation (PA/SI) phase of the Fort Ord Archives Search Report (ASR; *U.S. Army Engineer Division, Huntsville [USAEDH], 1997*). This area was reportedly used as a signal corps field training area.

#### 3.66.2 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 Era*

The eastern half of the site lies within a tract of land purchased from private landowners by the government in 1917 (Plate 66-1), the western half of the site lies on land purchased by the government after July 1940 (*Arthur D. Little, Inc. [ADL], 1994*). Documentation of pre-1940s era use of this area is limited to topographic maps from 1918 (*Department of Interior [DOI], 1918*) and 1933 (*U.S. Army [Army], 1933*). No identifiable features or text are noted on the topographic maps.

### 1940s Era

Review of 1940s historical maps and aerial photographs indicates that no specific training areas were in use in the site vicinity. The following details the review of historical documents:

- The 1945 and 1946 training maps identify the site area within the larger training area “e-north” (*Army, 1945 and 1946*). No specific training areas are identified.
- On a 1949 aerial photograph, some small areas in the site vicinity appear to have scarce or disturbed vegetation.

### 1950s Era

Review of 1950s training maps indicates that the Site OE-66 area was used in 1956 as a “Demonstration Area” and later in 1958 as “MG 1& 2.” The results of the review of the 1950s era documentation are as follows:

- On the circa 1954 map, the site is within a larger training area assigned to “Division Artillery” (*Army, 1954*).
- On the 1956 map, the southern part of the site area is indicated as a “Demonstration Area.” The site lies within the larger 10<sup>th</sup> Infantry’s training area (*Army, 1956*).
- More cleared/disturbed vegetation is apparent on the 1956 aerial photograph (Plate 66-2) than on the 1949 aerial photograph. No clear boundary or training area is distinguishable on the aerial photographs.
- On 1957 and 1958 training maps, the site area is within the larger training area of the “1<sup>st</sup> Brigade” (*Army, 1957 and 1958*). The mission of the 1<sup>st</sup> Brigade was to conduct basic combat training (*Army, 1968*).
- MG 1 & 2 is identified within the site area on the 1958 training map (*Army, 1958*). According to Army Field Manual FM 21-30, MG stands for Machine Gun (*Army, 1951*). Also, “ST-6 is identified just east of the site boundary, “ST” may stand for Service Test (*Army, 1985*).

### 1960s Era

Site OE-66 and its vicinity were used in the 1960s for aviation, Field Communication, and Wireman Course training. The training maps from the 1960s indicate Site OE-66 between two larger training areas, “D (4<sup>th</sup> Brigade)” to the west and “E (1<sup>st</sup> Brigade)” to the east. The results of the review of the 1960s era documentation are as follows:

- The 1961 training map shows “ST-7” about 100 feet east of the site (*U.S. Army Corps of Engineers [USACE, 1961]*).
- The area south of the site is identified as “BUT (Basic Unit Training) Composite ST Area.” on the 1964 and 1968 training maps. Also, a “Field Communication Crewman Course” training facility is identified immediately west of the site (*Army 1964; USACE, 1968*).

- On a 1967 map, a “Wireman Course” training facility is present west of the site area (*Army, 1967*). Field Communication Crewman areas were used for Signal Corps training and included practicing the layout of communication wires (*Robotti, 2001*).

### 1970s Era

Review of 1970s training and historical maps indicates that Site OE-66 was used as a “SDT-FXT,” “FWC FTX Area,” and “Training Site 25.” The north portion of the site included a helipad used for emergency evacuation training (*Army, 1980*). The site is within the larger training area “E (1<sup>st</sup> Brigade)” as seen on the Army 1976 through 1984 training maps. The results of the review of the 1970s era documentation are as follows:

- The 1972 Training Ranges and General Road map shows a Wireman Course training facility just west of the site (*USACE, 1972*).
- On the 1972 Field Training Area map, the site is labeled as “CST-FTX” (*Army, 1972*). It is not possible to determine what “CST-FTX” stands for based on the map legend. Based on definitions obtained from Army Regulations 310-50, CST may stand for Combat Support Training and FTX may stand for Field Training Exercise (*Army, 1985*).
- The February 1976 map identifies the area as “FWC FTX Area” (*Army, 1976a*). FWC may stand for Field Wireman Course or Command, and FTX may stand for Field Training Exercise (*Army, 1985*).
- The July 1976 map identifies the site as Training Site 25, however no boundary is indicated. A helipad is also identified in the northern portion of the site. Helipads areas were used for helicopter emergency evacuation training (*Army, 1976b*).
- A June 16, 1978, aerial photograph (Plate 66-3) shows more roads than the 1949 and 1956 aerial photographs. Vegetation density appears to have decreased in comparison to the previous aerial photographs.

### 1980s Era

The 1980 and 1984 USACE training maps identify Training Site 25 within the area for Site OE-66 and Site OE-27Y. The November 15, 1987, training map does not show any training facilities or features in the Site OE-66 area or its vicinity. Housing was constructed within parts of the site area by 1989 as part of the Schoonover housing development (Plate 66-4). The following identifies the results of the historical review:

- The 1980 and 1984 training maps identify the Training Site 25 (TS-25) boundary within the Site OE 66 and OE-27Y boundaries (*USACE, 1980 and 1984*). TS-25 was designated as an overnight bivouac training area (*Army, 1980*).
- The 1982 Ranges and Training Area Overlay map shows TS-25 and a helipad in the site area (*Army, 1982*).
- The 1987 map shows no specific training area within the Site OE-66 boundary (*Army, 1987*).
- Schoonover Park Housing was constructed between 1987 and 1990 (*ATC Environmental Inc. [ATC, 1994]*). A 1988 aerial photograph shows no housing within the site boundary. An October 4, 1989, aerial photograph shows housing built within the site OE-66 boundary.

### *1990s Era*

Site OE-66 lies mostly on property that contains housing and was transferred to California State University Monterey Bay (CSUMB) in 1995.

### *Proposed Future Land Use*

A small portion of Site OE-66 (northeast corner) lies on property that is designated as habitat reserve (USACE, 1997). The majority of the site lies on property transferred to CSUMB in 1995 and is currently used for student housing. The portion of Site OE-66 transferred to CSUMB is categorized as development property.

### 3.66.3 Potential Ordnance based on Historical Use of the Area

This site was used for various troop training activities including field communications, aviation, basic unit training, and a bivouac area. No evidence has been found to support the use of the area as an impact area. Site OE-27Y, which borders Site OE-66 on the south side, was reportedly used as a training site (bivouac area) (USAEDH, 1997). The firing of blank small arms ammunition was reported to have occurred at Site OE-66. Ordnance that might be expected at Site OE-66 would include possible pyrotechnics (smoke and illumination signals).

### 3.66.4 History of OE Investigations

The following describes the OE investigations that have been conducted at Site OE-66.

#### *1997 Revised 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. The archives search was conducted in accordance with U.S. Army Corps of Engineers guidance (USAESCH, 1995). 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 preparation of an ASR are described in Section 2.0 of this report.

Site OE-66 was identified during an interview conducted during the PA/SI phase of the Fort Ord Archives Search (USAEDH, 1997). The area (Site AD) was the location of the signal corps field training area. As described in Section 3.2.2 other training activities also were conducted in this area. No site-specific sampling for OE has occurred at Site OE-66. A site reconnaissance was conducted in 1997 by the USACE Unexploded Ordnance (UXO) Safety Specialist. The reconnaissance of Site OE-66 involved walking a portion of the site and sweeping the path walked using a Schonstedt Model GA-52/Cx magnetometer. No evidence was found to support the use of the area as an impact area (e.g., fragmentation, fuzes or projectiles). Only expended blank small arms ammunition and expended pyrotechnic items (M22 Series rifle fired smoke grenade and M125 Series illumination signal) were found (USAEDH, 1997). On the basis of the reconnaissance performed, the ASR recommended no further OE response at Site OE-66 (USAEDH, 1997).

## *2001 Basewide Range Assessment*

Site OE-66 was investigated as part of a basewide range assessment (BRA) for small arms and multi-use ranges currently being conducted at Fort Ord. The assessment of Site OE-66 for potential hazardous and toxic waste related contamination included a data review, site reconnaissance, and mapping of the site. For the BRA, the areas of investigation were identified as Historical Areas (HA). Site OE-66 was identified as HA-196. Prior to conducting the site reconnaissance, a review of historical maps and aerial photographs was conducted. Areas of interest (e.g., training area boundaries, disturbed vegetation areas, and roads) were identified from maps and photos and their locations (way points) loaded into a Global Positioning System (GPS) unit. The site reconnaissance was conducted by a two-person team that included an OE specialist and a second team member trained in OE recognition. The site reconnaissance included walking portions of the site and navigating to the way points using the GPS unit. No OE items (including small arms ammunition) were found during the site reconnaissance conducted at HA-196 (Site OE-66).

## *2003 Site Walk*

A site walk was conducted at Site OE-66 on November 13, 2003. The site walk location was selected to fill data gaps in reconnaissance efforts conducted previously at this site. The site walk was conducted by a three-person team, which included a UXO safety specialist. The team swept the path walked using a Schonstedt Model GA-52/Cx magnetometer. The path was also recorded using a GPS unit. The position of any anomaly detected by the Schonstedt GA-52/Cx was recorded with the GPS. The items found during the site walk included ammunition clips for an M1 rifle, and small arms ammunition links. No OE or OE scrap was found. A description of the site walk is included as an attachment to Appendix C of this report.

Based on the field work completed to date, no evidence that Site OE-66 was used as an impact area has been found.

### 3.66.5 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-66 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 66-5. It is provided to help evaluate the adequacy of the investigation completed to date and to identify potential release and exposure pathways.

#### 3.66.5.1 Training Practices

Training practices are 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.

## Signal Corps

Communications within the armored, infantry and mechanized battalions typically consist of single channel radios, field wire, messengers, and visual signals (*Army, 1991*). Secure single-channel radio provides the most responsive means of communications on the battlefield. Other means of communications include flashing light, and pyrotechnic signaling (*Army, 1990*). Combat arms battalions lay wire, provide messengers, and connect telephones for their battalions. The battalion communications system is used to direct and control firepower. The platoon leader gives orders to the squads and receives commands from company commanders through single-channel radios. Wire, audible signaling devices, or arm-and-hand signals are used when radio transmissions are not advisable (*Army, 1991*). In the infantry squad, the squad leader gives orders and communicates with platoon leader by single-channel radio, wire, voice, and arm-and-hand signals.

### 3.66.5.2 Site Features

Site OE-66 lies on the northeastern portion of former Fort Ord on the north side of Inter-Garrison Road (Plate 66-1). The site includes former military housing and recreation fields. The majority of the property was transferred to CSUMB in 1995 and the houses are currently used by CSUMB students. The site is flat with moderate to heavy vegetation surrounding the developed portions. The site was used for primarily troop training including field communications, however, adjacent areas were used for aviation training and as a bivouac area by 1978 (*Army, 1978*).

### 3.66.5.3 Potential Sources and Location of OE

Based on review of site data, the types of OE that might be expected at this site include pyrotechnics, including smoke-producing and illumination signals. One expended M22 Series rifle-fired smoke grenade and one expended M125 Series illumination signal were found during site reconnaissance at Site OE-66. The smoke grenade is used for signaling and laying of smoke screens 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 M22 Series smoke grenades and the M125 Series illumination signals are provided in Attachments 27X-A2 and 27Y-A2, respectively.

### 3.66.5.4 Potential Exposure Routes

The site currently includes the Schoonover Park Housing area constructed by the military in the late 1980s. Schoonover Park was transferred to CSUMB and is used as student housing. The remainder of Site OE-66 will be maintained as habitat reserve. Any OE found during housing construction would have been removed prior to occupation of the housing. Because no OE items were discovered during site reconnaissance or reported previously, OE is not expected in this area. The results of the literature review do not indicate that (other than pyrotechnics) OE would be present at this site. In addition, no evidence of an impact area (e.g., fragmentation, fuzes, targets) was found during site sampling conducted at adjacent Site OE-27Y (*USAEDH, 1997*). However, because the site was used as a training area, and because OE scrap was found during site reconnaissance, the possibility exists that a recreational user could come into contact with surface OE items, such as pyrotechnics, within the undeveloped portion of the site.

Although no OE items were found at Site OE-66 a brief discussion of the potential injuries that could result from contact with live illumination signals and smoke grenades is provided below. These items were selected for discussion, because a scrap M125 Series illumination signal and a scrap M22 Series rifle-fired smoke grenade were found during site reconnaissance.



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 27X-A2 and 27Y-A2.

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

These signals are 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 is 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 14 or more years, which could decrease the effectiveness of the components that cause it to function.

**Grenade, Rifle, Smoke, Colored: M22 and M22A2.** The grenade, rifle, smoke M22 and M22A2 (green, red, violet, and yellow) are designed for signaling and laying smoke screens. The M22 and M22A2 consist of three basic parts: a steel stabilizer assembly, an integral fuze and a body. The fuze is a mechanical impact-igniting type. The body is filled with a burning-type smoke charge that contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge to facilitate ignition. A nose-closing plug covers a small opening or air hole in the nose of the ogive. After being fired from a rifle equipped with a grenade launcher, it is functioned by impact with the ground or other hard target, causing the firing pin to strike the primer (like a small arms primer), which ignites the starter mixture charge, and in-turn starts the smoke charge to burn. The smoke charge, consisting of baking soda, potassium perchlorate, sugar and dye, burns for approximately 60 seconds (*Army, 1977b*). These would be very difficult to cause to function by incidental contact. They would have to be thrown against a hard surface, hard enough for the firing pin to overcome the anti-creep spring and strike the primer. If caused to function, the type of injuries that could be sustained would be burns from the burning smoke charge.

**Summary:** It is unlikely that a person could cause a smoke grenade to function through casual contact if one were found at the site and be burned, because the grenade: (1) was designed to be functioned by a hard nose-on impact with the ground or other hard target, and (2) would have been exposed to moisture, degradation, and weathering for 14 or more years, which could decrease the effectiveness of the components that cause it to function.

### 3.66.6 Site Evaluation

The available data (e.g., archival and reconnaissance data) regarding Site OE-66 were reviewed and evaluated according to procedures described in the *Final Plan for Evaluation of Previous Work* (HLA, 2000). The evaluation process is documented through the completion of a series of checklists. Copies of the checklist are provided as Attachment 66-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 reconnaissance performed at the site.

#### 3.66.6.1 Literature Review

##### *Type of Training and OE Expected*

This area was used for training since at least the mid-1950s. In the 1950s, training locations in this vicinity included a “Demonstration Area” and “MG 1 & 2” (Army, 1958). The specific use of the “Demonstration Area” is unknown. Ranges for live machine gun firing were present in various locations within the Multi-Range Area (MRA) from the 1940s through base closure. “ST-6” is noted to the northwest of the site boundary, “ST” may stand for “Service Test.” The Site OE-66 vicinity was used in the 1960s for aviation, field communication, and Wireman Course training. ST-7 is shown on the 1961 training map about 100 ft east of the site. The area is labeled “BUT (Basic Unit Training) Composite ST Area” in the 1964 and 1968 training maps. As part of the archives search, an interview was conducted with Mr. Lee Stickler. Mr. Stickler served as a Fort Ord Range Control Officer from 1970 until 1990. Mr. Stickler stated that the area was used for Signal Corps field training and that blank small arms ammunition was used (USAEDH, 1997).

Training in the 1960s appears to have been primarily for the Signal Corps. Discussions with Mr. John Robotti, who served as Fort Ord Director of Logistics at Fort Ord from 1961 until 1999, indicate that field communication crewman areas were used for practicing the layout of communication wire (Robotti, 2001). Based on the type of training conducted, small arms blanks and pyrotechnic items might be present. Review of 1970s training and historical maps shows that Site OE-66 was used as a “SDT-FXT”, “FWC FTX Area” (Field Wireman Course or Command, Field Training Exercise) and as “Training Site 25”. Training Sites were used for overnight bivouac areas. Housing was constructed in this location between 1987 and 1990.

##### *Subsequent Use of the Area*

Military housing was constructed in this area between 1987 and 1990. Use of this area for residential housing would indicate that any OE found during construction would have been removed or that no OE would be anticipated based on the training conducted. The housing was transferred to CSUMB in 1995 and is currently used as student housing.

##### *Establishment of Site Boundaries*

A general area of use was created from an interview conducted by the USACE with Mr. Stickler. The location identified by Mr. Stickler was a general area of potential activities and was not surveyed. Following the interview USACE personnel, including the UXO Safety Specialist, evaluated the area using the interview notes, site walk information, Fort Ord training maps, and aerial photographs. Based on the follow-up evaluation, the Site OE-66 boundary was established as part of the archives search. No additional information was found as a result of the literature review to warrant changes to the current boundary of Site OE-66. Aerial photographs (Plates 66-2 and 66-3) show many dirt roads and trails in this area, but no clear indication of a defined training area (e.g., no structures or permanent features).

Final

## Summary of Literature Review Analysis

Site OE-66 was identified during interviews conducted by the USACE as part of the archives search (*USAEDH, 1997*). This area has been used for various training activities since the 1940s including a demonstration area and Signal Corps training. This area was assigned to the 1<sup>st</sup> Brigade and the 4<sup>th</sup> Brigade from the late 1950s until the early 1970s. The 1<sup>st</sup> Brigade mission was to conduct basic combat training and the 4<sup>th</sup> Brigades mission included various combat support activities such as basic unit supply, field communications, radio operations, and light vehicle driving (*Army, 1968*). Ordnance reportedly used included blank small arms ammunition. A site walk of this area indicates that pyrotechnic items were also used here. No evidence has been found to support the use of Site OE-66 as an impact area and no further OE-related investigation is warranted.

### 3.66.6.2 Sampling Review

This section describes the results of the sampling conducted at the site and the implications for the site history. Site boundaries are reviewed based on the results of sampling. A review of the equipment used during sampling is also provided. A discussion of the sampling methods used and the quality control measures used during the investigation are also presented in this section. Although site-specific sampling of Site OE-66 did not occur, sampling was conducted at adjacent Site OE-27Y. Portions of some of the grids sampled (search lanes) at OE-27Y were within Site OE-66. Additionally, non site-specific grids were sampled in the vicinity of Site OE-66. A summary of the sampling operations conducted at Site OE-27Y and in the vicinity of Site OE-66 is provided in Table 66-1.

#### *Sampling Results (Items Found)*

A portion of Site OE-66 was sampled as part of the sampling of adjacent Site OE-27Y (Plate 66-4). The sampling of Site OE-27Y was conducted in 1994 and 1995 by UXB International (UXB). Site OE-27Y was subdivided into eighteen 50- by 1,700-foot search lanes and 25 percent of each lane was selected at random for sampling (382,500 square feet). Sixty-six items were found and removed. Sixty-five of the sixty-six items were live, small arms ammunition (eight 30 caliber blanks and fifty-seven 7.62mm blanks). One OE scrap item, an expended illumination signal, was found during the grid sampling (*UXB, 1995*). The illumination signal was a hand-held Model M125 type used for daytime or nighttime signaling (*Army, 1977*). No evidence of high or low explosives was found during sampling. It is not known whether the illumination signal found during the sampling of Site OE-27Y was found within the boundary of Site OE-66 because the specific location of the item within the search lane was not specified in the report. A summary of the sample results for Site OE-27Y is provided in Table 66-2.

In 1994, Human Factors Applications Inc. (HFA) completed sampling of four grids in the vicinity of Site OE-66 (*HFA, 1994*). The four 100- by 100-foot grids were 100 percent sampled (all anomalies detected were investigated) using either the Schonstedt Models GA-52/C or GA-72/Cv magnetometer (Plate 66-4). None of the sample grids were located within the boundary of Site OE 66; however, one of the four grids was located within adjacent Site OE-27Y. No OE items were found within the four grids sampled by HFA (*HFA, 1994*).

Although no site-specific sampling occurred at Site OE-66, sampling did occur within the southern portion of Site OE-66 (as part of the Site OE-27Y sampling) and east of the site. Live blank small arms ammunition and one expended illumination signal were found during the sampling of Site OE-27Y (*UXB, 1995*). No OE items were found within the three adjacent grids sampled by HFA. No evidence was found to suggest that Site OE-66 or adjacent Site OE-27Y was an impact area or that high explosives were used in this vicinity.

## Site Boundaries Review

The site boundary was provided by the USACE, Huntsville Division and documented in the ASR (*USAEDH, 1997*). The results of the sampling of adjacent Site OE-27Y and the sampling of locations near Site OE-66 do not indicate that modification to the site boundaries is necessary.

## Equipment Review

UXB used the Schonstedt Model GA-52/Cx magnetometer to conduct the geophysical investigation of adjacent Site OE-27Y. HFA used the Schonstedt Models GA-52/C or the GA-72/Cv magnetometers to conduct the geophysical investigation of the grids adjacent to Site OE-66. These magnetometers are hand held and swing 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/C, GA-52/Cx, and the GA-72/Cv are especially sensitive to smaller, near-surface ferro-metal objects (*Breiner, 1973*).

The performances of the GA-52/C, GA-52/Cx, and the GA-72/Cv were 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 the 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-66; 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/C located between 56 and 59 percent of the Type I items (illumination flares) buried at depths ranging from just below the surface to 1 foot. At the same depth range the Schonstedt Model GA-72/Cv located between 63 and 78 percent of the Type I items and the Schonstedt Model GA-52/Cx located between 67 and 78 percent of the Type I items. 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 (the search lane width used by UXB at Site OE-27Y). 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. Results for the 3-foot wide search lane, also evaluated as part of the ODDS, were not included in the detection percentages presented above, because 3-foot wide search lanes were not used during the geophysical investigation of Site OE-27Y. The detection rates discussed above are considered conservative because an additional 1 foot was added to the items' calculated penetration depth to allow

for the deposition of soil with time. Because the field conditions at the seeded test site and orientation of buried items may not be comparable to Site OE-66 conditions, the results should be used to indicate that in general, the equipment is capable of detecting the same items between 0 and 1 foot bgs. Additionally, unless obscured by vegetation, it is expected that the detection of ordnance items lying on the ground surface should be 100 percent.

Results of the ODDS Field Trial Sites (FTS) were also reviewed for potential use in evaluating instrument performance at Sites OE-66 and OE-27Y. Detection rates for each of the Schonstedt magnetometers were calculated for 4 of the 6 test sites; the remaining sites did not have enough OE items detected to allow calculation of site statistics. The calculated detection rates for the combined sites ranged from 52 to 96 percent for the GA-52/C, 97 to 100 percent for the GA-52/Cx, and 64 to 98 percent for the GA-72/Cv, 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 FTS for the site closest in OE item density to Site OE-27Y (FTS-3) were also reviewed. Five OE scrap items were located at FTS-3. No additional OE items were found during sifting of 10 percent of each grid (final Quality Control [QC] sampling). This indicates that it is unlikely that OE items would remain at FTS-3 within the grids sampled. Similar results could be expected at other sites, such as OE-27Y, after survey and clearance using the Schonstedt magnetometers.

Although not directly comparable to Site OE-66, 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. Blank ammunition is non-ferrous and cannot be detected with a magnetometer.

## *Sampling Methods Discussion*

### *HFA Field Sampling*

One hundred percent grid sampling was conducted by HFA in the vicinity of Site OE-66. According to the HFA work plan, grids were to be 100-by-100-feet and separated by at least 200 feet (*HFA, 1993*). Four 100- by 100-foot grids were set up adjacent to Site OE-66 as part of the 1994 HFA sampling program. A maximum search lane width of 5 feet was used during sampling. The grids were 100 percent sampled, which required that 100 percent of the anomalies detected in the sampling grids were excavated. The number of anomalies found was not documented and no field-generated grid records were available for review. According to the HFA work plan, each grid was given a 100 percent visual surface survey. A 100 percent subsurface survey, using the Schonstedt Model GA-52/C magnetometer, was performed simultaneously. Surface item locations were plotted on a map and then the items were removed. Subsurface contacts and anomalies were flagged for excavation and identification and were later excavated using hand tools (*HFA, 1993*). The general approach to the investigation of anomalies was to dig down to the anomaly, remove it, and check the excavation with the Schonstedt. If the anomaly was no longer detected, no further digging was performed. If the Schonstedt continued to detect an anomaly, the area was excavated to at least 4 feet below ground surface (bgs). No information was gathered on the types of non-OE scrap discovered during sampling or the depths at which items were found. Because no OE items were identified in the HFA grids sampled near Site OE-66, OE densities were not calculated.

### *UXB Field Sampling*

At the direction of the U.S. Army Corps of Engineers Huntsville Division (CEHND) Safety Specialist, UXB subdivided adjacent Site OE-27Y into eighteen 50- by 1700-foot search lanes and 25 percent of each lane was selected at random for sampling (382,500 square feet). Portions of 7 of the 18 search lanes fell within Site OE-66. Each search lane was investigated visually while simultaneously searching for subsurface anomalies with the magnetometer. The sampling method used was 100 percent grid sampling, all magnetic anomalies detected were marked (flagged) and excavated by using hand tools to a minimum depth of 4-feet by the UXO Safety Specialist (*UXB, 1995*). If the anomaly could not be uncovered within 4 feet of the surface, the on-site CEHND Safety Specialist was asked to determine if deeper excavation was required.

### *Quality Assurance/Quality Control*

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

### *HFA Field Sampling*

Little specific information concerning operational procedures was documented in the after action report (*HFA, 1994*). The following describes field procedures specified in the work plan and the after action report when documented.

According to the HFA work plan, equipment was inspected by the Senior UXO Supervisor (SUXOS) and Quality Control/Site Safety Officer (QC/SS) prior to placing it in service (*HFA, 1993*). Magnetometers were inspected and tested daily on a buried piece of inert ordnance (test source) to ensure that the magnetometers were operating within specification. The test source, a solid steel 81mm mortar (inert ordnance item), was buried at a depth of 4 feet. The magnetometers were tested before starting sampling operations in the morning and when operations resumed after lunch (*HFA, 1994*). Magnetometers that failed the inspection test, and were in need of repair, were to be removed immediately from service. Random checks were to be performed by the QC/SS and/or the SUXOS during daily operations. The QC/SS was to inspect all records bi-weekly to ensure that they were kept and maintained (*HFA, 1993*).

After surface and subsurface clearance of each site and prior to removal of grid markers, the QC/SS performed the standard minimum 10 percent QC check of each grid (*HFA, 1994*). If OE was discovered during the QC check, the grid was to be searched again to ensure that no other anomalies were present. Following the QC checks, the U.S. Army Corps of Engineers Huntsville Division (CEHND) Safety Specialist was to perform a 10 percent QA check of the site (sampled grids) prior to acceptance of the sample data.

According to the after action report, the project was completed without QC discrepancy. It was not possible to perform a check of the reported results and the field-generated grid sampling documentation, because they were not available.

### *UXB Field Sampling*

UXB conducted sampling at Site OE-27Y from December 21, 1994 through January 5, 1995. QA/QC was performed throughout field sampling and is documented in the Site OE-27Y Final After Action Report and the Final Primary Report (*UXB, 1995a and 1995b*). According to the reports, to ensure that OE sampling was done properly, QC checks were performed by UXB QC specialists on each lane. QC checks were performed on 10 percent of each lane after all OE operations were complete. Sample lanes were required to cover at least 10 percent of the total area of the site to be sampled. Following

completion of the QC check, the CEHND Safety Specialist conducted a QA check. The QA check included a 10 percent check of the site (search lanes), using a Mark 26 Forester Magnetometer, prior to accepting it.

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 contractor data to identify discrepancies. 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 contractor data were identified for this site.

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

### *HFA Sampling*

- The data collected by HFA were useful in identifying areas adjacent to Site OE-66 where OE is not likely present based on sampling
- Because no OE items were found, the absence of location and depth information does not impact data quality
- There appears to be poor survey control for the grid locations.

### *UXB Sampling*

- The sample data collected by UXB are useful in providing information concerning the type of items used (and not used) in this area
- QC of the database indicates that the specific location of the single expended illumination signal found at adjacent Site OE-27Y was not documented resulting in a location accuracy that is limited to the search lane where it was found
- Depth information was not recorded by UXB
- No discrepancies between the after action report and the grid records were identified.

### 3.66.6.3 Preliminary Assessment/Reconnaissance Review

This section describes the items that were found during reconnaissance site investigations and the implications for the site history. Three site reconnaissances have been conducted at Site OE-66. The first site walk was conducted in 1997 by the USACE UXO Safety Specialist. The object of the reconnaissance was to determine whether sites identified during the PA/SI conducted as part of the ASR required further action. The second reconnaissance was conducted in 2001 as part of the Fort Ord BRA. Site OE-66 was identified as an area historically used for the firing of small arms ammunition and flares. The site reconnaissance was conducted to determine whether sampling for residual lead associated with small arms use was warranted. The third reconnaissance, conducted in November 2003, involved a three-person team which included a UXO Safety Specialist. The reconnaissance location was selected to fill data gaps in reconnaissance efforts conducted previously at this site.

#### *Reconnaissance Methods Discussion*

A reconnaissance of Site OE-66 was completed as part of the PA/SI phase of the ASR for known and suspected OE sites at the former Fort Ord. Several areas of potential ordnance use were identified based on information gathered during interviews conducted as part of the ASR. Site OE-66 was identified in those interviews as “the location of the signal corps field training area.” Blank small arms ammunition was reportedly used. In November 1997, a USACE UXO Safety Specialist walked a portion of the site visually searching the path walked while simultaneously searching for subsurface OE using a magnetometer. No hazardous items were located, only expended blank small arms ammunition, an expended smoke grenade, and an expended pyrotechnic signal were found. No evidence of high explosive projectile fragmentation, fuzes, or expended projectiles was found. No evidence was found indicating this area was used as an impact area. The USACE UXO Safety Specialist assigned a Risk Assessment Code (RAC) score of 4 for Site OE-66. A RAC score of 4 includes a recommendation of further OE-related action by the Ordnance and Explosives Mandatory Center of Expertise (MCX) and Design Center (CEHND). The need for further action at Site OE-66 was based on the proximity of the site to the existing housing area and the increased probability of someone coming into contact with potential OE. The recommendation of further OE-related action was then forwarded to the CEHND for review. The CEHND reviewed the RAC worksheet and recommended no further OE-related action at Site OE-66 (*USAEDH, 1997*).

The Fort Ord BRA reconnaissance was conducted in 2001. The site reconnaissance was conducted by a two-person team that included an OE specialist and a second member trained in OE recognition. Prior to conducting the site reconnaissance, historical features were identified from training maps and aerial photographs and their locations entered into a GPS unit (way points). The team then conducted the site visit using a magnetometer to detect OE as they navigated to the way points. The path of the site walk was digitally recorded with a GPS unit. The following features or items were required to be mapped if present based on a visual search of the site as part of the BRA reconnaissance: 1) targets; 2) firing lines; 3) range fan markers; 4) survey bench marks; 5) areas of stained soil that could indicate petroleum hydrocarbon or bulk explosives contamination; 6) OE or OE scrap; 7) potential sample locations based on, a) the presence of spent ammunition (lead) (accumulations of 1 to 10 percent and areas exceeding 10 percent), or b) accumulations of OE or OE scrap; 8) other training related features (e.g., fighting positions, fox holes, etc.); and 9) areas of thick vegetation that could limit access to the investigation area. The path walked during the 2001 reconnaissance is shown on Plate 66-4. No evidence of OE was found at Site OE-66 during the 2001 reconnaissance. Based on the absence of features including targets, range markers, fighting positions, spent small arms ammunition, and OE scrap, no further investigation for chemical contamination was recommended for Site OE-66 under the Fort Ord BRA.



The site reconnaissance conducted in 2003 involved the team walking a portion of the site, surveying the path walked using a Schonstedt Model GA-52/Cx. The Schonstedt was used in an attempt to detect subsurface anomalies that might indicate that further investigation was warranted. The team also carried a GPS to record the path of the reconnaissance and the locations of any anomalies identified with the Schonstedt. The items found during this reconnaissance activity included two .30 caliber M1 ammunition clips, and small arms ammunition links. No OE or OE scrap was found. A summary of the results of the most recent reconnaissance effort is provided in Appendix C.

### *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*). The site was reportedly used for Signal Corps training including the use of blank small arms ammunition. In November 1997, a USACE UXO Safety Specialist walked a portion of Site OE-66 using a magnetometer. No OE items were located, only expended blank small arms ammunition, an expended smoke grenade, and pyrotechnic signals were found (*USAEDH, 1997*). Based on the results of reconnaissance investigations conducted at Site OE-66, there is no indication that modification to the site boundaries is necessary.

### *Quality Assurance/Quality Control*

The site reconnaissance conducted as part of the PA/SI was performed in accordance with USACE guidance (*USACE, 1995*). The site reconnaissance is conducted to look for evidence of past ordnance use. Visible evidence found during the site reconnaissance provides information on the type, extent, and magnitude of ordnance present. Physical features that may be present at a former site include impact craters caused by penetrating ordnance, the presence of OE and/or OE scrap on the ground surface, and soil staining associated with the use of bulk explosives.

Upon completion of the reconnaissance at each site a Risk Assessment Code (RAC) worksheet was completed and submitted to the Mandatory Center of Expertise (MCX) and Design Center (CEHND) as required (*USACE, 1995*).

Although the Fort Ord BRA is not a part of the OE program, many of the Data Quality Objectives (DQOs) identified for the Site Assessment Phase of the BRA investigation are the same DQOs established for the site reconnaissance phase of the current OE site investigation program being implemented at the former Fort Ord (*Parsons, 2001*). The DQOs for the BRA and the OE investigation program identify similar inputs to the decisions used to help answer questions regarding historical site use and to define the boundaries of the area of use. The DQOs for the OE investigation program site reconnaissance identify various inputs to the decision such as compilation of historical information regarding potential OE at the site (e.g., the review of interview records, field notes, aerial photographs, and historic maps). The DQOs for the BRA historical review identified similar sources of information including the review of interview records, historical maps, and aerial photographs. As part of the DQOs for a site inspection conducted for the OE investigation program, documentation of the type and location of OE and OE scrap, if found, is recorded. As part of the DQOs for the BRA site reconnaissance the quantity, type and location of OE and OE scrap found is also recorded. Both programs include using the results of the site inspections to determine if additional work (i.e., sampling for OE and chemicals associated with OE) is necessary. The Fort Ord BRA was conducted in accordance to the *Basewide Range Assessment Work Plan (IT Corporation [IT], 2001)*.

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

- The site reconnaissance conducted at Site OE-66 for the ASR was conducted in accordance with USACE guidance.
- The data collected and observations made by the UXO Safety Specialist are useful because only OE scrap (expended pyrotechnics) was found, supporting the conclusions that Site OE-66 was used for training that did not include weapon fired or high explosive OE and that no further OE-related investigation is necessary at Site OE-66.
- The BRA work conducted at Site OE-66 met the DQOs established for that program. Many of the DQOs from the BRA are the same DQOs that are currently in use for the OE investigation program.
- The data collected and observations made by the BRA and the site walk teams conducting the reconnaissance at Site OE-66 are useful because no OE or OE scrap was found which further supports the conclusion that no further OE-related investigation is necessary at Site OE-66.

### 3.66.7 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 site reconnaissance and sampling.

#### 3.66.7.1 Conclusions

##### *Site Use and Development*

- Based on a review of training maps, aerial photographs, site reconnaissance, and conducting site sampling at adjacent Site OE-27Y, Site OE-66 appears to have been used as a Signal Corps training site. Other training activities that occurred in this area in past years included aviation training and basic unit training, and it was a bivouac area. These activities began in the 1950s and continued until housing construction began in 1987.
- Reconnaissance conducted at this site identified expended blank ammunition and expended pyrotechnics on the ground surface. No evidence was found to support the use of high explosive OE.
- A small portion of the site lies on property that is designated as habitat reserve. The majority of the site lies on property transferred to CSUMB and is currently used for student housing. The portion of Site OE-66 transferred to CSUMB is categorized as development property.

##### *Sampling and Reconnaissance Adequacy and Data Quality*

- No site-specific sampling has occurred at Site OE-66. However, a portion of Site OE-66 was sampled during the sampling of adjacent Site OE-27Y. This sampling resulted in the finding of live blank small arms ammunition and an expended illumination signal (OE scrap).
- Site-specific grid sampling occurred adjacent to Sites OE-66 and OE-27Y. Three grids located to the west of Sites OE-66 and OE-27Y were sampled, and no evidence of OE was found.
- The sample data collected are useful because, although sampling was not performed to specifically investigate Site OE-66, the data provide useful information concerning the type of items that may have been used in this area (pyrotechnics) and the assertion that this area was not an impact area.

- The Schonstedt Model GA-52/Cx magnetometer was used for the geophysical investigation of Site OE-27Y. This instrument was evaluated as part of the ODDS and, with the exception of non-ferrous small arms ammunition, is capable of detecting the type of items expected at this site. A numerical value for 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 during the site reconnaissance conducted within Site OE-66 indicate that only pyrotechnic OE items (illumination and smoke signals) were used in this area. Additionally, no evidence of high explosive OE, or an impact area, was found during site reconnaissance; therefore, 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 over 14 years, which could decrease the effectiveness of the components that cause it to function.

**Grenade, Rifle, Smoke, Colored: M22 and M22A2.** It is unlikely that a person could cause a smoke grenade to function through casual contact if one were found at the site and be burned, because the grenade: (1) was designed to be functioned by a hard nose-on impact with the ground or other hard target, and (2) would have been exposed to moisture, degradation, and weathering for over 14 years, which could decrease the effectiveness of the components that cause it to function.

- The data collected and observations made by the team conducting the site walk at Site OE-66 are useful because only ammunition clips for an M1 rifle and small arms ammunition links were found, further supporting the conclusion that no further OE-related investigation is necessary at Site OE-66.
- Although the site reconnaissances conducted at Site OE-66 did not include walking the entire site, the quantity and quality of the information generated in combination with sample data collected from areas adjacent to Site OE-66 is sufficient to make an informed decision regarding the site. The investigation (site reconnaissance and adjacent sampling) were sufficient to confirm the types of OE items used at Site OE-66. Additionally, because there was no OE found in previous investigations, and the OE items potentially remaining at Site OE-66 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.

### 3.66.7.2 Recommendations

Based on the review of existing data:

- It is not anticipated that OE will be found at Site OE-66, and no further OE-related investigation is recommended. However, because OE were used throughout the history of Fort Ord and because OE scrap was found during site reconnaissance and sampling at adjacent Site OE-27Y, the potential for OE to be present at Site OE-66 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-66 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-66 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.

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## TABLES

**Table 66-1. Sampling Operations, Site OE-66 and Vicinity  
Track 1 Ordnance and Explosive Remedial Investigation/Feasibility Study  
Former Fort Ord, California**

Site	Grid ID or Search Lane ID	Operation Type	Contractor	Geophysical Instrument Used	Grid Completion Date
OE-66 -- Signal Corps Small Arms	D3C8H3-01	Sampling	HFA	SCHONSTEDT GA-72CV or GA-52C	Not available
OE-66 -- Signal Corps Small Arms	D3D8F6-01	Sampling	HFA	SCHONSTEDT GA-72CV or GA-52C	Not available
OE-27Y -- Training Site 25	OE-27Y	Sampling	UXB	SCHONSTEDT GA-52CX	12/21/1994
OE-27Y -- Training Site 25	D3B8G6-01	Sampling	HFA	SCHONSTEDT GA-72CV or GA-52C	Not available
OE-45 -- Tactical Training Area -- TTA	D3B6E0-01	Sampling	HFA	SCHONSTEDT GA-72CV or GA-52C	Not available

Sampling = 100 percent of anomalies detected were excavated to a minimum depth of 4 feet.

Deeper anomalies were pursued if directed by the USACE

UXB = UXB international Inc.

HFA = Human Factors Applications, Inc.

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



**Table 66-2. OE Scrap Found During Sampling, Site OE-27Y  
Track 1 Ordnance and Explosive Remedial Investigation/Feasibility Study  
Former Fort Ord, California**

Site	Search Lane ID	OE Items	Status	Depth (in)	Quantity
OE-27Y -- Training Site 25	OE-27Y - Lane 5	Signal, illumination, ground, M125 series	Inert	Not available	1

Site = OE Site Number

Grid = Grid in which item was found.

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

Depth = inches below ground surface that 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

66-A

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**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**

No evidence in literature search to support an impact area. This area/vicinity contained many training areas over the years. Was in use as a "Demonstration Area" (10th Infantry) in '56. "MG 1 & 2" in this area in 1958. MG is possibly machine gun (Army, 1985). Identified as "BUT Composite ST Area" in 1964. BUT may stand for "Basic Unit Training" and "ST" may stand for Service Test (Army, 1985). A "Field Communication Crewman Course" is identified immediately adjacent at this same time. "Helipad" is shown in this area on January 1967 map. "Wireman Course" is adjacent. Labeled as "BUT Composite ST Area" and as "Aviation Training Area" in 1968. "Wireman Course" adjacent. Helipad shown in this area on June 9, 1972, map (Training Ranges And General Road Map). A hand-drawn location/boundary for TS-25 is shown on the "tng Fac notes" in the southeast portion of the site. The hand drawn locations on this map are from 1971, 1972, and 1976. TS-25 also identified on March 1980 and June 1984 training maps. "Helicopter Training Area" included this area on 1987 map.

**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**

Blank Small Arms Ammunition. Revised Archives Search Report (ASR; USAEDH, 1997); Review of Fort Ord facilities and training maps, and After Action Report (UXB, 1995).

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 1: LITERATURE REVIEW**

Yes                  No                  Inconclusive

**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**

Expended small arms blanks, expended smoke grenade and signals found during recon. One expended illumination signal found during sampling of Site OE-27Y immediately adjacent to the south. (USAEDH 1997); (UXB, 1995); Review of Fort Ord facilities and training maps).

**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?**

		Inconclusive
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**Sources reviewed and comments**

Housing was constructed on a portion of the site after 1986. Not known if anything was found during the construction.

**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**

Area labeled "Demonstration Area" on 1956 map (Army, 1956). Not sure what this area was used for. Sampling of adjacent Site OE-27Y found one OE scrap item. Other adjacent areas include Field Communication Crewman course/Wireman course, Light Vehicle Driving Course, and Proficiency Test Area.

**ESTABLISHMENT AND SITE BOUNDARIES**

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

	No	
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**Sources reviewed and comments**

Many dirt roads and trails in this area, but no clear indication of a defined training area. No structures or permanent features visible ( 8/17/49; 6/23/51; 5/14/56; 10/18/74; 12/17/75; 6/16/78; 10/22/85; 3/25/86).

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 1: LITERATURE REVIEW**

Yes                  No                  Inconclusive

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

	No	
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**Sources reviewed and comments**

No boundary defined unless the "Demonstration Area" boundary is used (Army, 1956).

**8. Should current boundaries be revised?**

		Inconclusive
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**Sources reviewed and comments**

Boundary could be combined with OE-27Y.

**RESULT OF LITERATURE EVALUATION**

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

	No	
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**Comments**

Site could be combined with Site OE-27Y, however, no indication from the literature review that any further OE-related investigation is warranted.

**References**

- USAEDH, 1997. Revised Archives Search Report, Former Fort Ord, California, Monterey County, California. Prepared by US Army Corps of Engineers St. Louis District. Risk Assessment Procedures For Ordnance And Explosive Waste (OEW) Sites (RAC Sheet), Site OE-66, November 20, 1997.
- UXB International Inc (UXB), 1995. Final Report for Ordnance and Explosives Removal Action Fort Ord, California, Training Site 25 (TS25). November 1.
- Army, 1985. *Authorized Abbreviations, Brevity Codes, and Acronyms, Regulation 310-50*. November 15.
- Army, 1956. Map of Fort Ord Training Areas & Facilities. Enclosure I to Annex "O". Revised December 20.
- Field training Areas and range Map, April 27, 1964.
- Map of Fort Ord Training Areas and Facilities, January 10, 1958.
- Back Country Roads, January 1967.
- Training Facilities Map, Basic Information, March 1968.
- Topo map with tng fac notes, 1976.
- Training Facilities Plan (Dec 76) Future Development.
- Training Facilities Map (Jun 84) Basic Information.
- Ranges and Training Area Overlay, November 15, 1987.

ATTACHMENT 66-A  
 EVALUATION OF PREVIOUS WORK: SITE OE-66  
 EVALUATION CHECKLIST PART 2: RECONNAISSANCE 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 or other launched ordnance)?**

	No	
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**Sources reviewed and comments**

Based on the RAC sheet and the site reconnaissance conducted under the Basewide Range Assessment (BRA), expended pyrotechnics and small arms blanks were identified.

**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**

Expended blank small arms ammunition, expended smoke grenades, expended signals (RAC Sheet for Site OE-66)

**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**

RAC sheet notes expended smoke grenade and signals.

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

		Inconclusive
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**Sources reviewed and comments**

Housing was constructed on a portion of the site after 1986. Not known if anything was found during the construction.

**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**

Area labeled "Demonstration Area" on 1956 map (Army, 1956). Not sure what this area was used for. Sampling of adjacent Site OE-27Y found one OE scrap item. Sampling west of the site found no evidence of OE. Other adjacent areas include Field Communication Crewman course/Wireman course, Light Vehicle Driving Course and Proficiency Test Area.



ATTACHMENT 66-A  
 EVALUATION OF PREVIOUS WORK: SITE OE-66  
 EVALUATION CHECKLIST PART 2: RECONNAISSANCE EVALUATION

**Yes                  No                  Inconclusive**

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

	No	
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**Sources reviewed and comments**

Many dirt roads and trails in this area, but no clear indication of a defined training area. No structures or permanent features observed on aerial photos ( 8/17/49; 6/23/51; 5/14/56; 10/18/74; 12/17/75; 6/16/78; 10/22/85; 3/25/86).

**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**

Yes, if the "Demonstration Area" is the site. Only two training areas include site boundaries, "Demonstration Area" and "TS-25." The Demonstration Area is not mentioned in the ASR. Site OE-66 only encompasses a portion of the Demonstration Area and is immediately adjacent (North) of Site OE-27Y (TS-25)

**8. Was sampling and/or reconnaissance performed within appropriate area?**

Yes		
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**Sources reviewed and comments**

Based on the RAC sheet, the BRA, and 2003 site walk.

**9. Does reconnaissance indicate OE and/or ordnance-related scrap are present at the site?**

Yes		
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**Sources reviewed and comments**

Expended small arms blanks, expended smoke grenade and signals reportedly found during USACE site walk (RAC sheet for Site OE-66).

**10. 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**

Pyrotechnics and blank small arms ammunition is consistent with Signal Corps training.

ATTACHMENT 66-A  
 EVALUATION OF PREVIOUS WORK: SITE OE-66  
 EVALUATION CHECKLIST PART 2: RECONNAISSANCE EVALUATION

**Yes          No          Inconclusive**

**11. 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**

M I clips found during the 2003 site walk, are consistent with training in the 1940s, 1950s, and early 1960s.

**12. Was HE fragmentation found?**

	No	
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**Sources reviewed and comments**

No evidence of HE based on RAC sheet for Site OE-66, BRA, and 2003 site walk.

**13. Was HE found?**

	No	
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**Sources reviewed and comments**

No evidence of HE based on RAC sheet for Site OE-66, BRA, and 2003 site walk.

**14. Was LE found?**

	No	
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**Sources reviewed and comments**

RAC sheet for Site OE-66, BRA, and 2003 site walk.

**15. Were pyrotechnics found?**

	No	
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**Sources reviewed and comments**

RAC sheet for Site OE-66, BRA, and 2003 site walk.

**16. Were smoke producing items found?**

	No	
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**Sources reviewed and comments**

RAC sheet for Site OE-66, BRA, and 2003 site walk.

**17. Were explosive items found (e.g. rocket motors with explosive components, fuzes with explosive components)?**

	No	
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**Sources reviewed and comments**

RAC sheet for Site OE-66, BRA, and 2003 site walk.

ATTACHMENT 66-A  
 EVALUATION OF PREVIOUS WORK: SITE OE-66  
 EVALUATION CHECKLIST PART 2: RECONNAISSANCE EVALUATION

**Yes                  No                  Inconclusive**

**18. 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**

Live and expended blank small arms ammunition and expended pyrotechnics expected.

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

	No	
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**Sources reviewed and comments**

RAC sheet for Site OE-66.

**20. Is it appropriate to divide the site into sectors to focus on areas of common usage, similar topography and vegetation, and/or unique site features?**

	No	
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**Sources reviewed and comments**

No indication that the site should be divided.

**21. Should site boundaries be revised?**

	No	
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**Sources reviewed and comments**

No need to modify the boundary based on the results of the two site reconnaissance's conducted

**22. Has the field data been collected and managed in accordance with quality control standards established for the project?**

Yes		
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**Sources reviewed and comments**

However, a map should have been included with the RAC sheet for Site OE-66.

**Result of Reconnaissance Evaluation**

**Does the reconnaissance evaluation provide sufficient evidence to warrant further investigation?**

	No	
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**Comments**

No reason to conduct further investigation based on the RAC evaluation, site reconnaissance conducted under the BRA, and the 2003 site walk.

ATTACHMENT 66-A  
EVALUATION OF PREVIOUS WORK: SITE OE-66  
EVALUATION CHECKLIST PART 2: RECONNAISSANCE EVALUATION

**Yes      No      Inconclusive**

**References**

Risk Assessment Procedures For Ordnance And Explosive Waste (OEW) Sites (RAC Sheet), Site OE-66, November 20, 1997.

IT Corporation (IT), 2001. Basewide Range Assessment Work Plan And Contractor Quality Control Plan Small Arms And Multi-Use Ranges Fort Ord, California. Revision C. January.

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: 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**

Portion of the site sampled as part of the Site OE-27Y sampling (UXB, 1995)

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

		Inconclusive
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**Sources reviewed and comments**

Portion of the site sampled as part of the Site OE-27Y sampling. Live blank small arms ammunition found; however, not sure if any of the items were found within Site OE-66 (UXB, 1995).

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

		Inconclusive
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**Sources reviewed and comments**

Pyrotechnics found during sampling of Site OE-27Y, however, not sure if any of the items were found within Site OE-66 (UXB, 1995)

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

Yes		
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**Sources reviewed and comments**

Sampling was specific to Site OE-27Y (UXB, 1995)

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

		Inconclusive
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**Sources reviewed and comments**

Perhaps, OE scrap found, but specific location not provided (UXB, 1995)

**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**

Items found consistent with training in this area

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: SAMPLING EVALUATION**

Yes          No          Inconclusive

**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

**8. Was HE fragmentation found?**

	No	
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Sources reviewed and comments  
(UXB, 1995)

**9. Was HE found?**

	No	
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Sources reviewed and comments  
(UXB, 1995)

**10. Were LE found?**

		Inconclusive
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Sources reviewed and comments  
Live blank small arms ammunition found; however, not sure if any of the items were found within Site OE-66 (UXB, 1995)

**11. Were pyrotechnics found?**

	No	
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Sources reviewed and comments  
Only expended pyrotechnics found during sampling of adjacent Site OE-27Y, but specific location not provided (UXB, 1995).

**12. Were smoke producing items found?**

	No	
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Sources reviewed and comments  
(UXB, 1995)

**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  
(UXB, 1995)

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: SAMPLING EVALUATION**

Yes                  No                  Inconclusive

**14. Do items found in the area indicate training would have included use of training items with energetic components?**

		Inconclusive
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**Sources reviewed and comments**

Expended pyrotechnics found during sampling of adjacent Site OE-27Y, but specific location not provided (UXB, 1995)

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

	No	
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**Sources reviewed and comments**

(UXB, 1995)

**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**

No site-specific sampling of Site OE-66 has occurred

**17. Should current site boundaries be revised?**

	No	
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**Sources reviewed and comments**

No reason to revise site boundaries based on results of Site OE-27Y sampling

**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**

Small arms ammunition and pyrotechnics expected. Yes except the small arms ammunition. Small arms ammunition (brass) below ground surface would not be detectable. Would be able detect non-penetrating pyrotechnic items. Sites OE-66 and OE-27Y not suspected to have been used as an impact area.

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

	No	
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**Sources reviewed and comments**

Schonstedt Model GA-52/Cx only detects ferrous metals. Will not detect small arms ammunition (brass).

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: SAMPLING EVALUATION**

Yes                  No                  Inconclusive

**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		
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**Sources reviewed and comments**

Although not directly comparable to Site OE-66, the results of the ODDS indicated that all models of the Schonstedts used at this site are capable of detecting the ferrous surface OE (Type I items) expected at this site. Blank ammunition is non-ferrous and cannot be detected with a magnetometer. Illumination signals listed as Type I item in the ODDS (*Parsons, 2001*). Instrument listed in the after action report is the Schonstedt GA-52/Cx (*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**

Those items on the surface or at 1-foot below ground surface most likely would be found, however, non-ferrous (small arms ammunition) at depth would not.

**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 that instruments were used according to the work plan.

**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?**

		Inconclusive
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**Sources reviewed and comments**

Site OE-66 not sampled



**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: SAMPLING EVALUATION**

Yes                  No                  Inconclusive

**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.**

		Not Applicable
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**Sources reviewed and comments**  
 Not applicable, Site OE-66 not sampled

Total Area:                  sq. ft	Not Applicable
UXO Density:	Not Calculated

**25. What percentage of the anomalies were intrusively investigated?**

**Sources reviewed and comments**  
 Not applicable

Total % of anomalies investigated:	Not Applicable
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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, Site OE-66 not sampled

		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**  
 Site OE-27: Quality Control "(QC) checks were performed on each grid after all UXO operations were complete. UXB QC specialists checked a minimum of 10% 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" (UXB, 1995).

Yes		
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**Result of Sampling Evaluation**

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

		Not Applicable
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**Comments**

No site-specific sampling has occurred at Site OE-66. Sampling results of adjacent Site OE-27Y (including a portion of Site OE-66) do not indicate that further investigation of Site OE-27Y is necessary

**ATTACHMENT 66-A**  
**EVALUATION OF PREVIOUS WORK: SITE OE-66**  
**EVALUATION CHECKLIST PART 3: SAMPLING EVALUATION**

Yes          No          Inconclusive

**References**

UXB International Inc (UXB), 1995. Final Report for Ordnance and Explosives Removal Action Fort Ord, California, Training Site 25 (TS25). November 1.  
Parsons, 2001. Draft Ordnance Detection and Discrimination Study (ODDS), Former Fort Ord, Monterey, California. August.