

FINAL TECHNICAL PROJECT PLANNING DOCUMENT

ORDNANCE AND EXPLOSIVE ENGINEERING EVALUATION/COST ANALYSIS FIVE POINTS OUTLYING FIELD ARLINGTON, TEXAS

**Contract DACA87-00-D-34
Task Order 0008
USACE Project Number K06TX002801**



Prepared for:

**US Army Engineering and Support Center,
Huntsville
and
US Army Corps of Engineers,
Fort Worth District**

by:

**ZAPATAENGINEERING, P.A.
1100 Kenilworth Avenue
Charlotte, NC 28204**

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ABBREVIATIONS AND ACRONYMS

A/E	Architect/Engineering
AR	Army Regulation
ARARs	Applicable or relevant and appropriate requirements
ASSHP	Abbreviated Site Safety and Health Plan
ASR	Archives Search Report
CDROM	Compact Disk Read-Only Memory
CESWF	United States Army Corps of Engineers, Southwest Division, Fort Worth District
CESWT	United States Army Corps of Engineers, Southwest Division, Tulsa District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWM	Chemical Warfare Materiel
DA	Department of the Army
DERP	Defense Environmental Restoration Program
DID	Data Item Description
DOD	Department of Defense
DQO	Data Quality Objective
E	East
EE/CA	Engineering Evaluation/Cost Analysis
EM	Engineering Manual
EOD	Explosive Ordnance Disposal
FAR	Federal Acquisition Regulation
Ft	Feet
FTP	File Transfer Protocol
FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
GPS	Global-Positioning System
IAW	In Accordance With
INPR	Inventory Project Report
mi	Miles
MK	Mark
mm	millimeter
MPM	Most Probable Munition
N	North
NAD	North American Datum
NAS	Naval Air Station
NC	No Contact
NRCS	Natural Resource Conservation Service
NE	Northeast
NLT	No Later Than
No.	Number
NW	Northwest

ODC	Other Direct Costs
OE	Ordnance and Explosives
OERIA	Ordnance and Explosives Risk Impact Assessment
OLF	Outlying Field
PC	Personal Computer
PE	Professional Engineer
PG	Professional Geologist
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
QCO	Quality Control Officer
QCSR	Quality Control Summary Report
RAB	Restoration Advisory Board
RAC	Risk Assessment Code
RCRA	Resource Conservation and Recovery Act
ROE	Rights of Entry
S	South
SAP	Sampling and Analysis Plan
SCS	Soil Conservation Service
SE	Southeast
SOW	Scope of Work
STD	Standard
SW	Southwest
SWF	Fort Worth District of US Army Corps of Engineers
SWT	Tulsa District of US Army Corps of Engineers
TCRA	Time Critical Removal Actions
T&E	Threatened or Endangered Species
TM	Technical Manual
TNRCC	Texas Natural Resources Conservation Commission
TNT	Trinitrotoluene
TPP	Technical Project Planning
US	United States
US EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USAESCH	United States Army Engineering and Support Center, Huntsville
USN	United States Navy
UXO	Unexploded Ordnance
W	West

1.0 INTRODUCTION

1.0.1 The Conceptual Site Model (CSM), prepared as part of the Technical Project Planning Document, was prepared for the US Army Corps of Engineers (USACE) by its contractor, ZAPATA ENGINEERING, under contract DACA87-00-D-0034. An Engineering Evaluation and Cost Analysis (EE/CA) will be prepared for the former Five Points Outlying Field (OLF) located in the southeastern part of the City of Arlington (Tarrant County), Texas (See Figure 1-1). The US government used this site for combat training during World War II. The purpose of the EE/CA is to evaluate potential risk from any ordnance that may remain from past military activities and develop alternative actions to respond to the identified risks. The Technical Project Planning (TPP) Process allows the public to be closely involved in the planning and decision-making process throughout the project.

1.1 Project History and Overview

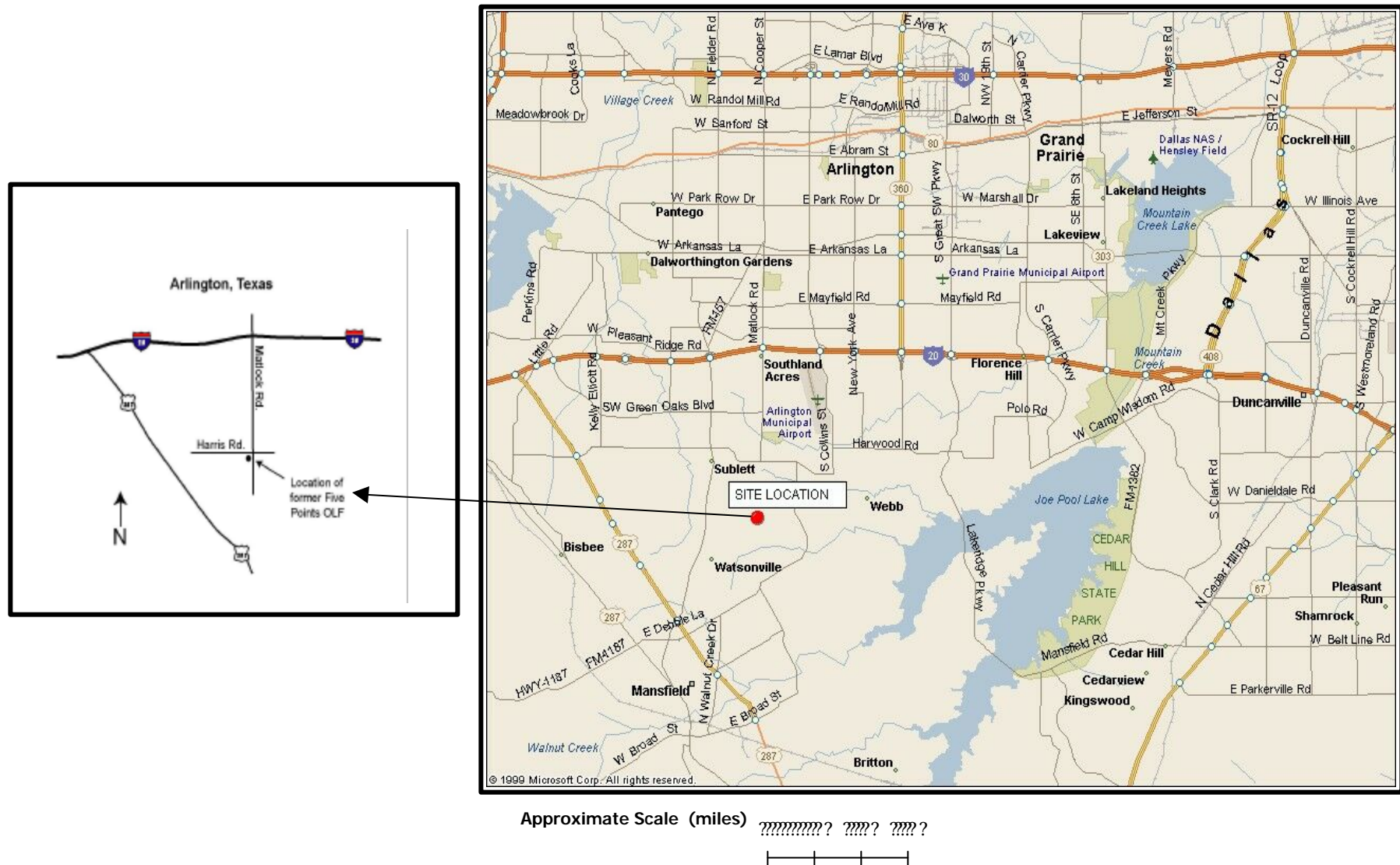
1.1.1 History

1.1.1 The Former Five Points OLF is a Defense Environmental Restoration Program/Formerly Used Defense Site (DERP/FUDS). The Five Points OLF was established during World War II and initially used as pilot training airfield associated with the Dallas Naval Air Station (NAS), 11 miles northeast of the site. At an unknown later time during the war, it was converted into a practice bombing range that became known as the Five Points OLF Bombing Range. The site is currently a residential area, and includes a mobile home park known as Twin Parks Estates, and a subdivision known as Southridge Hills, which remains under construction. The US Army Corps of Engineers (USACE) identified Five Points OLF as Site Number K06TX002801.

1.1.2 Overview

1.1.2 ZAPATA ENGINEERING, under contract to US Army Engineering and Support Center, Huntsville (USAESCH), is tasked to prepare a “Desktop” EE/CA (Contract Number DACA87-00-D-0034, Task Order No. 0008, dated 15 February 15, 2002). The primary goal of the study is to evaluate the likelihood of potential human exposure to OE in the Five Points OLF study area, and the associated risk. The Conceptual Site Model (CSM) presented in this report is one component of these evaluations.

FIGURE 1-1 SITE LOCATION MAP



1.2 Objectives and Scope

1.2.1 The purpose of the TPP Document and the Conceptual Site Model is to present a capsule history of the former Five Points Outlying Field (OLF) site, a synopsis of the background information on the site description, past DoD activities, OE items found at the site, and current and expected future land use. All of this information is being considered in the current EE/CA, conducted by ZAPATAENGINEERING.

1.2.2 The EE/CA is necessary to evaluate potential risk from any ordnance that may remain on the site from military activities and develop alternative actions to reduce those risks. As a “Desktop” EE/CA, there are no fieldwork requirements (detection, location, and mapping of OE). As such, ZAPATAENGINEERING will base the investigation on evaluation of archival data, and information gathered during the TPP Process. ZAPATAENGINEERING will then prepare a qualitative ordnance and explosives (OE) risk evaluation based on this available information. The ZAPATAENGINEERING project team will encourage, promote, and document stakeholder involvement throughout the EE/CA process.

1.3 Current Conditions

1.3.1 The former Five Points Outlying Field (OLF) site is partially occupied by the 35-acre Twin Parks Estates, a mobile home park, with the remainder of the site encompassing South Ridge Hills, the residential subdivision developed by KB Homes. According to the Archives Search Report (ASR), most of the subdivision homes have been sold to individual owners, with the unsold lots remaining in control of KB Homes.

1.4 Report Organization

1.4.1 The subsequent sections of the TPP Document examine the potential for human exposure to OE at the Five Points OLF. Potential pathways and types of OE are detailed in the following sections. The information presented in the TPP Document is organized as follows:

1.4.2 Section 1.0 Introduction.

Describes the purpose and scope of the TPP Document, and summarizes its organization.

1.4.3 Section 2.0 Environmental Setting.

Provides a summary of the physical characteristics of the study area.

1.4.4 Section 3.0 Investigation History.

Summarizes previous and current investigations of former Five Points OLF.

1.4.5 Section 4.0 OE Characteristics.

Summarizes the physical characteristics of OE items possibly affecting the site.

1.4.6 Section 5.0 Exposure Assessment.

Identifies the human receptors within the study area, and describes potential pathways of exposure to OE.

1.4.7 Section 6.0 Data Gaps.

Identifies potential data gaps and associated uncertainties.

1.4.8 Section 7.0 Conclusions and Recommendations.

Provides conclusions of the Final TPP Document and CSM report, and makes recommendations for further activities within the study area.

1.4.9 Section 8.0 References.

Lists the sources cited in this report.

2.0 ENVIRONMENTAL SETTING

2.1 Location and Description

2.1.1 The Five Points OLF lies approximately eight miles south of the center of Arlington, and three miles north-northeast of Mansfield, Texas, at the southwest corner of the intersection of Matlock Road (to the east) and West Harris Road (to the north). Refer to Figure 2-1, Site Map, Former Five Points OLF. The intermittent Bowman Branch of Walnut Creek lies to the south, and properties along Commercial Boulevard East are adjacent to the west. Currently, private individuals and businesses own the site.

2.1.1 Topography

2.1.1.1 The site is nearly flat with a gentle slope to the southeast. Historic aerial photos indicate the former presence of a small drainage depression in the southeastern part of the site, extending south to Bowman Branch. Grading activities associated with development of the site have leveled this part of the property. All of the Five Points OLF has been improved with the exception of the area immediately adjoining Bowman Branch. Improvements include roadways, site built homes, mobile home lots, a cleared area held for light commercial development, as well as the required utilities. A portion of the site located to the south along Bowman Branch is dedicated to the City of Arlington for a city park.

2.1.2 Geology

2.1.2.1 The Five Points OLF site is located in the Osage Plains section of the Central Lowland province. Rocks of this section range from Cretaceous to Recent. The oldest strata are exposed in the western part of Tarrant County. Younger bedrock units are exposed toward the east. Alluvium and terrace deposits overlap the bedrock along streams and rivers (USACE, 2002).

2.1.2.2 The outstanding geologic event in the region was the encroachment of the Comanchean Sea. This early Cretaceous sea expanded slowly from the Gulf of Mexico to cover all of Texas. It extended northward to cover the Arbuckle Uplift (in Oklahoma) and then receded. After a period of erosion, the less extensive sea of the Gulfian Epoch covered the Cretaceous sediments (USACE, 2002).

2.1.2.3 Comanchean series rocks of the Cretaceous System are divided into three major divisions, from oldest to youngest: the Trinity Group, the Fredericksburg Group, and the Washita Group. The Cretaceous System forms a southeastward-thickening wedge extending across the area into a structural feature known as the East Texas Basin. Regional dip is east to the east and southeast at about 15 to 40 feet/mile (modified from USACE, 2002).

2.1.2.4 Along the contacts between geologic formations, a mixing of sediment by erosion has occurred. It is most evident where the formations have widely different characteristics. In the area between formations of the Fredericksburg and Trinity Groups, calcareous materials of the overlying Fredericksburg Group have moved down slope to cover the non-calcareous Trinity Group. Further movement down slope has mixed these sediments into material that differs from what was in the original formations. In these areas of mixed parent materials, unlike soils occur in close association. Small areas of calcareous soils with grass cover occur in intricate patterns with acid soils and oak forest cover (quoted from USACE, 2002).

2.1.3 Soils

2.1.3.1 The soils at the Five Points OLF site are clays and silty clays. The soils range from very shallow to deep in very short distances, and the slopes range from level to 30 percent. Since the site covers a large area and the soil series are relatively small and jumbled, there are a number of different soil types present in the site.

2.1.3.2 The shallow soil profile begins with a surface layer that can range from five to 12 inches deep, consisting of grayish-brown gravelly clay. Underlying this layer is platy or coarsely fractured limestone. These soils are well drained. The available water capacity is very low, permeability is moderately slow, and runoff is medium to rapid depending on the slope. The hazard of erosion due to water is slight to moderate.

2.1.3.3 The deep soils have profiles that differ greatly within small areas. The surface layer is generally about 12 inches thick, and composed of dark grayish-brown stony clay or clay. The subsurface layer, to a depth of 25 inches, is very dark gray clay. The subsoil, to a depth of 40 inches, is dark gray, light olive brown, or yellowish-brown clay, or silty clay. The stratum and substratum, to 70 inches, is composed of brownish-yellow silty clay, or grayish-brown clay that may be mottled with olive yellow in some small areas. The deep soils are well drained. The available water capacity is medium to high,

permeability is very slow, surface runoff is medium, and the hazard of water erosion is moderate.

2.1.3.4 A large area near the site that has an easily recognizable soil profile is the airport. The surface layer is dark grayish brown clay and dark clay about 20 inches thick. The subsoil is dark grayish-brown clay to 63 inches. The sub-stratum is olive gray or grayish-brown clay to 70 inches. These soils are poorly drained, the available water capacity is high, permeability is very slow, and runoff is slow. The hazard of soil erosion due to water is severe (USACE, 2002). There is little or no potential for frost development in the soil at this site.

2.1.4 Hydrology

2.1.4.1 Ground Water

2.1.4.1.1 The Trinity Group of Cretaceous age is the largest and most prolific aquifer in the study area. The aquifer consists of the Antlers, Paluxy, and Twin Mountains Formations. The Antlers is a coalescence of the Paluxy and Twin Mountains. The Trinity Group aquifer ranges in thickness from 100 ft in the outcrop area to about 1,200 feet near the down dip limit of fresh to slightly saline water. Artesian storage coefficients range from 0.00001 to 0.00025 and specific yields range from 15 to 25 percent in the outcrop (USACE, 2002).

2.1.4.2 Surface Water

2.1.4.2.1 There are no major rivers or streams at this site. Runoff from this location drains to the southeast portion of the site into an intermittent section of the Bowman Branch. This branch flows to the east, becoming perennial, and eventually emptying into Walnut Creek, approximately 3.5 miles east-southeast of the site. From this point, the flow heads to the east-northeast for approximately 3 miles before draining into Mountain Creek, 1,800 ft downstream of the John Penn Branch confluence. The flow then travels approximately five miles to the north-northeast before draining into Mountain Creek Lake.

3.0 INVESTIGATION HISTORY

3.1 Previous Investigations

3.1.1 Final Archives Search Report (ASR) (February 2002)

3.1.1.1 The Final Archives Search Report (ASR), prepared by the US Army Corps of Engineers, was released in February 2002. This is a compilation of all information known about the site, up to that point in time.

3.1.2 Expanded Site Investigation (ESI) Trip Report (February 1998)

3.1.2.1 The US Army Corps of Engineers, Fort Worth District, conducted an ESI of the Five Points OLF in February 1998. This investigation was prompted by accounts in the Inventory Project Report (INPR) of “children getting onto the property, finding MK23, 3-lb. practice bombs, and taking the black powder out and lighting it.” At the time, the District wanted to determine site conditions, and the possible necessity of a Time Critical Removal Action (TCRA). Resulting discussions with the property owner, however, revealed that the timeframe surrounding these activities involving the children was the 1940’s.

3.1.2.1 Field Survey

3.1.2.1.1 The 1998 ESI involved a visual and magnetometer survey of the surface at the site. Intrusive investigations were not performed during the ESI. Although there was an abundance of surface scrap, none was reportedly ordnance-related. The magnetometer survey did detect numerous subsurface metallic anomalies, increasing in number near the center of the former bombing range target. The ESI concluded, “the potential for subsurface presence of practice bombs exists.” Based on the results of the investigation, however, the ESI concluded that a Time Critical Removal Action (TCRA) was not warranted. The ESI instead recommended completion of an ASR, followed by the scheduling of a Non-TCRA.

3.1.3 Findings and Determination of Eligibility (December 1996)

3.1.3.1 In December 1996, a ‘Findings of Fact’ was issued addressing the Five Points OLF site. The project area was formally acknowledged as a formerly used defense site, and therefore eligible for the DERP FUDS program established under 10 USC 2701 et. seq.

3.1.4 Inventory Project Report (INPR) (October 1996)

3.1.4.1 An INPR addressing the Five Points OLF was released in October 1996. The US Army Corps of Engineers, Fort Worth District prepared this report to establish the site as a FUDS under the Defense Environmental Restoration Program (DERP).

3.1.5 Property Survey Summary (September 1996)

3.1.5.1 In late September 1996, the USACE Fort Worth District personnel, accompanied by representatives of the Parks Estates Partnership, inspected the mobile home park during a drive-through inspection. Based on the survey, the Fort Worth District assigned a Risk Assessment Code of “2”. This is the second highest ranking, making the completion of an INPR a high priority, and recommending further action by the USAESCH.

3.1.6 Alternatives Evaluation for DERP Project (June, 1984)

3.1.6.1 In June 1984, the US Army Corps of Engineers released an evaluation of alternatives for the Twin Parks Estates site. The alternatives included:

1. Buying back the land from the (then) owners, erecting a secure fence around the perimeter of the entire 160 acres, and posting unexploded ordnance (UXO) signs around the property. The property would remain in the DOD active property inventory indefinitely.
2. Buying back the 125 acres not being used as a mobile home park, erecting a secure fence around the perimeter of the entire 160 acres, and posting unexploded ordnance signs around the property. The property would remain in the DOD active property inventory indefinitely.
3. Having a contractor remove the top four to six feet of soil from the property, haul it to a secure landfill, and dispose of it as a reactive waste in accordance with RCRA, and replace it with clean soil from an off-site borrow area.
4. Having a contractor use a “potato picker” plow, scraper/conveyor, or other farm earthwork machinery to process the soil to a depth of four to six feet. An EOD Detachment would detect ordnance materials in

the processed soil and remove potentially hazardous ordnance materials to Fort Hood, Texas for disposal. The contractor could then re-grade the processed soil.

5. Having an EOD detachment locate all potential ordnance items using a Ferex instrument capable of detecting to a depth of four to six feet, dig up the items for disposal at Fort Hood, Texas, or other active Army disposal site, and refill the excavations.

3.2 Current Investigation

3.2.1 Conceptual Site Model (CSM) Development

3.2.1.1 The CSM is intended to provide a preliminary conceptual understanding of the relationship between OE at the Five Points OLF and potential pathways for exposures to human receptors. The CSM presented in this report incorporates available information on the historically reported OE types at the site.

3.2.1.2 This information is used to identify data gaps in the current understanding of OE occurrence study area (refer to Section 6.0), and to identify additional investigation activities aimed at filling data gaps (refer to Section 7.0).

4.0 CHARACTERISTICS OF POTENTIAL OE AT SITE

4.0.1 This section summarizes general knowledge regarding the OE reportedly found at the Five Points OLF. This summary is only intended to present some of the key characteristics of these OE. For a more detailed description of these items, the reader is referred to the Final Archive Search Report, dated February 2002.

4.1 Source, Nature, and Extent of OE

4.1.1 The source, nature, and extent of OE are based on findings and conclusions of the Final ASR, historical records, and new information that might be developed during the TPP process.

4.1.1 Source of OE

4.1.1.1 The source of the OE was US Navy aerial bombing practice, most likely from Dallas NAS from 1940 to mid 1950's.

4.1.2 Nature of OE

4.1.2.1 The OE consists of practice bombs, most of which have a small spotting or expelling charge to indicate the point of impact. No historic documents, anecdotal information, or other source indicates that chemical warfare material (CWM), white phosphorus, or incendiary materials were used at Five Points OLF.

4.1.3 Extent of OE

4.1.3.1 The entire site may have subsurface practice ordnance. This is due to the nature of practice bombing, the limited accuracy of the bombsites and systems of the day, and the construction processes associated with residential development of the property. Site-specific types of OE located to date are described in paragraph 4.2. The only type of OE found on site since closure of Five Points OLF has been the Mk 23 Mod 1 Practice Bomb.

4.2 Description of Hazards of Specific OE Encountered

4.2.1 CWM is not suspected to exist within the areas of investigation. Features and hazards of ordnance that was used at Five Points OLF Bombing Range listed below are

based on configurations for selected ordnance listed in TM 9-1904, *Ammunition Inspection Guide*, March 1944.

4.2.1 Mk 23 Mod 1 Practice Bomb (3 lb), Features and Hazards

4.2.1.1 The bomb body is cast iron, galvanized steel, or lead, depending on the series. The bomb is 8.3 inches long and 2.3 inches across the fins. Refer to FIGURE 4-1 for an illustration of the item. The AN-Mk 4 signal cartridge was used as described below.

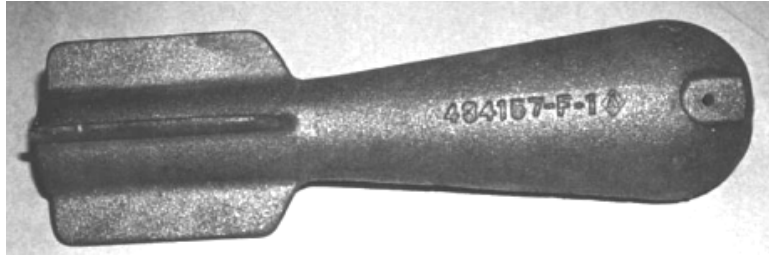


FIGURE 4-1 MK 23 MOD 1 PRACTICE BOMB

Photograph from ORDATA II Version 1.0

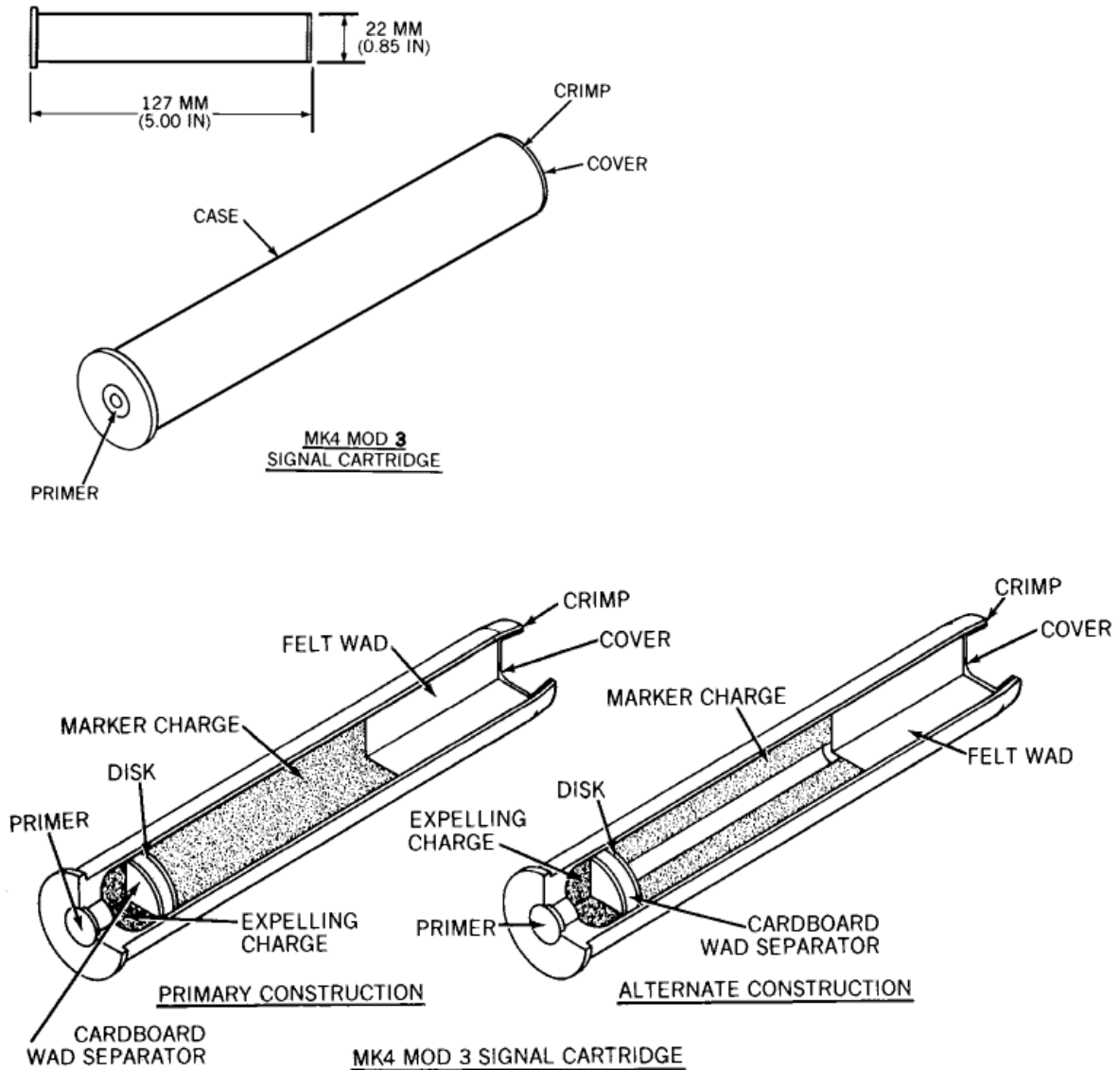
4.2.2 AN-Mk 4 Signal Cartridge

These are signal generating signal cartridges and spotting charges (See Figure 4-2). They are used in various size practice bombs to provide visual observance of target impact in the bombing of surface and water targets. The Mk 4-series are unpainted with black stenciled markings depicting nomenclature, NSN, production date, DOD No., Lot No., and manufacturers identification data. The Mk 4 Mod 0, 1, and 2 are cardboard with a metal base; the Mk 4 Mod 3 and 4 are aluminum.

4.2.3 Mk 5 Dye Marker

This is a non-hazardous fluorescent dye marker without explosives.

FIGURE 4-2 MK 4 SIGNAL CARTRIDGE FULL VIEW AND CUTAWAY



Illustrations from ORDATA II Version 1.0

4.2.4 M38A2 Practice Bomb (100 lb), Features and Hazards:

4.2.2.1 The body of the M47 bomb was thin, rolled and lap welded sheet metal. Refer to FIGURE 4-3 for an illustration of the item. The M1A1 and M3 Spotting Charge are almost identical except the M3 is slightly longer than the M1A1.

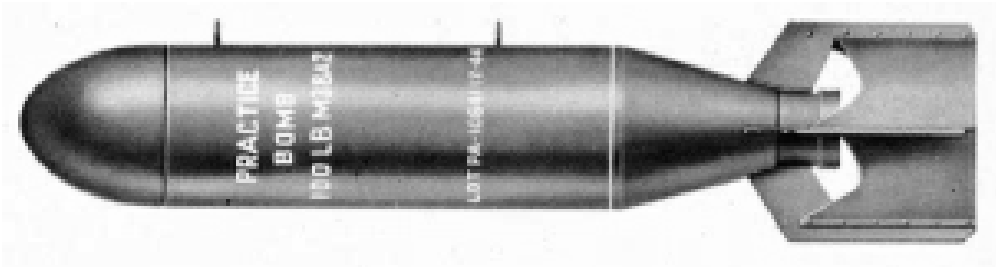


FIGURE 4-3 M38A2 PRACTICE BOMB

Photograph from ORDATA II Version 1.0

4.2.2.2 M1A1 Spotting Charge. This type of spotting charge fits in the after end of the 100- pound Practice Bomb M38A2. It produces a flash of flame and white smoke for observation of bombing accuracy. When assembled in the bomb, the can of the charge protrudes two to three inches out of the bomb body. The fuze is an integral part of the spotting charge assembly. When the arming wire is pulled, the spring-loaded arming pin jumps out, leaving the inertia weight supported only by the combination firing pin and creep spring. On impact, the inertia weight drives this firing pin into the shotgun-type primer, which, in turn, ignites the black powder. The case is made of metal.

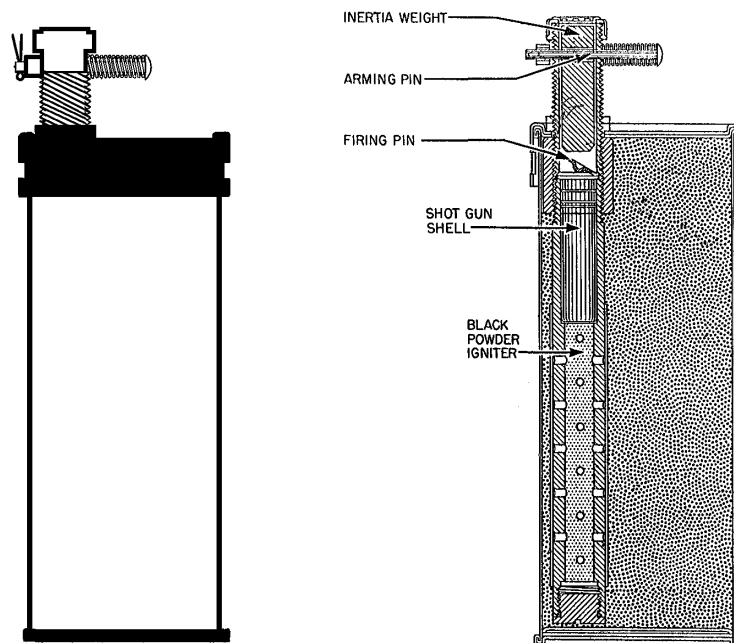


FIGURE 4-4 M1A1/M3 SPOTTING CHARGE

Illustrations from ORDATA II Version 1.0

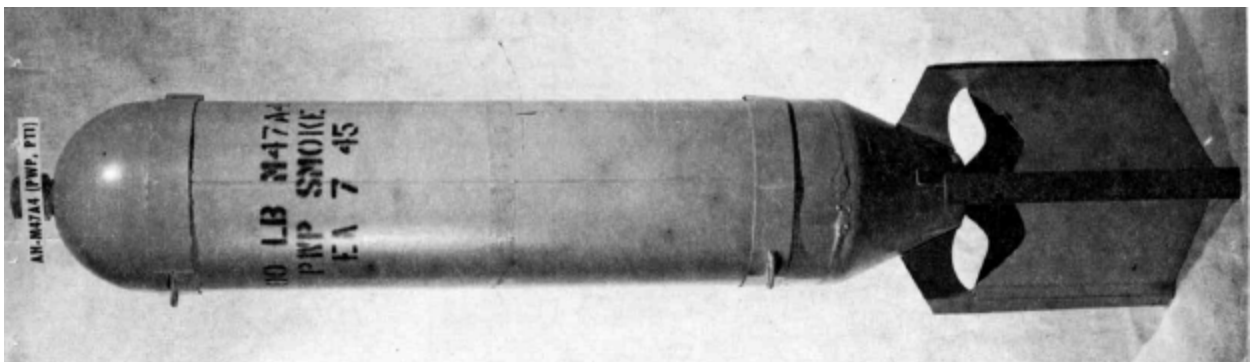
4.2.2.3 M3 Spotting Charge. This type of spotting charge fits in the after end of the 100-pound Practice Bomb M38A2. It produces a flash of flame and white smoke for observation of bombing accuracy. When assembled in the bomb, the can of the charge protrudes two to three inches out of the bomb body. The Spotting Charge M3 (see Figure 4-4) has a 2.33-pound dark smoke filling and a black-powder igniter. It is 5/8 inch longer than the Spotting Charge M1A1, but otherwise is like it. The M3, with its dark smoke filler, is well adapted for bombing practice over snow-covered terrain. The black-powder igniter charge contains approximately 425 grains. The fuze is an integral part of the spotting charge assembly. When the arming wire is pulled, the spring-loaded arming pin jumps out, leaving the inertia weight supported only by the combination firing pin and creep spring. On impact, the inertia weight drives this firing pin into the shotgun-type primer, which, in turn, ignites the black powder. The case is made of metal.

4.2.2.4 M5 Spotting Charge. The Spotting Charge M5 consists of a glass bottle filled with FS smoke mixture. An ordinary bottle cap seals the mixture. The bottle is held to the Practice Bomb M38A2 by a wire twisted around the neck of the bottle and attached to the tail vanes. The charge assembly is made of glass and weighs 2.54 pounds. FS smoke is Sulfur Trioxide in Chlorosulfonic Acid. FS consists of sulfur trioxide (SO_3) in chlorosulfonic acid (ClSO_3H). The standard solution of FS consists of approximately 55% sulfur trioxide dissolved in 45% chlorosulfonic acid, by weight.

4.2.5 M47 Series Practice/Chemical Bomb, Features and Hazards

Refer to FIGURE 4-5 for a photograph of the item.

FIGURE 4-5 TYPICAL M47 SERIES BOMB



Photograph from ORDATA II Version 1.0

4.2.3.1 The body of the M47 bomb was thin, 1/16 or 1/32-inch depending on model, rolled and lap welded sheet metal. The bomb that was used at Five Points OLF was likely filled with water, sand, or iron oxide for use as a practice bomb.

4.2.3.2 The M108, M126, or M159 nose fuze was used in conjunction with various high explosive bursters. The bomb can be loaded with any of the fillers listed below. While it is unknown which practice version of the M47 chemical bomb was used at the Five Points OLF, there are no indications that Mustard (H), white phosphorus, or plasticized white phosphorus (PWP) were used at the site. Information on H, WP, and PWP versions of the M47 series bombs is provided for safety and identification purposes only. According to an Army Technical Manual (TM 9-1904), dated March 1944, *“The H filler has been found to leak when loaded into this bomb.” At the date of publication, the M47 and M47A1 were not allowed to be loaded.*” The incendiary version was used for target marking, as well as, anti-personnel and material.

4.2.3.3 Potential fillers for the M47 bomb include:

- ?? Water, sand, or iron oxide for use as a practice bomb.
- ?? White Phosphorus (WP), 100 lbs – No evidence of use on site.
- ?? Plasticized White Phosphorus (PWP), 74 lbs – No evidence of use on site.
- ?? Incendiary Filler consisting of 65-lbs of latex and gasoline, when loaded with this filler, the nose has M7 Burster Charge (1-lb black powder) installed. – No evidence of use on site.
- ?? Mustard (H) agent, 73 lbs. – No evidence of use on site.

4.2.3.4 Painting and Markings. The following standard markings are listed for information; however, do not use color-coding as positive identification of OE items.

- ?? Practice – Blue with white or black markings
- ?? WP/PWP Filler – Blue gray base with one yellow band with yellow markings.
- ?? Incendiary Filler – Blue gray base with one purple band with purple markings.
- ?? H Filler – Blue gray base with 2 green bands with green markings.

4.3 Update of Final Archives Search Report (ASR) Findings

No update has been issued.

5.0 EXPOSURE ASSESSMENT

5.1 Nature of Potential Impact to Public Health

5.1.1 Based on the Final ASR Findings, Mk 23 miniature Navy practice bombs and possibly M38A2 practice bombs and an unknown version of the M47-series chemical bomb may be found at the Five Points OLF (USACE, 2002).

5.1.2 Items documented to have been found by civilians are limited to practice bombs only. The level of concern for public health is based on the known past use of the range and the amount of OE previously found on the site. The risk to the public directly relates to exposure to OE. The Engineering Evaluation/Cost Analysis (EE/CA) being prepared by ZAPATAENGINEERING will detail the associated risks and recommended risk-reduction alternatives.

5.1.3 No activities involving hazardous materials or containerized hazardous materials have been documented as occurring at the site. Although no hazardous, toxic, and radiological waste concerns are apparent or anticipated, as a precautionary measure the USACE is conducting a soil-sampling program at the site. Laboratory analyses will include tests for total lead and zinc; white phosphorus; Tetryl and TNT, and herbicides.

6.0 DATA GAPS

6.0.1 This project is considered a “Desktop” EE/CA, with no required field detection, location, or mapping of OE. As such, ZAPATAENGINEERING will base the EE/CA on evaluation of existing (archival) data and information gathered during the TPP Process.

6.0.2 The USACE Tulsa District (CESWT) is conducting fieldwork in a parallel study of the Five Points OLF, the results of which will be included as an appendix to the EE/CA. The CESWT study involves soil sampling to eliminate the data gaps related to the potential occurrence, migration, and fate of possible OE-related soil contaminants at the Five Points OLF. The laboratory analyses for this site will include tests for total lead and zinc, white phosphorus, Tetryl and TNT, and herbicides.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.0.1 This section presents the conclusions and recommendation of the Final TPP Document and CSM report. A Draft CSM was prepared and forwarded to the CESWF prior to the June 2002 TPP workshop in Arlington, Texas. The purpose of the Draft CSM was to provide background on the history and issues affecting the Five Points OLF. The worksheets used to formulate the CSM were then refined at the June meeting (see Appendix A), and it was concluded that the potential exists for human exposure to OE at the Five Points OLF.

7.0.2 During the TPP workshop, data gaps were discussed, with particular emphasis on development of a Sampling and Analysis Plan addressing possible soil contamination at the project site. During the second day of the TPP workshop, the technical team settled on a soil sampling strategy to eliminate the data gaps regarding available information on the occurrence, migration, and fate of possible OE-related soil contaminants at the Five Points OLF. The laboratory analyses for this site will include tests for total lead and zinc, white phosphorus, Tetryl and TNT, and herbicides.

8.0 REFERENCES

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Appendix A

Memorandum for Record (MFR) Worksheets