Final

Site Specific Chemical Warfare Materiel Scoping and Security Study Report

Formerly Used Defense Sites Site Inspection Report

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Fort Crowder

FUDS No. B07MO013801

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CHAPTER 1
INTRODUCTION

1.1. BACKGROUND

In accordance with the Defense Environmental Restoration Program (DERP) guidance and project initiation requirements under the Formerly Used Defense Site (FUDS) program, the U.S. Army Corps of Engineers, Kansas City District (CENWK) prepared an Inventory Project Report (INPR) in July 1993, to determine whether the former Fort Crowder is eligible as a FUDS. The former Fort Crowder was included in the inventory of FUDS as a site potentially containing Chemical Warfare Materiel (CWM). The FUDS project number for the former Fort Crowder is B07MO013801.

1.2. PROJECT OBJECTIVE

1.2.1. The objectives of the CWM Scoping and Security Study (CWM Study) are to prioritize the FUDS-eligible suspect CWM project properties (suspect CWM sites) for future funding and actions; involve the public, federal, state, tribal, and local stakeholders in the decision process for determining potential further action; and identify security and safety concerns. As discussed in the CWM Scoping and Security Study Report, the process for evaluating the suspect CWM sites was developed in a manner consistent with FUDS Program Policy (ER 200-3-1) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process guidance. The process provides for a phased approach for determining which sites require further investigation.

1.2.2. This Site-Specific CWM Scoping and Security Study Report serves as the Site Inspection (SI) Report for the former Fort Crowder. The SI Report presents the findings of the SI, draws conclusions based on the findings, and makes recommendations based on the available information. The recommendations and associated costs to complete the work at the site, along with the information collected at the other suspect CWM sites, will be used to develop a comprehensive management plan for non-stockpile CWM at FUDS.

CHAPTER 2
SITE DESCRIPTION

2.1. SITE LOCATION

The former Fort Crowder is located south of Neosho, Missouri and is comprised of more than 42,800 acres in Newton and McDonald counties. Figure 2.1 presents a site map of the former Fort Crowder with an inset showing the location of the site within the State of Missouri.

2.2. PHYSICAL DESCRIPTION

The former Fort Crowder lies on the west-central edge of the Ozark Plateau Province and on the southern flank of the Springfield Plateau. The topography of the site is characterized by gently rolling hills and relatively flat grasslands. The surrounding terrain encompassing the area of interest at the former Fort Crowder is rolling pasture and woods.

2.3. HISTORY AND PAST USE

2.3.1. History

2.3.1.1. The initial construction of Fort Crowder began in 1941 on approximately 8,900 acres of newly acquired land. Between 1941 and 1943, the Department of the Army acquired approximately 42,800 acres for the establishment of the Fort. By the time the primary construction ended in July 1942, there were 2,328 buildings, 51 miles of new roadways, and over five miles of new railroad track. Fort Crowder could accommodate 1,920 officers and 40,563 noncommissioned officers. The population increased in 1943 when a large contingent of Women's Army Corps (WAC) soldiers were stationed at Fort Crowder. A total of 1,000 WACs were ultimately stationed at the Fort making it one of the largest WAC contingents in the country. In October 1943, the first group of German prisoners of war arrived at Fort Crowder. By the end of the war, the prisoner population reached as high as 2,000.

2.3.1.2. During World War II, field demonstrations were conducted to train troops in gas mask proficiency and in the familiarization of various war gases using Chemical Agent Identification Sets (CAIS). There were three gas chambers at Fort Crowder. Two of the gas chambers were located at the No. 110 Gas Chambers Area and one was at the

No.104 Gas Chamber Area. Only the No. 110 Gas Chambers Area is located within the former Fort Crowder FUDS boundary.

2.3.1.3. In 1946, Fort Crowder was deactivated, and in the following four years 1,789 buildings and 29,380 acres were declared surplus and sold. The cantonment area decreased to 2,055 acres and approximately 3,040 acres were retained for use as ranges.

2.3.1.4. In May of 1951, the former Fort Crowder was reactivated as an Army Reception Center for the Korean Conflict. The cantonment area was used in this capacity until the mission of the Fort was again changed. In January 1953, the former Fort became a U.S. Branch Disciplinary Barracks, housing approximately 1,500 prisoners. In 1954, the facility was designated as a permanent fort in hopes of keeping it active. The effort was unsuccessful and in January 1958, the U.S. Branch Disciplinary Barracks were closed.

2.3.1.5. In 1962, the bulk of the land comprising the former Fort Crowder was declared excess property. Four thousand acres were licensed to the Missouri National Guard and an additional 6,000 acres were to be sold. Between 1947 and 1965, approximately 38,100 acres were declared surplus and sold. In 1972, an additional 150 acres were sold and in 1984 another 123 acres were declared surplus.

2.3.2. Previous Investigations

2.3.2.1. The U.S. Army Corps of Engineers (USACE), Kansas City District prepared an INPR for the former Fort Crowder. This INPR included performing real estate searches and historical background searches specific to Fort Crowder in order to determine if the site was eligible under the FUDS program.

2.3.2.2. In 1992, an Archives Search Report (ASR) was compiled by TCT-St. Louis. The ASR was prepared by reviewing all available records, photographs, and reports that documented the history of the site. Site visits were also conducted on-site and in the Neosho, Missouri area (TCT-St. Louis, 1992).

2.3.2.3. The USACE, St. Louis District issued an ASR in April 1993, based to a large extent on the TCT-St. Louis document. This ASR is a primary source for information about Fort Crowder and incidents that occurred in the years since it was closed (USACE, 1993).

2.3.3. Past Property Use

Prior to the construction of Fort Crowder, the area was rolling farmland dotted with orchards, corn fields, and modest farm homes. Apples and strawberries were major crops of the area. Many of the apple orchards were destroyed during the construction of the

fort. Prior to World War II, the farmers in the area produced as much as 50 railroad cars of strawberries per year.

2.4. CURRENT AND FUTURE USE

2.4.1. Current Use

The former Fort Crowder site is primarily an agriculture and wooded area. Commercial, educational, and industrial facilities are located around the former headquarters area, the hospital area, and the warehouse area. The former Pistol Range is currently the site of a privately-owned pullet chicken farm. The No. 110 Gas Chambers Area is currently residential property and horse pasture. The Missouri Army National Guard (MOARNG) maintains a 4,358 acre training site at the former Fort Crowder that trains several thousand troops each year.

2.4.2. Future Use

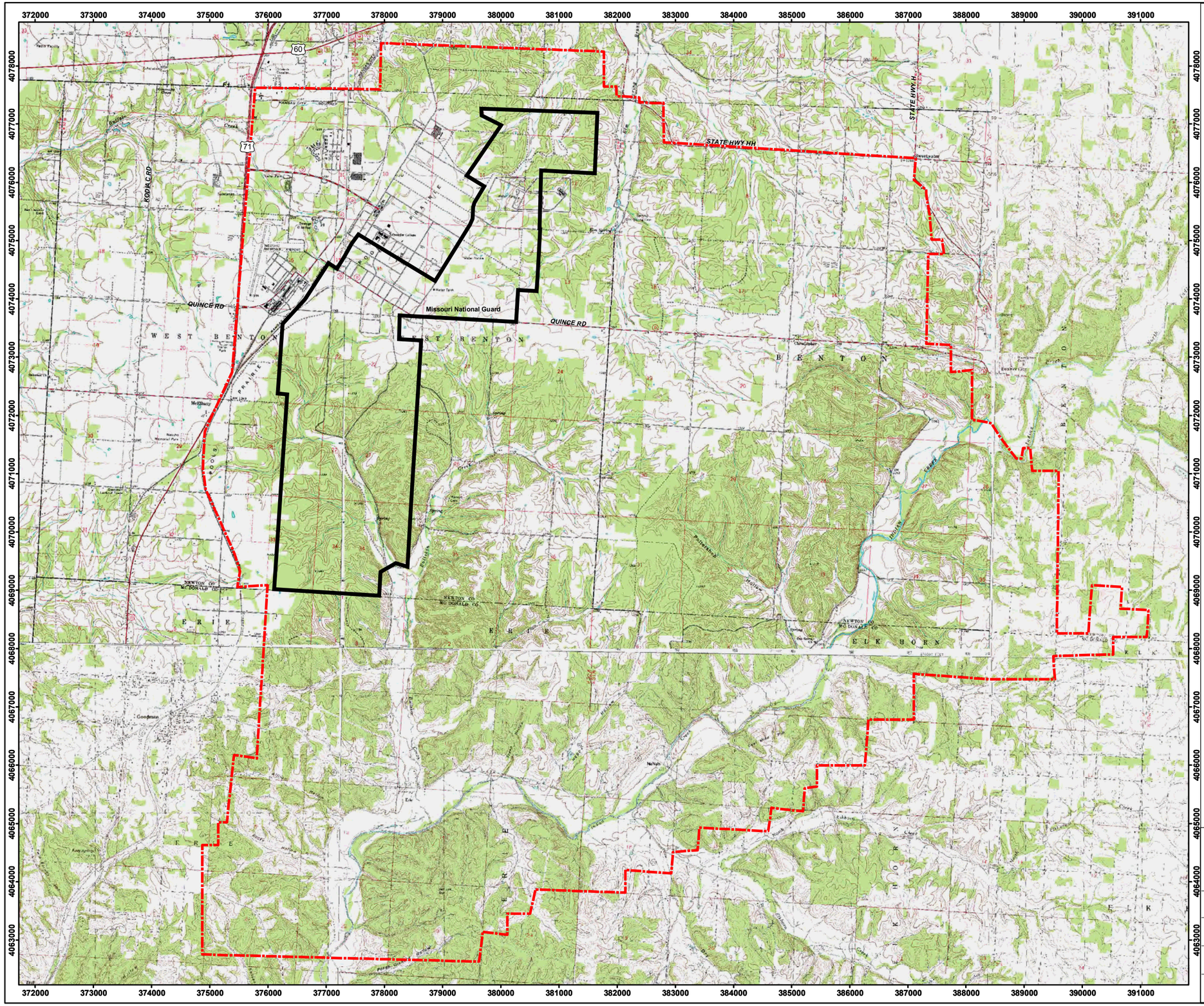
The future land use is anticipated to remain the same with respect to agriculture. The potential exists that development will extend farther south from Neosho through the former cantonment area and into areas to the south.

Figure 2.1

Fort Crowder

Neosho, MO

For Official Use Only



Legend

- Missouri National Guard Boundary
- Approximate Site Boundary of Former Fort Crowder

N

Image Source: USGS 7.5' Neosho East and Neosho West Topographic Quadrangles, Compiled 1972, Photo Inspected 1981.

Projection: UTM Zone 15 NAD83, Map Units in Meters, Distance Units in Feet.

5,500 2,750 0 5,500 Feet

PARSONS	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: BT	**Fort Crowder**		
DRAWN BY: BT			
CHECKED BY: JC	SCALE: As Shown	PROJECT NUMBER: 742675	
SUBMITTED BY: JC	DATE: July 2005	PAGE NUMBER:	
	FILE: X:\CWM_GIS\GIS\Maps\ Crowder\ss_report\ Fig2_1.mxd		

CHAPTER 3
SITE EVALUATION

3.1. INTRODUCTION

3.1.1. The CWM Study process for evaluating and characterizing the suspect CWM sites consists of a phased approach for determining which sites require further action. This approach is consistent with the Preliminary Assessment (PA) and Site Inspection (SI) phases of the CERCLA process. The approach is detailed in Chapter 4 of the CWM Scoping and Security Study Report.

3.1.2. The PA consists of historical records review, limited aerial photographic analysis, and site data collection. If the PA indicates further investigation is warranted, the site is evaluated in the next step of the process, the remedial SI. The SI may involve a site visit and surface inspection, mapping and spatial analysis, additional aerial photographic analysis, interviews with current landowners and local officials, and if warranted and feasible, geophysical surveys, intrusive investigation, and limited munitions constituent sampling. Based on the results of this additional evaluation, an appropriate response action is recommended.

3.2. HISTORICAL RECORDS SUMMARY

Records review for the former Fort Crowder consisted of reviewing the ASR and a Historical Photographic Analysis conducted in 2003 and 2004.

3.2.1. Archives Search Report

3.2.1.1. The ASR (TCT-St. Louis, 1992) identified the area around the Former Pistol Ranges and the No. 110 Gas Chambers Area as the Chemical Exercise Area but no boundaries were identified. The two areas are adjacent and separated by Mink Drive (formerly June Road). An interviewee identified an area about 350 feet east of the gas chambers as the location where training with chemical agents occurred (this corresponds to the area identified as the Chemical Exercise Area). The training consisted of exposing soldiers to chemical agents in a setting that simulated actual battlefield conditions. The interviewee stated that the agents used at this site included mustard (H, HS), Lewisite (M-1 or L), chloropicrin (PS), and phosgene (CG). Figure 3.1 presents the location of the No. 110 Gas Chambers Area.

3.2.1.2. Another interviewee (USACE, 1993) stated that training chemicals were stored in Quonset huts, or igloos, located in the southeast corner of June Corner (the general area where the former Pistol Range was located). He stated that there were twenty-two 30-foot by 30-foot igloos and other facilities in that area where munitions, explosive simulators, and chemical training materials were stored. After World War II, the buildings were declared surplus and sold. Reportedly, the work crews removing the igloos took anything found in the structures, dumped it out nearby, and buried it.

3.2.1.3. In June 1986, a bulldozer operator preparing a site for new building construction uncovered several vials of unidentified liquid and metallic material of military nature. A white gaseous cloud filled the air behind the bulldozer after it ran over some of the vials. The operator's eyes became watery and he had difficulty breathing. After resting a while under a tree, the operator went back to work. The next day the operator reported the incident. The Technical Escort Unit (TEU) responded and removed the following military related debris:

- 40 M1 practice mine fuzes,
- 8 M1 practice mine fuze components,
- 15 M48 surface trip flares (without fuzes),
- 3 M10 Mk2 practice grenade fuzes,
- 1 M11 aircraft signal, and
- 30 40ml (1.4 ounce) glass vials containing chemical agent or chemical agent simulants, along with some packing material (9 confirmed as components of K951 CAIS; according to the TEU Trip Report, three of the vials contained mustard (H)).

3.2.1.4. TEU carefully cleared the site of munitions and vials by sifting the loose dirt moved by the bulldozer. A total of 8 inches of soil was removed and sifted and the area was decontaminated with calcium hypochlorite.

3.2.1.5. CAIS is the suspected CWM at the former Fort Crowder. Interpretation of the available data indicates that two main types of CAIS may have been used at Fort Crowder: sniff sets and ampules. The sniff sets could have been the K955 Navy Sets or the Navy X Sets. Sniff sets were intended for indoor use to instruct military personnel in recognizing the odors of chemical agents. The ampules would have been from the K951/K952 sets. The ampule sets were designed for outdoor use and consisted of agent/chemicals (pure or in solution) sealed in Pyrex tubes.

3.2.2. 2003 Aerial Photographic Analysis

Maps created and produced by the U.S. Army Engineer Research and Development Center, Topographic Engineering Center (TEC) were compiled in a report following

evaluation of historic aerial photographs of the former Fort Crowder. The Special Assessment Historical Photographic Analysis of the former Fort Crowder was completed in February 2003. Although subjective, this process identified ground scars, areas of disturbed ground, berms, and ditches in the areas of interest with respect to CWM. This information was used to aid in the selection of the geophysical survey areas for the site investigation. Features identified by TEC could represent disposal areas of potential CWM or be the result of benign military activity to include general construction, agriculture, or a variety of other uses. They only suggest that activity was occurring in these areas during the active military occupation of the facility. Aerial photography collected and analyzed by TEC was from July 1938, September 1953, and March of 1996 and 1997.

3.2.3. 2004 Aerial Photographic Analysis

3.2.3.1. The Special Assessment GIS-Based Historical Photographic Analysis report for the former Fort Crowder was completed by TEC in May 2004. The May 2004 TEC report included the photographic sources used in preparation of the February 2003 report and also included additional photographic sources from December 1942, August 1945, and November 1950. The 1942 aerial photographs clearly show the No. 104 Gas Chamber, the No. 110 Gas Chambers, and the Pistol Range to the east of the No.110 Gas Chambers. The No. 104 Gas Chamber was more centralized to the cantonment area and is on the site currently controlled by the Missouri Army National Guard (See Figure 3.1) The ground scars to the east of the Pistol Range identified in the 1953 aerial photograph are not as evident in the aerial photograph from 1942. The aerial photograph from 1942 also shows the bunkers in the magazine area. The ground scars in the magazine area identified in the 1953 aerial photograph are also present in the 1942 aerial photograph. The aerial photograph from 1942 identifies a possible training area with a “V” shaped trench located in the northern portion. This area is south of the parade ground and just north of the Fort’s standard bayonet course. The trench is not visible in the aerial photograph of the same area in 1945.

3.2.3.2. The photographic analysis completed in May 2004 clearly shows many of the features of the former Fort. These features include the firing ranges, obstacle courses, incinerator area, hospital area, WAC housing area, and the various other structures of the Fort. As with the May 2003 TEC analysis, the identification of ground scars, areas of disturbed ground, berms, ditches, and possible training areas is a subjective process. These identified features could represent disposal areas of potential CWM or be the result of benign military activity. They only suggest that activity was occurring in these areas during the active military occupation of the facility.

3.3. SITE INVESTIGATIONS PERFORMED

3.3.1. Site Visit

The U.S. Army Engineering and Support Center, Huntsville (USAESCH) conducted a site visit to the former Fort Crowder on February 20, 2003 to evaluate current site conditions and to confirm the findings of the ASR. The site visit team recorded data using a combination of maps, a global positioning system (GPS) receiver, field book, and digital camera. A summary of the findings and conclusions of the site visit are summarized below:

- The property owner of the former pistol range was able to place a mark on one of the TEC aerial photographs showing the location where the vials were found in 1986. The identified location was east of Mink Drive and east of the No. 110 Gas Chambers Area near an E-shaped berm identified by the TEC aerial photograph analysis.

- This area is high ground that is covered with grass and includes a chicken facility.

- Portions of old berms and several building foundations from the former military installation remain at the site. A map provided by the USACE, St. Louis District showed that the berms were part of a former Pistol Range.

- A significant magnetic anomaly was identified on top of the berm using a Schonstedt magnetic locator. Small magnetic anomalies were identified in the area of the 1986 incident. Bullet casings and an expended fuze from a practice grenade were found on one of the foundations.

- Based on the site visit conducted and historical information available, the area of the 1986 exposure incident was recommended as the focus of further investigations. Geophysical investigations were recommended in the area around the chicken facility and north to Highway D (Austin Road) and the remaining berm area.

3.3.2. 2003 Intrusive Investigation

The USAESCH, with Parsons as the prime contractor, conducted a site investigation to characterize the potential presence of CWM contamination at the former Fort Crowder. The No. 110 Gas Chambers Area and the former Pistol Range were the focus of the investigation conducted by Parsons. The field investigation activities conducted at the former Fort Crowder included geophysical surveys, anomaly reacquisition, air monitoring, intrusive operations, and soil sampling and analysis. A summary of each aspect of the investigation is discussed in the following paragraphs.

3.3.2.1. Geophysical Survey

3.3.2.1.1. A geophysical survey to detect ferrous metal objects was performed at the former Fort Crowder in August 2003. A towed array of Geonics EM61-MK2 Time Domain Metal Detectors (TDMD) was used in conjunction with a GPS to perform geophysical surveys over approximately 30 acres in the former Pistol Range and No. 110 Gas Chambers Area. The EM61-MK2 was selected as the most appropriate geophysical instrument based on its performance in similar soil and geologic conditions to the former Fort Crowder. The EM61-MK2 was used in a towed array configuration consisting of three EM61-MK2 units attached side-by-side using non-metallic fasteners, and supported using sets of the EM61 wheels. The array of instruments was towed at slow speed using an all-terrain vehicle (ATV). A Trimble Real-Time Kinematic (RTK) GPS system was positioned over the array of geophysical instruments to record anomaly locations. A laptop computer was integrated to the towed array system to simultaneously record data from the three EM61-MK2 coils and the Trimble RTK GPS system.

3.3.2.1.2. Data from the EM61-MK2 was written directly to the field computer using Geometrics Maglog software which allowed the towed array team to monitor coverage and signal quality during the data collection. The processing involved outputting the raw EM61-MK2 data using Geometrics Magmapper software into xyz files for post processing. Further data analysis processes included transferring the xyz files into the Geosoft Oasis software, geo-referencing to UTM Zone 14N, NAD 83, and meters coordinate system and leveling (adjusted to a common baseline). Plotting and target analysis was then performed and the locations and magnitudes of the geophysical signals were plotted on maps.

3.3.2.1.3. The primary target of the investigation was CAIS. During shipment and storage of CAIS, four individual CAIS were contained in a large metal shipping container (referred to as a pig) with a cap bolted on to seal one end. The individual CAIS were contained within smaller metal containers within the pig. Within these smaller metal containers were glass vials containing various chemical agents that were used to train soldiers in the identification of chemical agents. The pigs were approximately 38 inches in length and were expected to have anomaly amplitudes in excess of 50 mV. A total of 113 “piglike” anomalies were identified during the evaluation of the geophysical data. The individual metal containers possibly containing the glass vials were expected to have anomaly amplitudes in excess of 10 mV and were classified as “high priority” anomalies. A total of 137 “high priority” anomalies were identified through evaluation of the geophysical data. An additional 98 “high amplitude, non-piglike” anomalies were also identified for investigation through evaluation of the geophysical data. In addition to the individual anomalies identified for potential investigation, 10 anomalous areas consistent with burial trenches or pits were identified for investigation from the EM61-MK2 survey. Figure 3.2 presents the geophysical data for the former Fort Crowder.

3.3.2.2. Anomaly Reacquisition

The anomalies and anomalous areas selected for investigation by the Project Geophysicist were uniquely numbered and depicted on Anomaly Dig Sheets for intrusive investigation. Coordinates for these anomalies were compiled into waypoint files and uploaded to the Trimble RTK GPS unit for reacquisition by the field team. The field team used the GPS to navigate to the anomaly location and confirm the presence of the anomaly using the EM61-MK2. Survey flags were labeled with the unique anomaly identification number and placed in the ground at the edge of the anomaly location. For area anomalies, the boundaries of the anomalous zones were marked with flags depicting the unique area identification. A total of 321 individual anomaly locations and 10 anomalous areas were reacquired and marked for investigation. The berm remaining on site was inspected and flagged using a Schonstedt magnetometer. An additional 144 anomalies were flagged for investigation on the berm. Figure 3.3 presents the location of the reacquired anomalies and scar areas for the former Fort Crowder.

3.3.2.3. Intrusive Investigation

3.3.2.3.1. Intrusive sampling, including hand-tool excavation, backhoe trenching, and soil sampling was conducted to evaluate the potential presence of CWM. Locations for hand-tool excavation and trenching were based on results of the geophysical surveys. Edgewood Chemical Biological Center (ECBC) personnel performed continuous air monitoring of downrange air quality during excavations. The air was monitored for CWM and industrial chemicals during excavation activities using MINICAMS and DAAMS tubes.

3.3.2.3.2. The intent of the intrusive excavation was to assess the individual anomalies and characterize the contents of the anomalous areas identified through the geophysical survey. The investigation of individual anomalies consisted of excavating until the item was encountered. Once the item was removed, the base of the excavation area was screened with a magnetometer to determine if additional items were present. If the magnetometer indicated that subsurface anomalies were present, the excavation was continued. Intrusive excavation in the anomalous areas involved digging a trench through the highest density area as indicated on the anomaly location maps. Metallic scrap, not military related, was collected for further inspection by the QC Officer or SUXOS and placed in the site dumpster when verified to be inert.

3.3.2.3.3. Subsurface soil samples were collected and submitted for laboratory analysis during the intrusive investigation. Samples were collected from the base of the excavated trench and from the trench side walls and were analyzed for select chemical agents and their chemical agent breakdown products (ABP).

3.3.2.4. Investigation Results

3.3.2.4.1. Intrusive investigation activities were conducted at the former No. 110 Gas Chambers Area and the former Pistol Range Area from November 3, 2003 through November 20, 2003. The anomalies investigated consisted of all 137 "high priority" anomalies, 49 of the 113 "piglike" anomalies, 39 of the 98 "high amplitude, non-piglike" anomalies, 34 of the 144 "mag and flag" anomalies from the berm, and the 10 anomalous areas identified during the geophysical survey. The results of the Fort Crowder intrusive investigation are summarized in Table 3.1. Figure 3.4 shows the locations of the anomalies that were intrusively investigated; the location of the mine fuze and ordnance related scrap; and the location of the trenches that were excavated during the operation.

3.3.2.4.2. The intrusive investigation activities conducted at the former No. 110 Gas Chambers Area and the former Pistol Range Area did not uncover any CWM or chemical agent contaminated media. Military related items found during the investigation included a live practice mine fuze and ordnance related scrap from two rifle grenades. The live practice mine fuze (anomaly No. 46) was located in the former Pistol Range Area, approximately 40 feet southeast of the 1986 incident area. This item was relocated next to the berm and Blown In Place (BIP) by a U.S. Army Explosives Ordnance Disposal unit from Fort Leonard Wood. The remainder of the items recovered during the intrusive investigation activities consisted primarily of metal items consistent with building materials and farm activities. These items included barbed wire, banding material, nails, rebar, tool parts, wire, nuts, bolts, and pieces of reinforced concrete. The intrusive findings from the No. 110 Gas Chambers Area and the former Pistol Range Area are summarized in the Dig Sheets located in the Appendix.

3.3.2.4.3. Thirty soil samples were collected from the trenches during the investigation of the anomalous areas at the former Fort Crowder. Two soil samples were collected from the location where the live practice mine fuze was explosively destroyed (one prior to BIP operations and one after BIP operations). Headspace monitoring for chemical agents was conducted on each of the soil samples by ECBC. Since all soil samples were non-detect for chemical agent, the samples were shipped to the ECBC laboratory at the Edgewood Arsenal in Aberdeen Proving Ground, Maryland. The soil samples were analyzed for mustard (H); nitrogen mustards (HN-1 and HN-3); Lewisite (L); and their corresponding ABPs. No CWM or breakdown products were detected in the ECBC laboratory analyses. When the non-detect results were received from ECBC, the split BIP samples collected from the detonation location of the mine fuze were submitted to Severn Trent Laboratories (STL) for explosives (SW8330) and metals analysis (SW6010B/7471A). Explosives constituents were below detection limits for both of the samples submitted and there was no significant increase in the concentration of metals at the location. The soil sample headspace results and analytical laboratory results are presented in the Appendix.

3.3.2.4.4. Monitoring results for the MINICAMS and DAAMS were non-detect for CWM during the intrusive activities conducted at the former Fort Crowder.

Table 3.1
Investigation Summary

Activity	Components	Method	Monitoring/Analysis	Results
Intrusive Excavation	Intrusively investigated 259 anomalies and 10 anomalous areas.	Mechanical and hand excavation	MINICAMS monitoring of excavation work zone for mustard (H), nitrogen mustards (HN-1 & HN-3), phosgene (CG), chloropicrin (PS), chloroform, and Lewisite (L)	137 high priority, 49 piglike, 39 high amplitude, 34 mag and flag and 10 anomalous areas were investigated. The results included one UXO item, 2 pieces of ordnance related scrap, and common scrap metal consistent with building material and farm equipment. No CWM.
			Excavation and perimeter monitoring with DAAMS pumps for HD, HN-1, HN-3, and L	Non-detect for chemical agents and ABP
Pre- and Post-Detonation Sampling	Soil samples collected before and after the explosive destruction of UXO items	Composite sample	Laboratory analysis offsite – ECBC, Maryland and STL, Savannah and Tallahassee ECBC analysis: H, HN-1, HN-3, L, and ABP. STL analysis: USEPA SW846 Method 8330, 8015M, 6010B, and 7471	Non-detect for chemical agents and ABP. No elevated levels of explosives or metals reported from STL (See Appendix for detailed reporting)
Soil Sampling	30 soil samples taken from excavations	Composite samples	Headspace onsite for chemical agents (H, HN-1, HN-3, and L)	All non-detect at reporting limit level
			Laboratory analysis offsite for chemical agents (H, HN-1, HN-3, and L) and agent breakdown products (ABP)	All non-detect at reporting limit level

3.4. SOURCE, NATURE AND EXTENT OF CWM

The results of the Site Inspection indicate that CWM in the form of CAIS could potentially remain at the former Fort Crowder. Historical documentation indicates that CWM training activities occurred at Fort Crowder, but no information was found that indicates its final disposition or complete use. An intrusive investigation conducted in 2003 did not uncover any CWM or chemical agent contaminated media. Although selected metal anomalies in the area were investigated as part of the 2003 intrusive operation, it is possible that non-metallic CAIS bottles could still remain at the site.

3.5. RISK EVALUATION

3.5.1. The potential for a CWM safety risk depends on the presence of three critical elements: a source (presence of CWM), a receptor, and an interaction between source and receptor. There is no risk if any one of these three elements is missing.

3.5.2. The use of CWM at the former Fort Crowder involved training in the identification and decontamination of chemical agents. The risks consist of vials from CAIS remaining at the site as possible sources. A relative risk scoring is provided in Chapter 8 as part of the site prioritization. The scoring provides a relative hazard ranking that is used to establish order of execution and funding for recommendations of further action projects. The relative risk evaluation is not intended to take the place of the risk assessment that would be conducted later in the remedial process.

3.6. SECURITY EVALUATION

The security risk for the former Fort Crowder is based on the location of CWM, if present, and the accessibility. The site presents a low security risk based on the fact that no other locations for suspect CWM are known. Chapter 7 provides a security risk scoring and a more detailed discussion.

3.7. TECHNICAL LIMITATIONS / IMPRACTICALITY

Historic records indicate that CWM in the form of CAIS was formerly used and stored at the former Fort Crowder; however, the records do not include any information on the final disposition of the CAIS, and thus there is a chance that buried CAIS remains. CAIS could have been either buried as a means of disposal, or isolated unbroken vials may inadvertently remain in the ground at the demonstration areas. Further investigation is considered technically unfeasible for two reasons:

1. No other burial locations were identified during records review or visual site inspection, and
2. Glass vials from CAIS are not detectable in soil with currently available technology. A detailed discussion of the technical limitations of finding buried

CAIS vials is provided in Chapter 6 of the CWM Scoping and Security Study Report.

Soil sampling and analysis for chemical agents and associated breakdown products is impractical because of the lack of identifiable locations and the small quantities likely involved. The absence of specific locations and small quantities, combined with a lack of mobility within soil, will likely produce inconclusive soil sampling results related to the presence or absence of chemical agents and their associated breakdown products in soil. In the absence of a definitive source of CWM contamination, no reasonable sampling locations can be determined and no pathways of exposure can be quantitatively evaluated.

3.8. PUBLIC INVOLVEMENT

A fact sheet for the former Fort Crowder was prepared and is attached in the Appendix.

Figure 3.1

Areas of Interest
Fort Crowder

Neosho, MO

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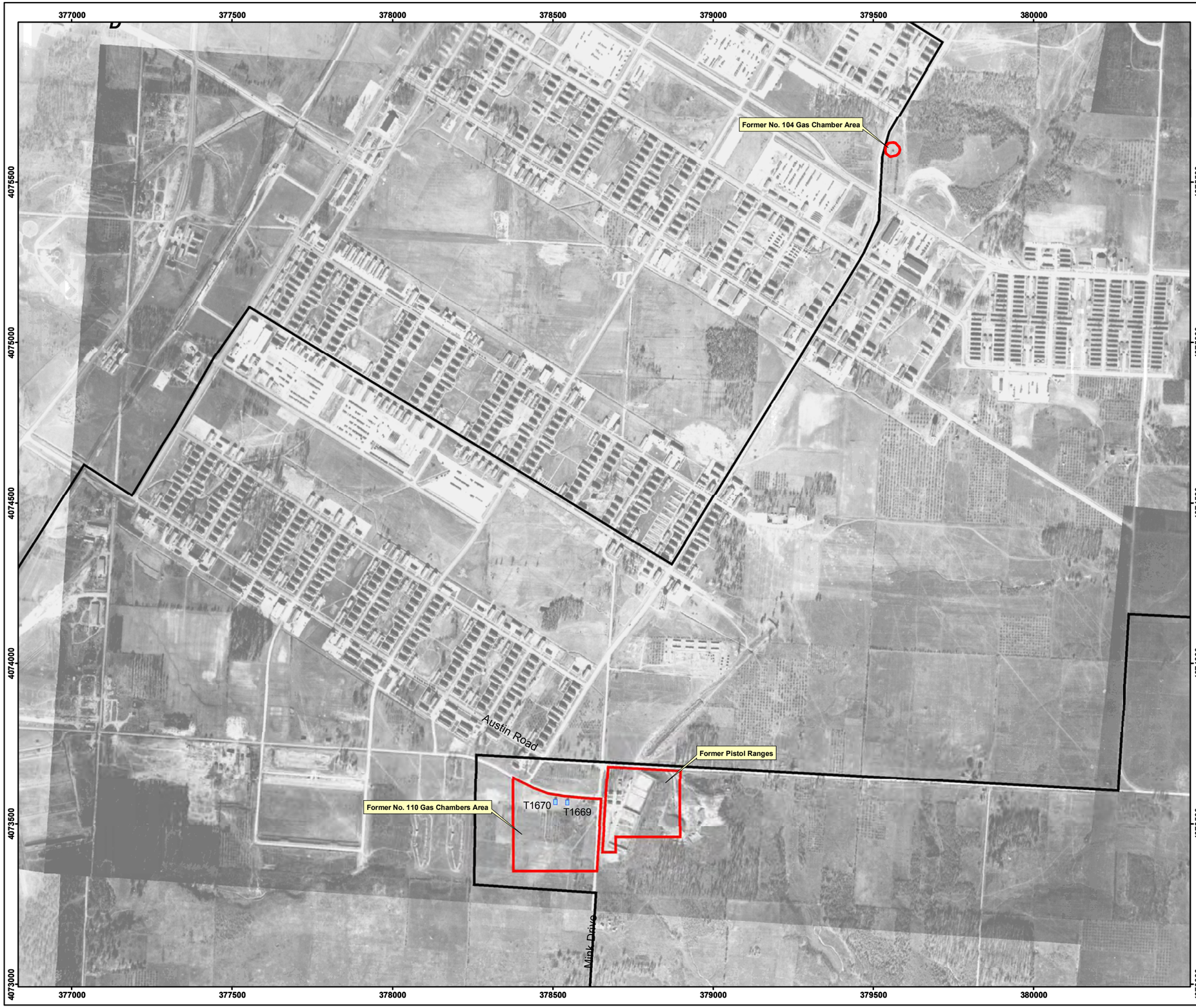

Legend

T1670 Approximate Location of Gas Chambers

Area of Interest

Missouri National Guard Fort Crowder Boundary

N

Image Source: 1942 Aerial Photo from TEC.

Projection: UTM Zone 15 NAD83, Map Units in Meters, Distance Units in Feet.

1,000 500 0 1,000 Feet

PARSONS	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: BT	**Areas of Interest Fort Crowder**	
DRAWN BY: BT		
CHECKED BY: JC	SCALE: As Shown	PROJECT NUMBER: 742675
SUBMITTED BY: JC	DATE: July 2005	PAGE NUMBER:
	FILE: X:\CWM_GIS\GIS\Maps\ Crowder\ss_report\ Fig3_1.mxd	

Figure 3.2

Geosurvey Data
Fort Crowder
Neosho, MO

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Legend

- Fence Line
- Geosurvey Area
- T1670 Approximate Location of Gas Chambers

N

Image Source: 1942 Aerial Photo from TEC.

Projection: UTM Zone 15 NAD83, Map Units in Meters, Distance Units in Feet.

150 75 0 150 Feet

PARSONS	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER
DESIGNED BY: BT	Geosurvey Data
DRAWN BY: BT	
CHECKED BY: JC	SCALE: As Shown — PROJECT NUMBER: 742675
SUBMITTED BY: JC	DATE: July 2005 — PAGE NUMBER:
	FILE: X:\CWM_GIS\GIS\Maps\Crowder\ss_report\Fig3.2.mxd

Figure 3.3

Geophysical Anomalies
Fort Crowder

Neosho, MO

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Legend

Targets:

- High Priority Target
- Pig Like Target
- Low Priority Target
- Mag and Flag
- Fence Line
- High Priority Area
- A1 Investigation Area
- T1670 Approximate Location of Gas Chambers

N

Image Source: 1942 Aerial Photo from TEC.

Projection: UTM Zone 15 NAD83, Map Units in Meters, Distance Units in Feet.

150 75 0 150 Feet

PARSONS	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER
DESIGNED BY: BT	Geophysical Anomalies
DRAWN BY: BT	
CHECKED BY: JC	SCALE: As Shown; PROJECT NUMBER: 742675
SUBMITTED BY: JC	DATE: July 2005; PAGE NUMBER:
	FILE: X:\CWM_GIS\GIS\Maps\Crowder\ss_report\Fig3.3.mxd

Figure 3.4

Findings
Fort Crowder

Neosho, MO

For Official Use Only

Legend

Target and Investigation Status (Black - Not investigated; Blue - Scrap; Red - UXO; Green - Non-explosive munitions debris)

- High Priority Target
- Pig Like Target
- Low Priority Target
- Mag and Flag
- Fence Line
- High Priority Area
- A1 Investigation Area
- T1670 Approximate Location of Gas Chambers
- TR3 Trench

N

Image Source: 1942 Aerial Photo from TEC.

Projection: UTM Zone 15 NAD83, Map Units in Meters, Distance Units in Feet.

150 75 0 150 Feet

PARSONS	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER
DESIGNED BY: BT	Findings
DRAWN BY: BT	
CHECKED BY: JC	SCALE: As Shown — PROJECT NUMBER: 742675
SUBMITTED BY: JC	DATE: July 2005 — PAGE NUMBER:
	FILE: X:\CWM_GIS\GIS\Maps\Crowder\ss_report\Fig3.4.mxd

CHAPTER 4
RECOMMENDED ACTIONS

4.1. INTRODUCTION

4.1.1. The following actions were evaluated to determine the next step:

- Further Action:
  - SI;
  - Removal Response;
  - Remedial Investigation/Feasibility Study (RI/FS);
    - Independent RI/FS
    - Programmatic RI/FS
  - Remedial Action; and
  - Long-Term Management (LTM).
- CWM Project Closeout (PCO).

4.1.2. The CWM Scoping and Security Study Report provides a description of each action. The text below provides the recommended action for the former Fort Crowder. Figure 4.1 shows the site evaluation flowchart for the former Fort Crowder.

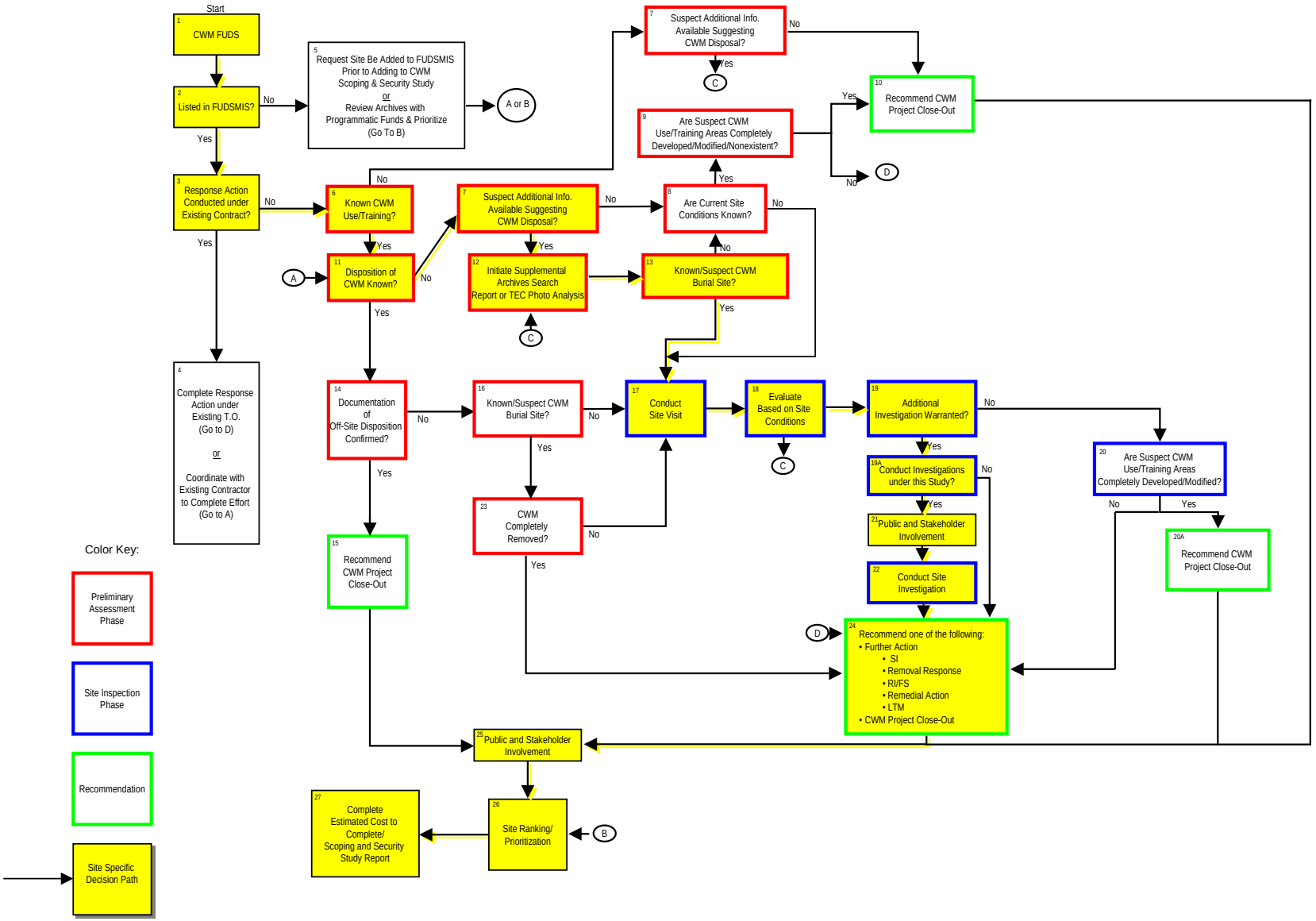
4.2. RECOMMENDATIONS

4.2.1. Historical documents indicate that training activities involving CWM were conducted at the former Fort Crowder. However, no information was found that indicates its final disposition or complete use. An intrusive investigation conducted in 2003 did not uncover any CWM or chemical agent contaminated media. Although selected metal anomalies in the area were investigated as part of the 2003 intrusive operation, it is possible that non-metallic CAIS bottles or vials could remain at the site. Therefore, there is a remote chance that buried CAIS components may remain in portions of the former Pistol Range and the No. 110 Gas Chambers Area and other portions of the former FUDS property.

4.2.2. The recommendation for the former Fort Crowder, and the other suspect CWM sites where CAIS is the sole type of potential CWM, is to be included as part of a

programmatic, multiple-site RI/FS. Further field investigation at these sites is limited by the lack of known burial sites and the fact that the glass CAIS vials are not detectable using current technology. Thus, unlike the independent, site-specific RI/FS, the programmatic RI/FS will not involve any field work. (An independent RI/FS was recommended for other suspect CWM sites with known burial sites of potential bulk CWM or CWM munitions; these types of CWM are metallic targets readily detected by geophysical equipment, and there is an identified area to sample.) The programmatic RI/FS will address the technological limitations of locating CAIS and the risks associated with exposure in areas that remain undeveloped. The RI/FS will evaluate potential remedial alternatives, such as no action and Educational Awareness and Training.

Figure 4.1 Fort Crowder Evaluation Decision Flowchart



CHAPTER 5
PROJECTED WORK TO COMPLETE

The work necessary to complete the site will consist of:

- Conducting a programmatic RI/FS, including the development of a Public Involvement Plan and implementation of public involvement activities, and preparation of a Proposed Plan and Decision Document;
- RA-C in the form of Educational Awareness and Training (assumed in order to prepare cost-to-complete estimate);
- LTM consisting of periodic monitoring for new information on or confirmation of CWM contamination, changes in the community, effectiveness of the remedial action, and update of the PIP as necessary; and
- PCO after 30 years of LTM.

5.1. PROGRAMMATIC RI/FS PHASE

5.1.1. The programmatic RI/FS will consist of an evaluation of those sites where CAIS is the CWM of concern and no further information is available concerning any known or suspect burial locations. The programmatic RI/FS will address the technological difficulty in detecting loose vials and bottles from CAIS in soil. Unlike the independent RI/FS recommended at other sites where further field investigation of metallic anomalies is appropriate, the programmatic RI/FS will not involve geophysics or intrusive activities. The former Fort Crowder will be evaluated collectively with the other CAIS sites where field investigation is unfeasible. Potential remedial alternatives, such as no action and Educational Awareness and Training, will be evaluated.

5.1.2. A Public Involvement Plan (PIP) is required for all FUDS projects that progress beyond the SI phase of the Remedial Response process. A PIP will be developed as described in Chapter 6 of the CWM Scoping and Security Study Report, and it will serve as the foundation for future public involvement activities for Fort Crowder. Specific information on stakeholders will be gathered as part of the PIP development. The PIP will include an assessment of the local community and their concerns about the site and will identify appropriate community-specific public involvement initiatives.

5.1.3. The PIP is a dynamic document requiring review and periodic updates. The reviews of the PIP will include an evaluation of the effectiveness and community perception of the Remedial Action.

5.1.4. A Proposed Plan (PP) will be prepared after the RI/FS report is completed. The PP provides a brief summary description of the remedial alternatives evaluated, and it identifies and provides a discussion of the rationale that supports the preferred alternative. The purpose of the PP is to provide the public with a reasonable opportunity to comment on the preferred alternative, as well as alternative plans under consideration, and to participate in the selection of a remedy at a site.

5.1.5. After the PP is prepared, Kansas City District will publish a notice in the local media announcing availability of the document for a 30-day public review. A public meeting will also be held. The effort involved with conducting the meeting will include preparation of materials, logistics, inviting stakeholders, public and media notification, and holding the actual meeting. Official response to comments will be provided for all public comments received during the comment period or made by a person at the public meeting, and the comments will be considered in the final decision-making process for the site.

5.1.6. A Decision Document (DD) will be developed following stakeholder review of the PP to finalize the decision. As part of the RI/FS process, the DD is required by FUDS policy to document the rationale to conduct a remedial action. The DD is part of the administrative record for the project. The document will also summarize comments received from the regulators and public during the review of the PP.

5.2. REMEDIAL ACTION – CONSTRUCTION PHASE

In order to provide the Cost-to-Complete estimate (Chapter 6) required as part of this study, it is assumed that Educational Awareness and Training will be the preferred remedial action alternative for the former Fort Crowder. As described in Chapter 6 of the CWM Scoping and Security Study Report, the remedy will involve training emergency responders in the handling of emergencies related to CWM and conducting a public education session to raise awareness of the hazards associated with CWM and the site. Completion of the initial Educational Awareness and Training sessions will achieve the Response Complete milestone.

5.3. LONG-TERM MANAGEMENT

When the remedial action is complete and the Response Complete milestone has been achieved, LTM of the project will continue in the form of five-year reviews until PCO with regulatory concurrence can be achieved. Updates to the PIP are recommended in order to document changing site conditions or new information, and to assess and

potentially modify the Educational Awareness and Training activities. Reviews consist of contacting selected stakeholders and recipients of training to determine:

- If training materials are still available for new emergency responders and stakeholders, and
- If there is a need to conduct additional on site training.

5.4. CWM PROJECT CLOSEOUT

Following the recommended period of LTM, PCO will be conducted for the site. As described in Chapter 6 of the CWM Scoping and Security Study Report, PCO will consist of contacting local officials and property owners; requesting formal regulatory concurrence from the lead regulatory agency; preparing a PCO Report to document the decision; and issuing a public notice of the decision in the local media. If it is determined that the former Fort Crowder site no longer poses a risk, PCO will be achieved.

5.5. SCHEDULE TO COMPLETE

The programmatic RI/FS and PIP will be completed in Year 1. The initial Educational Awareness and Training will be conducted in Year 2, followed by LTM in the form of five-year reviews consisting of PIP updates and updating education and training materials. LTM of the project will continue for a period of 30 years, until PCO with regulatory concurrence is achieved.

CHAPTER 6
COST-TO-COMPLETE

6.1. INTRODUCTION

The USAESCH was tasked to develop a cost-to-complete for each suspect CWM site under this study. This Chapter provides the estimated cost-to-complete the project as defined by the scope of work recommended in Chapter 5. Costs are provided based on the assumptions defined in the Chapter 7 of the CWM Scoping and Security Study Report. The factors that were included in the costs are listed below.

6.2. COST BASIS

6.2.1. Standard costs, discussed in Chapter 7 of the CWM Scoping and Security Study Report, were used to create the estimated costs to complete for this site. Table 6.1 shows the costs for the various work activities.

6.2.2. The estimated costs include funding for contractors and the USACE. The prime contractor will coordinate, conduct, and document all of the activities including the training sessions, recurring reviews, and meetings. It is assumed that the USACE work will be managed by the USAESCH with support for document review, stakeholder involvement, and meetings by the USACE District.

6.3. COST-TO-COMPLETE SUMMARY

The total cost-to-complete for CWM at the former Fort Crowder is estimated to be $295,300. The detailed costs are provided in the Appendix to this report. Table 6.1 provides a summary of the costs broken down by phase. The primary uncertainties in the cost estimate are:

- Whether or not CWM or other information is found resulting in additional costs in the form of additional investigation and response actions. The assumption is made in this estimate that no further investigation is required.
- Variability in the cost of executing the activities planned including the estimate for inflation, economic factors, and regulatory changes.

Table 6.1
Estimated Cost-to-Complete
Former Fort Crowder

Phase	Phase Description	Contractor Cost	Government Cost						Task Total Cost
			Huntsville	District	TEU	ECBC	USATCES	USACHPPM	
RI/FS	**Remedial Investigation and Feasibility Study**	$0	$0	$0	$0	$0	$0	$0	$0
RD	**Remedial Design***	$0	$0	$0	$0	$0	$0	$0	$0
RA-C	**Remedial Action - Construction**	$56,800	$26,900	$26,200	$0	$0	$0	$0	$109,900
LTM	**Long-Term Management**	$34,200	$57,600	$61,800	$0	$0	$0	$0	$153,600
PCO	**Project Closeout**	$8,000	$5,600	$18,200	$0	$0	$0	$0	$31,800
CTC	**Total Cost-To-Complete**	**$99,000**	**$90,100**	**$106,200**	**$0**	**$0**	**$0**	**$0**	**$295,300**

Notes:

* Remedial Design (RD) costs are included in the programmatic RI/FS.
Costs presented are rounded to the nearest 100 dollars

CHAPTER 7
SECURITY RANKING

7.1. INTRODUCTION

7.1.1. The former Fort Crowder has been evaluated in terms of the site-specific security risks. Chapter 5 of the CWM Scoping and Security Study Report includes a description of the ranking process. The security ranking was a component of the overall ranking process for the sites and those security-related elements of the ranking system are discussed in this chapter.

7.1.2. The primary security concern associated with these sites is the risk of the public being exposed to CWM or CWM being recovered by someone intending to use it to do harm. As described in the CWM Scoping and Security Study Report, a quantitative risk-scoring procedure was used to establish the relative security risk at the former Fort Crowder. The scoring is based on the information collected during this project including records review, site visits, an intrusive investigation, and interviews.

7.2. SECURITY SCORING

The security scoring is based on two data elements from the CWM Hazard Evaluation (CHE) module of the proposed DoD Munitions Response Site Prioritization Protocol (MRSPP). The two elements are Information on the Location of CWM and Ease of Access. The scores below are assigned based on which descriptions were selected based on site data. A copy of the MRSPP site ranking score sheet is provided in the Appendix.

7.2.1. Information on the Location of CWM

The potential for CAIS remaining at the former Fort Crowder is based on physical evidence and historical documentation of its use at the facility. No historical documentation was found that indicates its final disposition or complete use; however, in a 1986 incident, TEU uncovered thirty 40 ml vials containing chemical agents or simulants. In November 2003, the intrusive investigation did not uncover any CWM or chemical agent contaminated media. Although the majority of the anomalies in the area were investigated as part of the operation, it is possible that CWM could still remain at the site. The Information on the Location of CWM is classified as Suspected based on physical evidence with a score of _10_.

7.2.2. Ease of Access

The former Pistol Range and the No. 110 Gas Chambers Areas are bounded by barbed wire fencing used to deter access. For this site, the Ease of Access factor is scored as an _8_ based on barriers preventing access to some but not all areas of the site.

7.2.3. Total Security Ranking Score

The sum of the various security factors for the former Fort Crowder is _18_ out of a maximum possible score of 35.

CHAPTER 8
CONCLUSIONS AND FINAL RANKING

8.1. CONCLUSIONS

Historical records indicate training activities involving CWM were conducted at the former Fort Crowder. However, no information was found that indicates its final disposition or complete use. The intrusive investigation conducted in 2003 did not uncover any CWM or chemical agent contaminated media. Although selected metal anomalies in the area were investigated as part of the 2003 intrusive operation, it is possible that non-metallic CAIS bottles could still remain at the site. Therefore, there is a remote chance that buried CAIS components may remain in portions of the former site. The recommendation for the former Fort Crowder is further action in the form of a programmatic RI/FS.

8.2. SITE RANKING

One of the primary objectives of the CWM Study was to assign a relative priority to the suspect CWM sites so that planning and funding of further actions can be accomplished. To facilitate this, USAESCH ranked the sites using available scoring systems. Most of the suspect CWM sites were assigned a RAC as part of the INPR or ASR preparation. During the course of the study, USAESCH applied the proposed DoD MRS Prioritization Protocol CHE module to all sites. Chapter 5 of the CWM Scoping and Security Study Report provides a detailed description of the ranking process.

8.2.1. Previous Ranking Systems (RAC Scores)

A Risk Assessment Code scoring for the former Fort Crowder was conducted in September 1997 by the USACE, St. Louis District as part of the ASR. The former Fort Crowder received a RAC score of 1. A RAC 1 indicates an Imminent Hazard based on a Catastrophic Hazard Severity and Hazard Probability B (Probable).

8.2.2. Overall CWM Site Ranking

Site ranking was performed for the former Fort Crowder using the DoD MRS Prioritization Protocol CHE Module as described in Chapter 5 of the CWM Scoping and Security Study Report. The MRS Prioritization Protocol provides a relative hazard ranking that is used to establish order of execution and funding for recommendations of further action projects. Evaluations were performed based on the historical and site data

collected on this site. The categories of evaluation are whether CWM is known or suspected including Configuration of CWM, Sources of CWM, Information on the Location of CWM, Ease of Access, Population Density, Population Near Hazard, Local Activities and Structures, and Ecological and Cultural Resources. Table 8.1 shows the scores for the former Fort Crowder. A copy of the MRS Prioritization Protocol site ranking score sheet is provided in the appendix.

8.2.2.1. CWM Configuration

Historical documents have identified several CWM structures and training activities at former Fort Crowder. CWM structures included confirmed Gas Chambers and documented training involving the use of CAIS. Interpretation of the available data indicates that two main types of CAIS may have been used at Fort Crowder: sniff sets and ampules. Sniff sets were intended for indoor use to instruct military personnel in recognizing the odors of chemical agents. The ampules would have been from the K951/K952 sets. The possibility exists that additional CAIS might remain on some portion of the former Fort Crowder. The presence and configuration of CWM is scored as a _10_ based on the assumption that the potential CAIS remaining at the site are type K951.

8.2.2.2. Sources of CWM

Records indicated that the chemical warfare training consisted of gas chamber exercises, outdoor demonstrations, decontamination, and training in the use of protective clothing. The Sources of CWM classification is considered to be a training facility with CAIS for a score of _2_ points.

8.2.2.3. Information on the Location of CWM

The potential for CAIS remaining at the former Fort Crowder is based on physical evidence and historical documentation of its use at the facility. No historical documentation was found that indicates its final disposition or complete use; however, in a 1986 incident, TEU uncovered thirty 40 ml vials containing chemical agents or chemical agent simulants. In November 2003, the intrusive investigation did not uncover any CWM or chemical agent contaminated media. Although the majority of the anomalies in the area were investigated as part of the operation, it is possible that CWM could still remain at the site. The Information on the location of CWM is classified as Suspected based on physical evidence with a score of _10_.

8.2.2.4. Ease of Access

The former Pistol Range and the No. 110 Gas Chambers Areas are bounded by barbed wire fencing used to deter access. For this site, the Ease of Access factor is scored as an _8_ based on barriers preventing access to some but not all areas of the site.

8.2.2.5. Status of Property

The former Pistol Range and the No. 110 Gas Chambers Areas of the former Fort Crowder is a FUDS. The score for the Status of Property classification is _5_ for non-DoD control.

8.2.2.6. Population Density

Based on the U.S. Census Bureau data for the 2000 census, the actual population density for Newton and McDonald Counties is less than 100 persons per square mile resulting in a ranking score of _1_.

8.2.2.7. Population Near Hazard

The number of occupied structures on and within 2 miles of the site is greater than 26, giving a score of _5_.

8.2.2.8. Types of Activities/Structures

Residential and commercial activities occur on and near the former Fort Crowder giving the Types of Activities/Structures factor a score of _5_.

8.2.2.9. Ecological and Cultural Resources

Shoal Creek, a source of drinking water for the community of Neosho, and numerous aquifers are located throughout the former Fort Crowder site. The creek and aquifers qualify as ecological resources giving a score of _3_. No cultural resources have been documented for the area.

8.2.3. Overall Ranking

The sum of all of the various ranking scores for the former Fort Crowder is _49_ out of a maximum possible score of 100, which results in a Rating of E.

Table 8.1
Site Ranking for the Former Fort Crowder

Category	Classification	Description	Score
CWM Configuration	K951 CAIS	The CWM known or suspected of being present at the site may include K951 CAIS	10
Sources of CWM	Training Facility using CAIS	CAIS were used in training	2
Information on the Location of CWM	Suspected (physical evidence)	Physical evidence that CAIS and bulk mustard were used and stored	10
Ease of Access	Access Barrier is Incomplete	Access is limited by gates, fences, buildings and paved surfaces	8
Status of Property	Non-DoD Control	This is a FUDS.	5
Population Density	Less than 100 persons per square mile	Population density of Clay County based on 2000 Census data	1
Population Near Hazard	26 or more structures	More than 26 inhabited structures within 2 miles	5
Types of Activities/Structures	Residential, educational, commercial, or subsistence	Residences and commercial farming operations exist within 2 miles	5
Ecological and Cultural Resources	Ecological Resources Present	Ecological resources are present but no cultural resources were documented.	3
		Total Ranking Points	**49**
		Rating Classification	**E**

CHAPTER 9
REFERENCES

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APPENDIX

TEU MOVEMENTS

TEU MOVEMENT RECORDS

51-86 21 Jun 86 PBA, AR TO Neosho, MO: 40 ml heat sealed glass vials (9), 40 ml vials (3) partially filled with H, 1 remnant glass vial, 40 ml heat sealed glass vial (1)

HISTORICAL PHOTOGRAPHIC ANALYSIS

CAMP CROWDER
NEWTON COUNTY, MISSOURI

Special Assessment
GIS-based Historical Photographic Analysis

May 2004 – Report

Recovered Chemical Warfare Materiel (RCWM) Program

U.S. Army Engineer Research and Development Center
Topographic Engineering Center
7701 Telegraph Road
Alexandria, Virginia 22315-3864

NOTICE & INTRODUCTION

NOTICE

The views, opinions, and conclusions in this report are those of the author and should not be construed as official Department of Army positions or policy unless so designated by other documentation.

Photographic items contained in this report may be restricted for use other than research. It is the responsibility of the party using photographs from this study to contact the US Army Topographic Engineering Center, Operations Division in order to ascertain clearance for use.

INTRODUCTION

This report presents the results of a GIS-based Historical Photographic Analysis of Camp Crowder, located in Newton County, Missouri. The Camp is located just south of the town of Neosho.

The Operations Division (Hydrologic and Environmental Analysis Branch) of the U.S. Army Engineer Research and Development Center, Topographic Engineering Center (ERDC-TEC) was tasked to collect and analyze historical photographic records and ancillary data related to this site. The analysis was requested to help locate features/sites which may have been used for training, use or disposal of chemical warfare materiel (CWM). The Corps' 1993 Archives Search Report (ASR) identified three likely locations for CWM disposal.

The analysis focus was for the period 1941-1946, however the analysis was extended for other years since data was available. Also, as various types of training occurred at this site, features identified will be related to other types of activity (such as weapons and ordnance training).

The analysis presented in this report is based upon interpretation of black and white aerial photographic coverage of the project area spanning the years 1938 to 1953. Stereo analysis was employed where overlapping photography was available. Significant features, derived through photo analysis, are displayed on selected photos in this study. Grid coordinates are also included for select features to provide a general indication of the feature's location. The accompanying Geographic Information System (GIS) data, supplied on CD, has additional information useful in locating identified features and defining their extent. The CD also contains a 1996/97 and 1942 orthophoto and select rectified historical aerial photos. Historical (digitized) features can be placed atop the 1996/97 orthophoto in order to see their location on the current landscape.

Some of the identified features can be "benign" as it is not always possible to determine the activity that altered the surface. Future field work and additional ancillary information will further determine the relevance of these features.

The mapping grid used for this report is UTM, Zone 15, NAD 83 horizontal datum, units in meters.

This analysis was completed for the U.S.Army Corps of Engineers, Huntsville Engineering and Support Center, Huntsville, Alabama.

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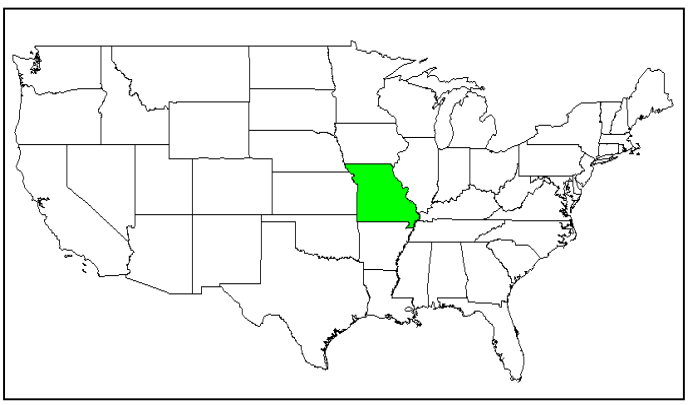
PROJECT AREA LOCATION



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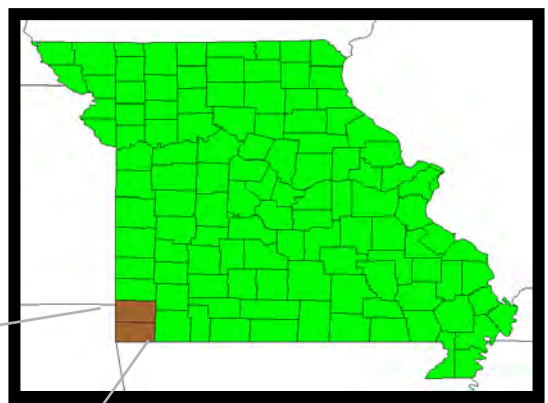
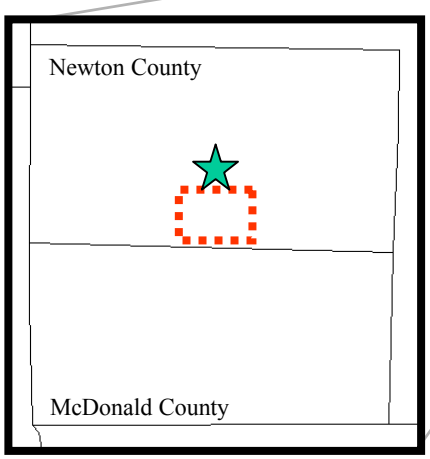
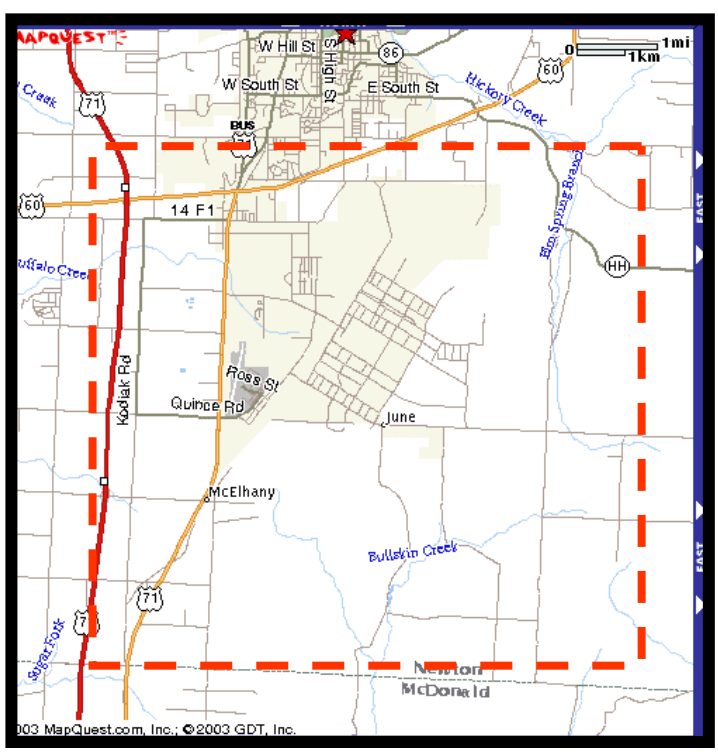




PROJECT AREA

NEWTON COUNTY



HISTORICAL REVIEW

HISTORICAL SUMMARY (selected information from the USACE 1993 Archives Search Report or ASR and a 1995 Inventory Project Report or INPR).

Camp Crowder was established during World War II. It is located approximately 3 miles southeast of Neosho, in Newton and McDonald counties, Missouri. The Department of Defense (DOD) use began in 1941. By 1943 DOD had acquired 42,786.41 acres fee for the establishment of a Signal Corps Training Center.

By the time the primary construction ended in July 1942, there were 2,328 buildings, 51 miles of new roadway, and 5.64 miles of new railroad track. The camp could accommodate 1,920 officers and 40,563 noncommissioned officers.

In 1943 the population of the camp rose again because of two very different factors. In August a large contingent of Women's Army Corps (WAC) soldiers were stationed at the camp. This total peaked at approximately 1,000, making Camp Crowder's contingent of WACs one of the largest in the country. In October of the same year, the, first group of German prisoners of war arrived at Camp Crowder. These prisoners were primarily from Rommel's Afrika Corps. By the end of the war, the prisoner population reached as high as 2,000. After the war ended, the Chief of Engineers recommended that the camp be retained for use. This recommendation was not followed, however, and the camp was deactivated in 1946.

In the following four years (1946-1949) 1,789 buildings and 29,380 acres were declared surplus and sold. The cantonment area decreased to 2,055 acres and approximately 3,040 acres were retained for use as ranges. This area fell into serious disrepair in the years immediately following World War II.

On May 15, 1951 Camp Crowder was reactivated as an Army Reception Center for the Korean Conflict. The reduced cantonment area was used in this capacity until the mission of Camp Crowder changed yet again.

In January 1953 Camp Crowder became a U.S. Branch Disciplinary Barracks, housing approximately 1,500 prisoners. In 1954, the facility was designated a permanent fort in hopes of keeping it activated. This effort was unsuccessful and in January 1958, the US Branch Disciplinary Barracks were closed. Part of the old camp was used as US Air Force Plant 65 from 1958 to 1967. Plant 65 operated until 1968 as an Atlas missile manufacturing and testing facility, and later, until 1980, as a jet engine overhaul and testing facility (per information at http://63.88.245.60/derparc/derp/crowd_68.pdf). Plant 65 was a government owned, contractor-operated facility.

In 1962 the bulk of the land comprising the fort was declared excess property. Four thousand acres were licensed to the Missouri National Guard and an additional 6,000 acres were to be sold.

Between 1947 and 1965 approximately 38,100 acres were declared surplus and sold. In 1972 another 150 acres were sold, and an additional 123 acres were declared surplus in 1984.

CWM HISTORICAL REVIEW

HISTORICAL CWM SUMMARY (selected information from the USACE 1993 Archives Search Report).

The Corps' 1993 ASR (based on records reviewed and the interviews with personnel familiar with operations at Camp Crowder) identifies three sites where the possibility of CWM may be located on former Camp Crowder lands.

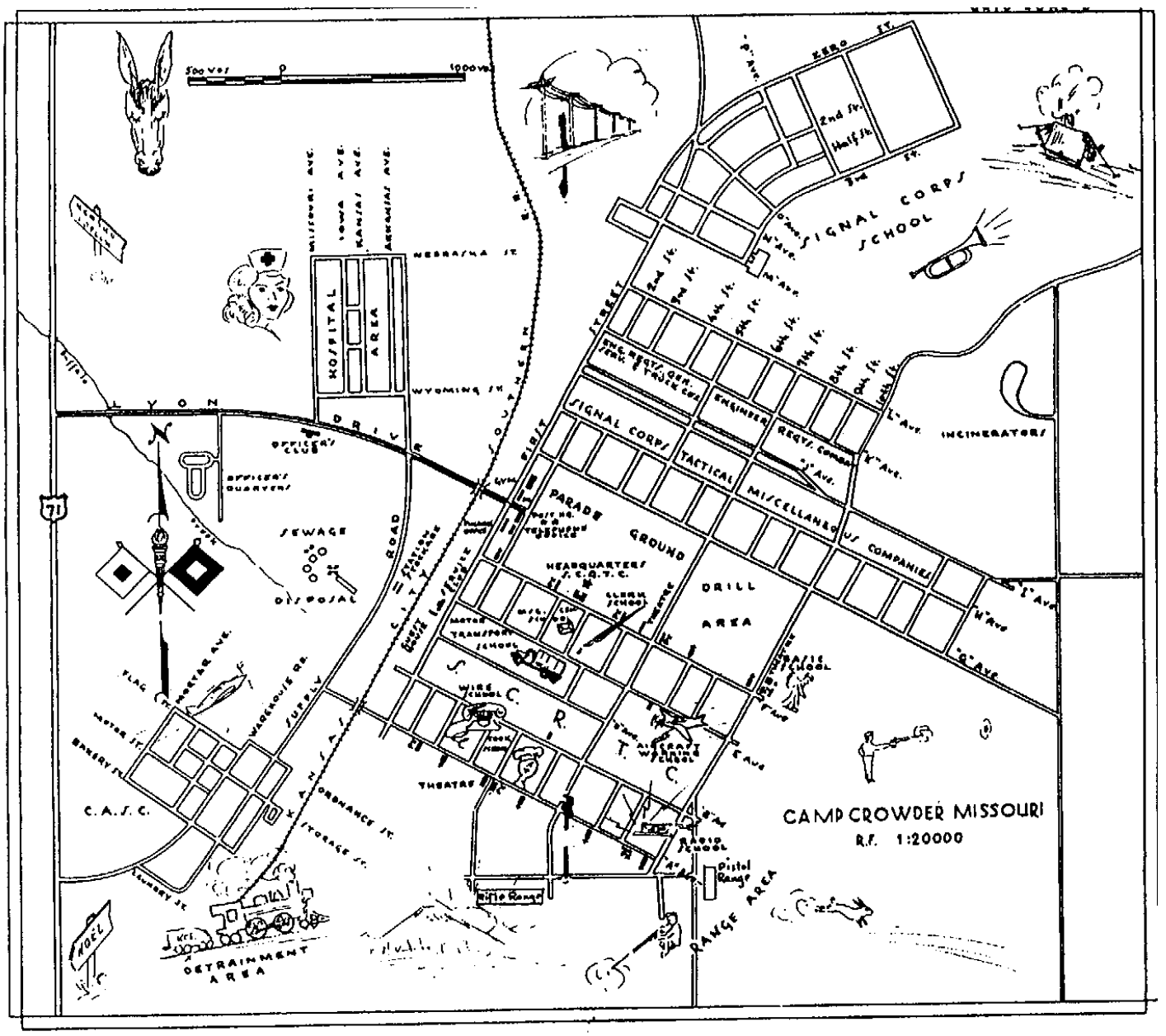
The first site is located in the vicinity of the Gas Chamber # 110. This land is currently owned by MoArk Productions. An incident occurred on this property in 1986 in which a bulldozer operator was affected by an unknown chemical agent. The area was thoroughly investigated at the time and remains of chemical test kits as well as conventional munitions were located.

The second site is the magazine area in the northern section of the former camp. At this site an incident occurred in July 1981 where three National Guardsmen were injured by an unknown gas. It is thought that if the magazine area were more fully investigated, debris such as that found surrounding the 1986 incident would be located.

The third site was reported to be a patrol/infiltration area located at the northern section of the camp between Elm Spring and the incinerator. Mr. Harold Crossno, an employee of Camp Crowder, related that he traveled past this area every day on his way to work. It was normally off limits to civilian personnel, but because he lived north of the camp he was given a key to a back gate which allowed him to enter. Mr. Crossno stated that he knew that the troops used this area in their last weeks at Camp Crowder to sharpen their bivouacking and patrolling skills before shipping out. He knew that simulated attacks occurred in this area and smoke was used. He was not sure if chemical simulators were used. After further review (by the USACE) it was determined that the infiltration course in the photographs was actually located in the area of the live fire ranges. The oval track shown on the map was actually an amphibious vehicle training area.

The CWM materials used on this site (i.e. Camp Crowder) were predominantly training materials. There is no indication as to the exact amount of CWM material used at this site. During World War II three gas chambers were used in order to train troops to identify various war gases. Several first hand reports indicate tear gas being the primary gas used in the chambers, however, chemical test kits were also used in these chambers. These instructional kits contained various gases, some full strength and others diluted, which were used to familiarize troops with the attributes of various toxic debilitating gases. The gases were contained in wide mouth glass vials which contained charcoal saturated with various agents. Troops physically inhaled the fumes from these vials in this training. The investigation conducted after the 1986 incident at the MoArk Productions property uncovered components of the chemical test kits used for training. The Technical Escort Unit on site removed the following military debris: 40 mine fuzes; 30 glass vials containing chemical agent or simulators; 8 mine fuse components; 15 surface trip flares; 3 grenade fuses; and 1 aircraft signal. These test kits contained Mustard, Lewisite, Chloropicrin, and Phosgene. St. Louis District personnel interviewed individuals who described the chemical field exercises. These individuals described how glass vials were attached to detonators and then placed in the field. Troops were then required to conduct battle exercises with these chemical warfare agents being released into their midst. These exercises were used to simulate real battlefield conditions.

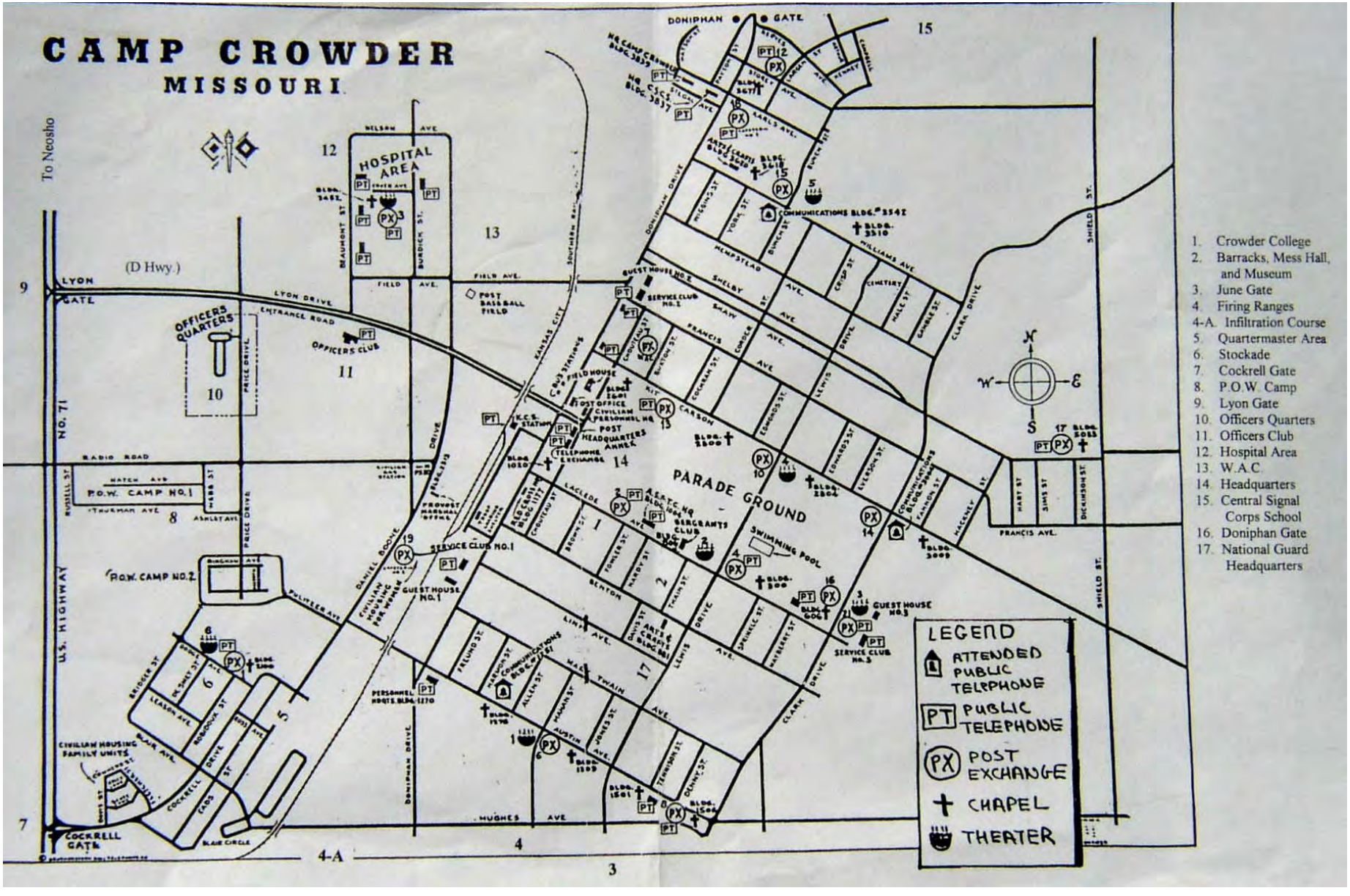
HISTORICAL CAMP MAP



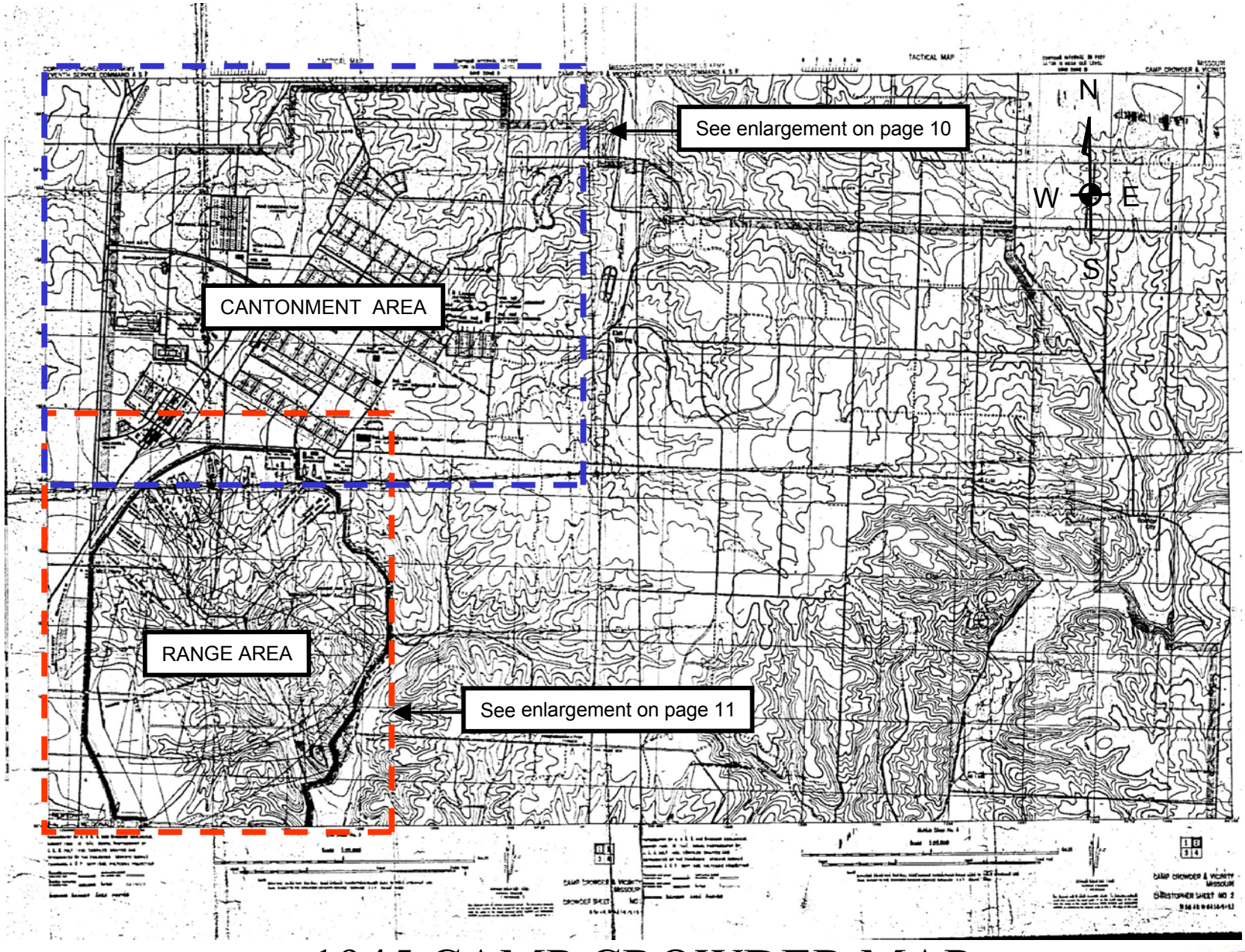
"Welcome to Camp Crowder," Pamphlet in holdings at Carlisle Barracks, PA. No date listed.

(Source: USACE 1993 Archives Search Report, Appendix H)

HISTORICAL MAP (no date)



Source: http://users.mo-net.com/racko/crowder_higherres.html (April 2004)



1945 CAMP CROWDER MAP

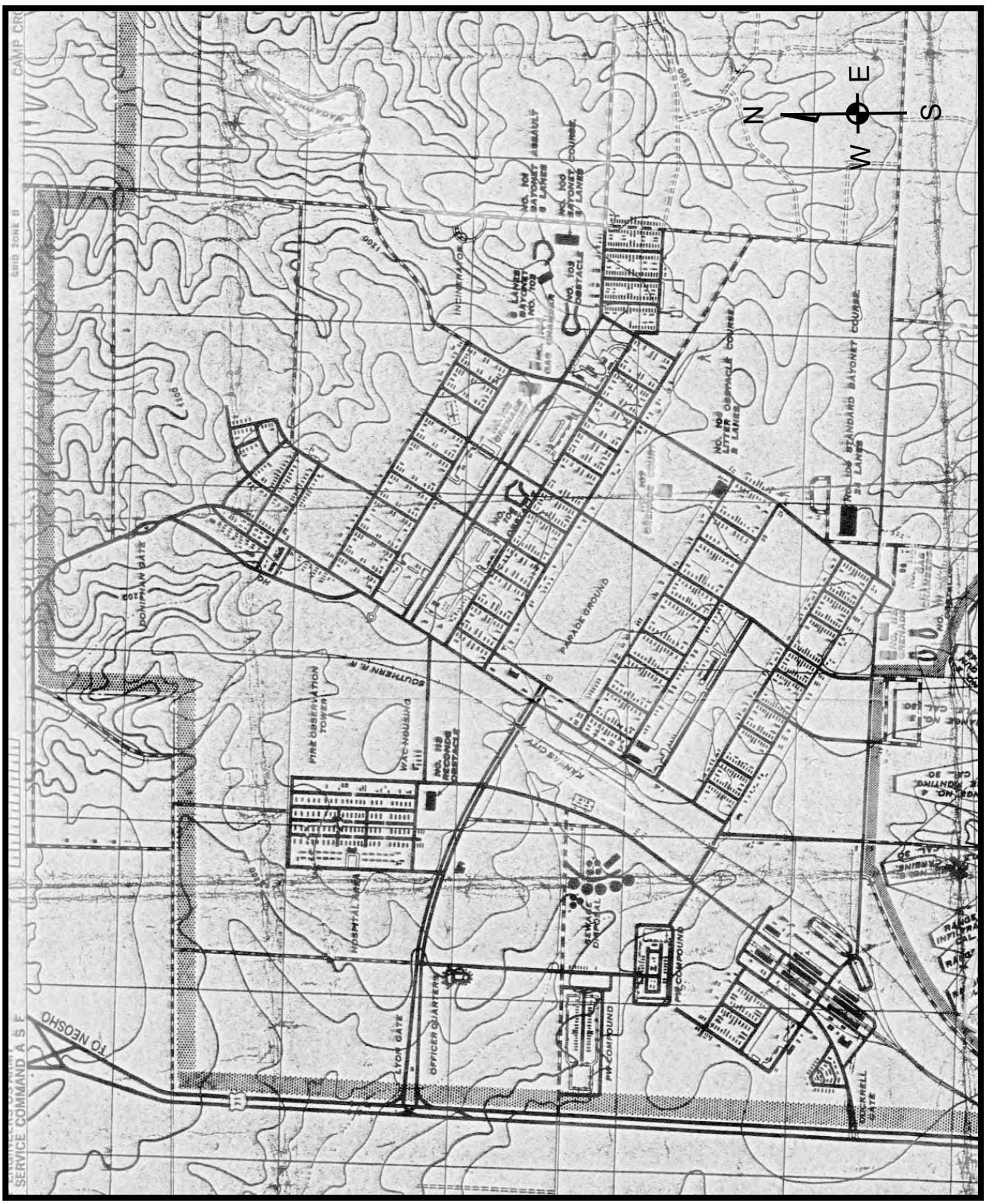
Map source: Seventh Service Command, ASF, Sept., 1945.

(A larger image of this map is on the CD for this study)

Portion of a 1945 Map of Camp Crowder

Map source: Seventh Service Command, ASF, Sept., 1945.

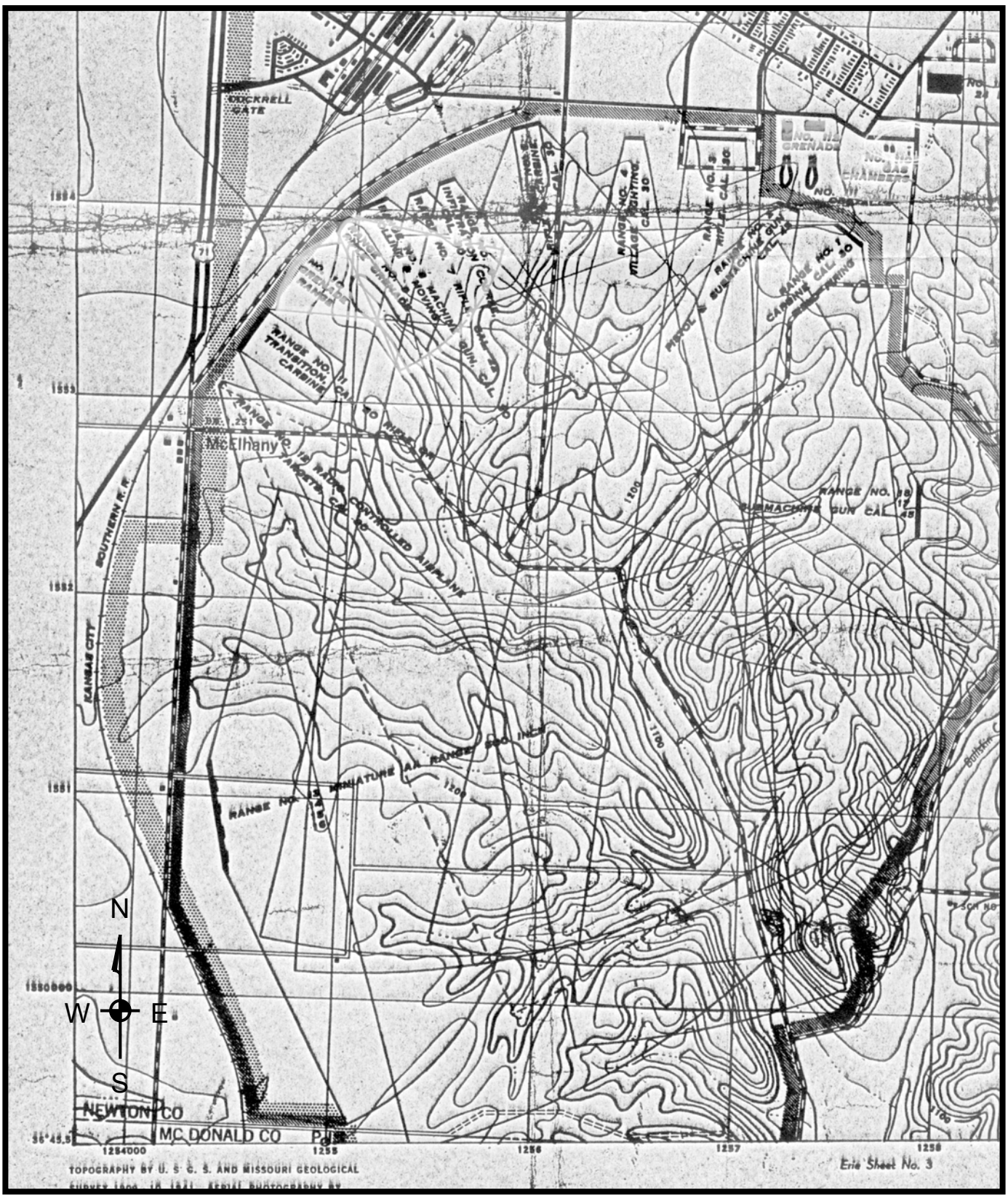
Cantonment Area



Portion of a 1945 Map of Camp Crowder

Map source: Seventh Service Command, ASF, Sept., 1945.

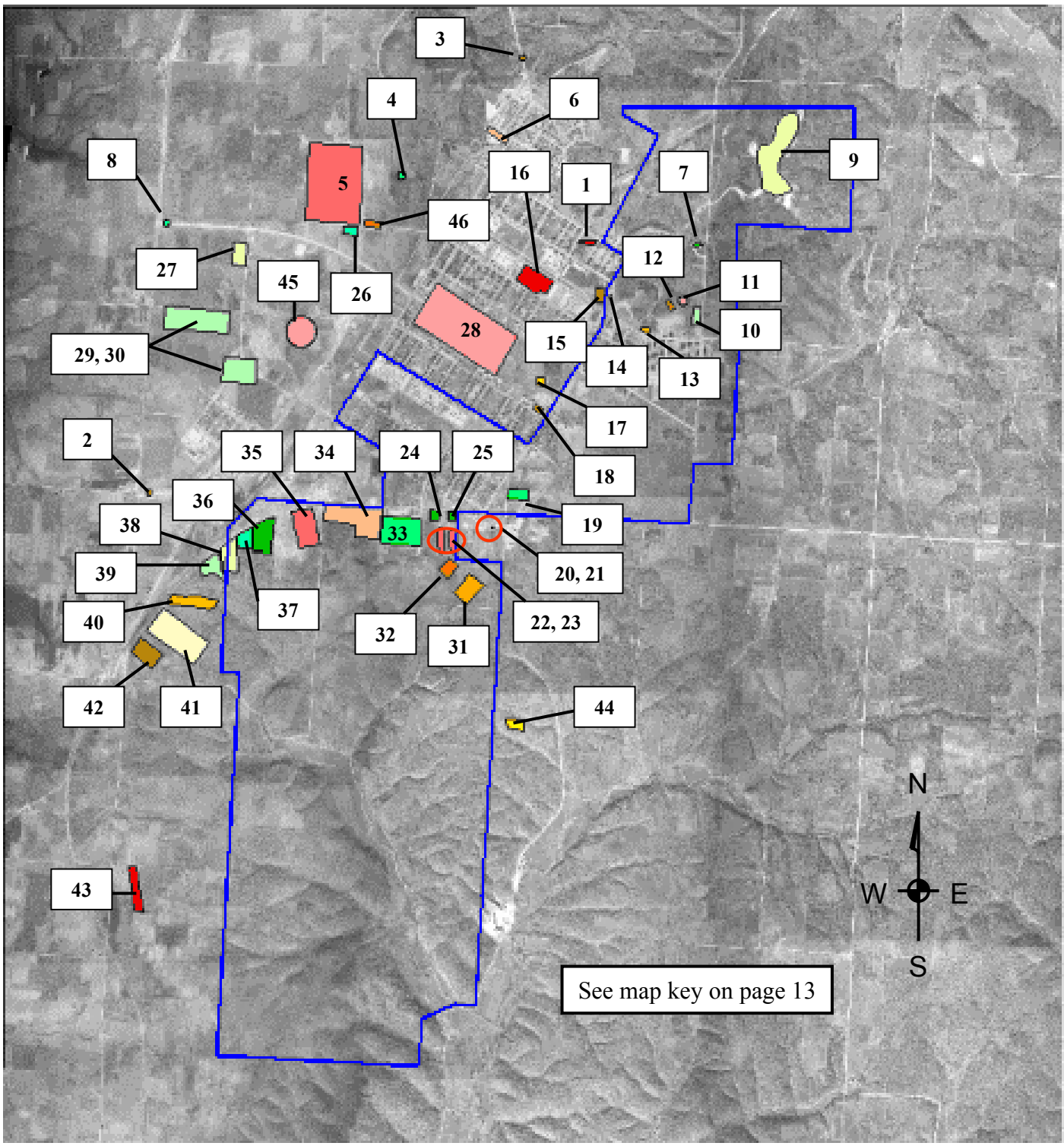
Range Area



1945 MAP FEATURES ATOP A 1942 AERIAL PHOTO

Feature source: Map of the Seventh Service Command, ASF, Sept., 1945.

(NOTE: These features and their map are in the GIS, on the CD)

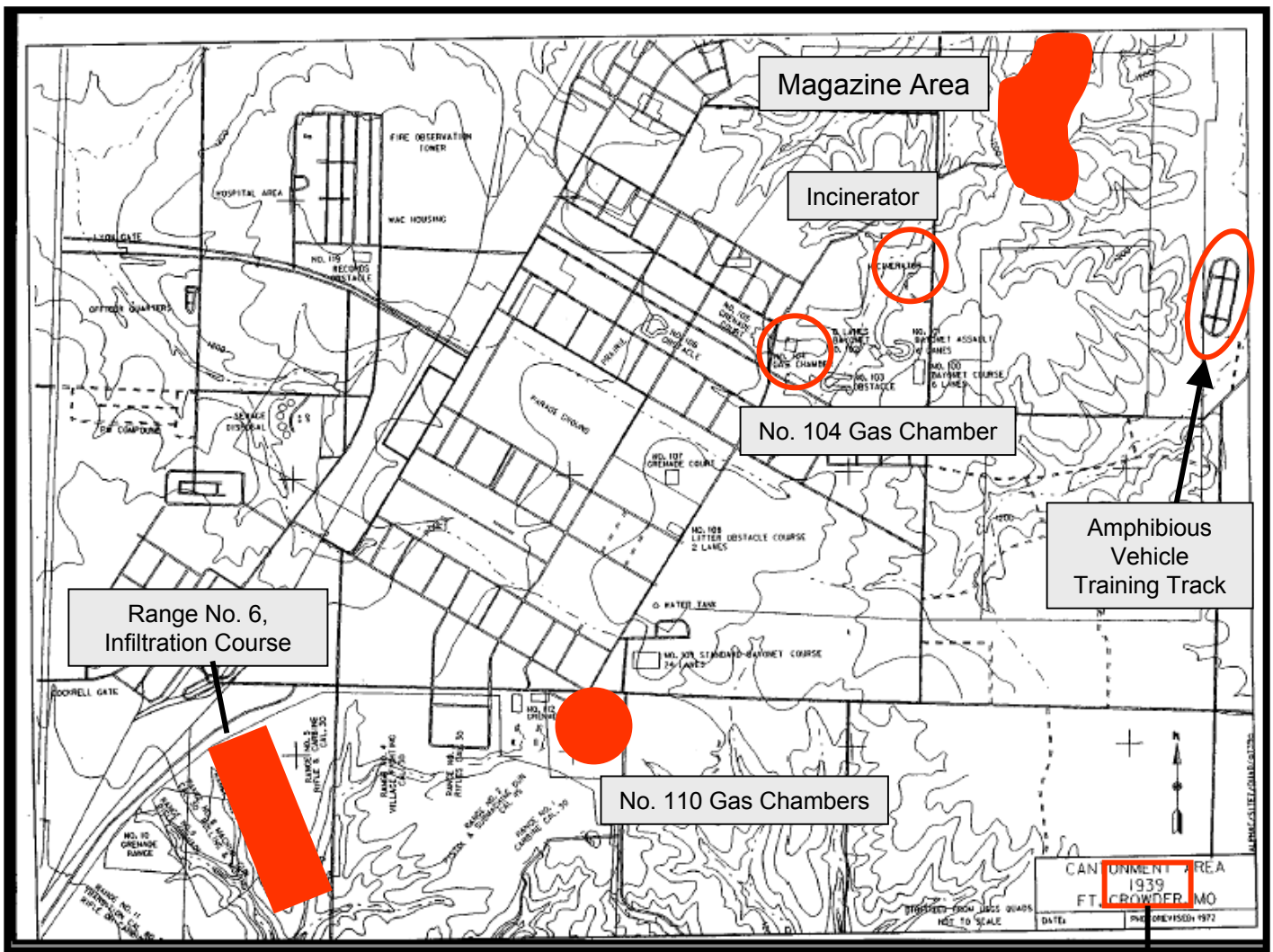


KEY TO 1945 MAP FEATURES

(NOTE: These features and their map are in the GIS, on the CD)

1 Cemetery
2 Cockrell Gate
3 Doniphan Gate
4 Fire Observation Tower
5 Hospital Area
6 HQ
7 Incinerator
8 Lyon Gate
9 Magazine Area
10 No. 100 Bayonet Course (6 lanes)
11 No. 101 Bayonet Assault (6 lanes)
12 No. 102 Bayonet (6 lanes)
13 No. 103 Obstacle
14 No. 104 Gas Chamber
15 No. 106 Grenade Court
16 No. 106 Obstacle
17 No. 107 Grenade Court
18 No. 108 Litter Obstacle Course
19 No. 109 Standard Bayonet Course
20 No. 110 Gas Chambers
21 No. 110 Gas Chambers
22 No. 111 Obstacle
23 No. 111 Obstacle
24 No. 112 Grenade
25 No. 112 Grenade
26 No. 113 Reconds Obstacle
27 Officer Quarters
28 Parade Ground
29 PW Compound
30 PW Compound
31 Range No. 1 (carbine cal. 30 rapid firing)
32 Range No. 2 (pistol and submachine gun, cal. 45)
33 Range No. 3 (rifle cal. 30)
34 Range No. 4 (village fighting, cal. 30)
35 Range No. 5 (rifle & carbine, cal. 30)
36 Range No. 6 (infiltration course, cal. 30)
37 Range No. 7 (rifle cal. 22)
38 Range No. 8 (machine gun, cal. 30)
39 Range No. 9 (rifle grenade)
40 Range No. 10 (grenade range)
41 Range No. 11 (transition, cal. 30, rifle or carbine)
42 Range No. 12 (radio controlled airplane targets, cal. 30)
43 Range No. 13,14,15.16 (miniature AA, 500 inch)
44 Range No. 17,18 (submachine gun, cal. 45)
45 Sewage Disposal
46 WAC Housing

1993 ASR CWM POSSIBLE AREAS OF CONCERN ON A HISTORICAL MAP OF CAMP CROWDER

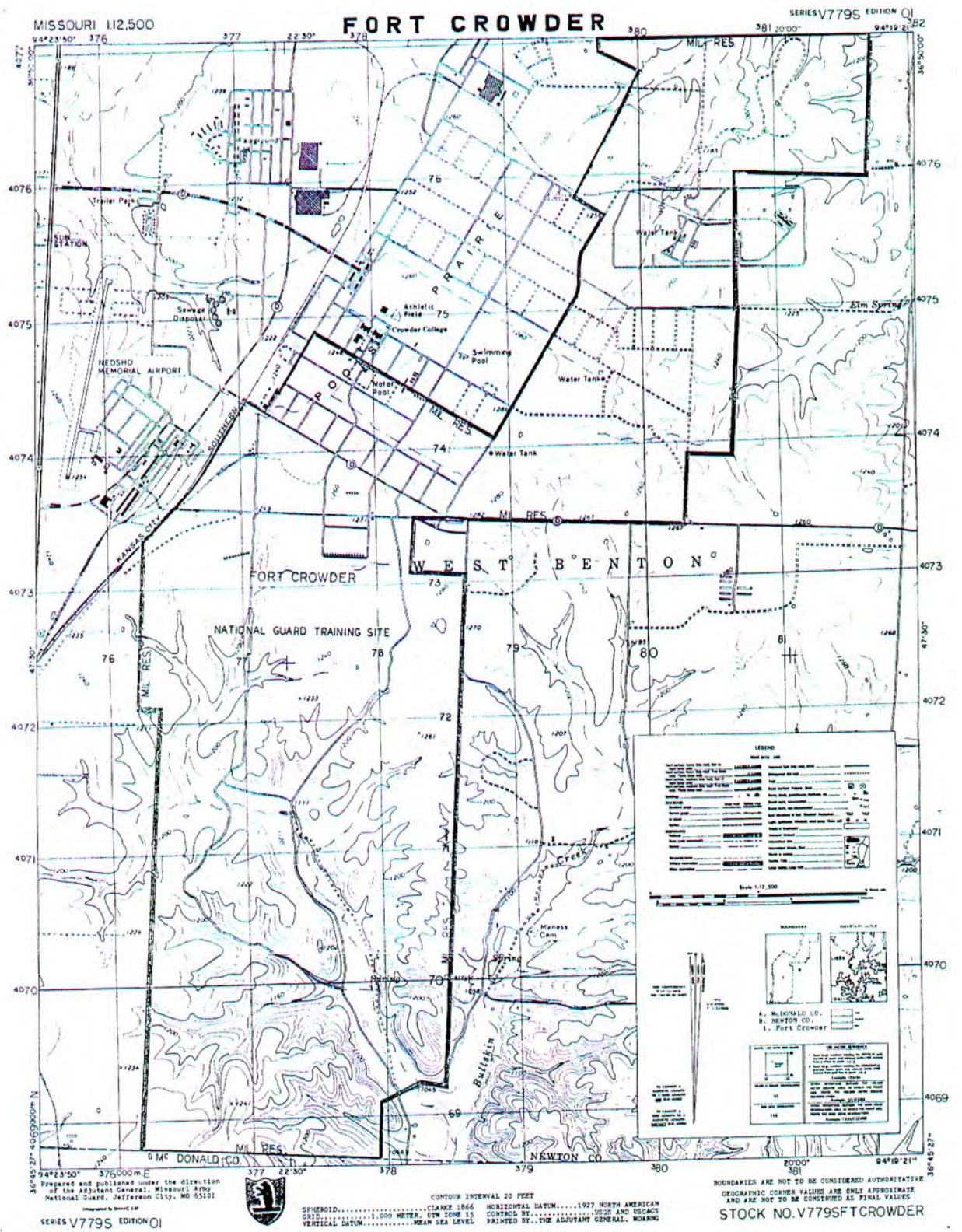


Map/Information Source: USACE 1993 Archives Search Report, Appendix H, and pages 6-1 through 6-2, Findings.

1993 ASR Areas of Possible Concern for CWM =

Note: This map source is actually a 1945 Map produced by the Seventh Service Command, ASF, Sept., 1945. Aerial photos used to produce the topographic map were 1939.

Missouri National Guard Map



(Source: USACE 1993 Archives Search Report, Appendix H)

TRAINING PHOTOS

Demonstration of First Aid for a gas casualty by the members of the 164th Signal Photo Co., Camp Crowder, Missouri, Aug. 28, 1942.

(NARA Photo 111-SC-143595)

Smoke pot in action during simulated gas attack conducted by Lt. Richard N. Farrell, while on bivouac of the 164th Signal Photographic Co., Camp Crowder, Missouri, Sept. 9, 1942.

(NARA Photo 111-SC-143581)

Source: National Archives and Records Administration (NARA), Still Pictures, Record Group 111, College Park, Maryland.

TRAINING PHOTOS

Pole Climbing with gas masks, training at ASFTC, Camp Crowder, Missouri, Feb. 19, 1945.

(NARA Photo 111-SC-200444)

Lt. Richard N. Farrell is sounding alarms for gas attack. Camp Crowder, Missouri, Aug. 28, 1942.

(NARA Photo 111-SC-143597)

Source: National Archives and Records Administration (NARA), Still Pictures, Record Group 111, College Park, Maryland.

TRAINING PHOTOS

Pfc. P. F. Gardner loading rocket projector (bazooka) held by T/Sargt. M. Rucinski, both of 1142nd Engineers at company firing range, Camp Crowder, Missouri, Dec. 30, 1943.

(NARA Photo 111-SC-183657)

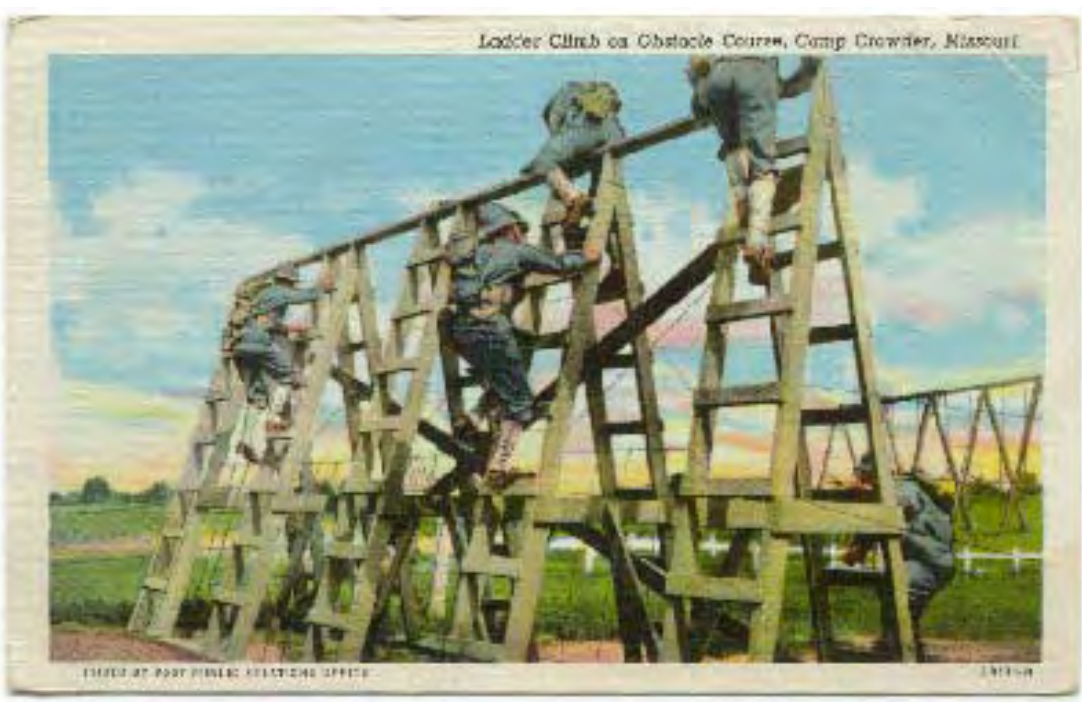
Trainees at Camp Crowder, Missouri, receive instruction in the use of rifle grenades. Apr. 27, 1946.

(NARA Photo 111-SC-239102-S)

Source: National Archives and Records Administration (NARA), Still Pictures, Record Group 111, College Park, Maryland.

POSTCARDS

Lyon Gate, Camp Crowder, Missouri.

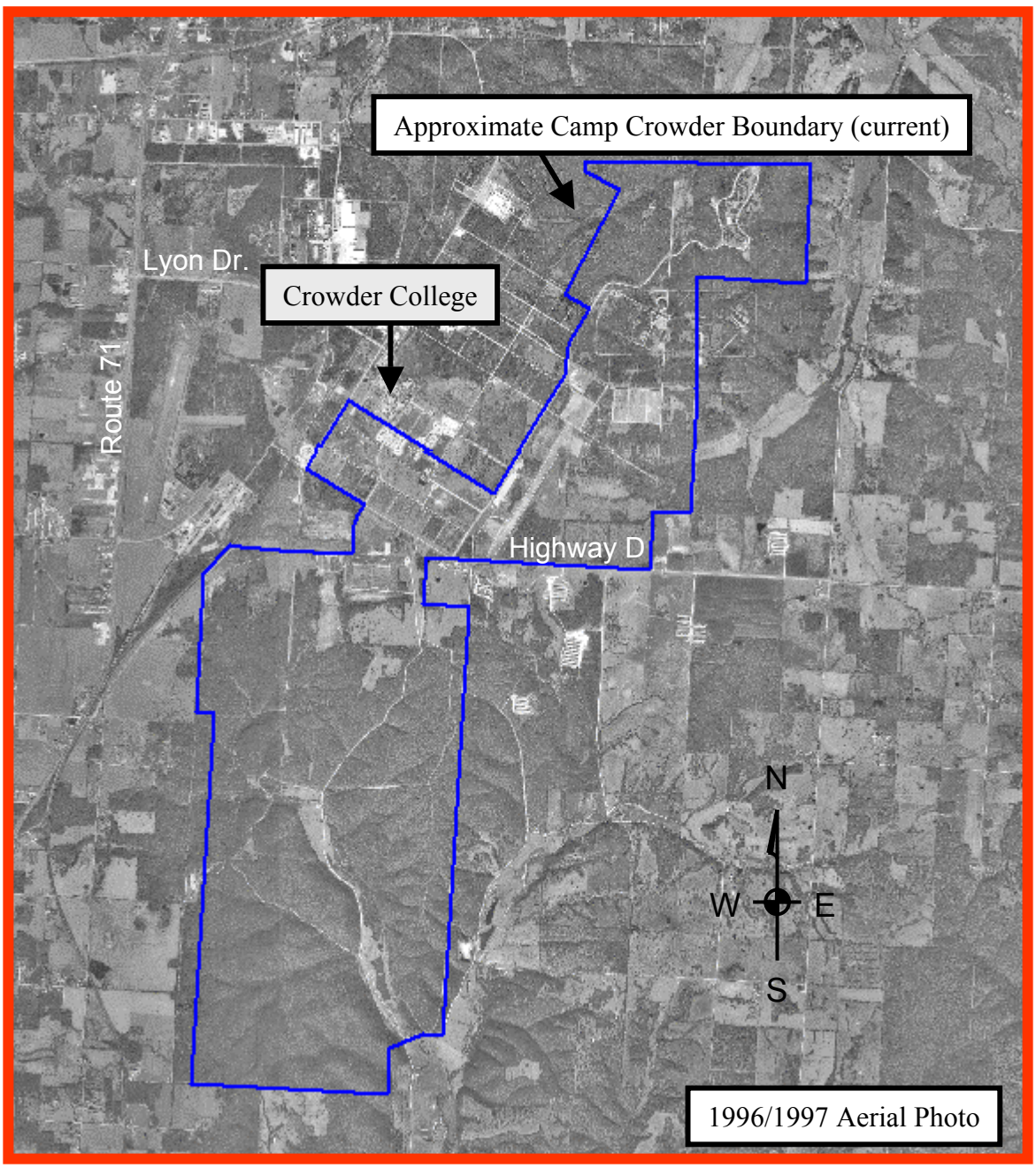


Ladder climb on obstacle course, Camp Crowder, Missouri.

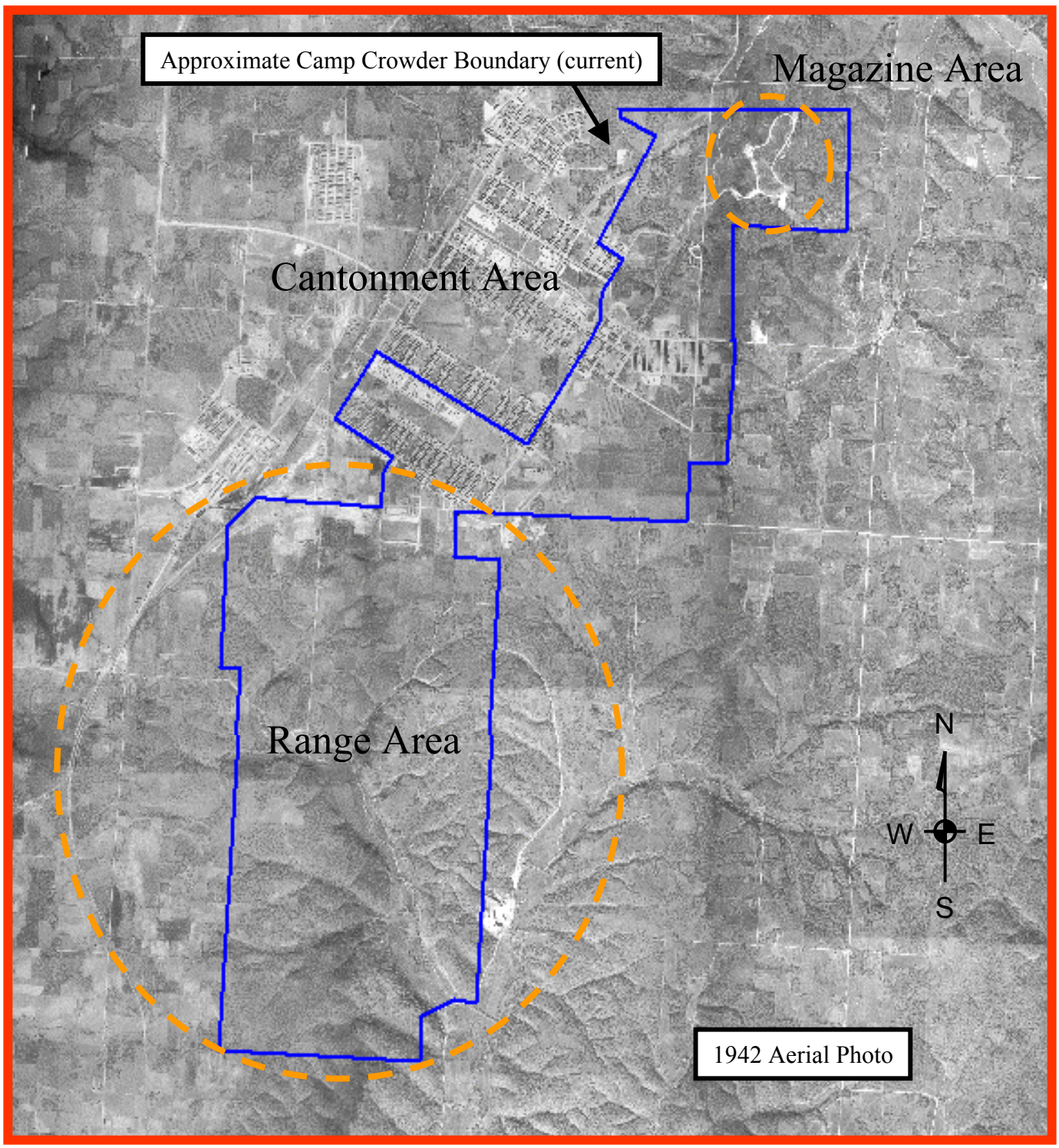
Source: http://users.mo-net.com/racko/crowder.html (April 2004)

PROJECT AREA OVERVIEW

Area in 1996/1997



1942 AREA OVERVIEW



PHOTOGRAPHIC SOURCES

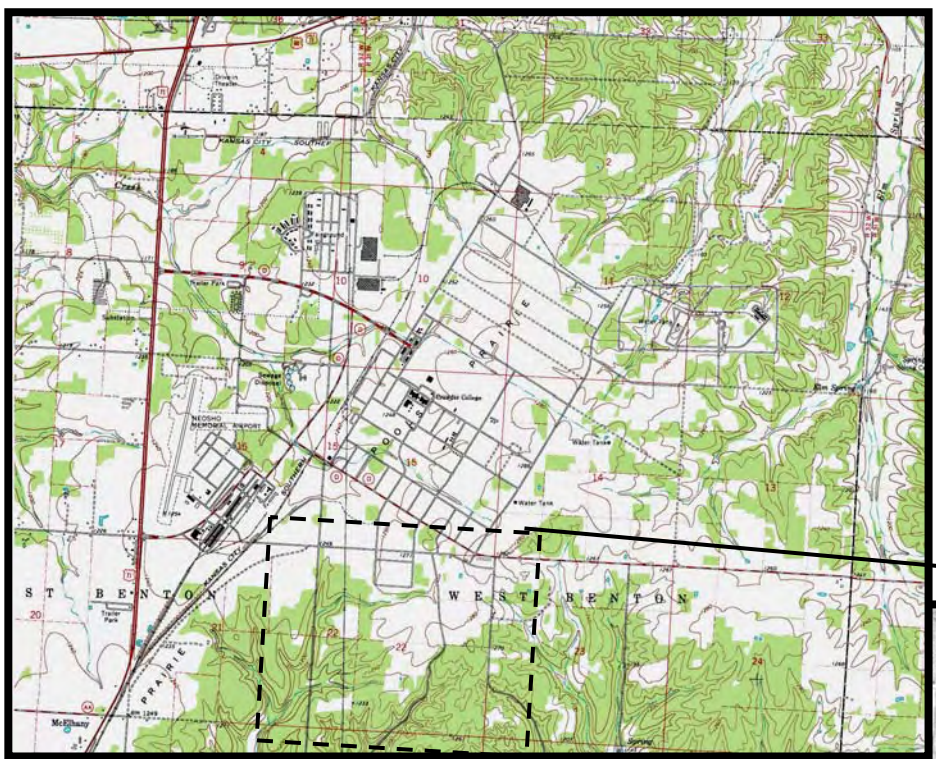
AERIAL PHOTOGRAPHY COLLECTED

DATE	SCALE	DESCRIPTION
July 1938	1:20,000	National Archives & Records Administration College Park, Maryland
December 1942	1:23,000	National Archives & Records Administration College Park, Maryland
August 1945	Oblique	National Archives & Records Administration College Park, Maryland
November 1950	1:19,600 and oblique	National Archives & Records Administration College Park, Maryland
September 1953	1:20,000	National Archives & Records Administration College Park, Maryland
March 1996 and 1997	1 Meter GSD (ground sample distance)	USGS Digital Ortho Quarter Quad Mosaic

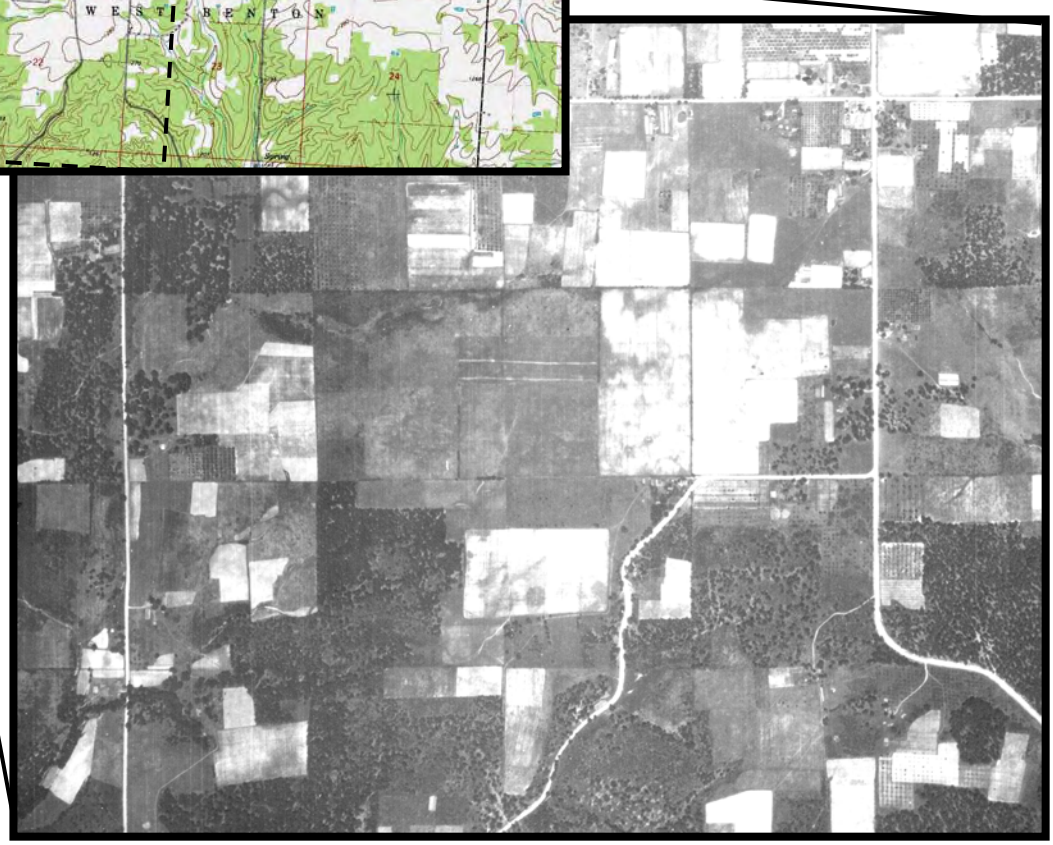
PHOTOGRAPHIC ANALYSIS

1938 Aerial Photo

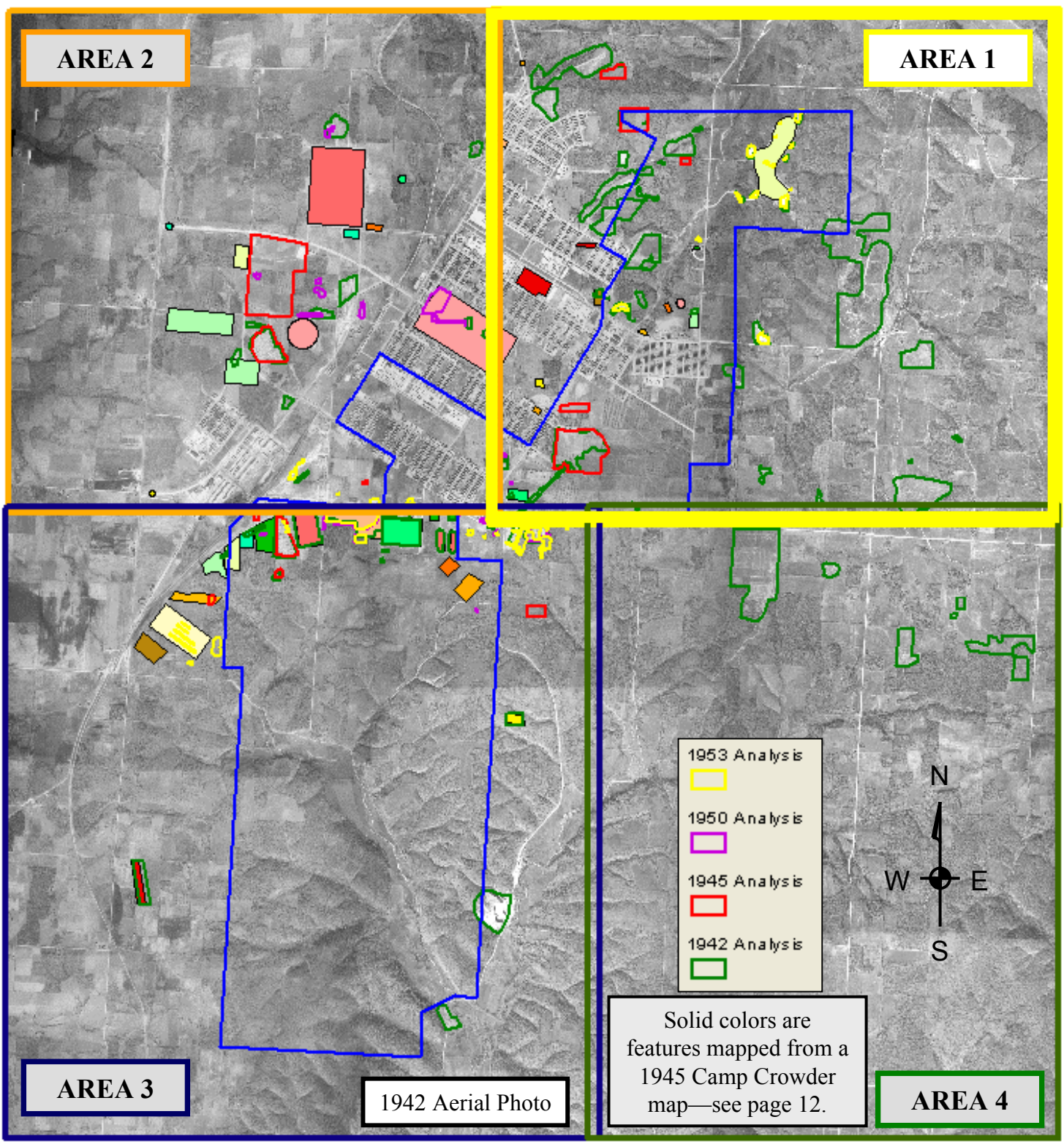
Map is from portions of the US Geological Survey, 1:24K Quadrangles, Neosho East and Neosho West, 1981.



Land use in 1938 was agriculture.

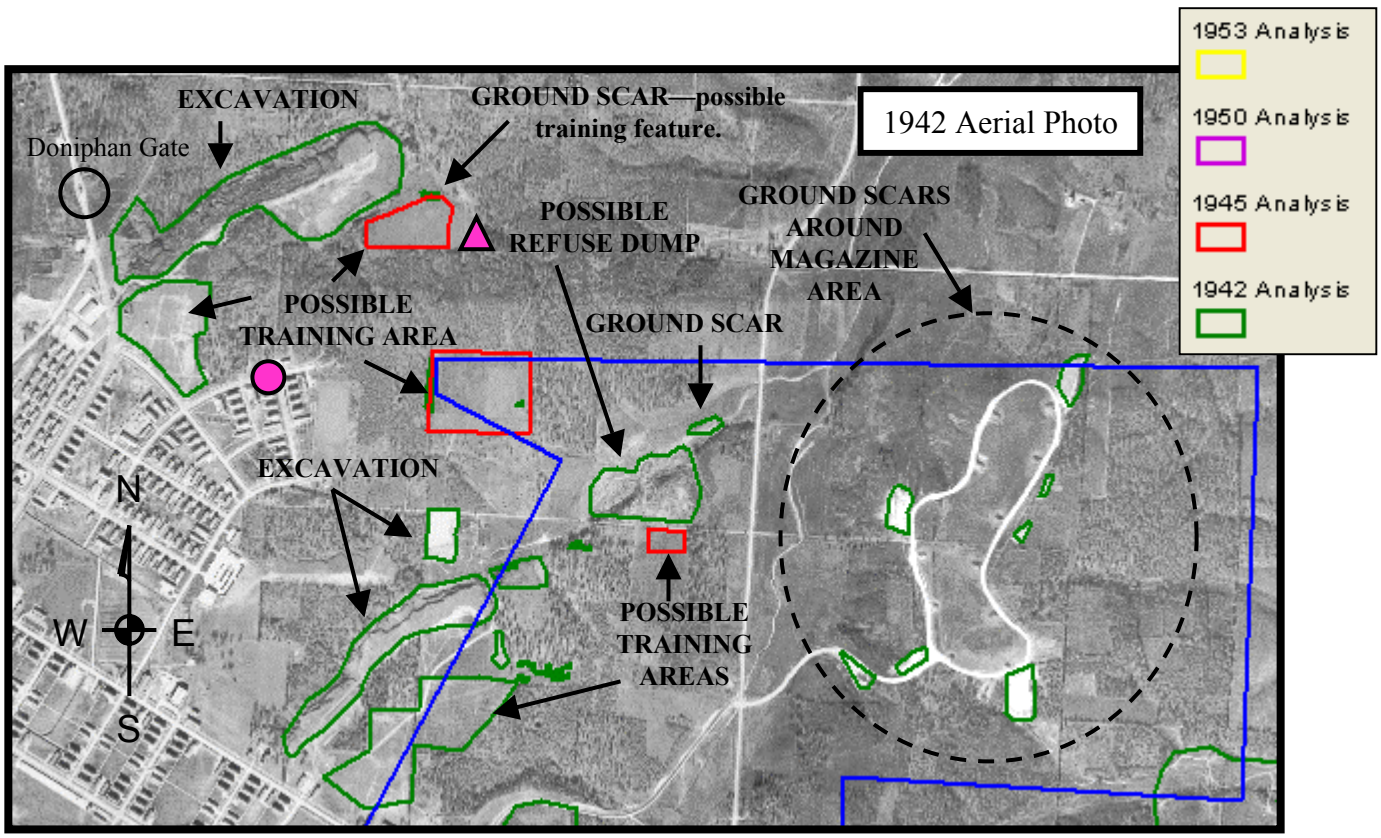


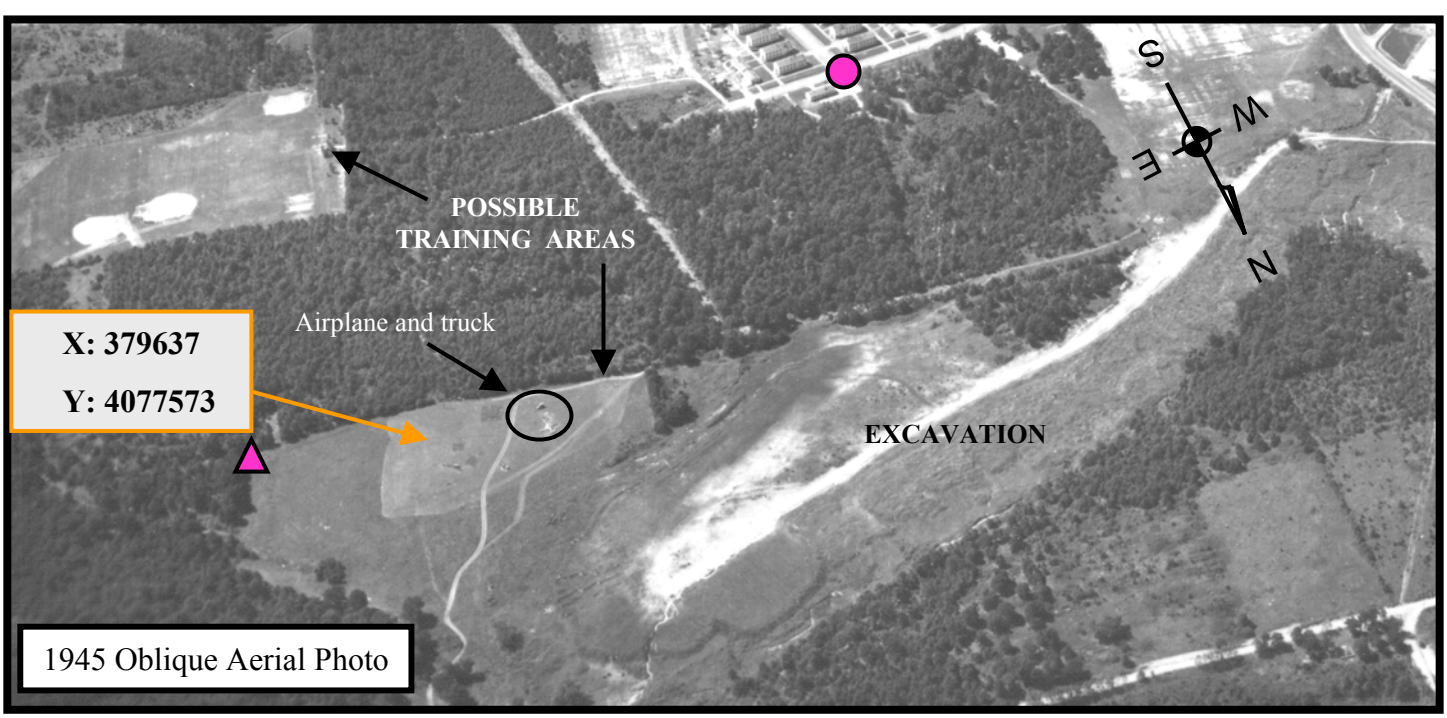
1942-1953 PHOTOGRAPHIC ANALYSIS OVERVIEW—AREA 1



NOTE: ALL X,Y COORDINATES PRESENTED IN THE ANALYSIS ARE NAD83, UTM, ZONE 15, UNITS IN METERS

AREA 1





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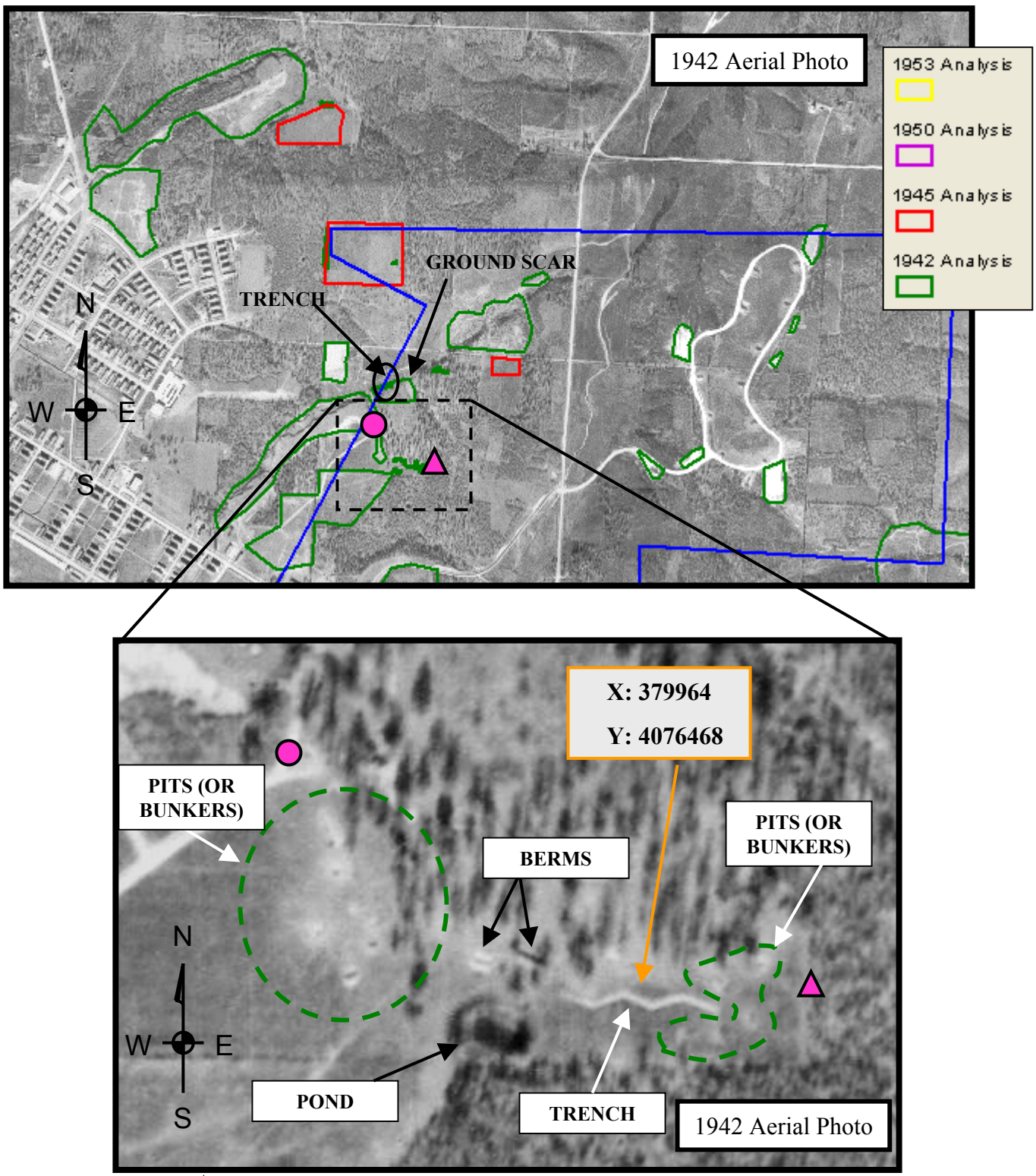

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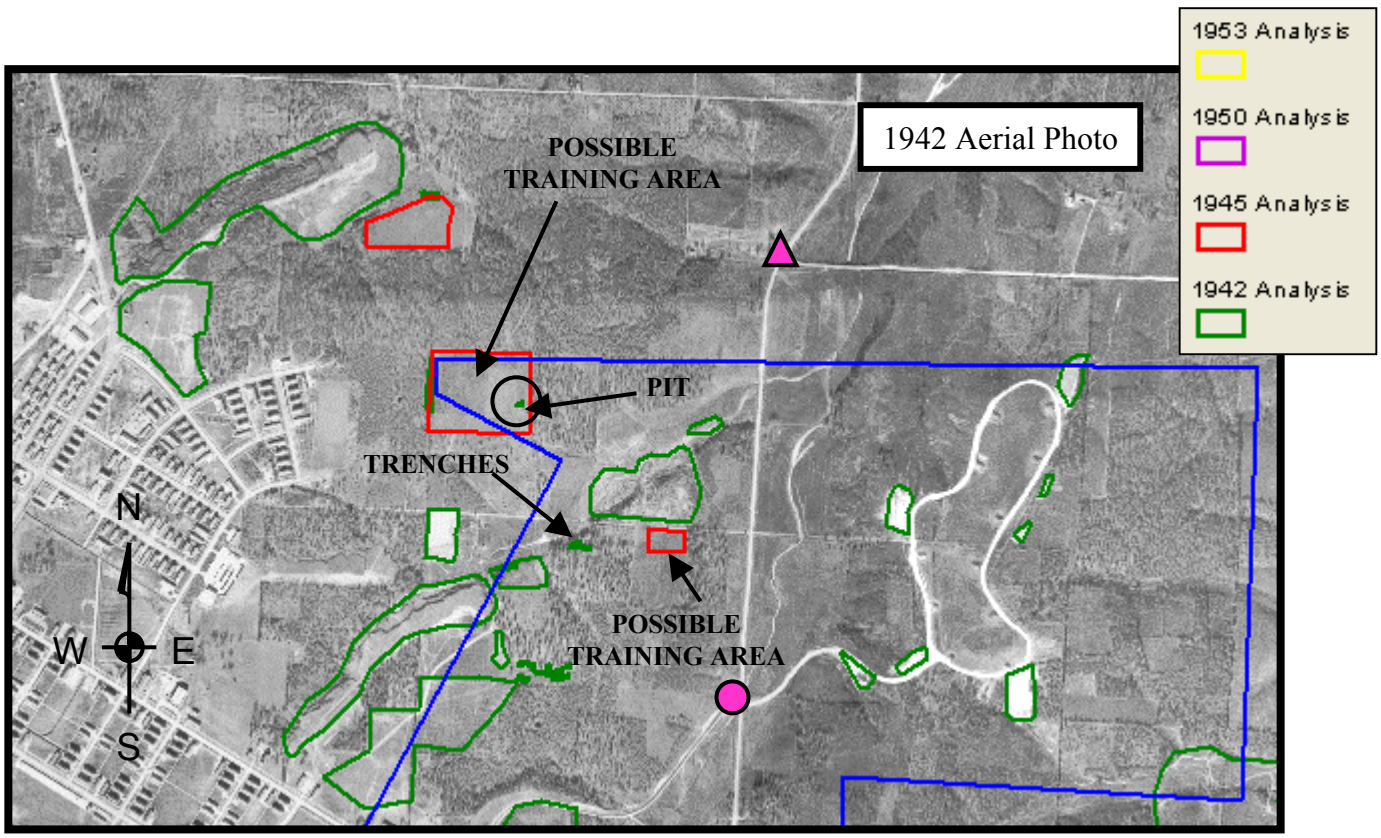

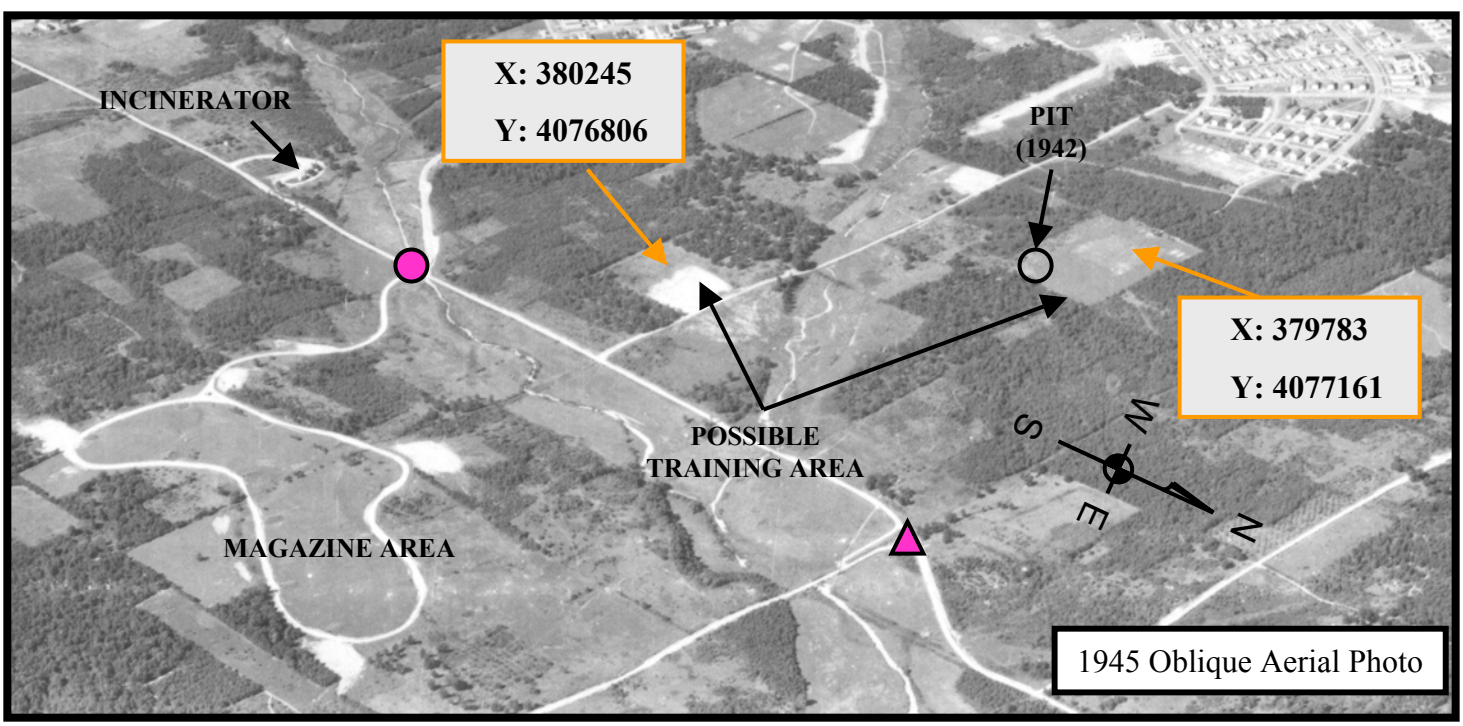

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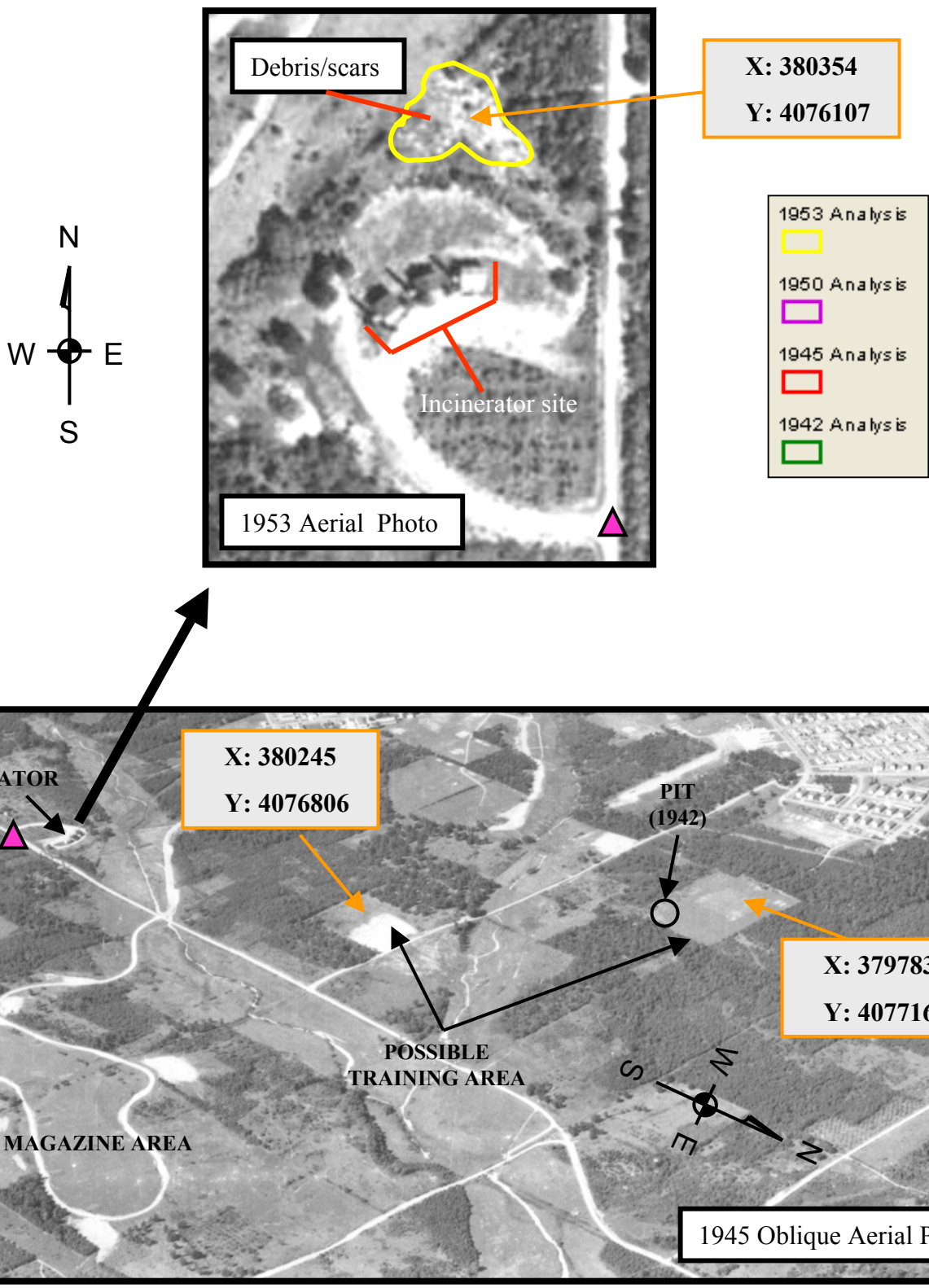

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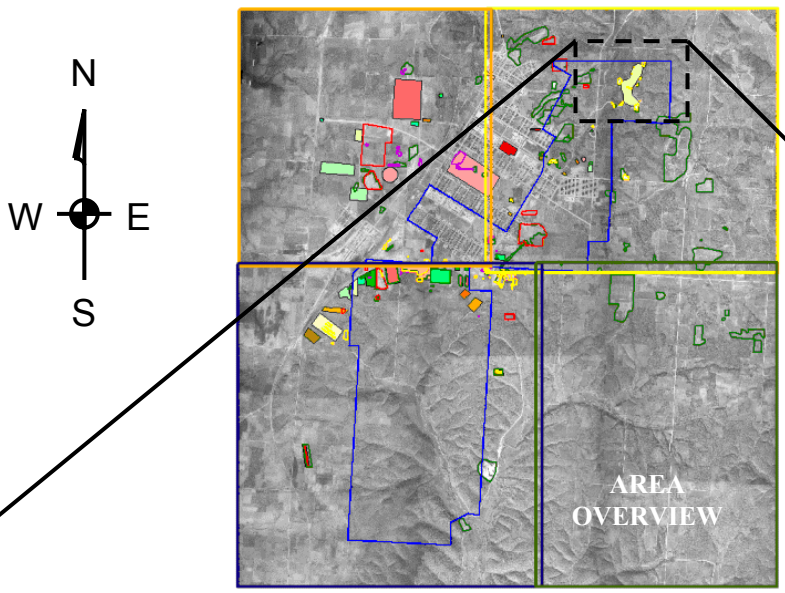
N
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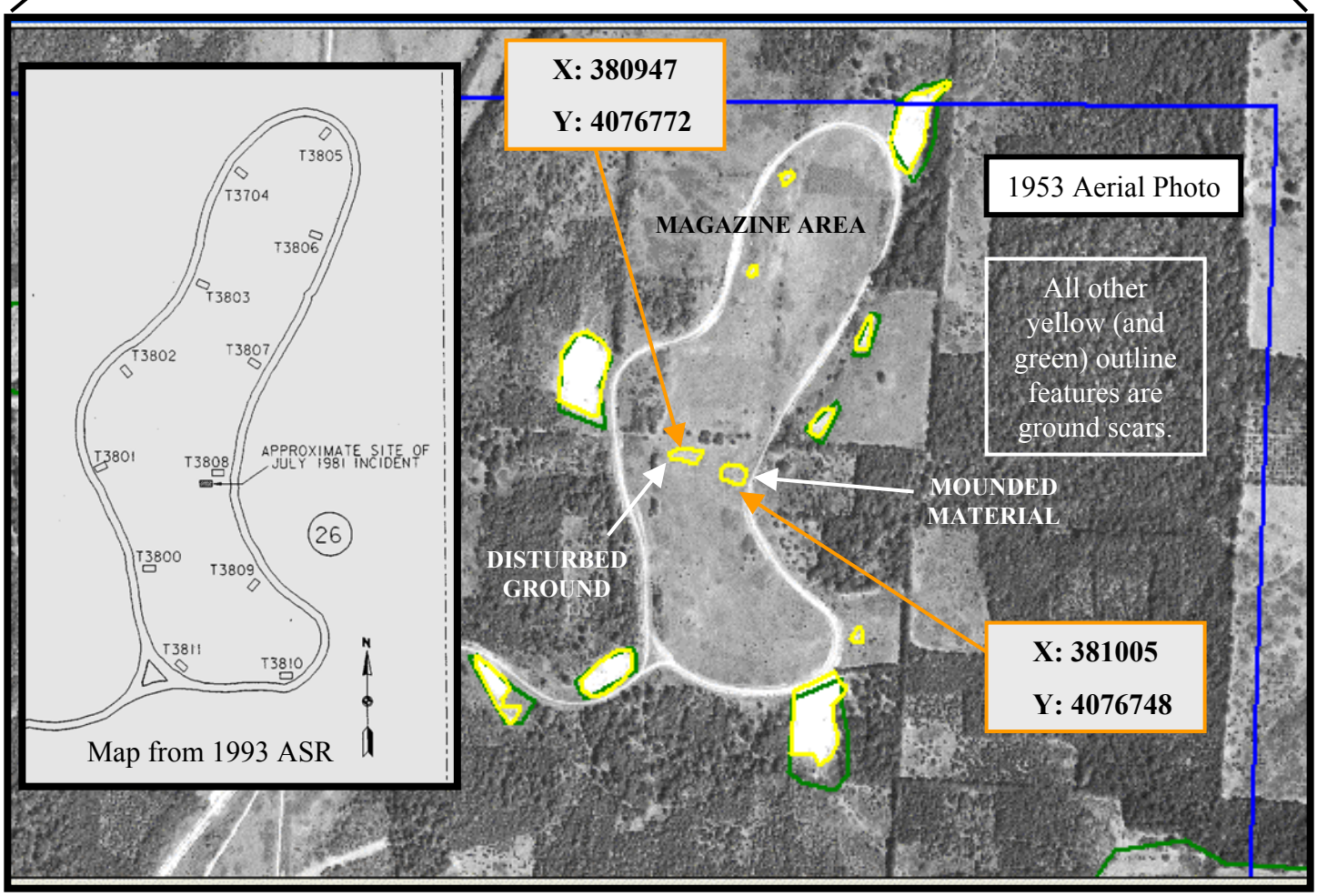
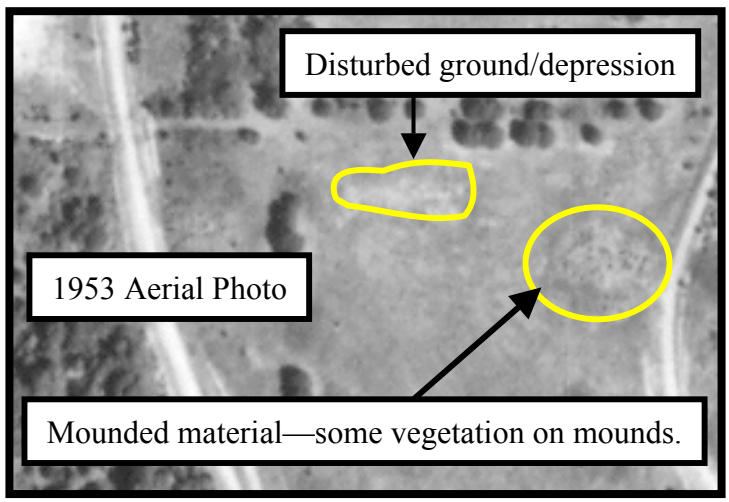
S
AREA
OVERVIEW


1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis

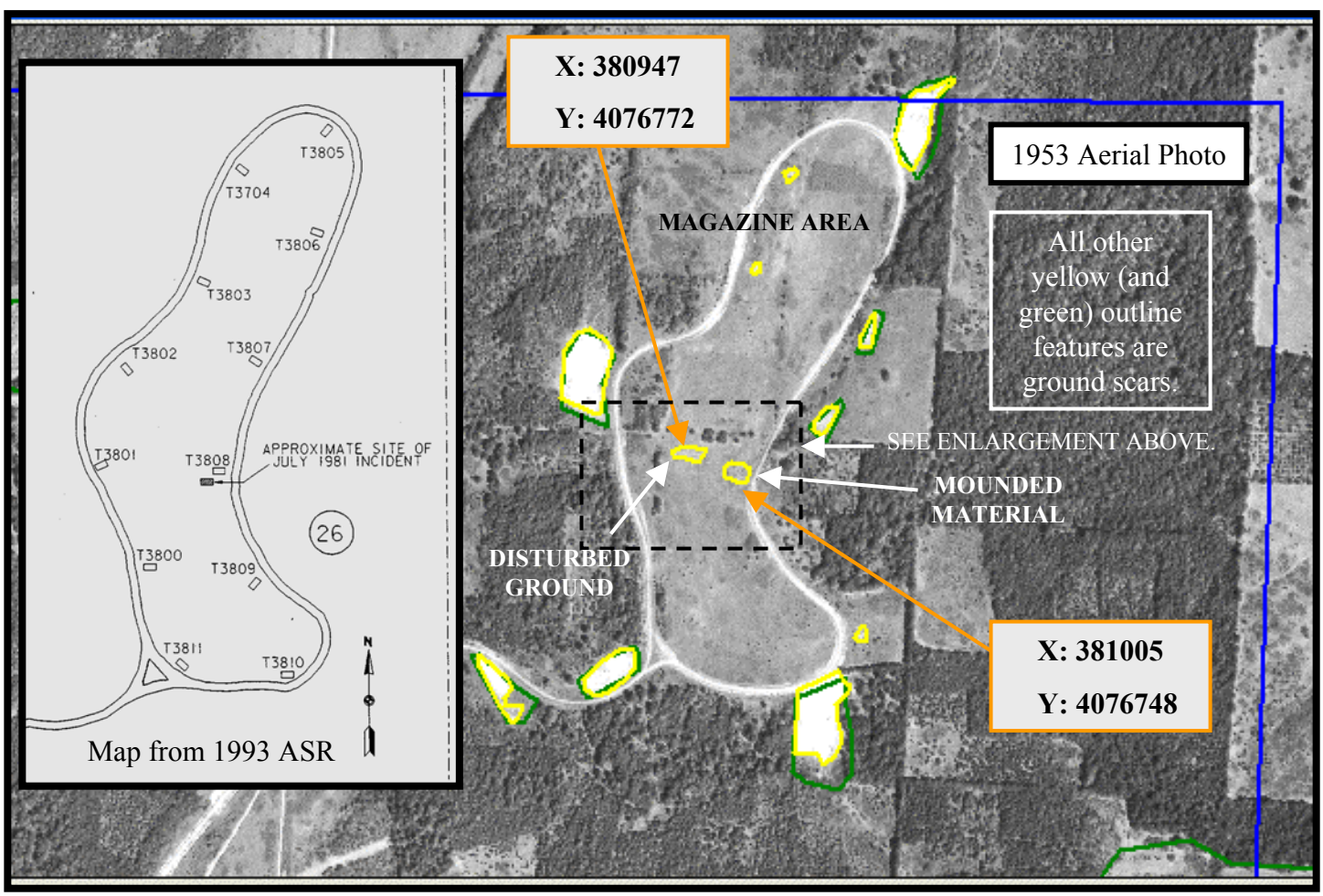

X: 380947
Y: 4076772
1953 Aerial Photo
MAGAZINE AREA
All other yellow (and green) outline features are ground scars.
MOUNDED MATERIAL
DISTURBED GROUND
X: 381005
Y: 4076748
T3805
T3704
T3806
T3803
T3802
T3807
T3801
T3808
APPROXIMATE SITE OF JULY 1981 INCIDENT
26
T3800
T3809
T3811
T3810
Map from 1993 ASR

AREA 1

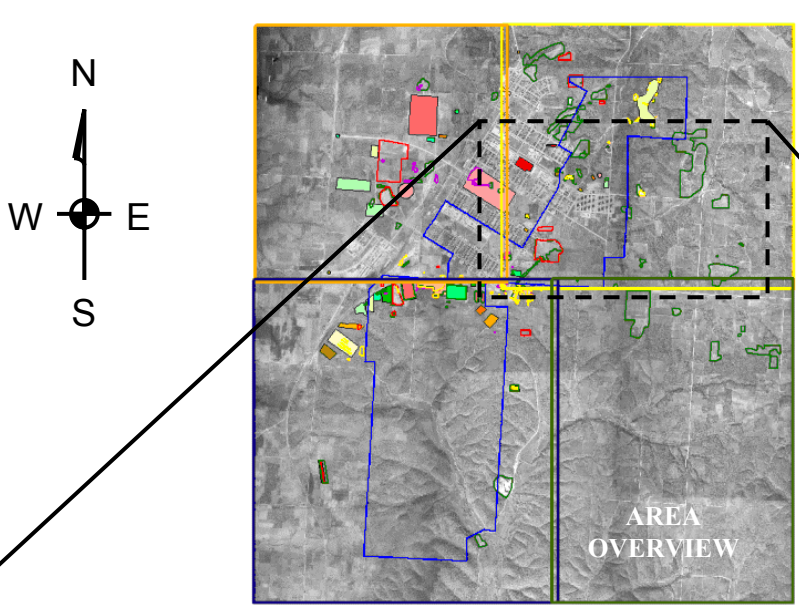

N
W
E
S


Disturbed ground/depression
1953 Aerial Photo
Mounded material—some vegetation on mounds.

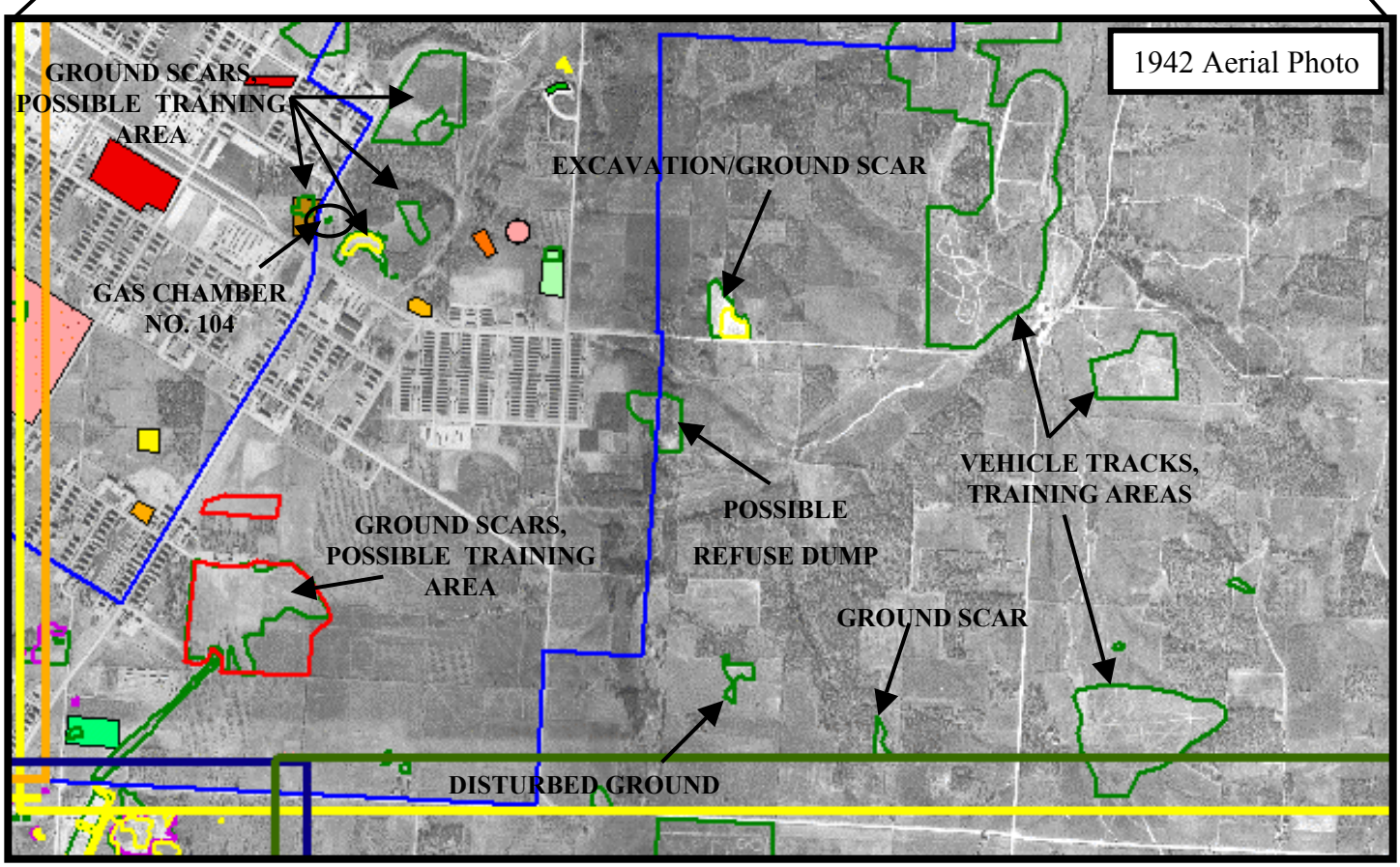

1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis


X: 380947
Y: 4076772
1953 Aerial Photo
MAGAZINE AREA
All other yellow (and green) outline features are ground scars.
SEE ENLARGEMENT ABOVE.
MOUNDED MATERIAL
DISTURBED GROUND
X: 381005
Y: 4076748
T3805
T3704
T3806
T3803
T3802
T3807
T3801
T3808
APPROXIMATE SITE OF JULY 1981 INCIDENT
26
T3800
T3809
T3811
T3810
N
Map from 1993 ASR

AREA 1



1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis



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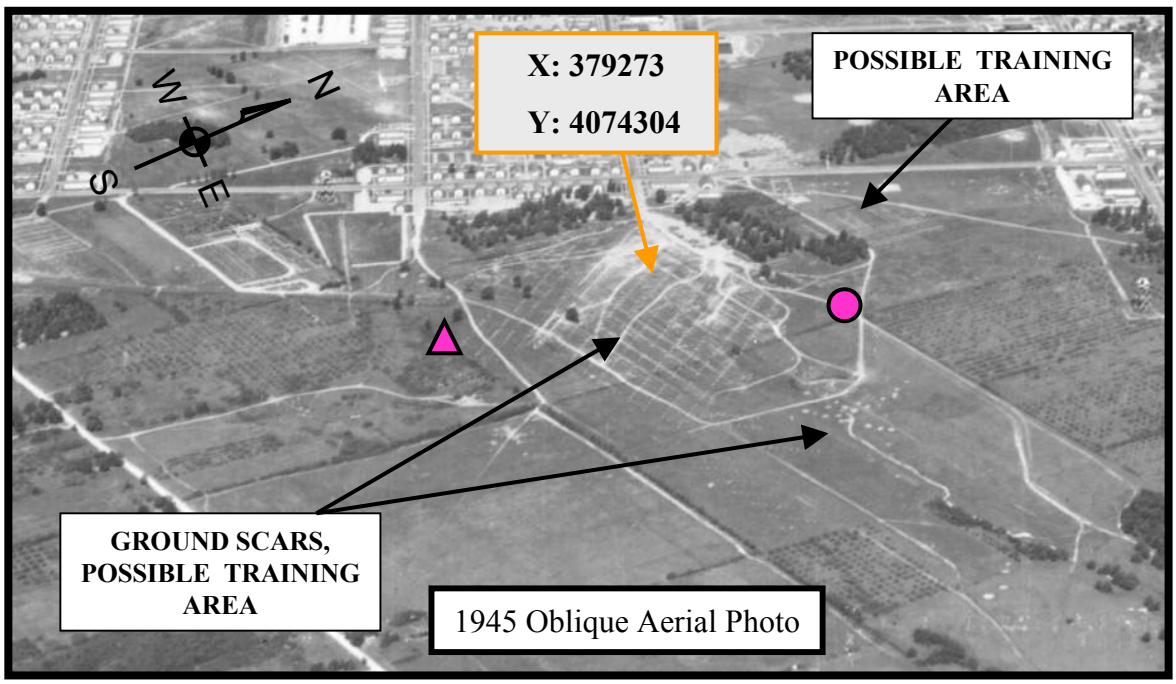
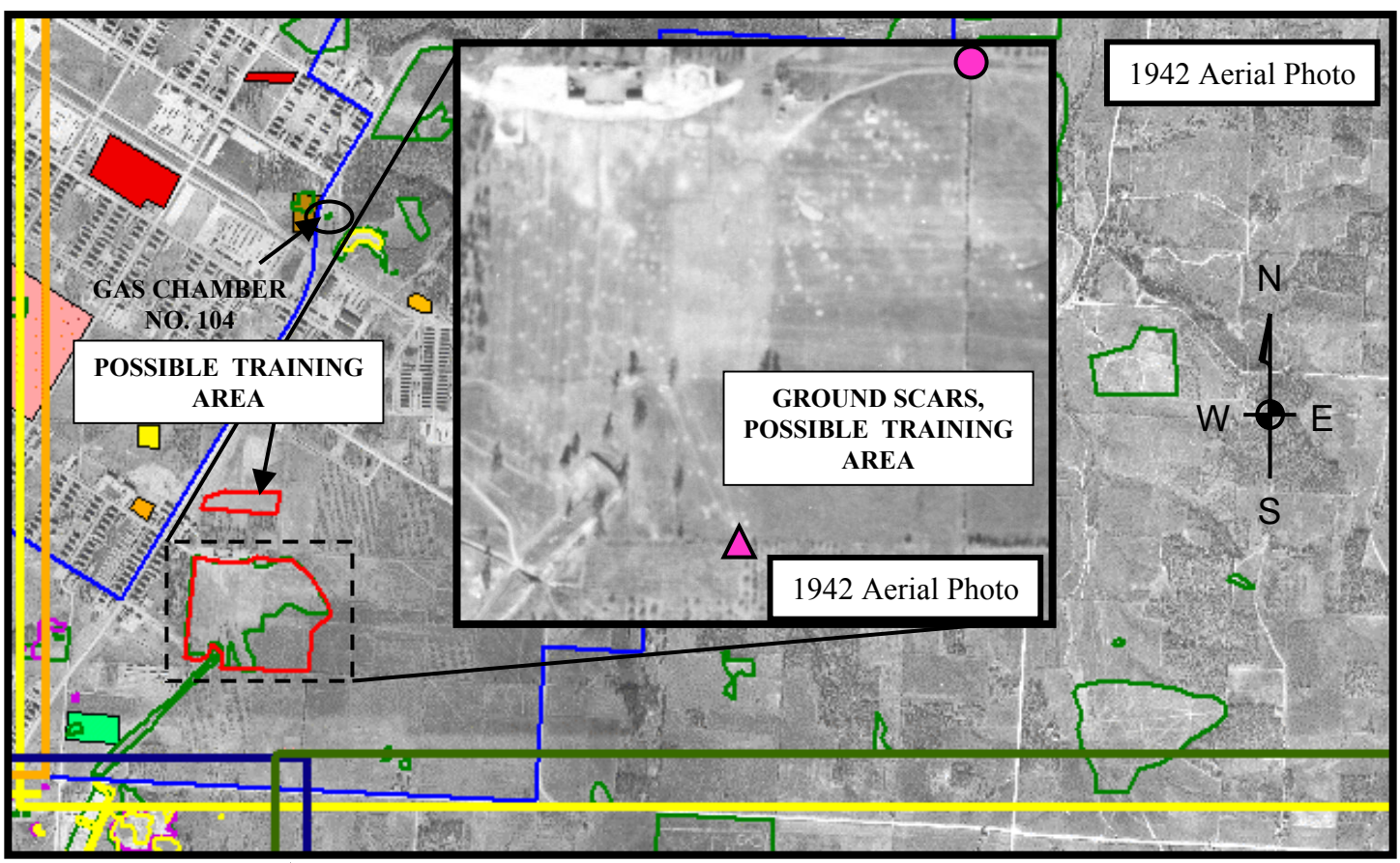


1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis



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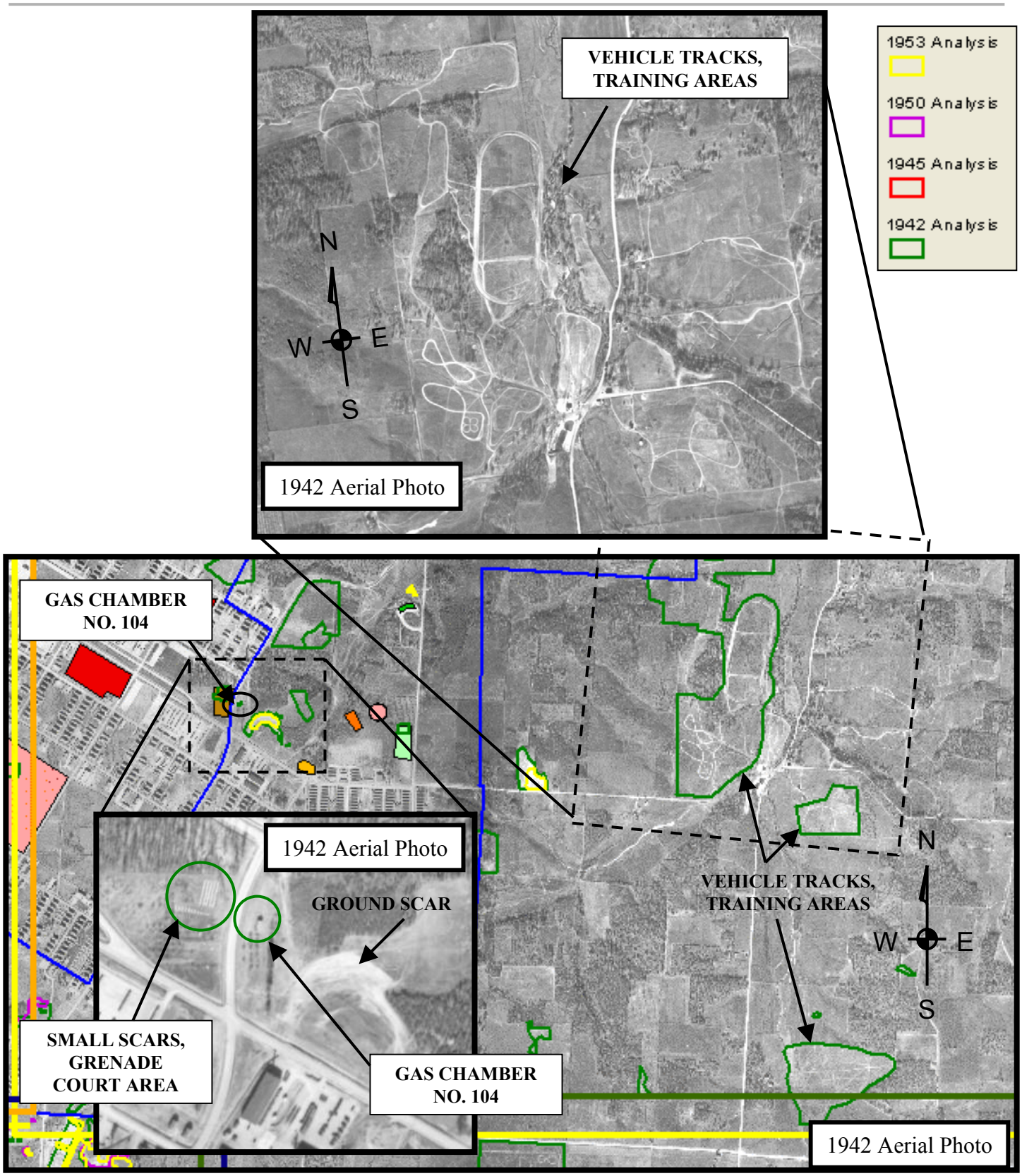
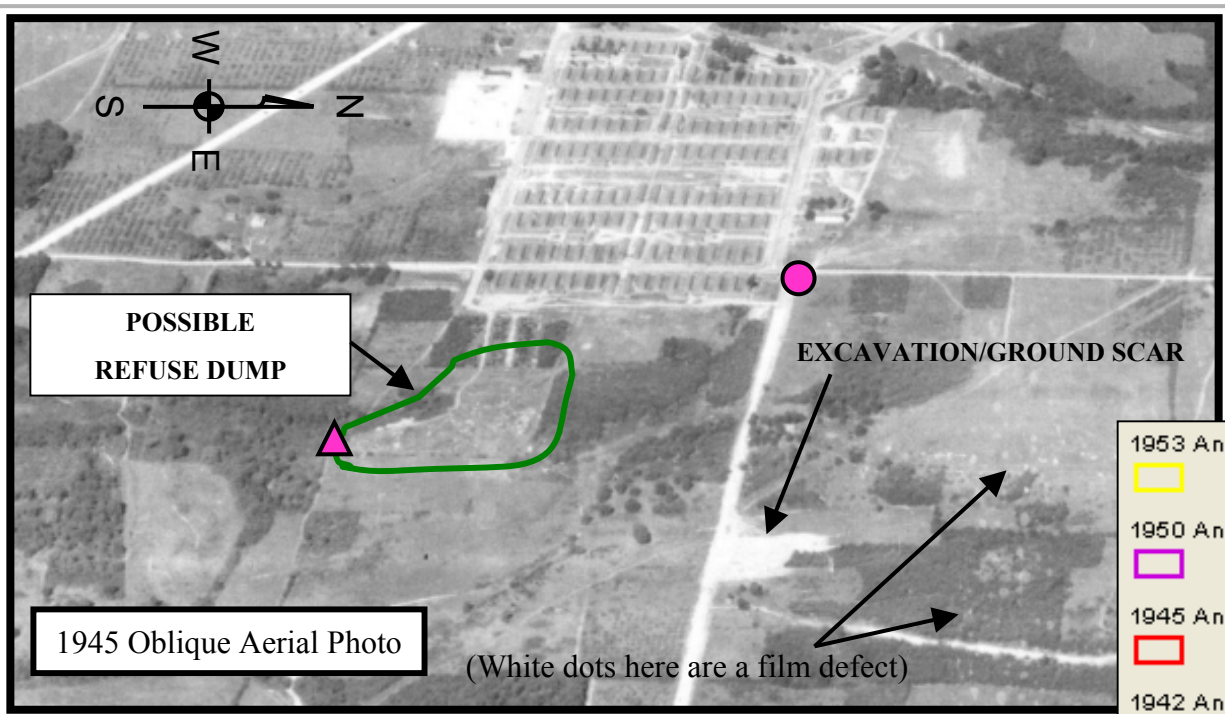
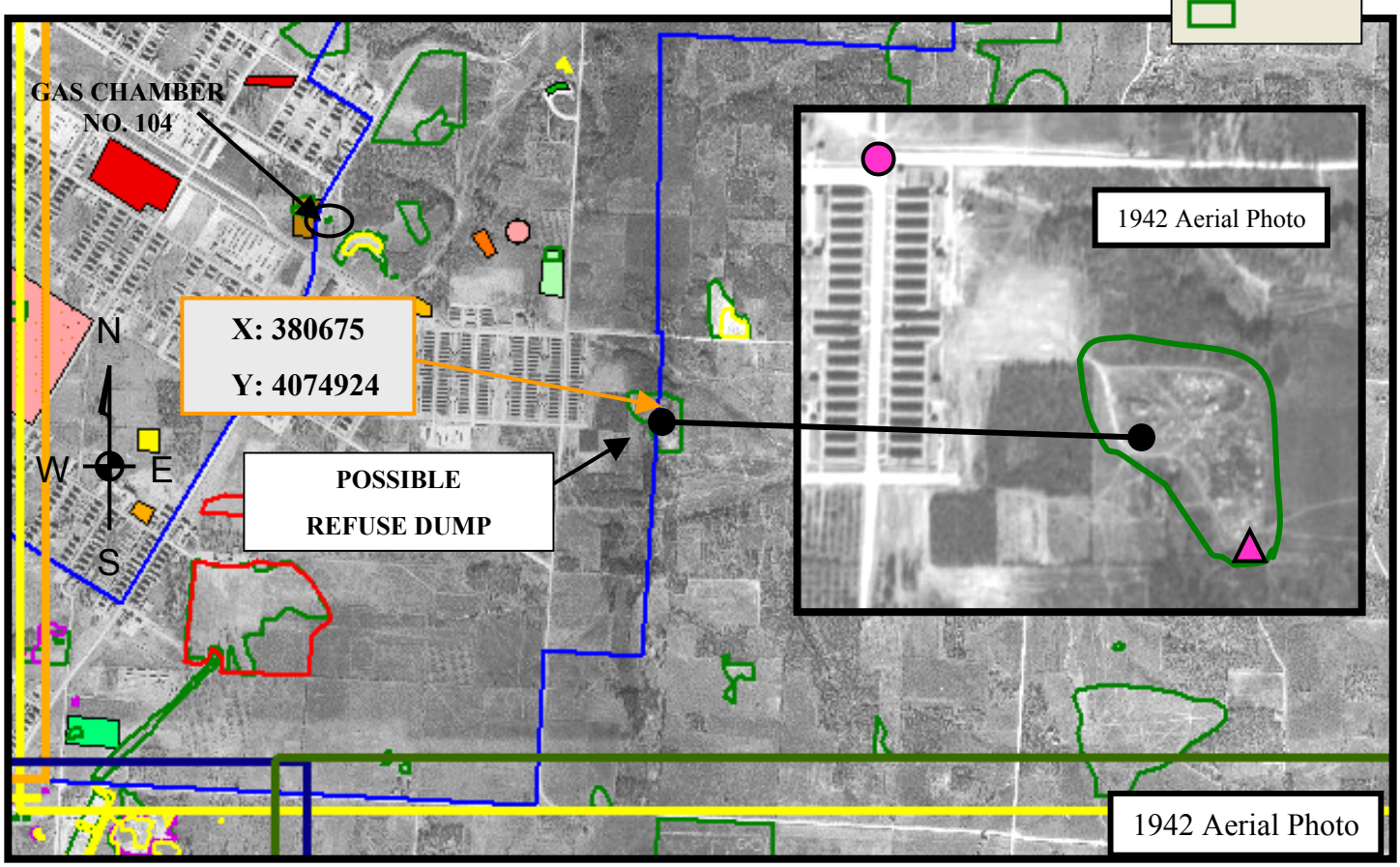

VEHICLE TRACKS, TRAINING AREAS
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
N
W
E
S
1942 Aerial Photo
GAS CHAMBER NO. 104
1942 Aerial Photo
GROUND SCAR
SMALL SCARS, GRENADE COURT AREA
GAS CHAMBER NO. 104
VEHICLE TRACKS, TRAINING AREAS
N
W
E
S
1942 Aerial Photo

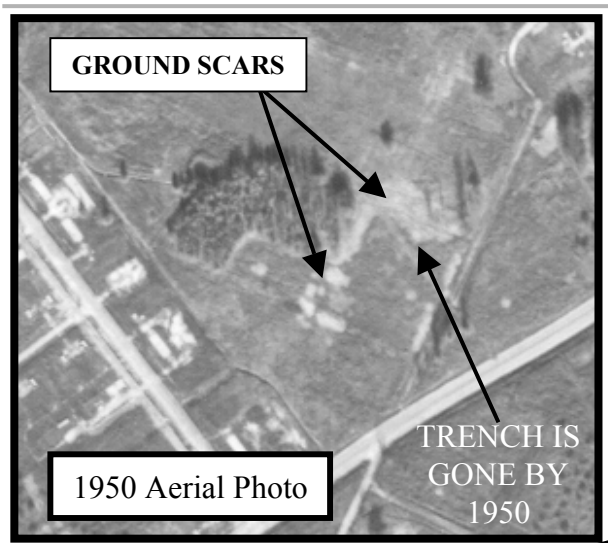
AREA 1

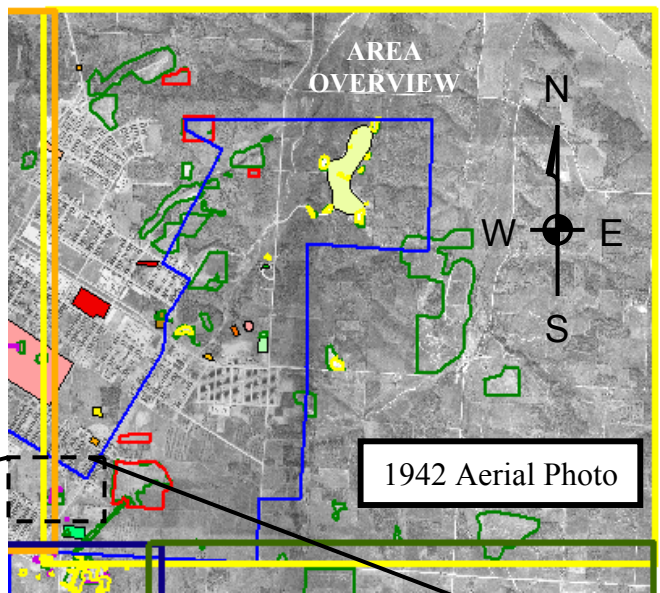


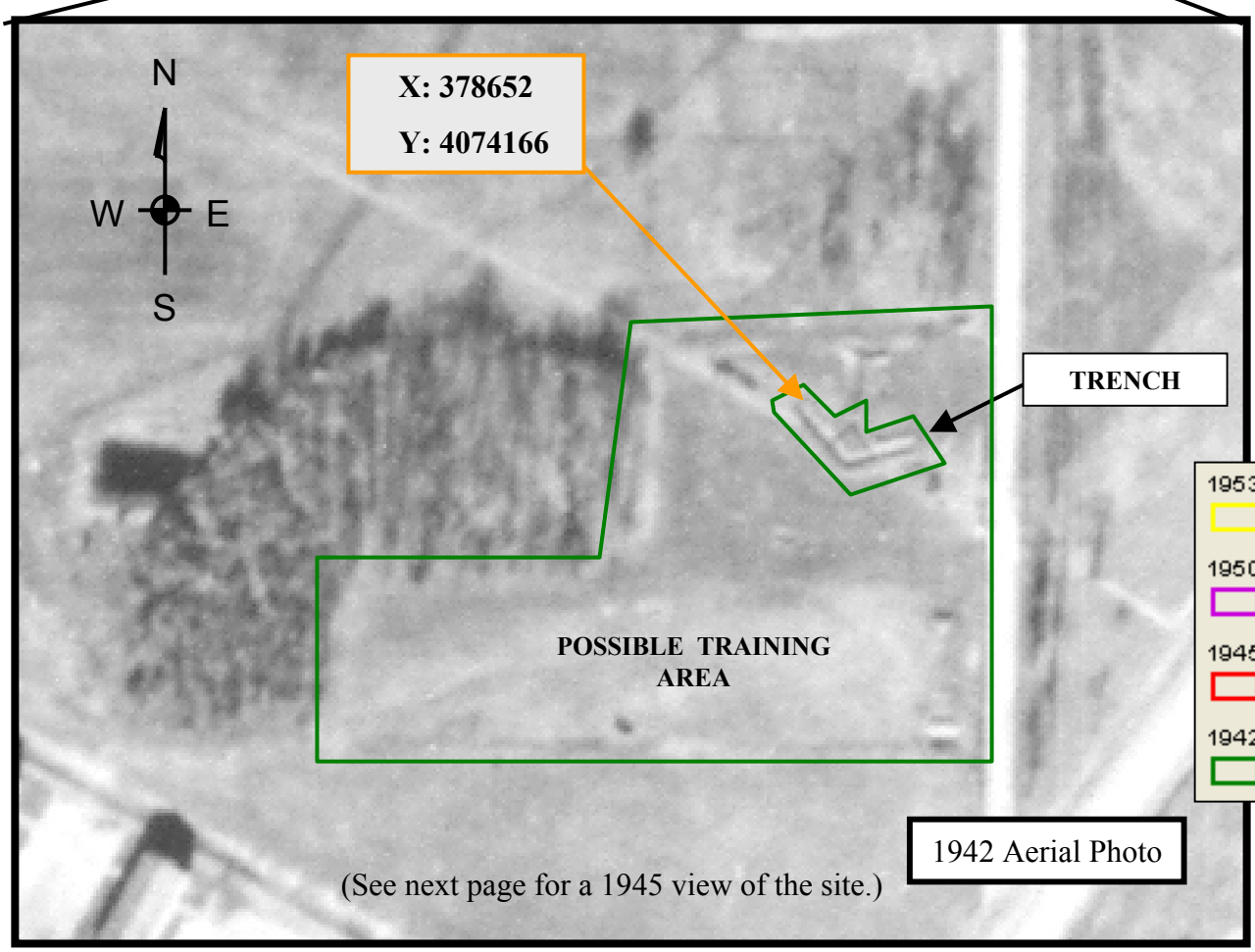


= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

AREA 1

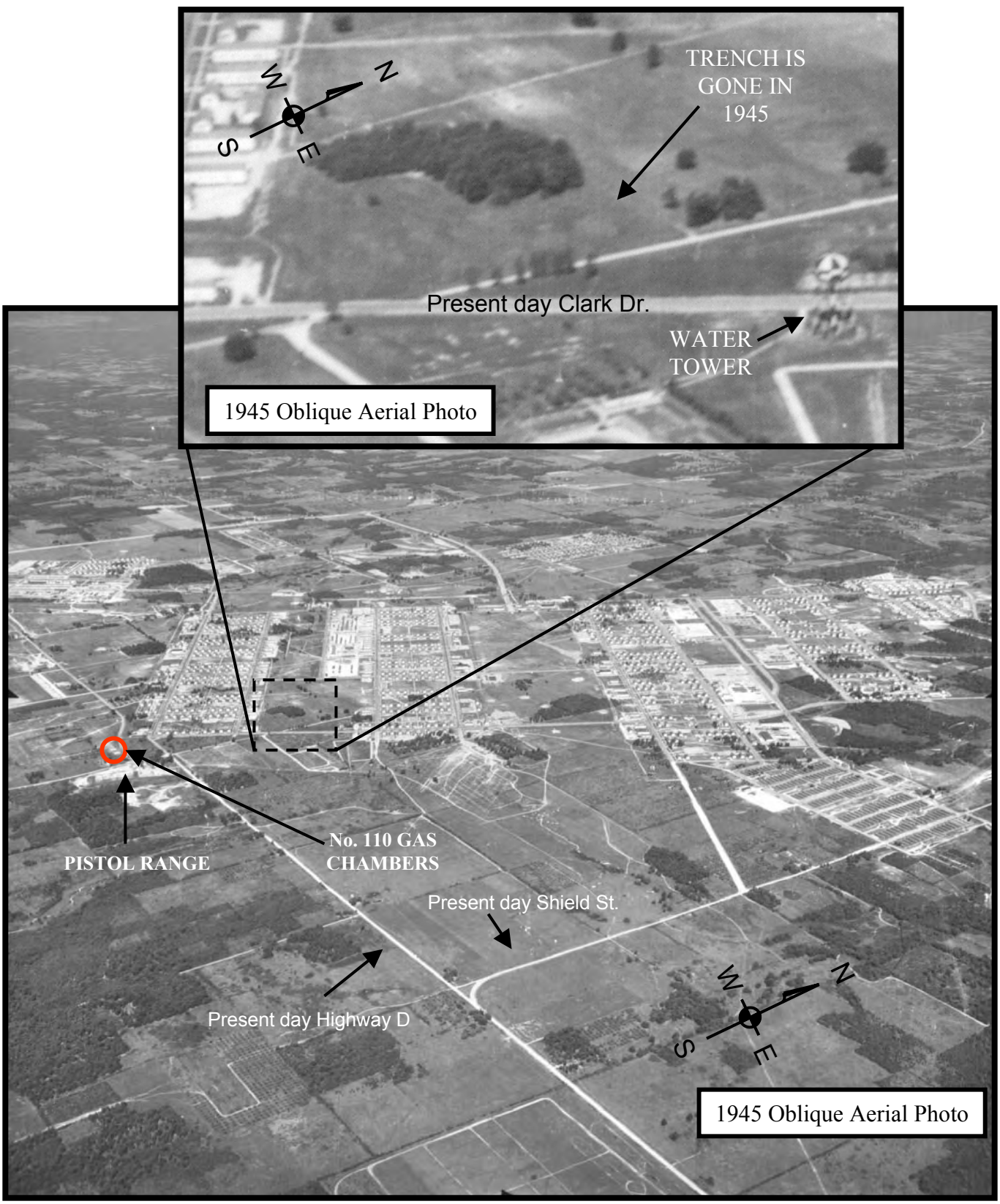




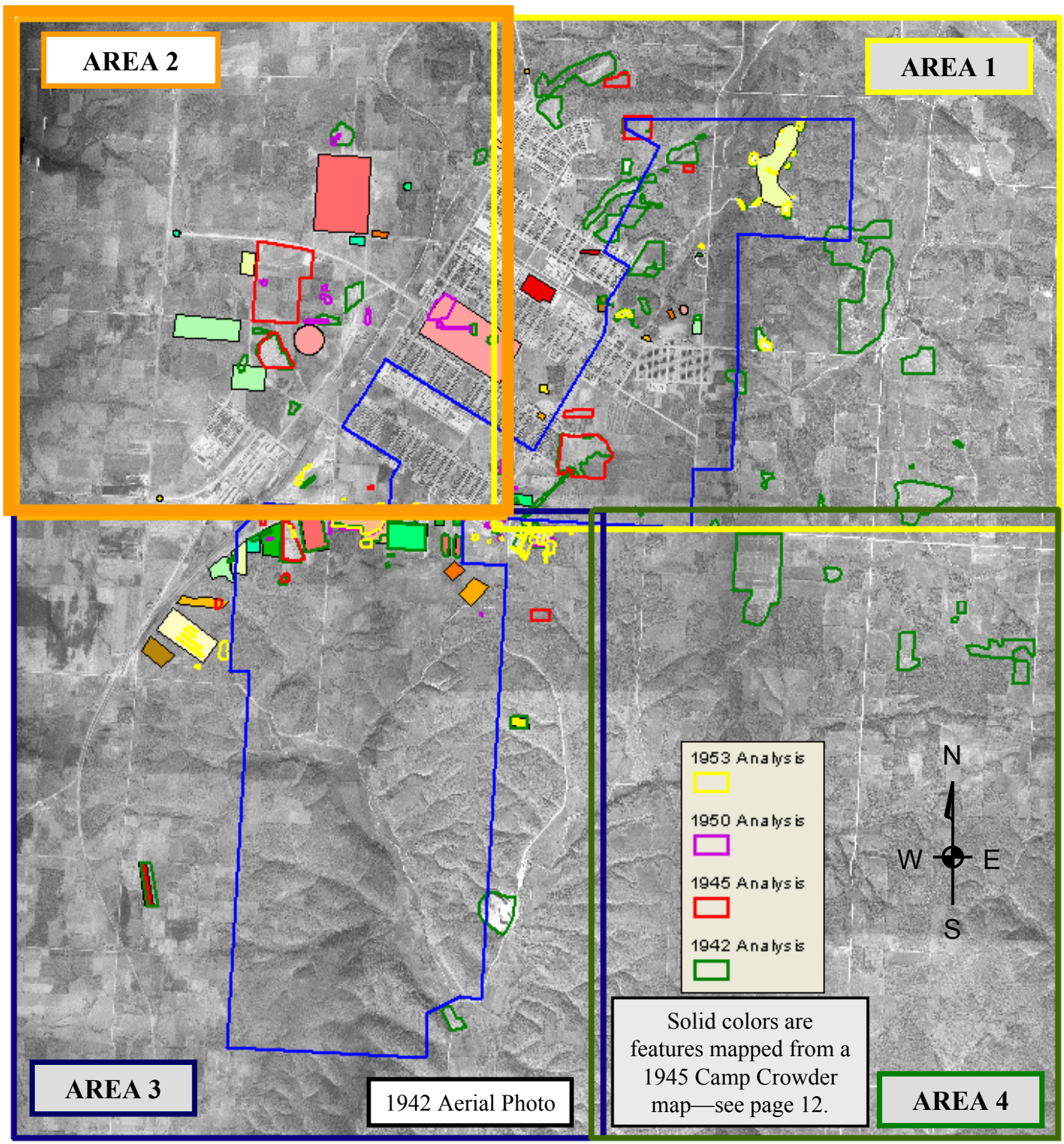


(See next page for a 1945 view of the site.)

AREA 1

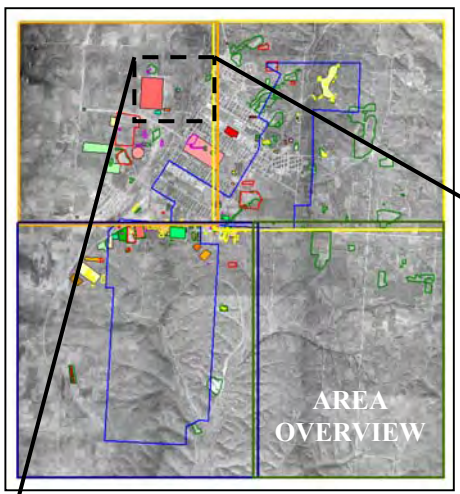

TRENCH IS GONE IN 1945
Present day Clark Dr.
WATER TOWER
1945 Oblique Aerial Photo
PISTOL RANGE
No. 110 GAS CHAMBERS
Present day Shield St.
Present day Highway D
1945 Oblique Aerial Photo

1942-1953 PHOTOGRAPHIC ANALYSIS OVERVIEW—AREA 2



NOTE: ALL X,Y COORDINATES PRESENTED IN THE ANALYSIS ARE NAD83, UTM, ZONE 15, UNITS IN METERS

AREA 2

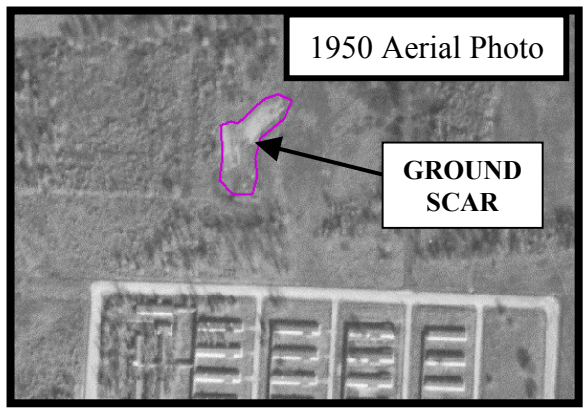


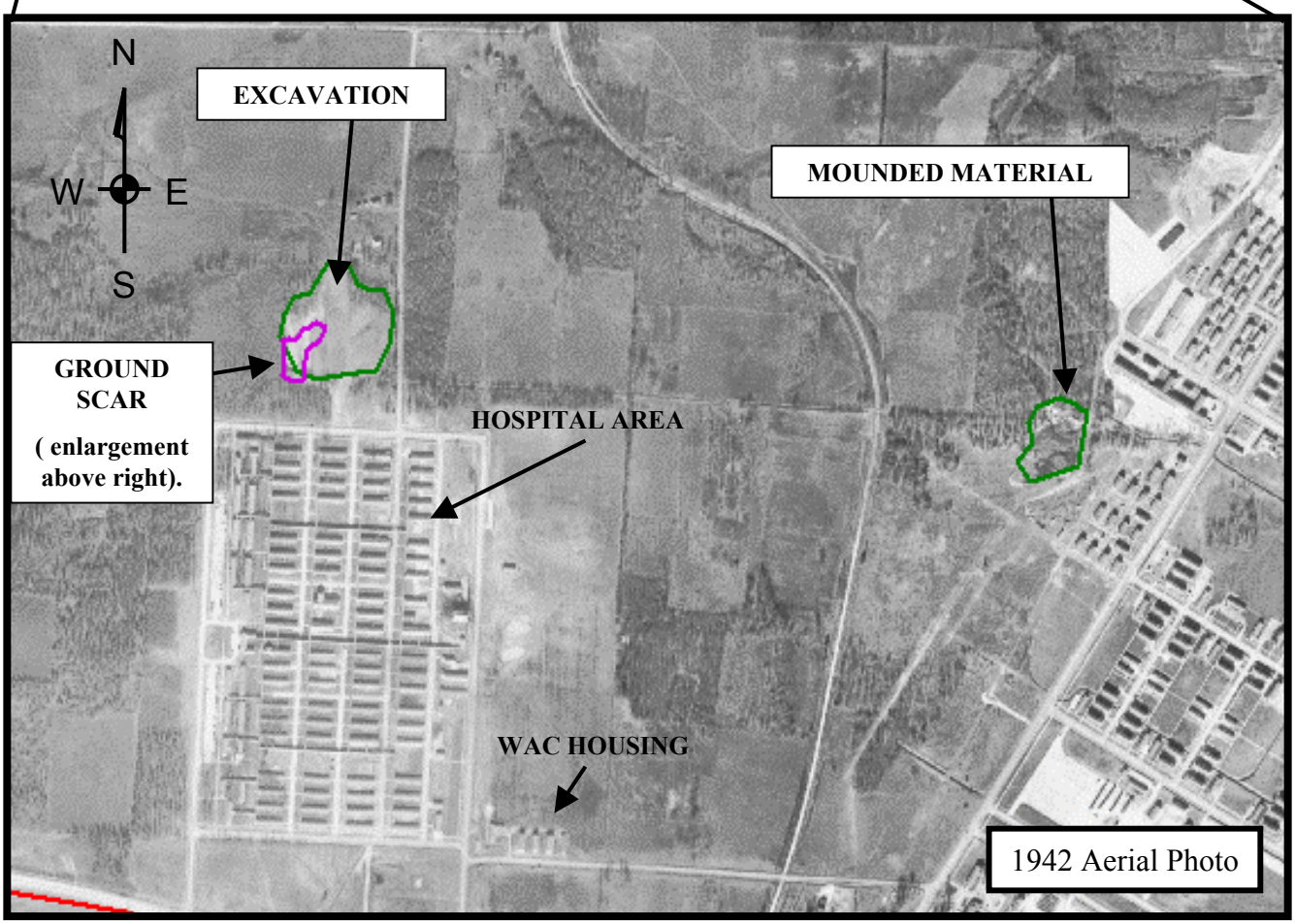
1953 Analysis

1950 Analysis

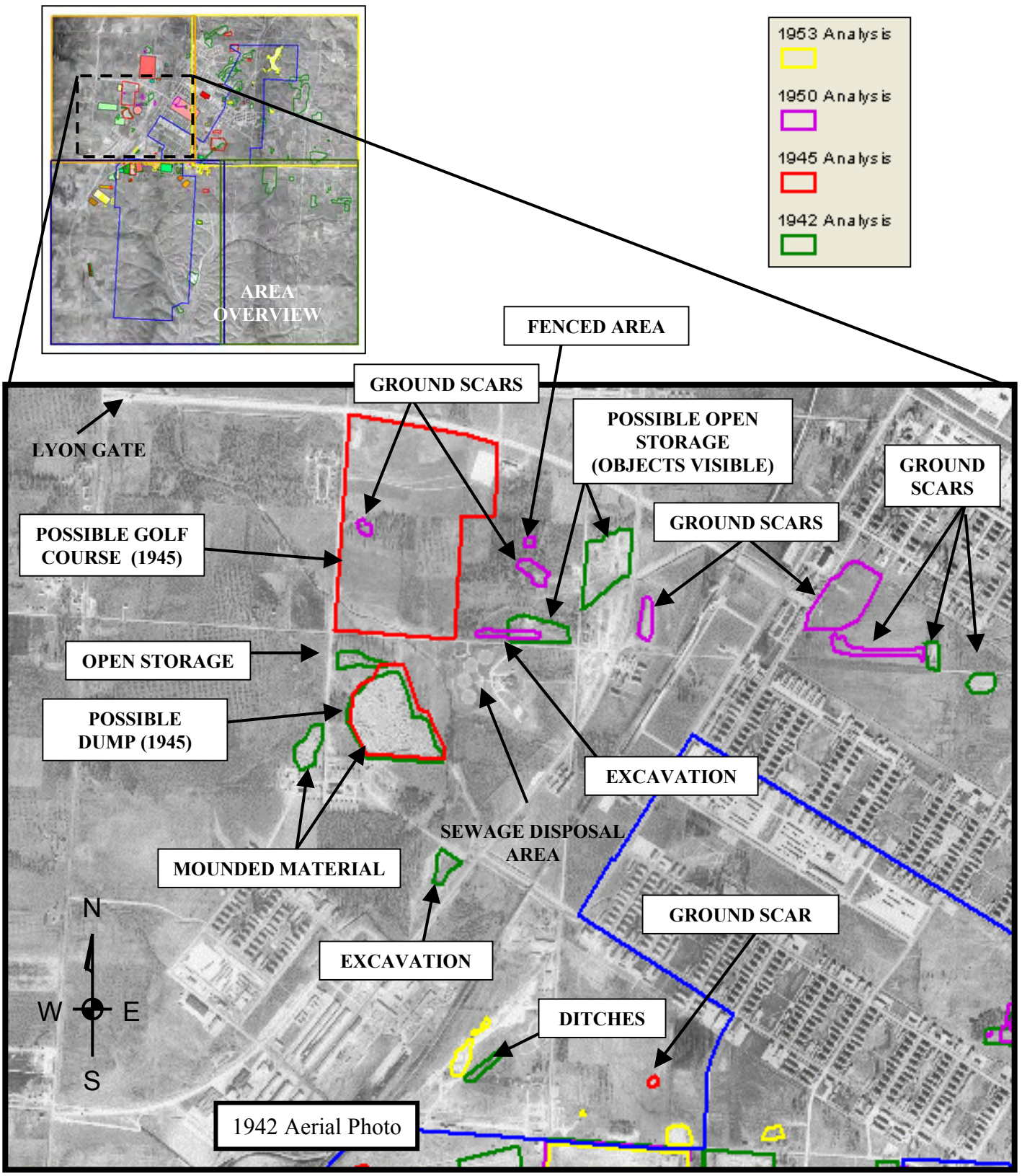
1945 Analysis

1942 Analysis

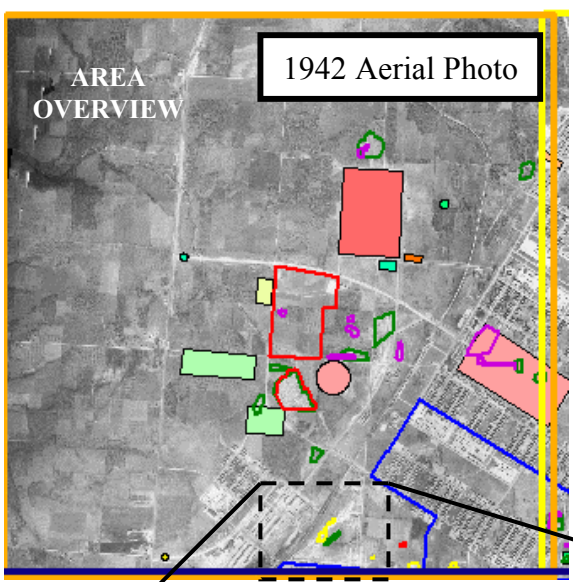


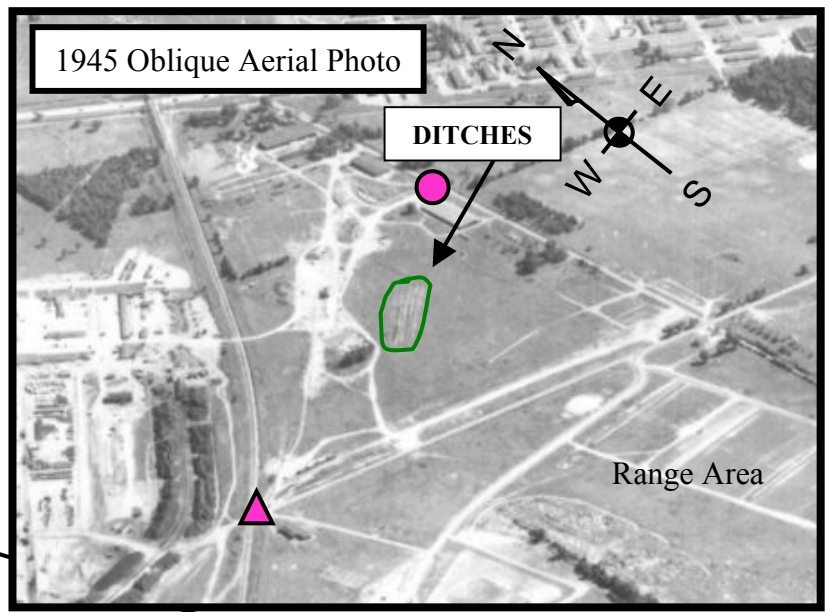


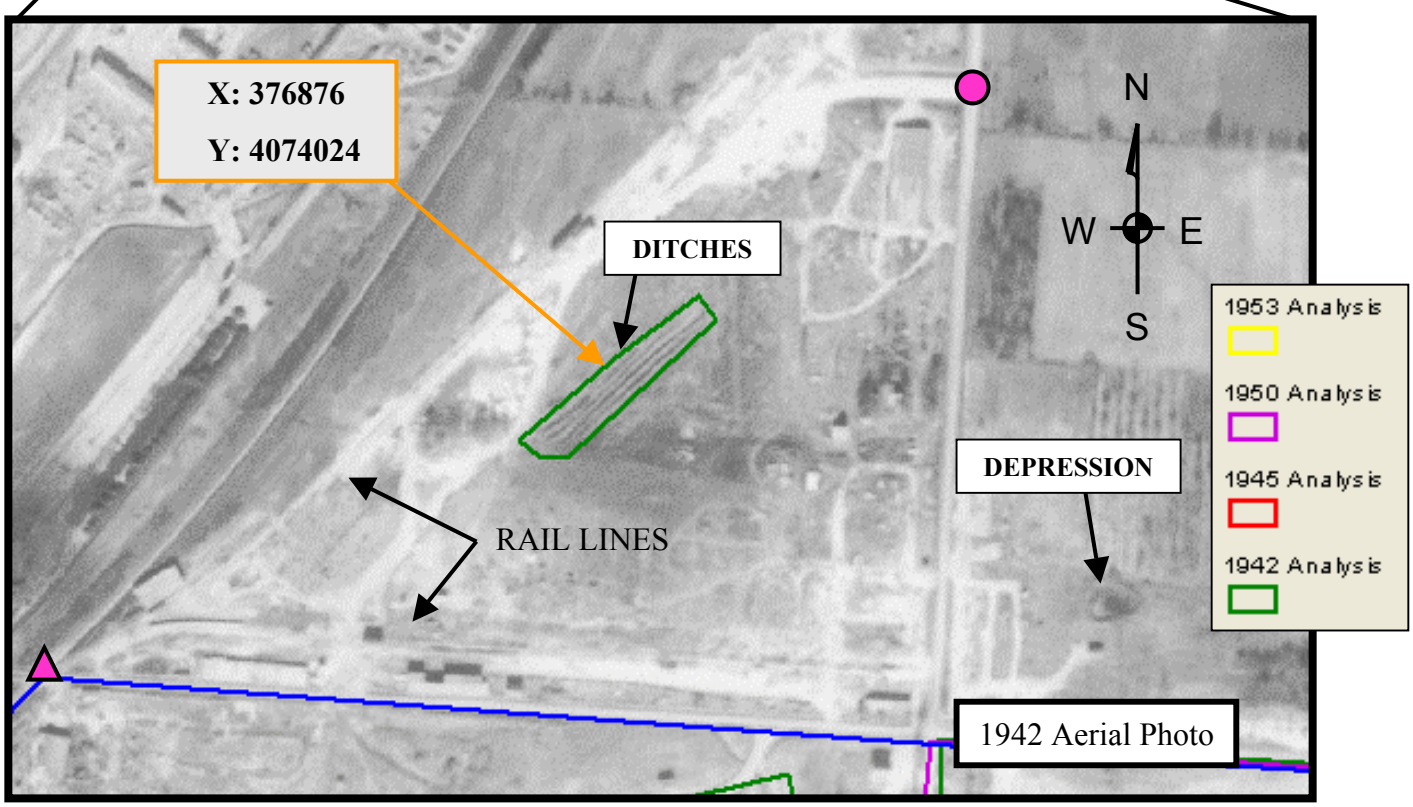
AREA 2


1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
AREA OVERVIEW
FENCED AREA
GROUND SCARS
LYON GATE
POSSIBLE OPEN STORAGE (OBJECTS VISIBLE)
GROUND SCARS
GROUND SCARS
POSSIBLE GOLF COURSE (1945)
OPEN STORAGE
POSSIBLE DUMP (1945)
EXCAVATION
SEWAGE DISPOSAL AREA
MOUNDED MATERIAL
GROUND SCAR
EXCAVATION
DITCHES
N
W
E
S
1942 Aerial Photo

AREA 2

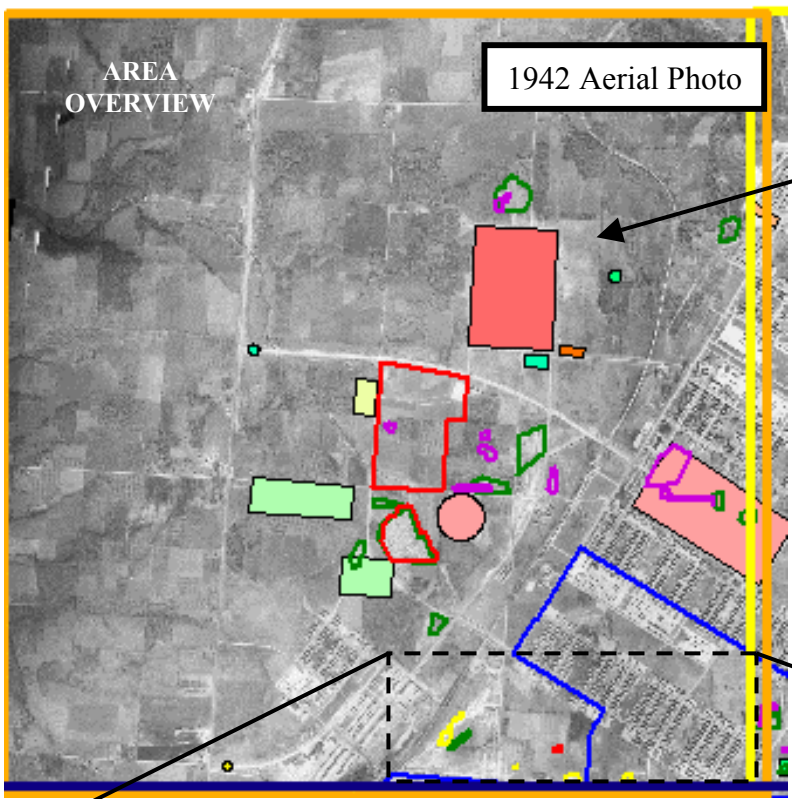






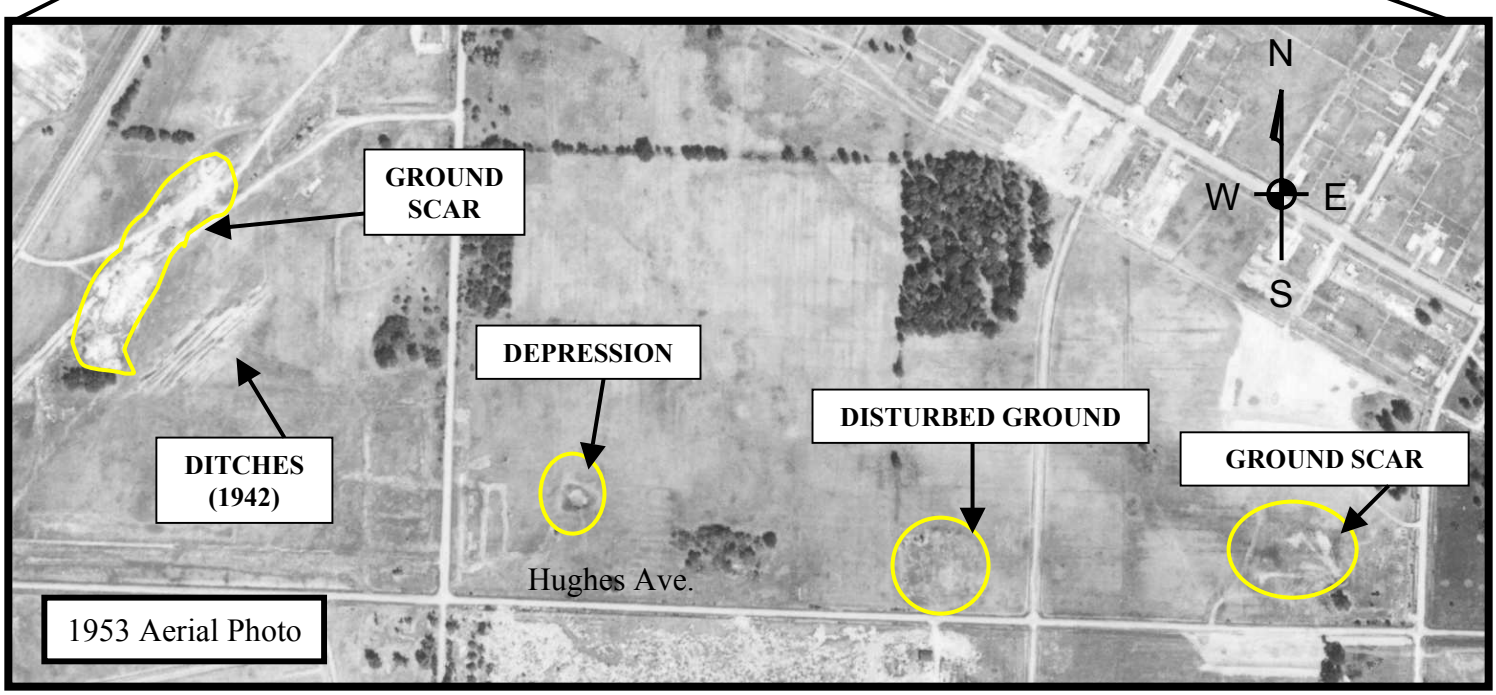
= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

AREA 2

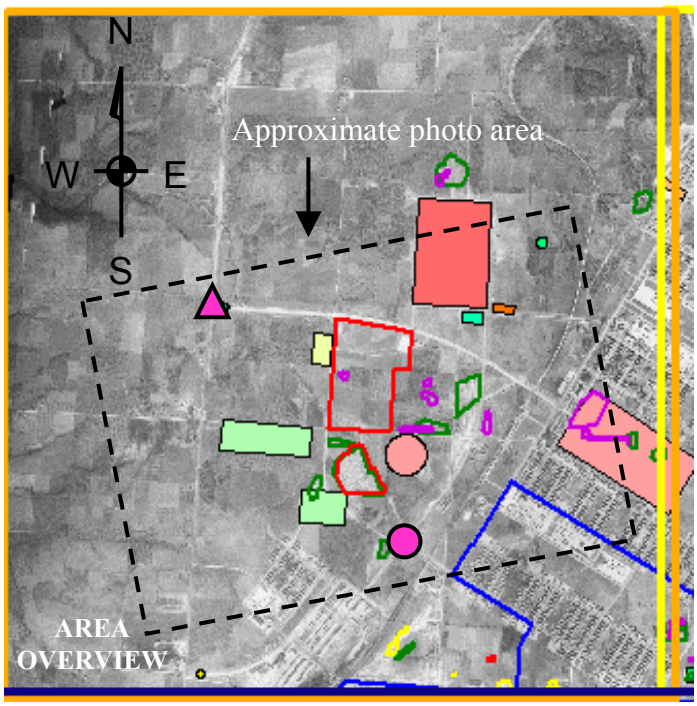


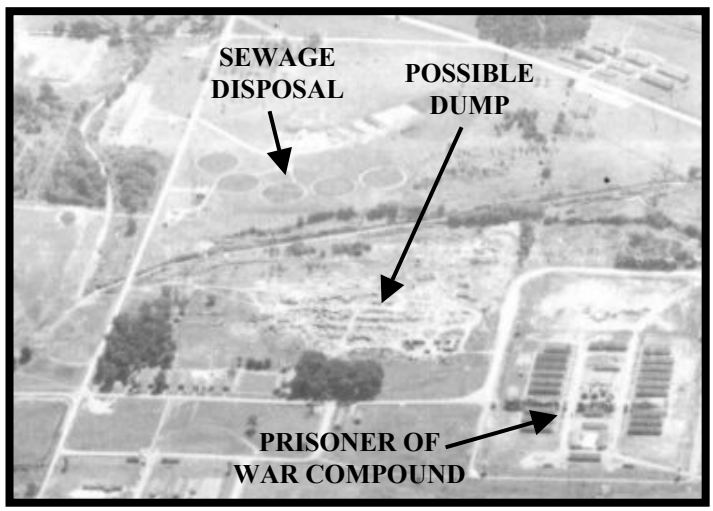
Solid colors are features mapped from a 1945 Camp Crowder map—see page 12.

1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis

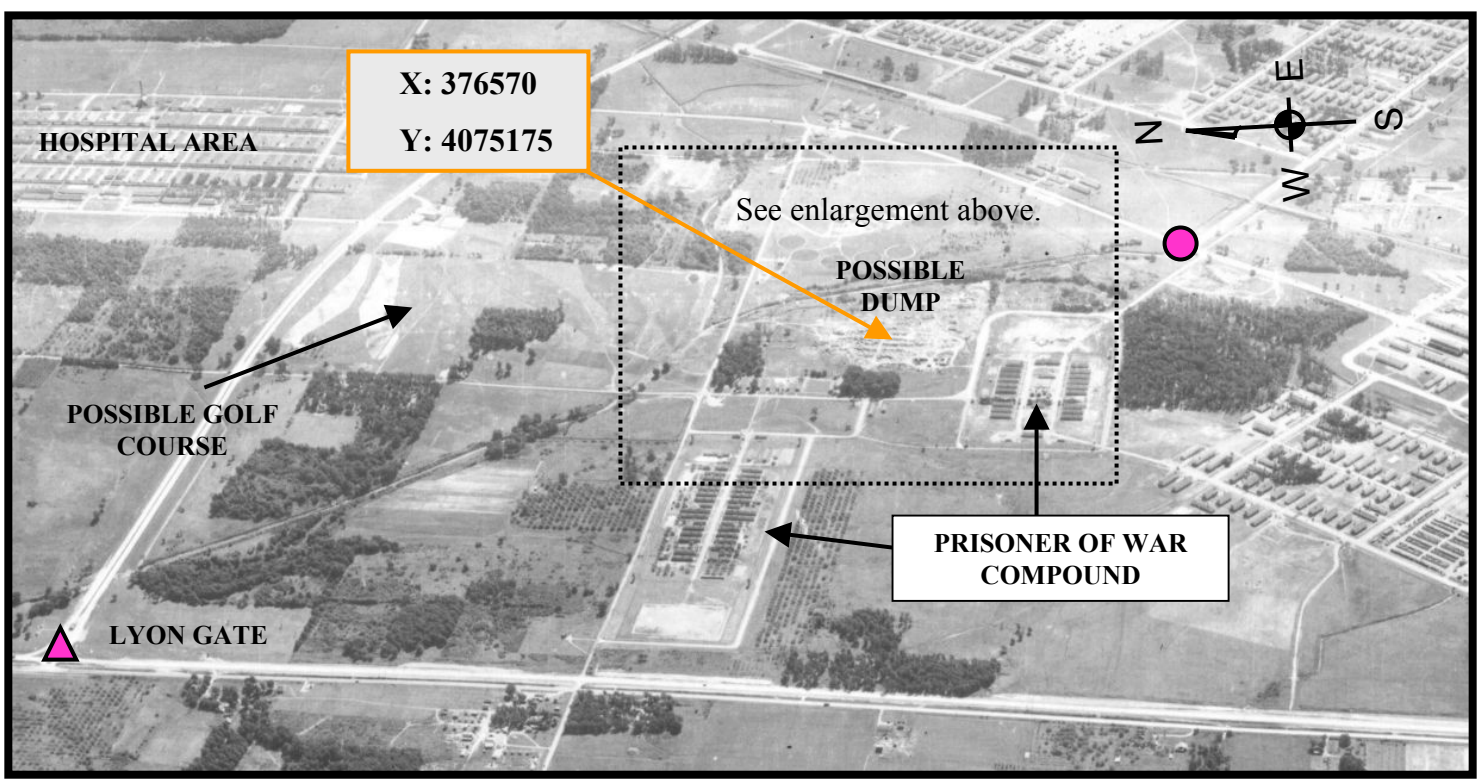


AREA 2



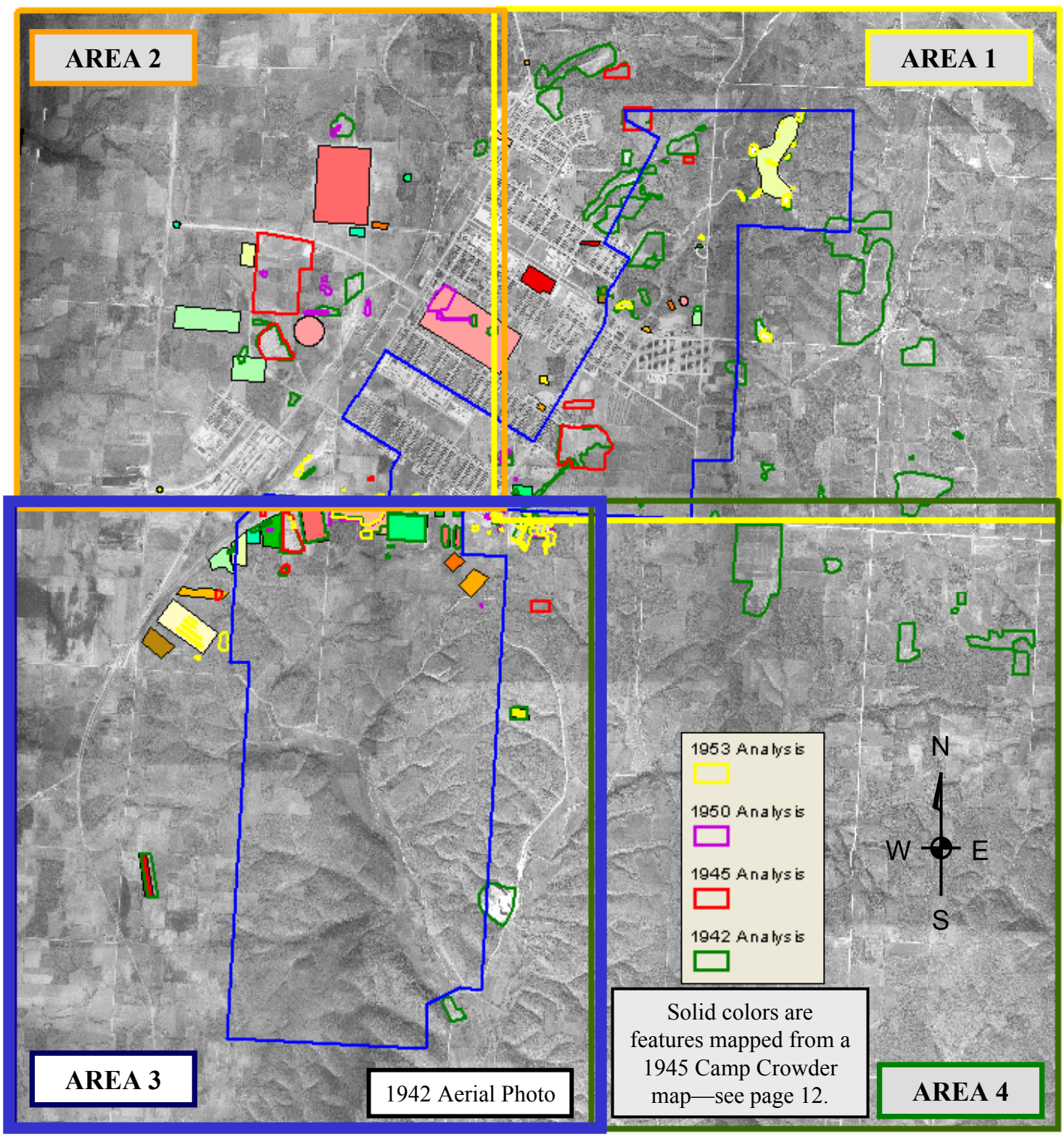


1945 Oblique Aerial Photo



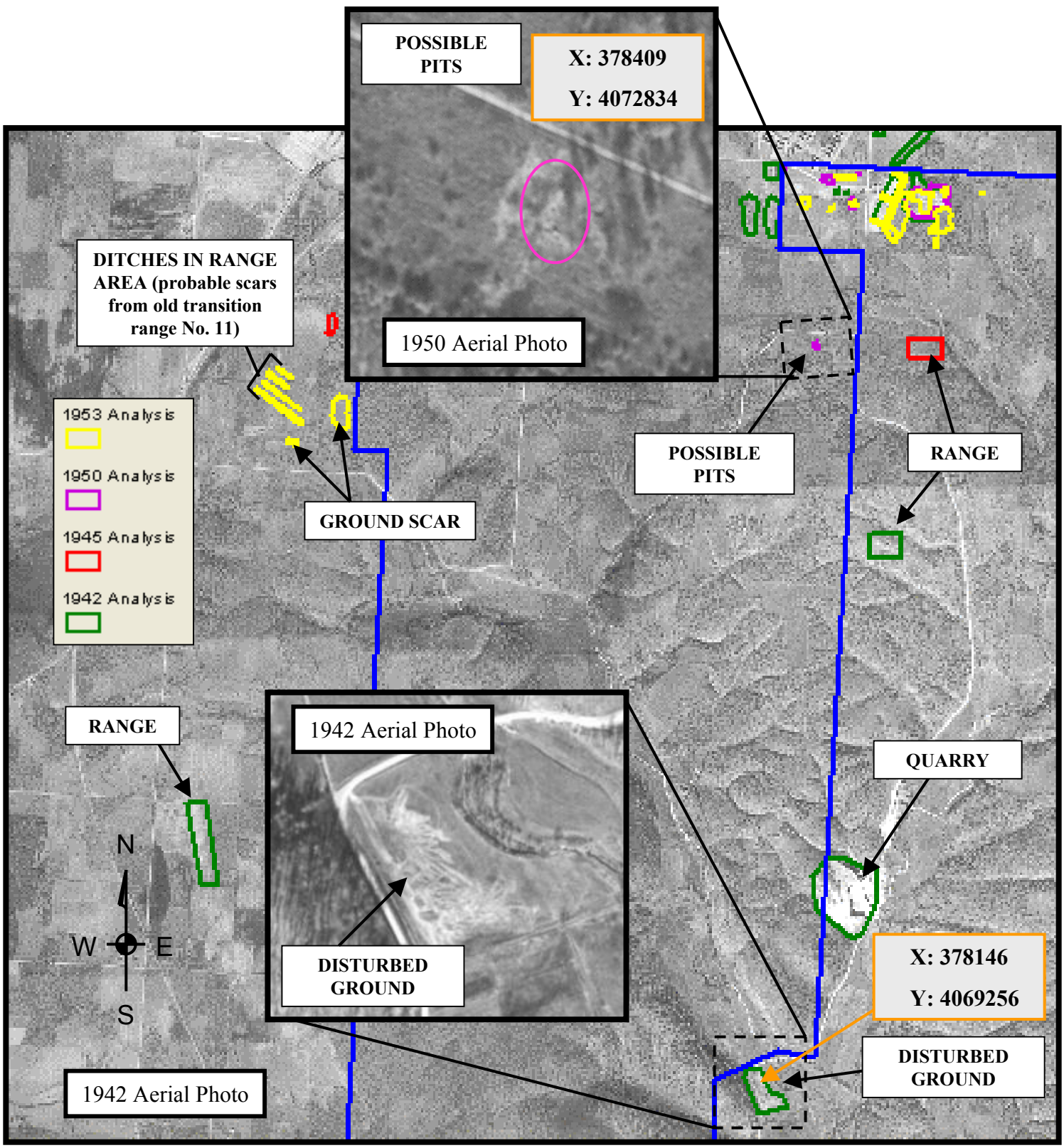
= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

1942-1953 PHOTOGRAPHIC ANALYSIS OVERVIEW—AREA 3

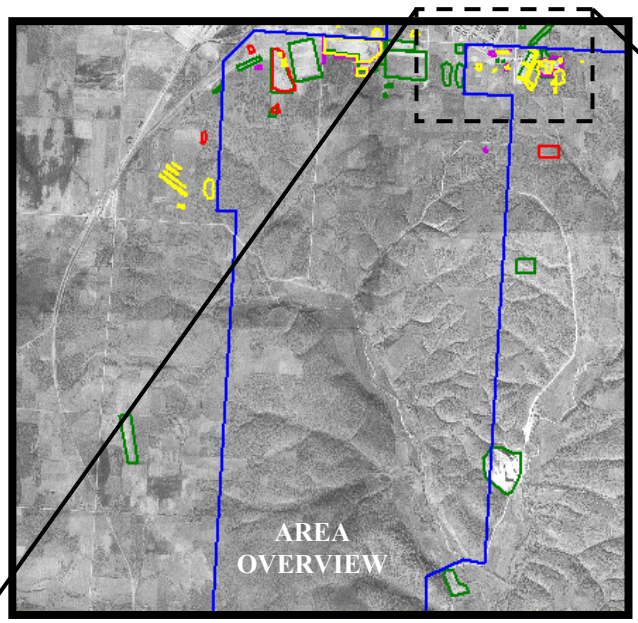


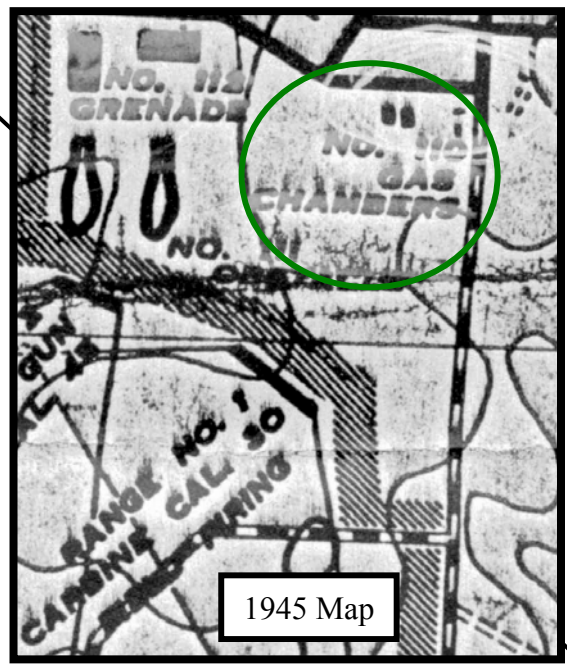
NOTE: ALL X,Y COORDINATES PRESENTED IN THE ANALYSIS ARE NAD83, UTM, ZONE 15, UNITS IN METERS

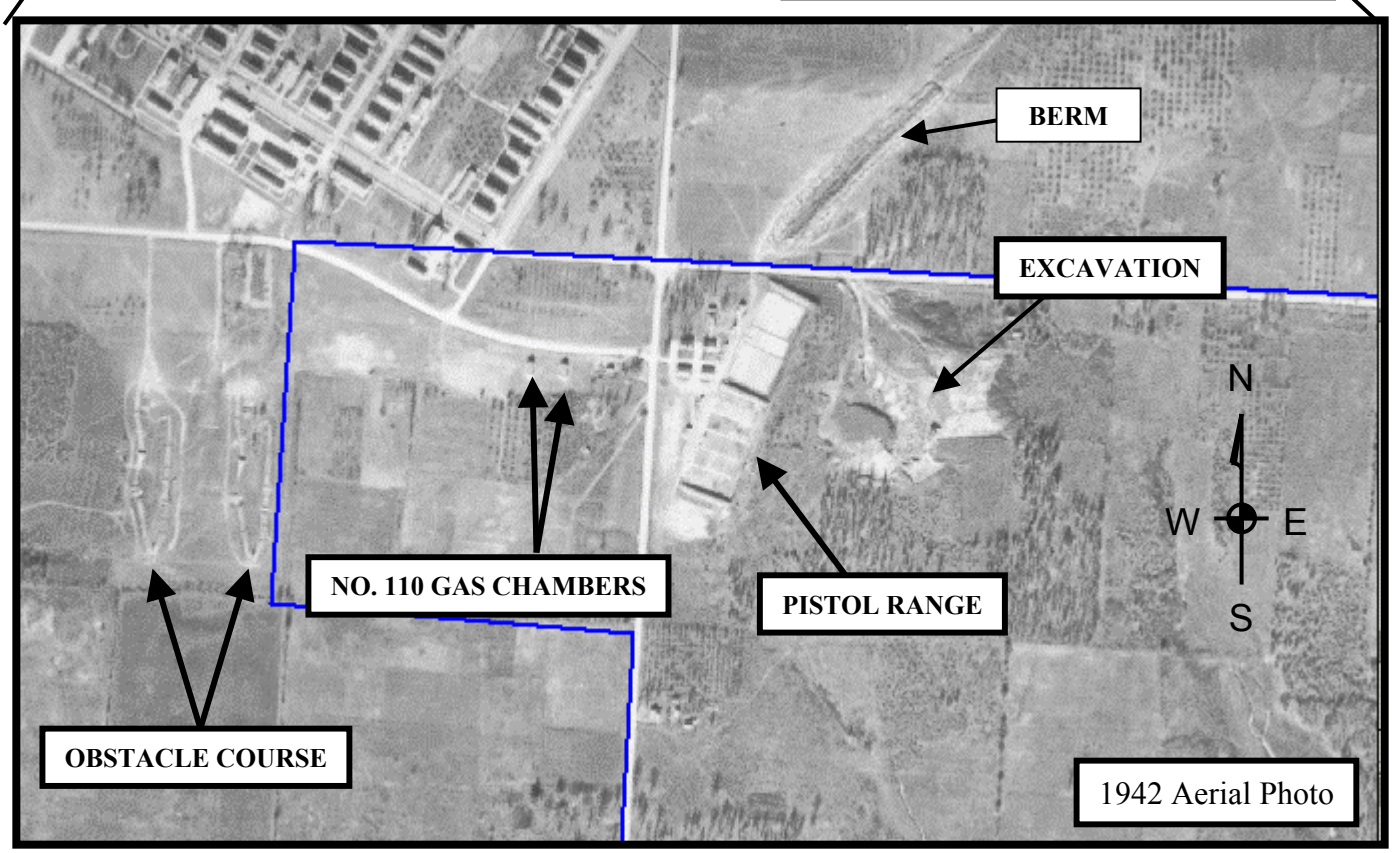
AREA 3


POSSIBLE PITS
X: 378409
Y: 4072834
1950 Aerial Photo
DITCHES IN RANGE AREA (probable scars from old transition range No. 11)
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
GROUND SCAR
POSSIBLE PITS
RANGE
RANGE
1942 Aerial Photo
DISTURBED GROUND
QUARRY
N
W
E
S
X: 378146
Y: 4069256
DISTURBED GROUND
1942 Aerial Photo

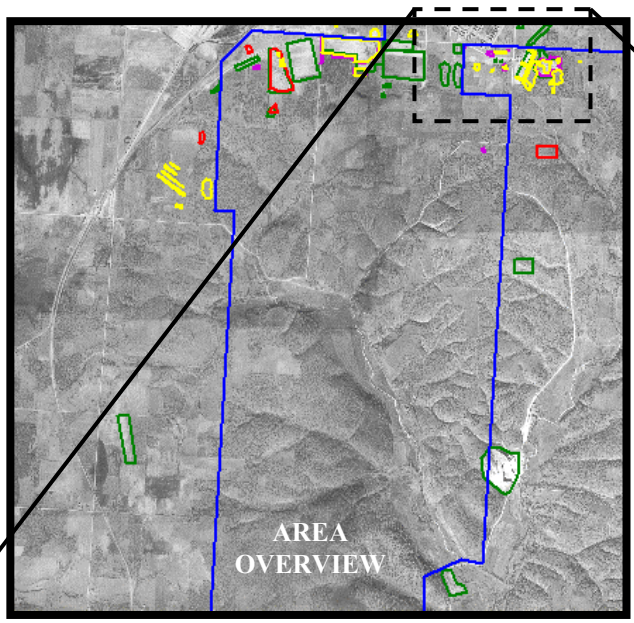
AREA 3

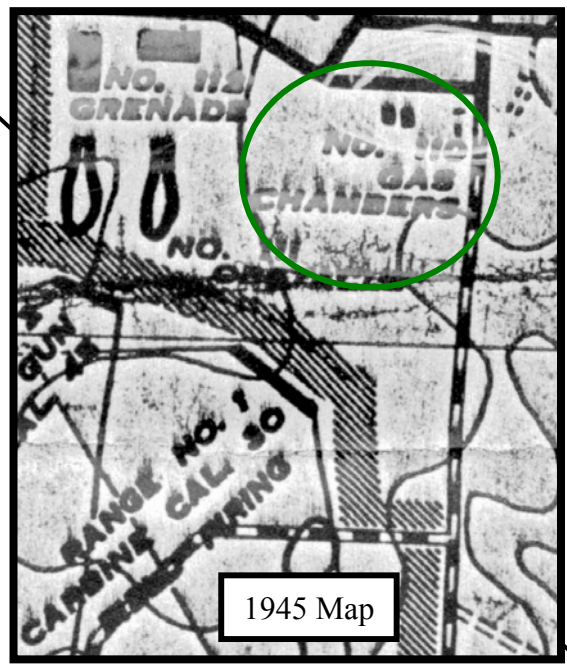

AREA
OVERVIEW

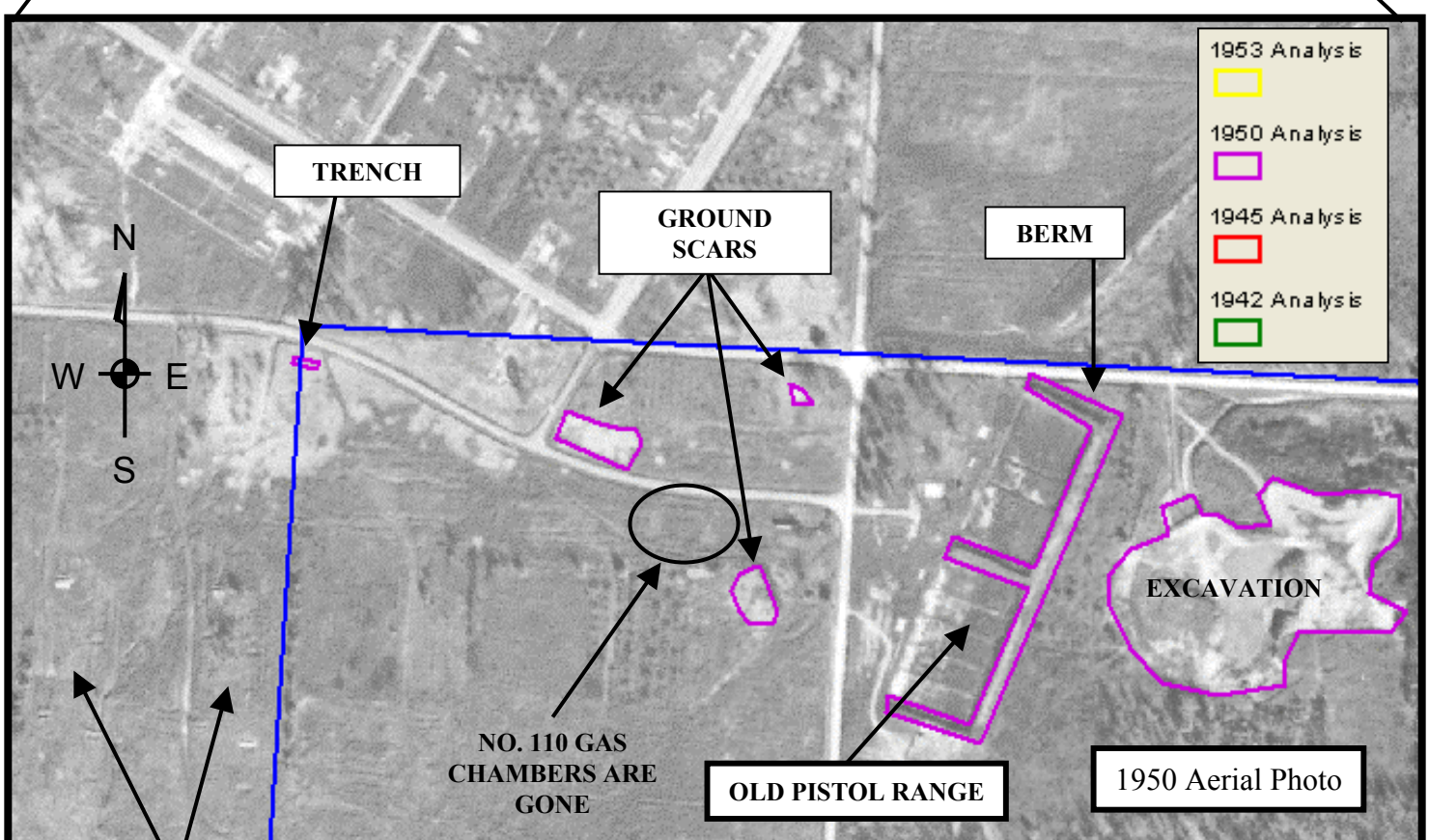

NO. 110
GRENADE
NO. 110
GAS
CHAMBERS
NO.
GUN
RANGE NO. 1
CAL .30
CARBINE
FIRING
1945 Map


BERM
EXCAVATION
N
W
E
S
NO. 110 GAS CHAMBERS
PISTOL RANGE
OBSTACLE COURSE
1942 Aerial Photo

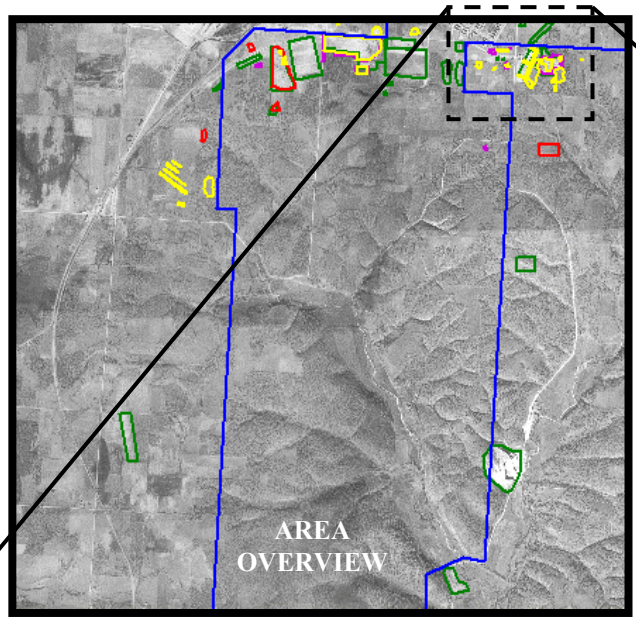
AREA 3


AREA
OVERVIEW

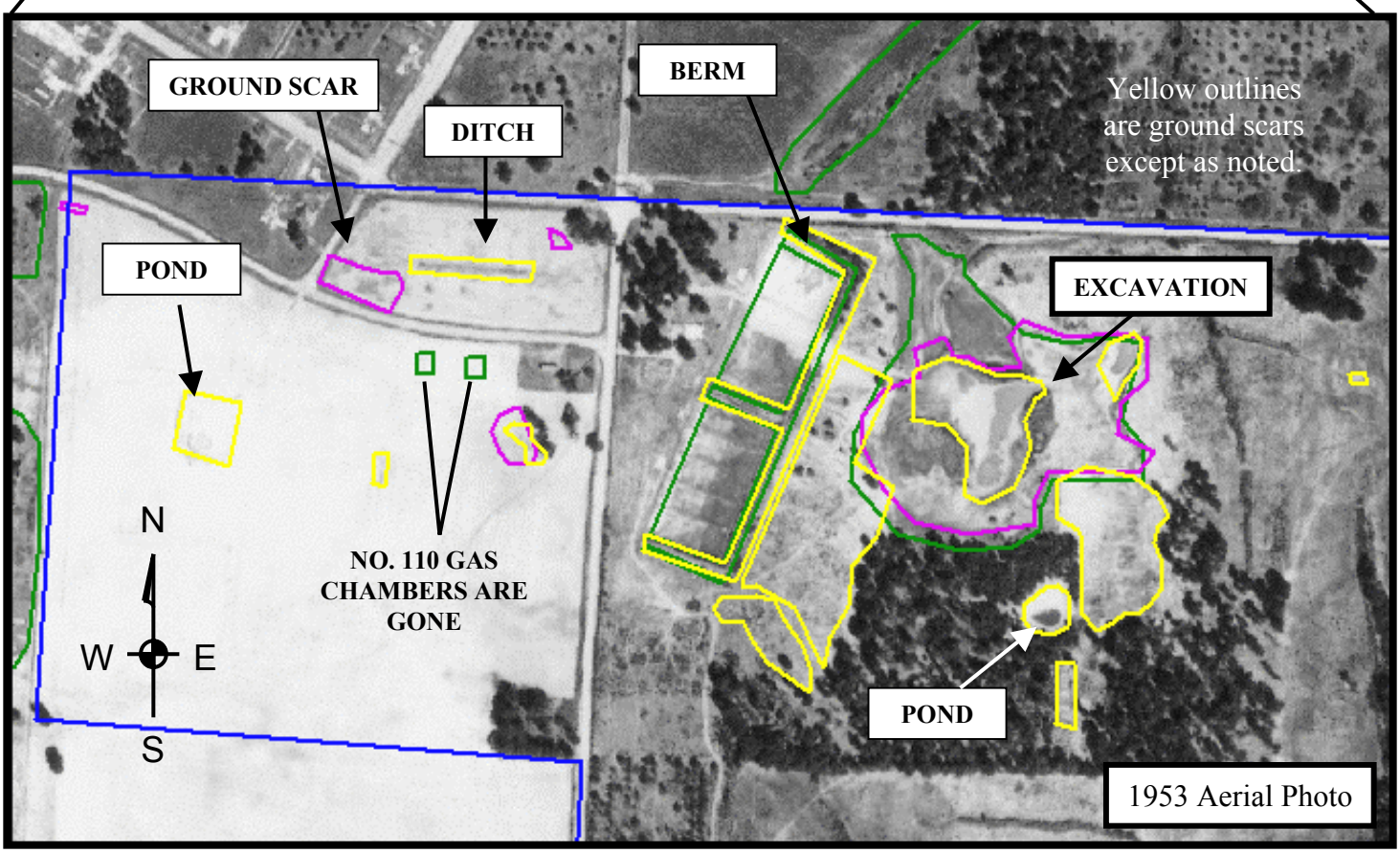

NO. 112
GRENADE
NO. 110
GAS
CHAMBERS
NO.
GUN
RANGE NO. 1
CAL .30
CARBINE
FIRING
1945 Map


1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
TRENCH
GROUND
SCARS
BERM
N
W
E
S
EXCAVATION
NO. 110 GAS
CHAMBERS ARE
GONE
OLD PISTOL RANGE
1950 Aerial Photo
OLD OBSTACLE COURSE

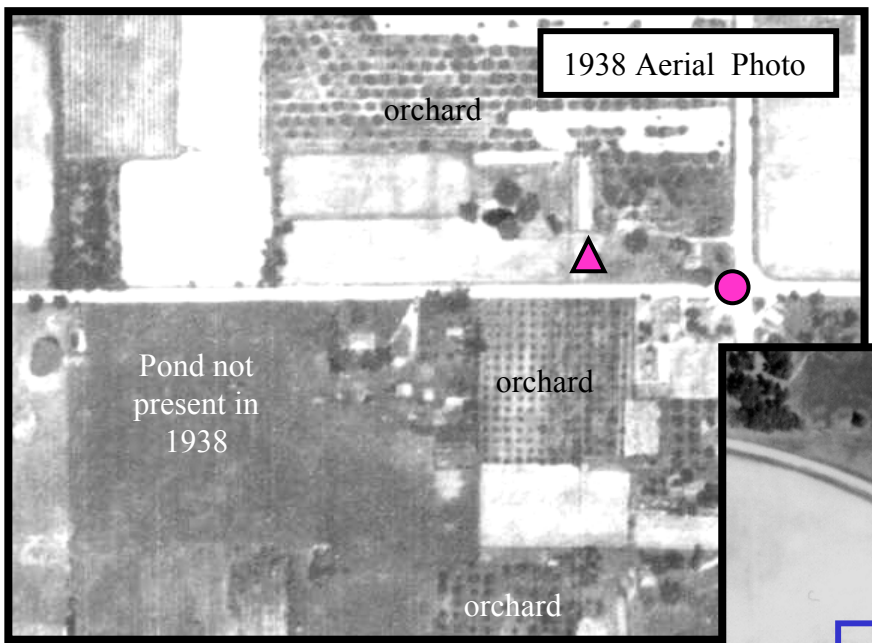
AREA 3

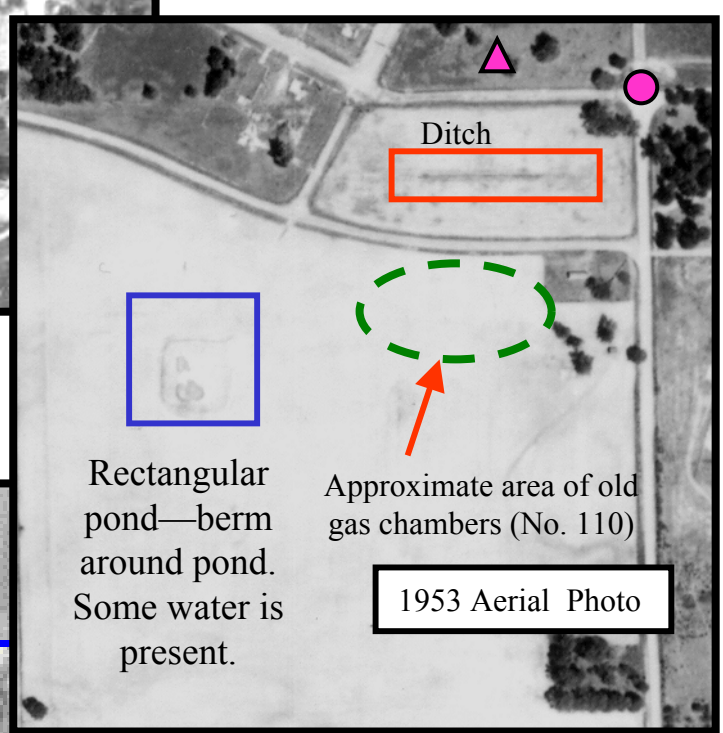


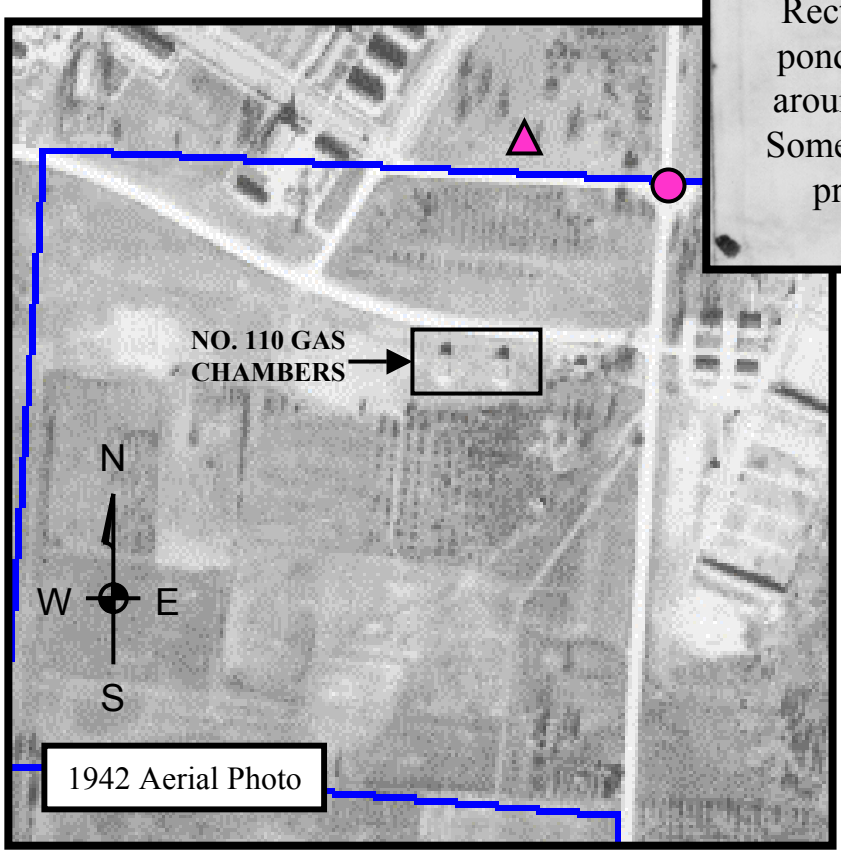
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis

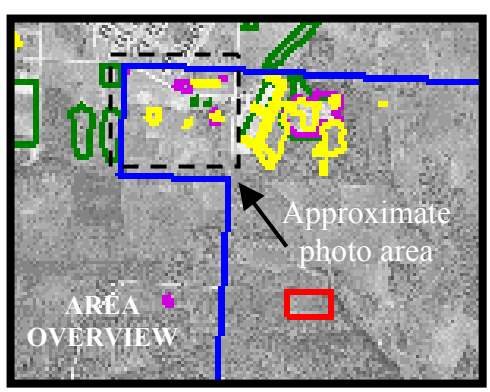


AREA 3





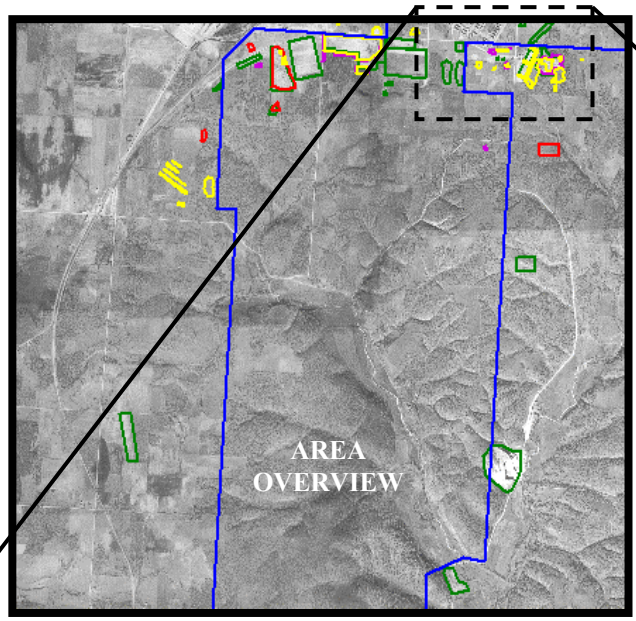




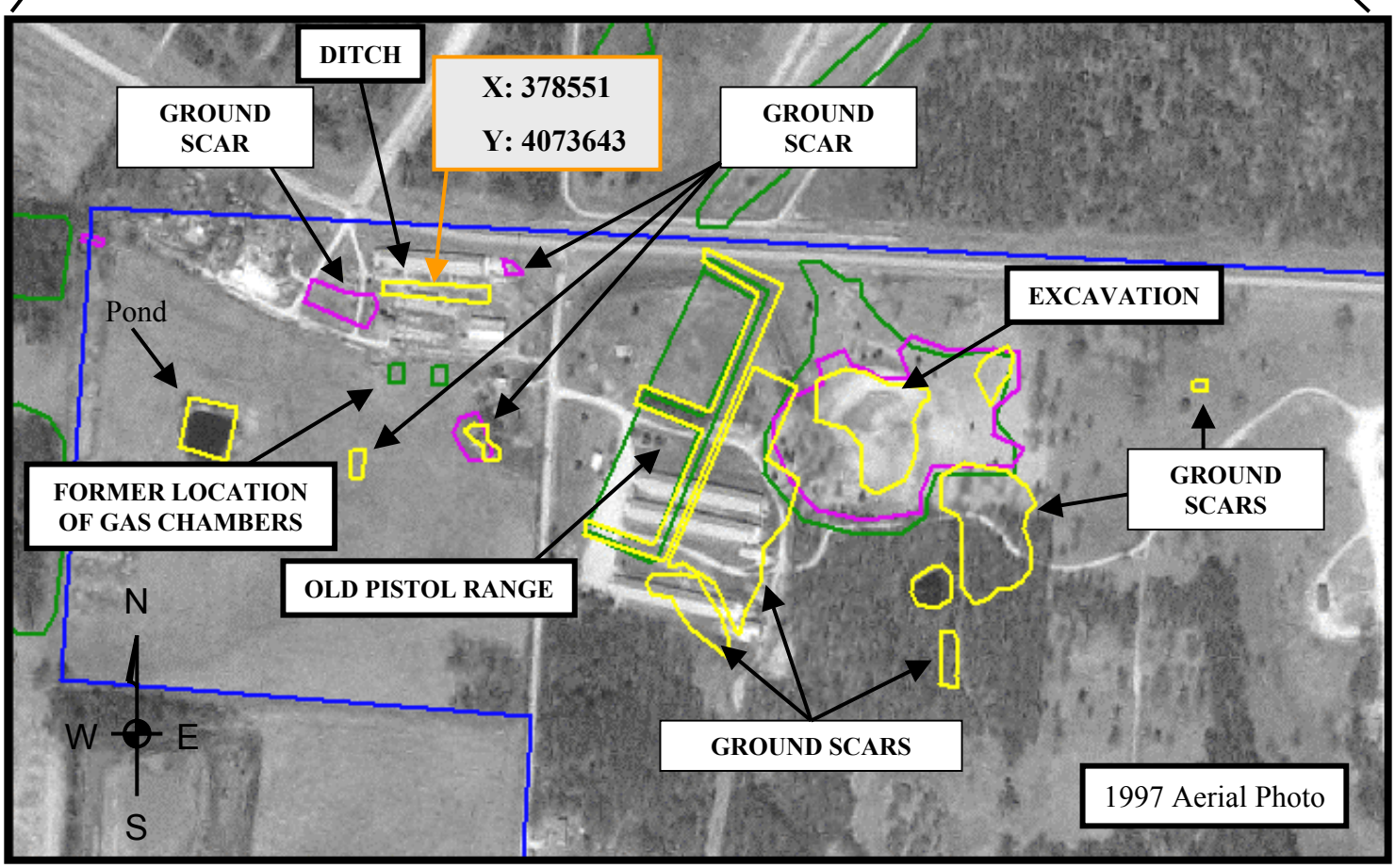
= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

AREA 3

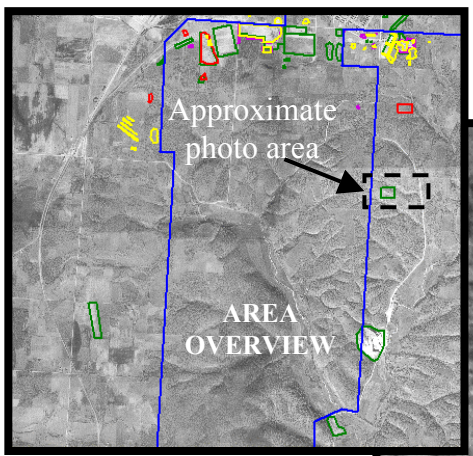
1942-1953 ANALYSIS ATOP1997 PHOTO



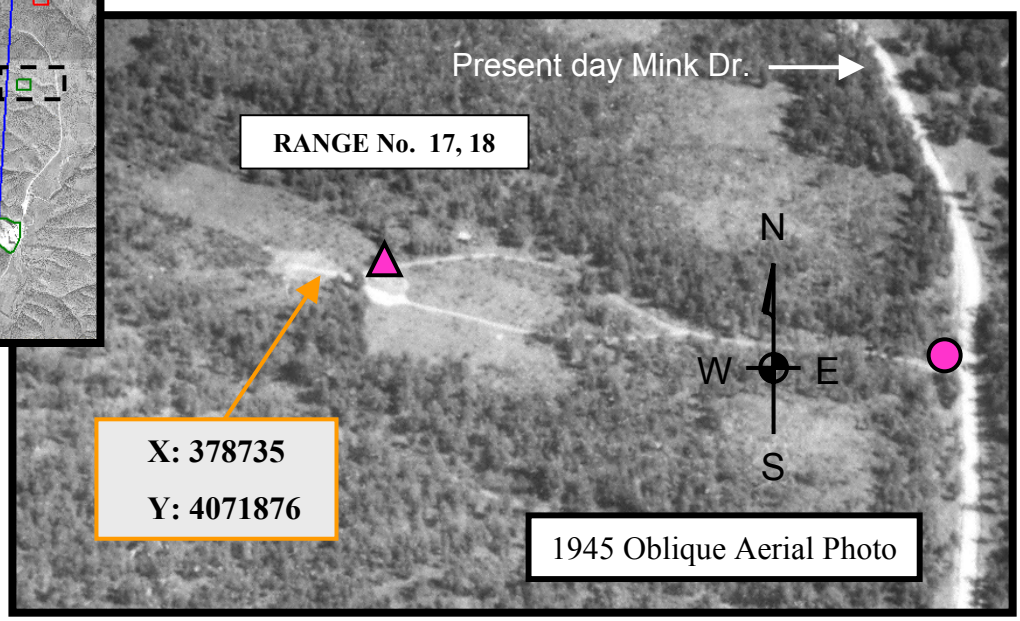
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis

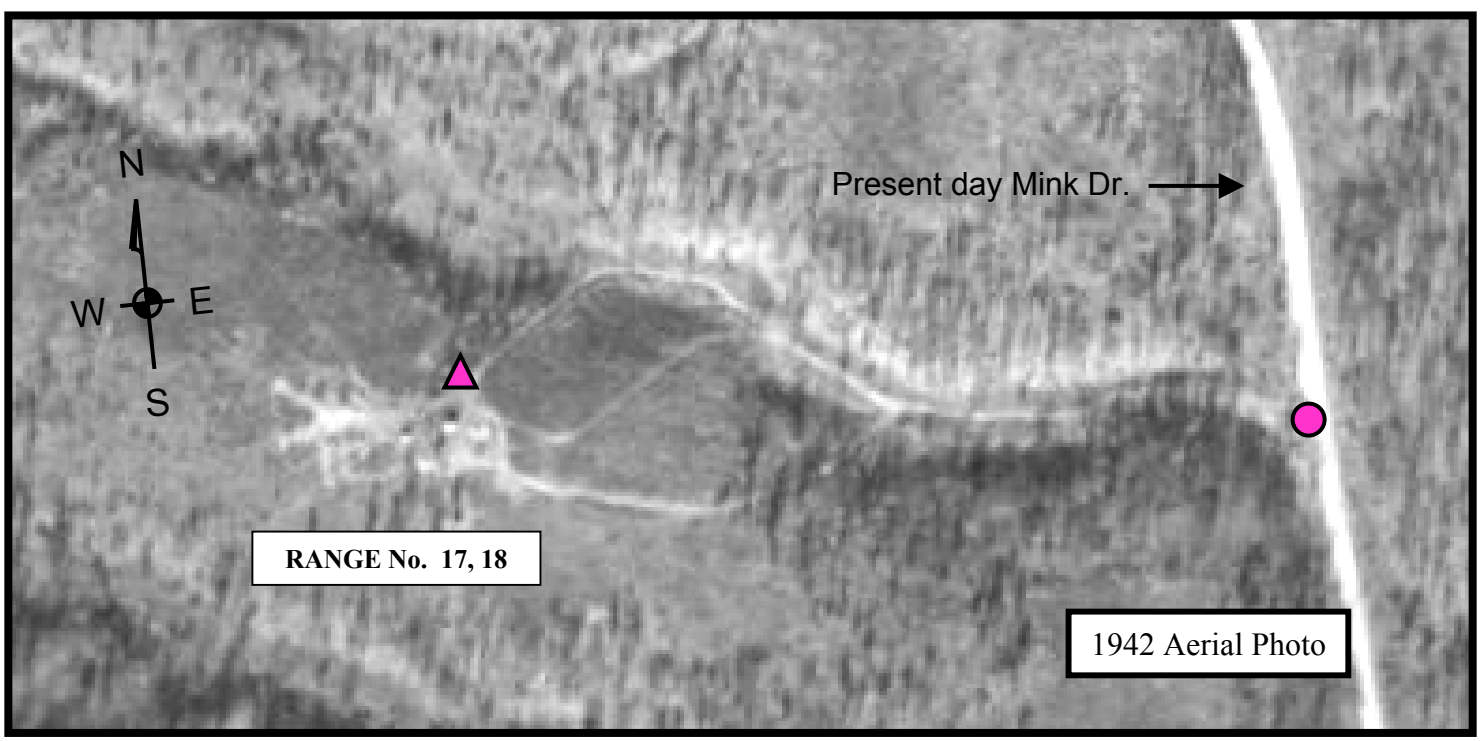


AREA 3



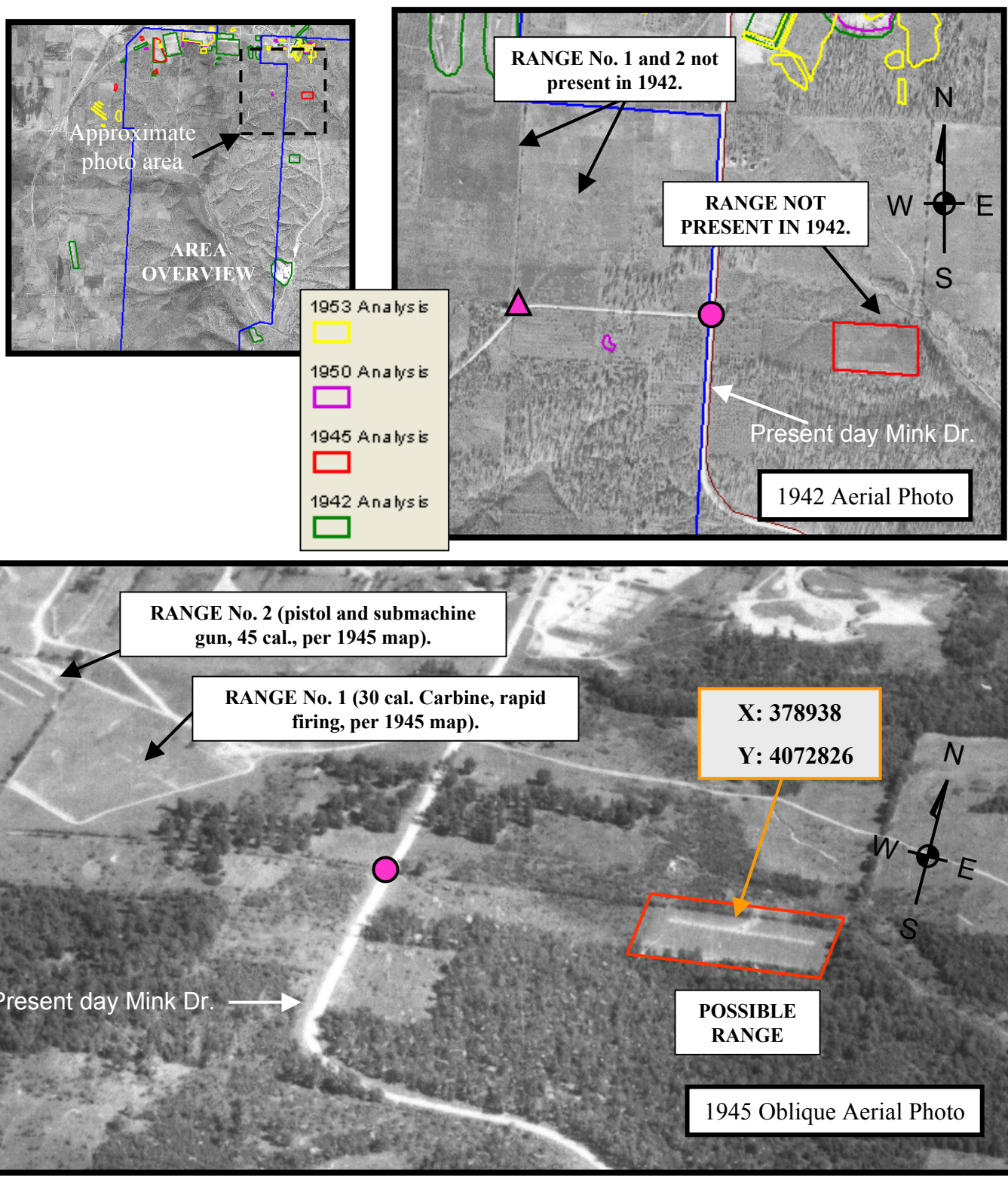
RANGE 17,18: Submachine Gun, .45 Cal. (per 1945 map).





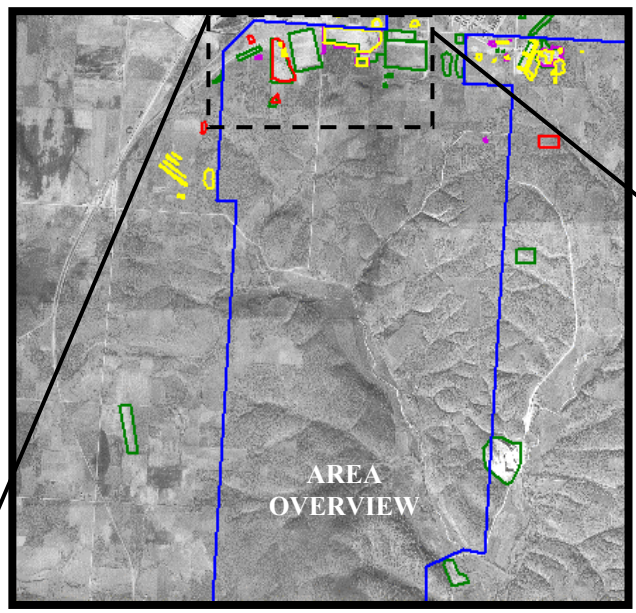
● ▲ = PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

AREA 3



= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

AREA 3

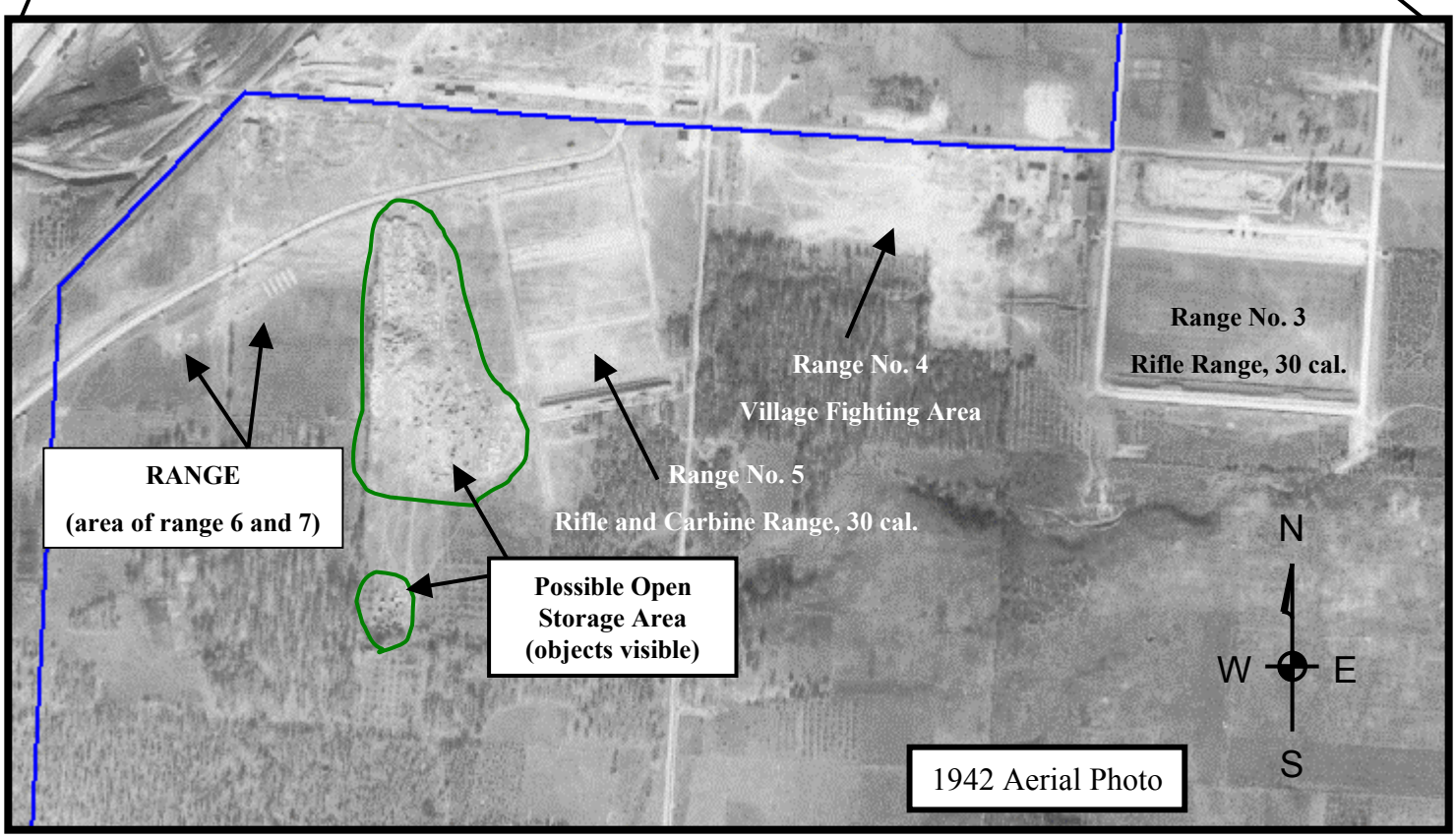


1953 Analysis

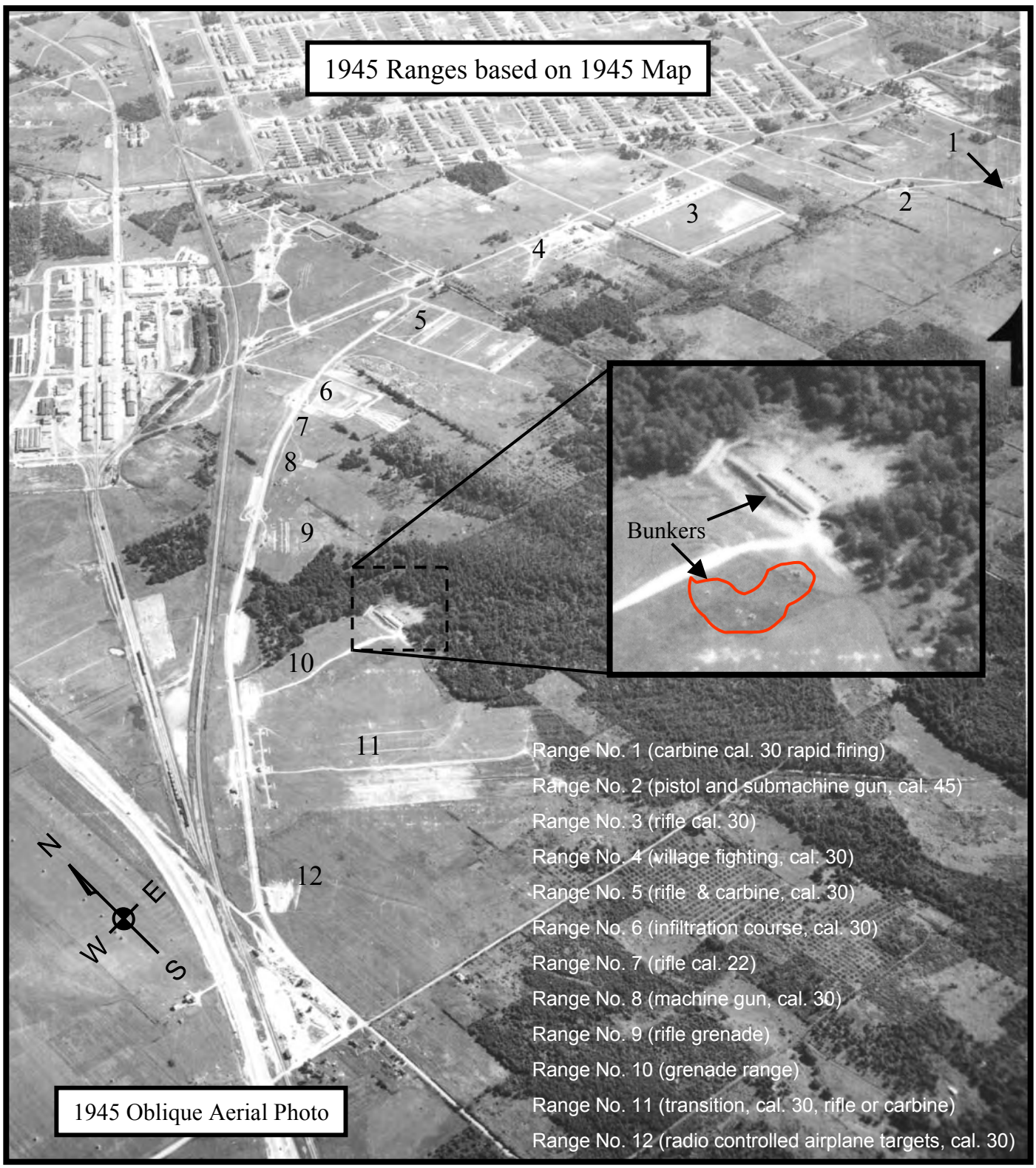
1950 Analysis

1945 Analysis

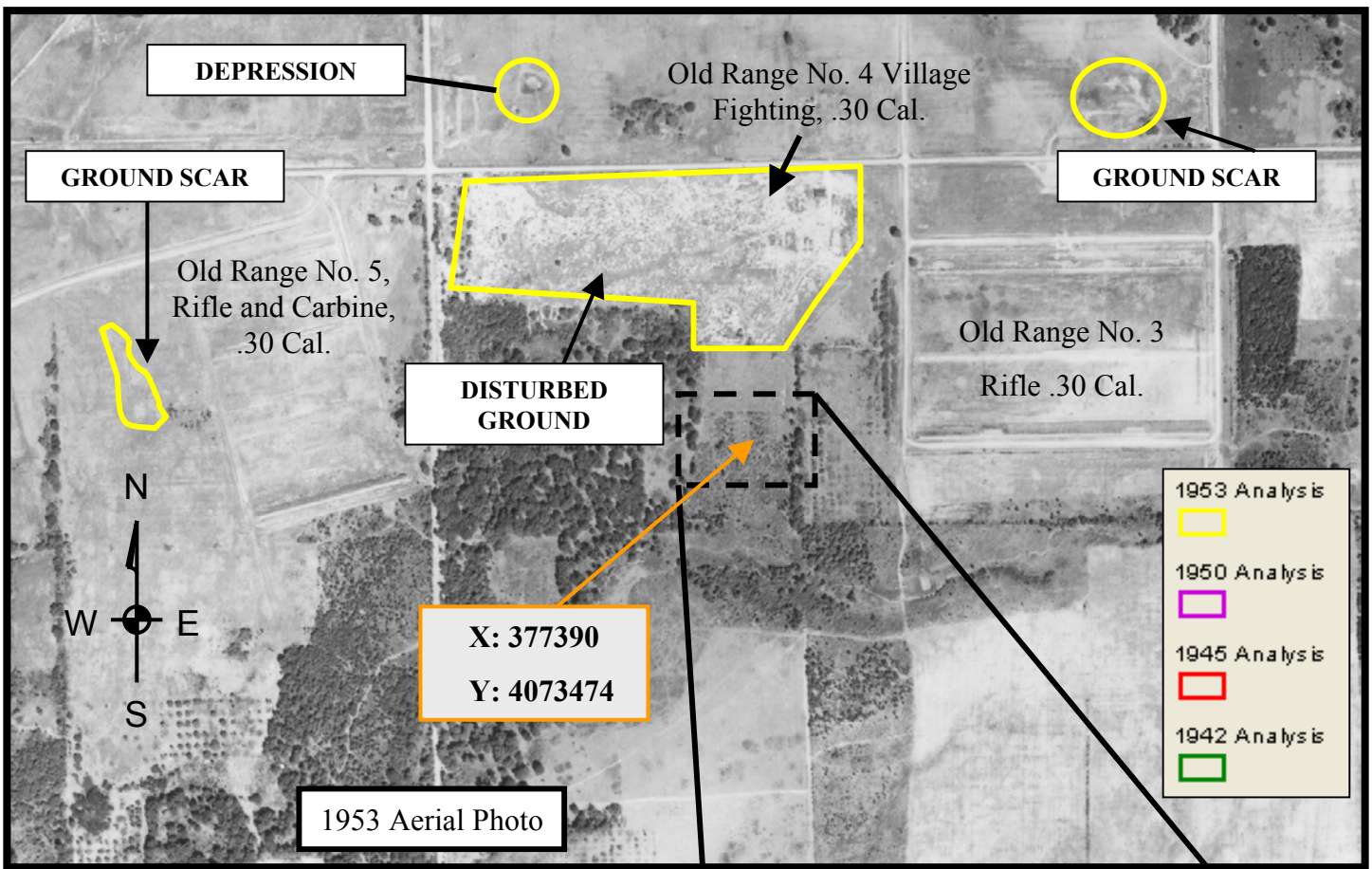
1942 Analysis

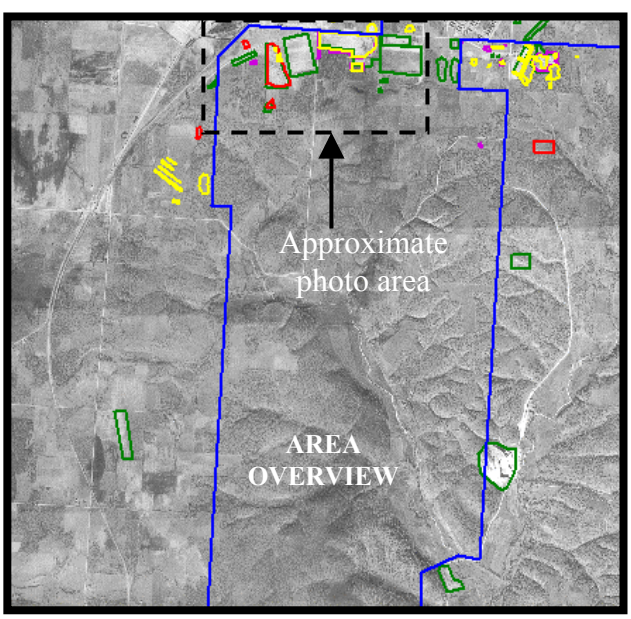


AREA 3

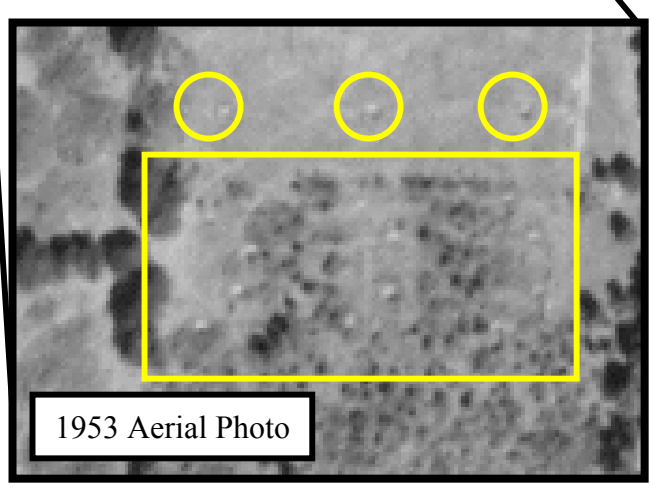

1945 Ranges based on 1945 Map
1
2
3
4
5
6
7
8
9
10
11
12
Bunkers
N
E
W
S
1945 Oblique Aerial Photo
Range No. 1 (carbine cal. 30 rapid firing)
Range No. 2 (pistol and submachine gun, cal. 45)
Range No. 3 (rifle cal. 30)
Range No. 4 (village fighting, cal. 30)
Range No. 5 (rifle & carbine, cal. 30)
Range No. 6 (infiltration course, cal. 30)
Range No. 7 (rifle cal. 22)
Range No. 8 (machine gun, cal. 30)
Range No. 9 (rifle grenade)
Range No. 10 (grenade range)
Range No. 11 (transition, cal. 30, rifle or carbine)
Range No. 12 (radio controlled airplane targets, cal. 30)

AREA 3

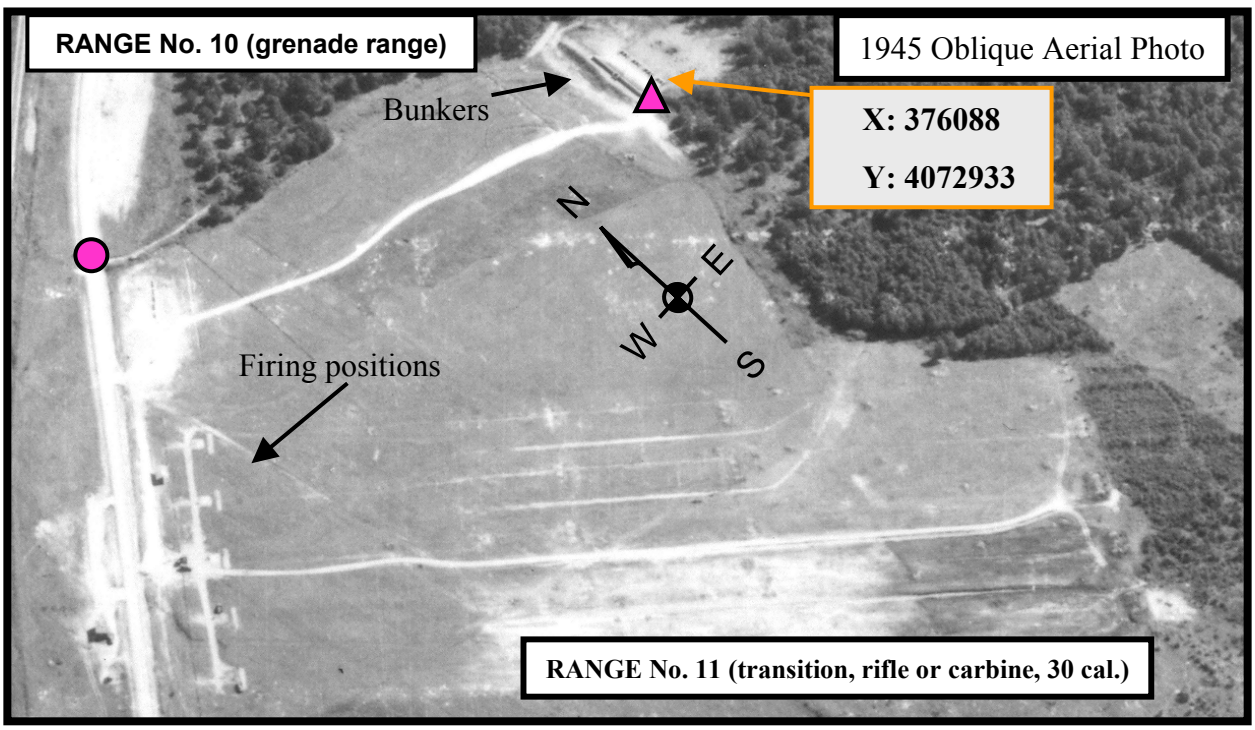


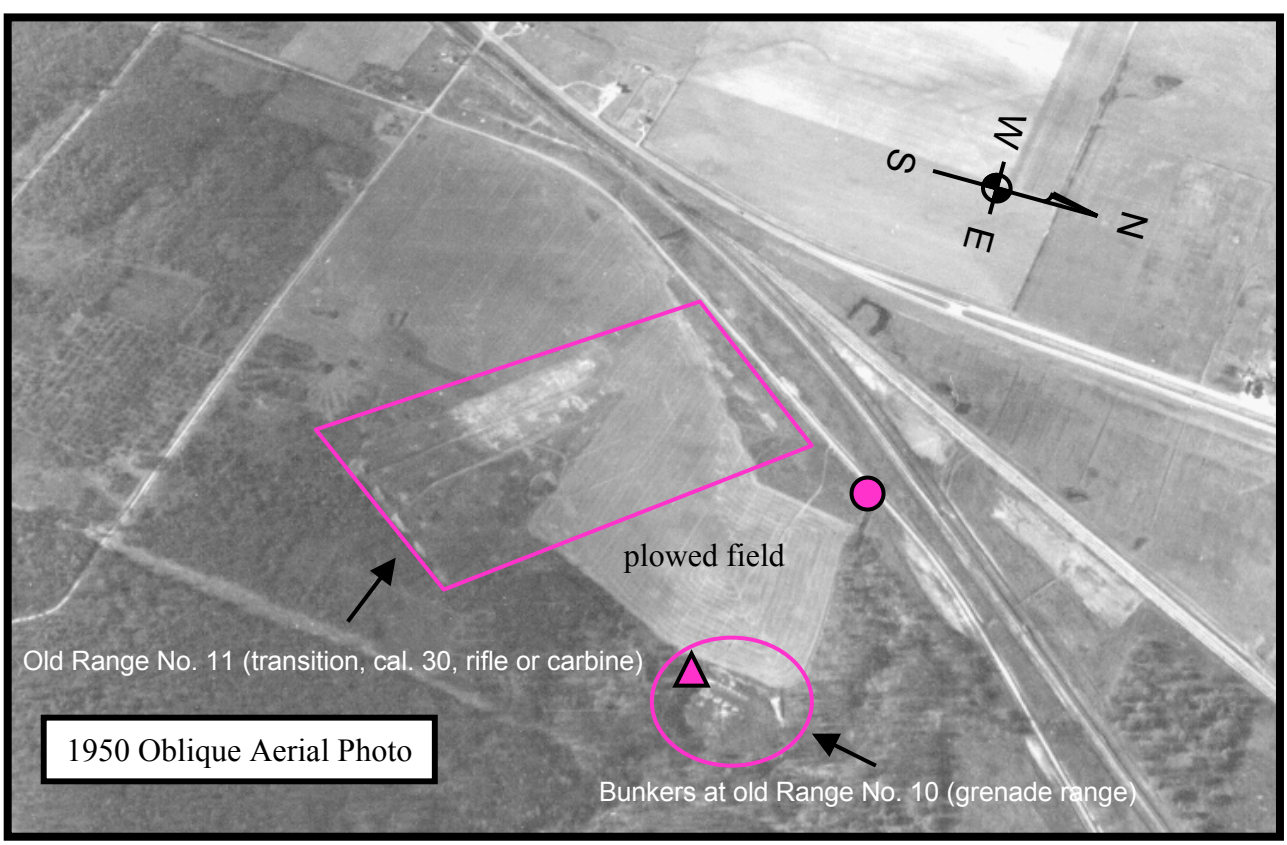


Scattered Pits/holes



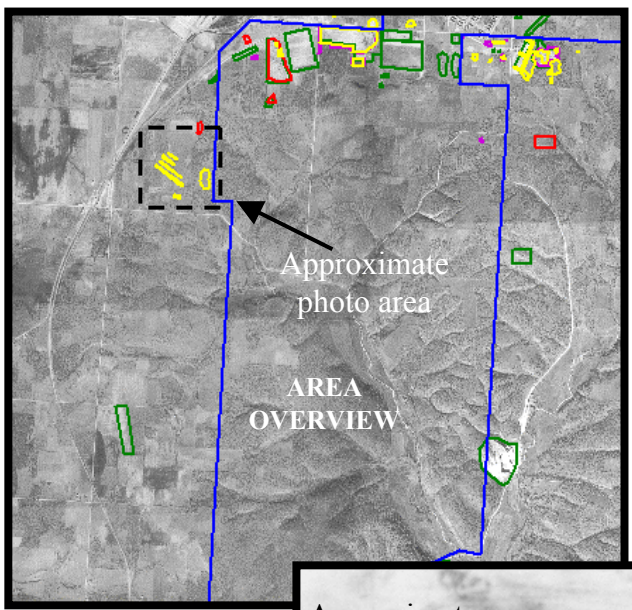
AREA 3

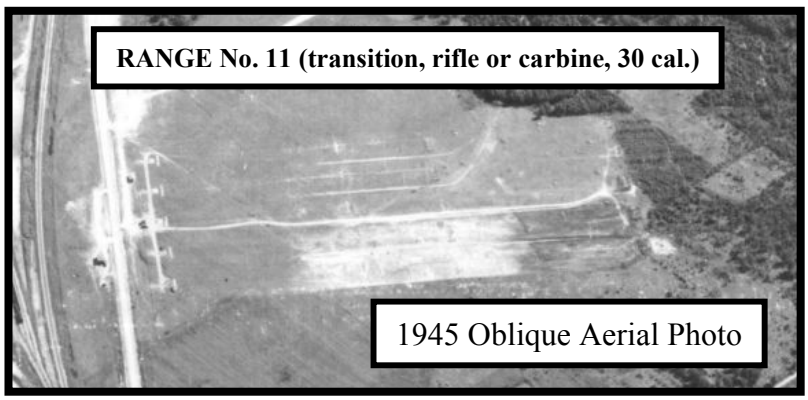


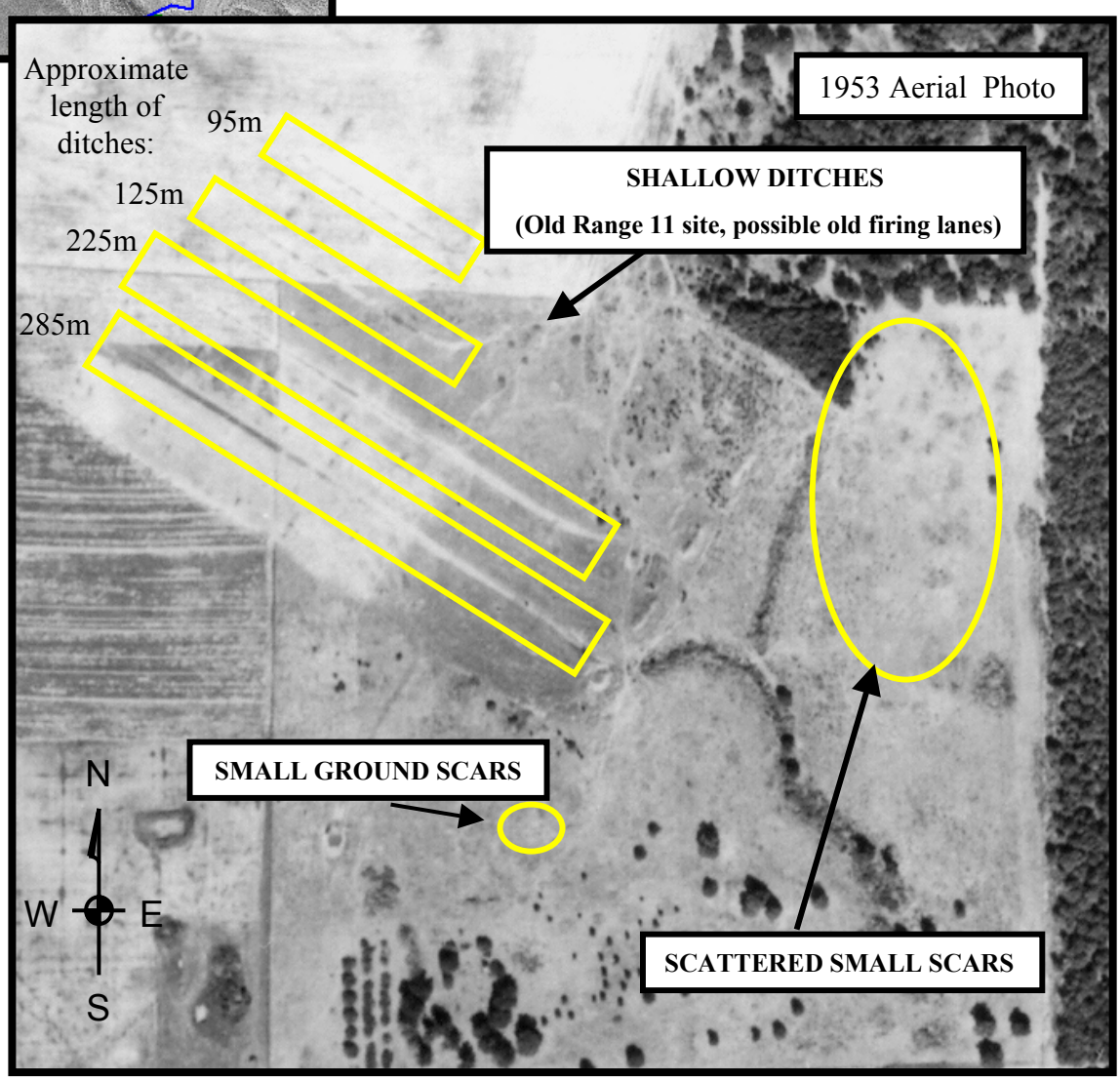


= PHOTO REFERENCE POINT (SAME POINT ON DIFFERENT PHOTOS)

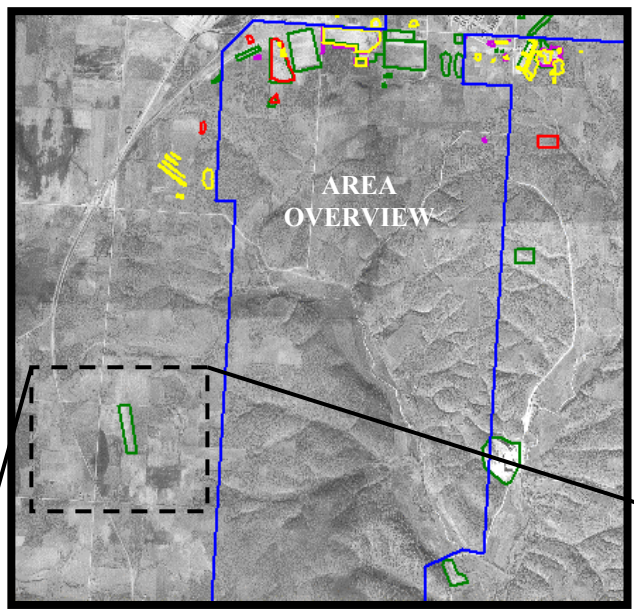
AREA 3

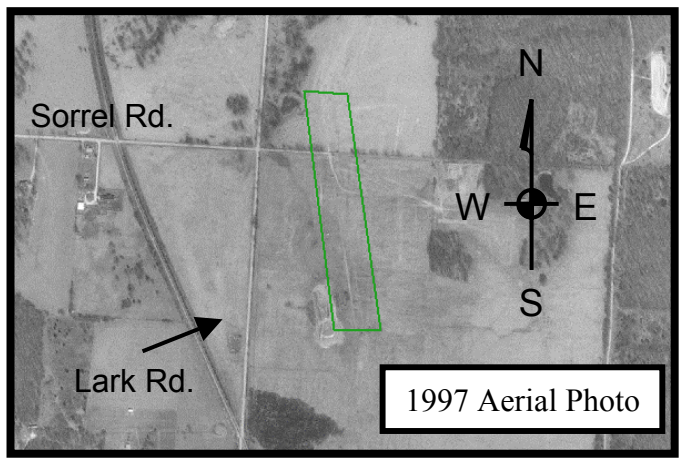

Approximate
photo area
AREA
OVERVIEW

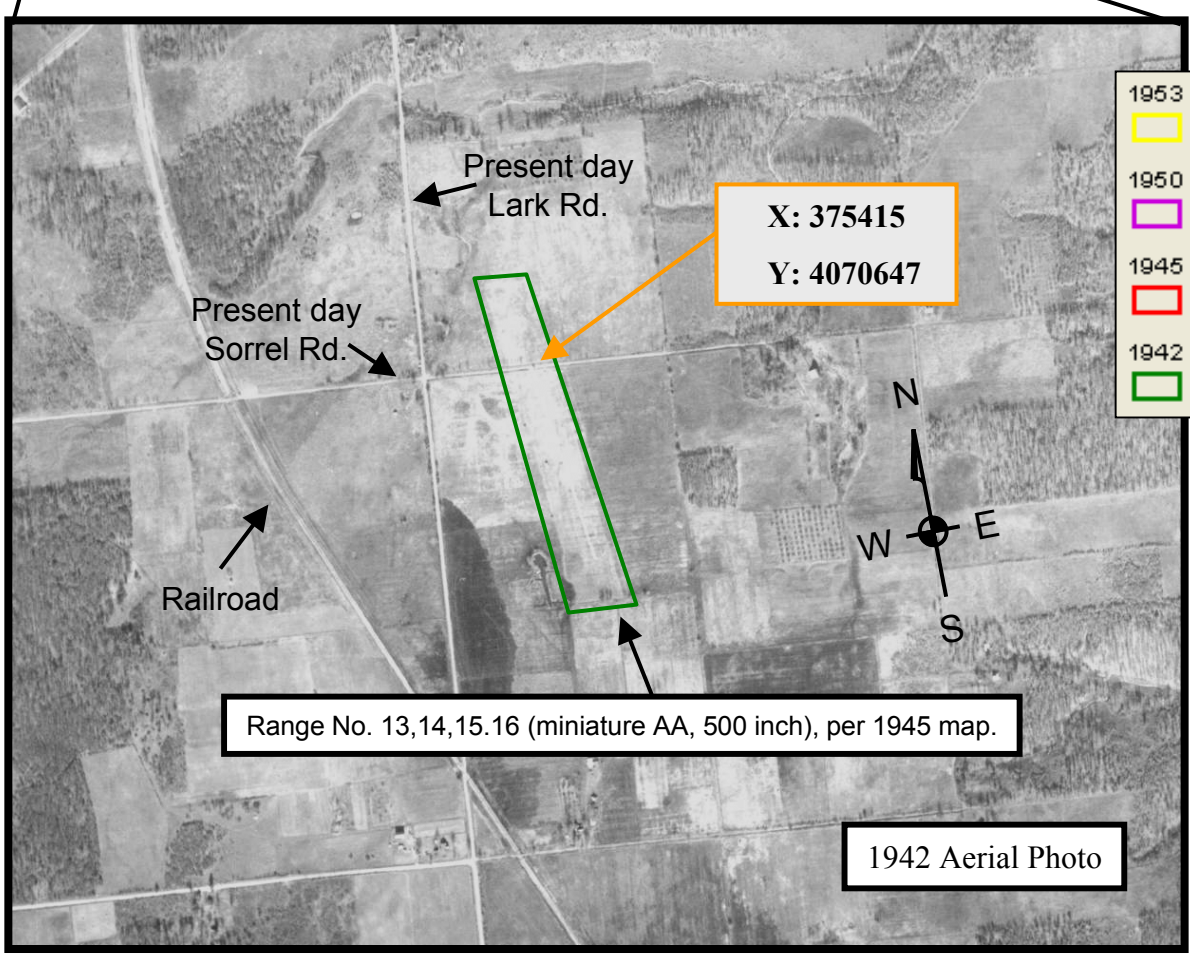

RANGE No. 11 (transition, rifle or carbine, 30 cal.)
1945 Oblique Aerial Photo


1953 Aerial Photo
Approximate
length of
ditches:
95m
125m
225m
285m
SHALLOW DITCHES
(Old Range 11 site, possible old firing lanes)
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
N
W
E
S
SMALL GROUND SCARS
SCATTERED SMALL SCARS

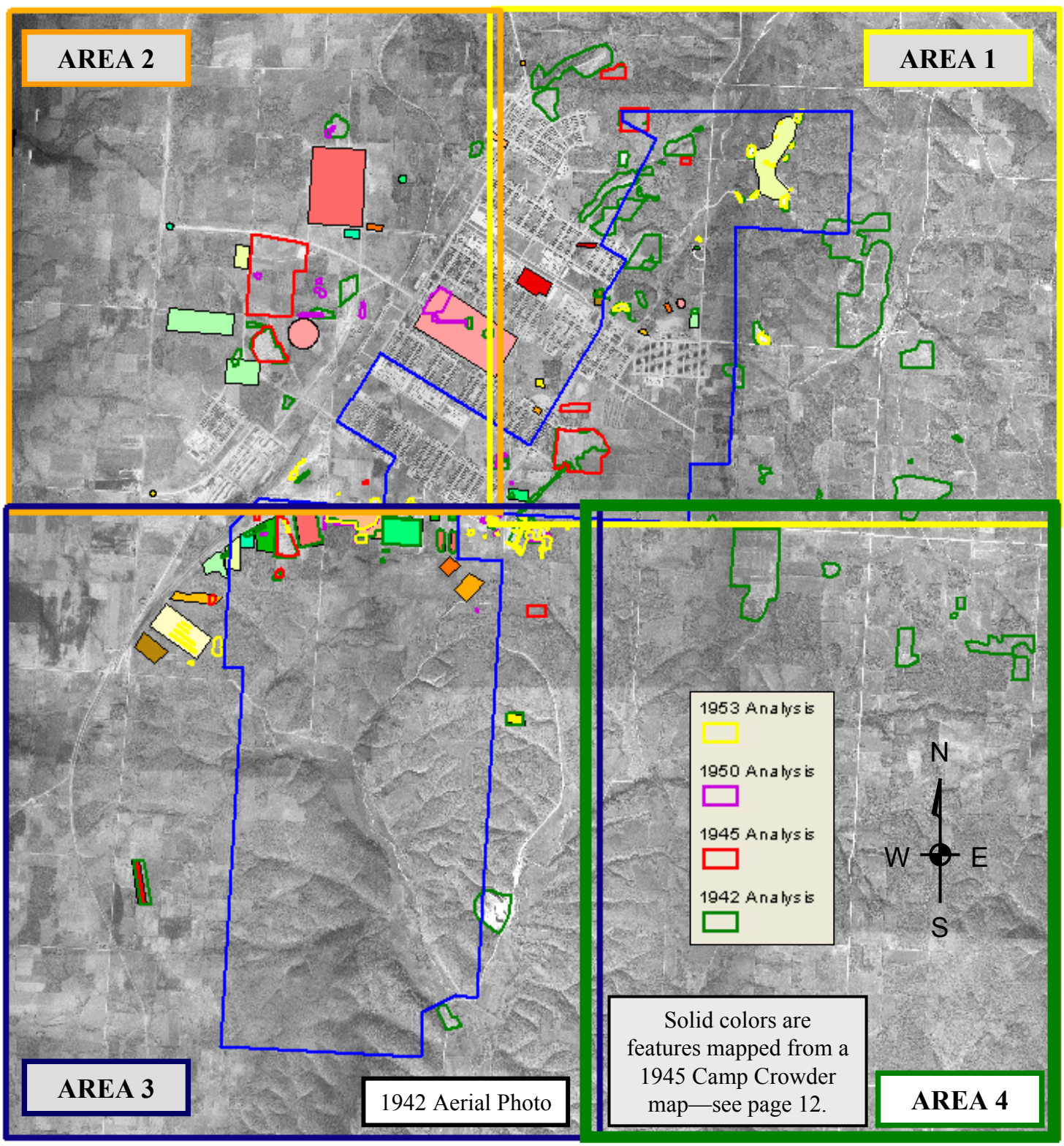
AREA 3


AREA
OVERVIEW


Sorrel Rd.
Lark Rd.
N
W
E
S
1997 Aerial Photo

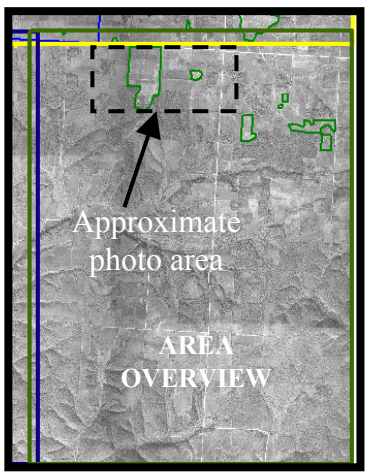

Present day
Lark Rd.
Present day
Sorrel Rd.
X: 375415
Y: 4070647
1953 Analysis
1950 Analysis
1945 Analysis
1942 Analysis
N
W
E
S
Railroad
Range No. 13,14,15.16 (miniature AA, 500 inch), per 1945 map.
1942 Aerial Photo

1942-1953 PHOTOGRAPHIC ANALYSIS OVERVIEW—AREA 4

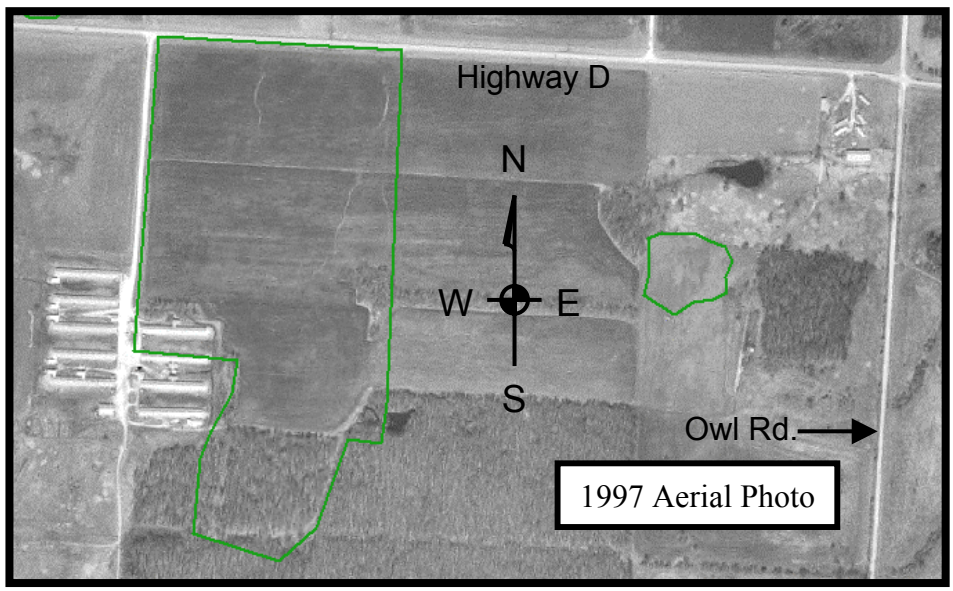


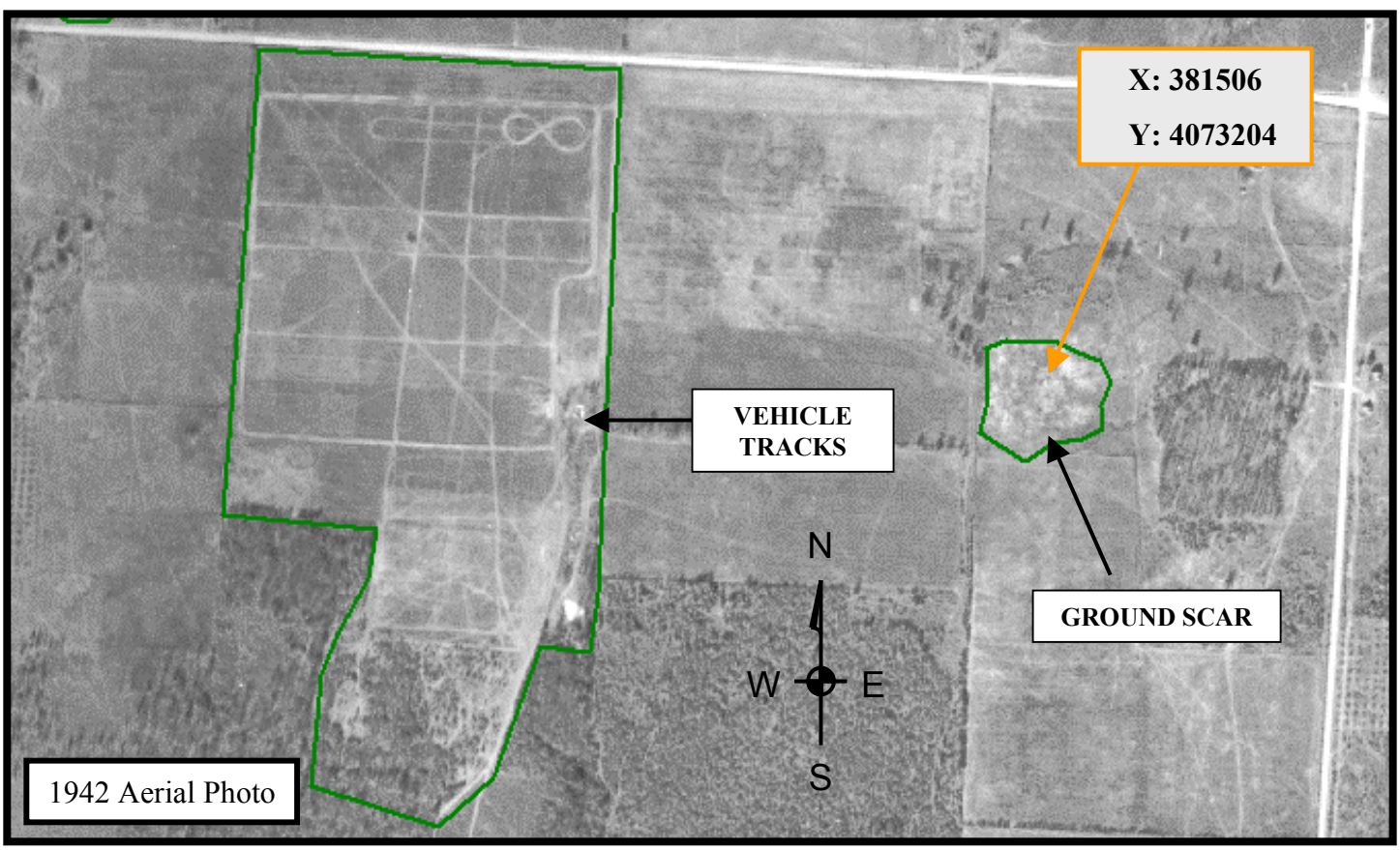
NOTE: ALL X,Y COORDINATES PRESENTED IN THE ANALYSIS ARE NAD83, UTM, ZONE 15, UNITS IN METERS

AREA 4

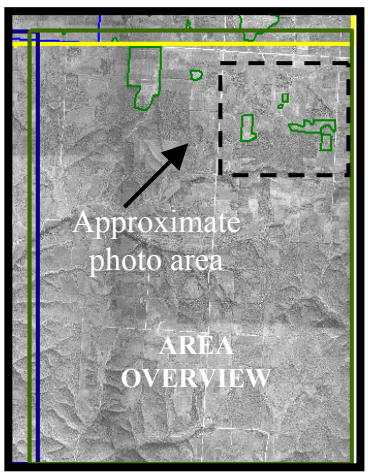


1942 Analysis

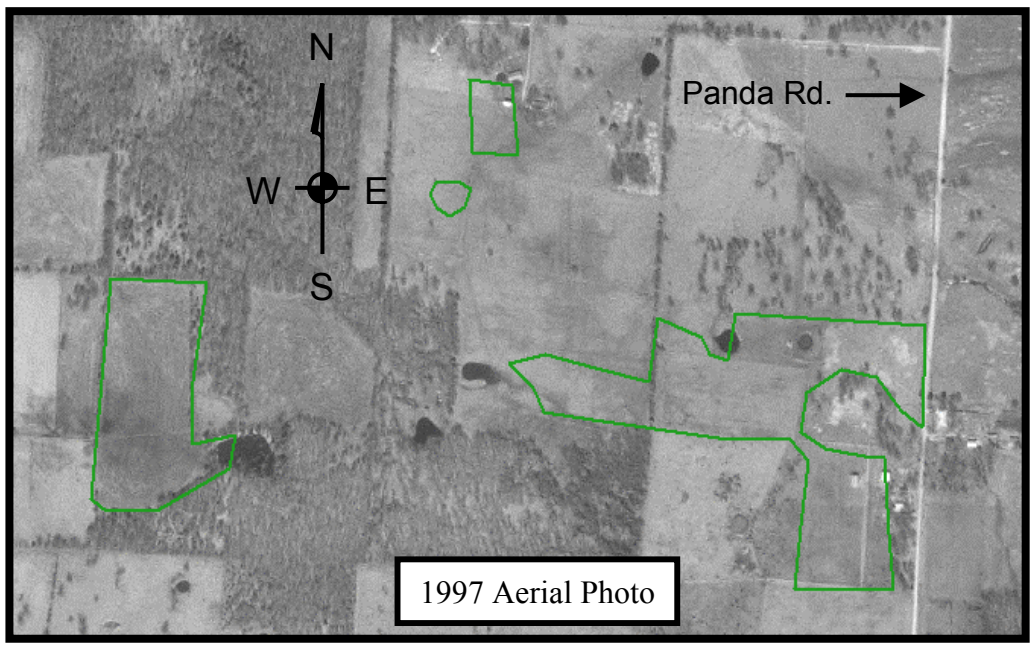


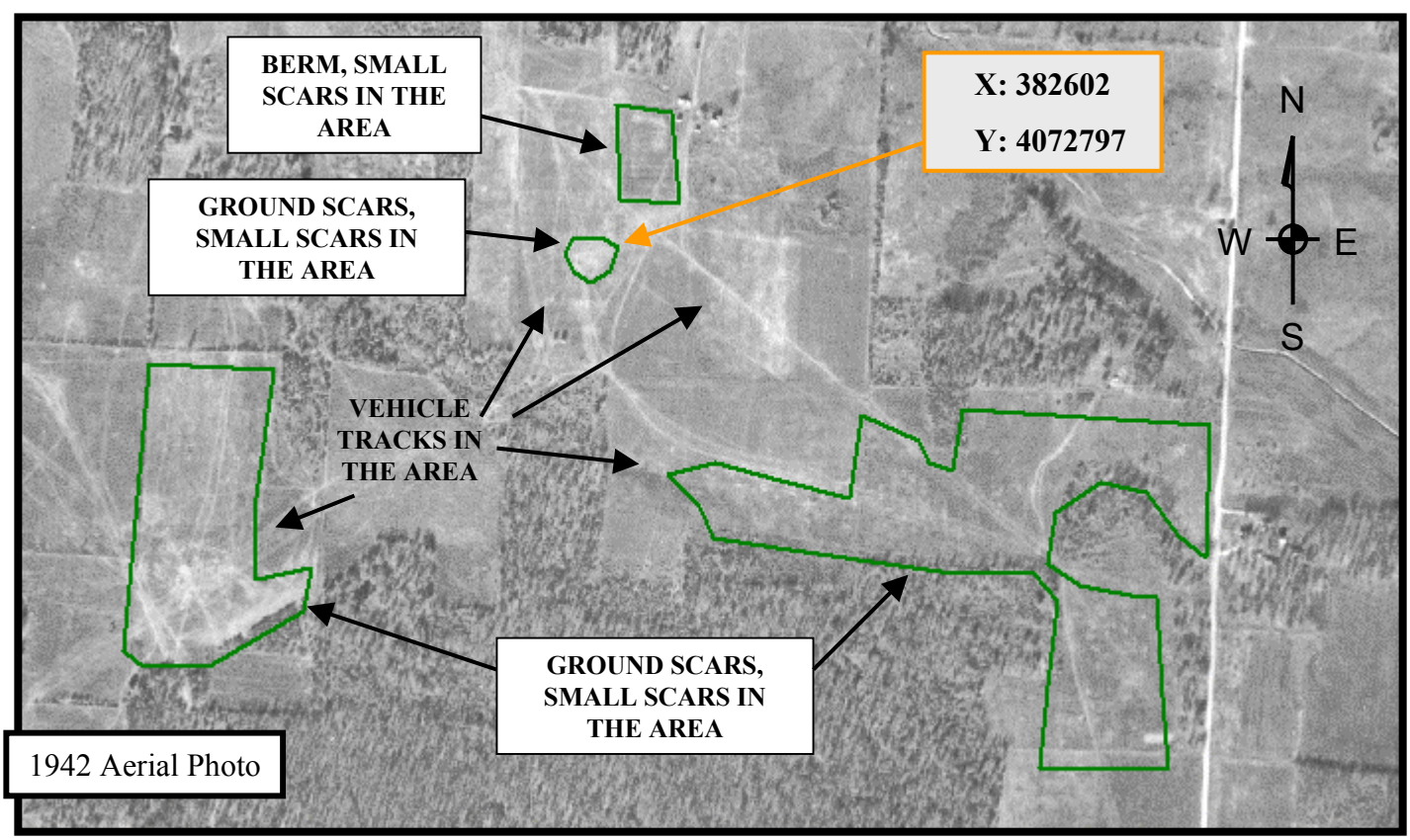


AREA 4

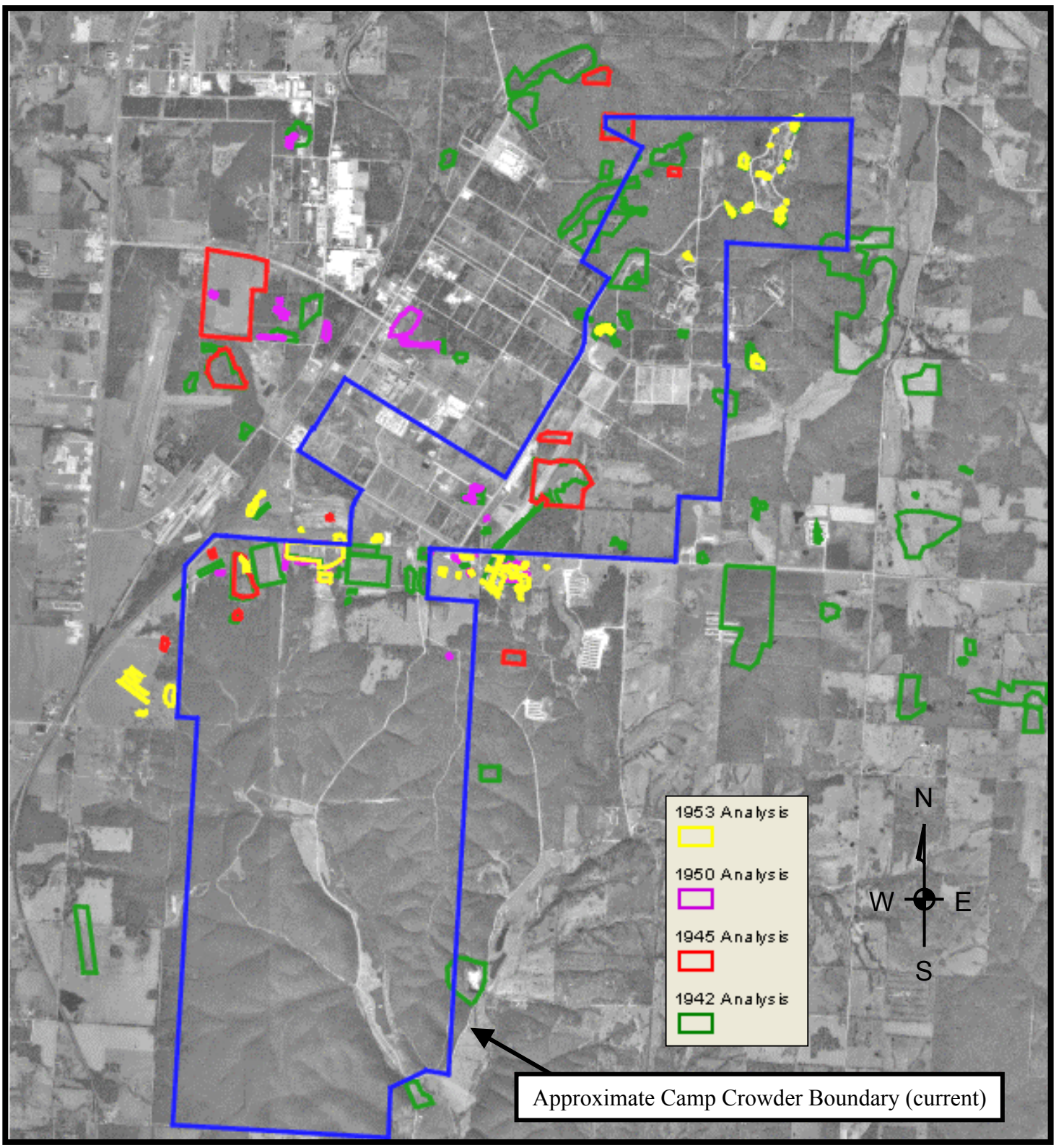


1942 Analysis

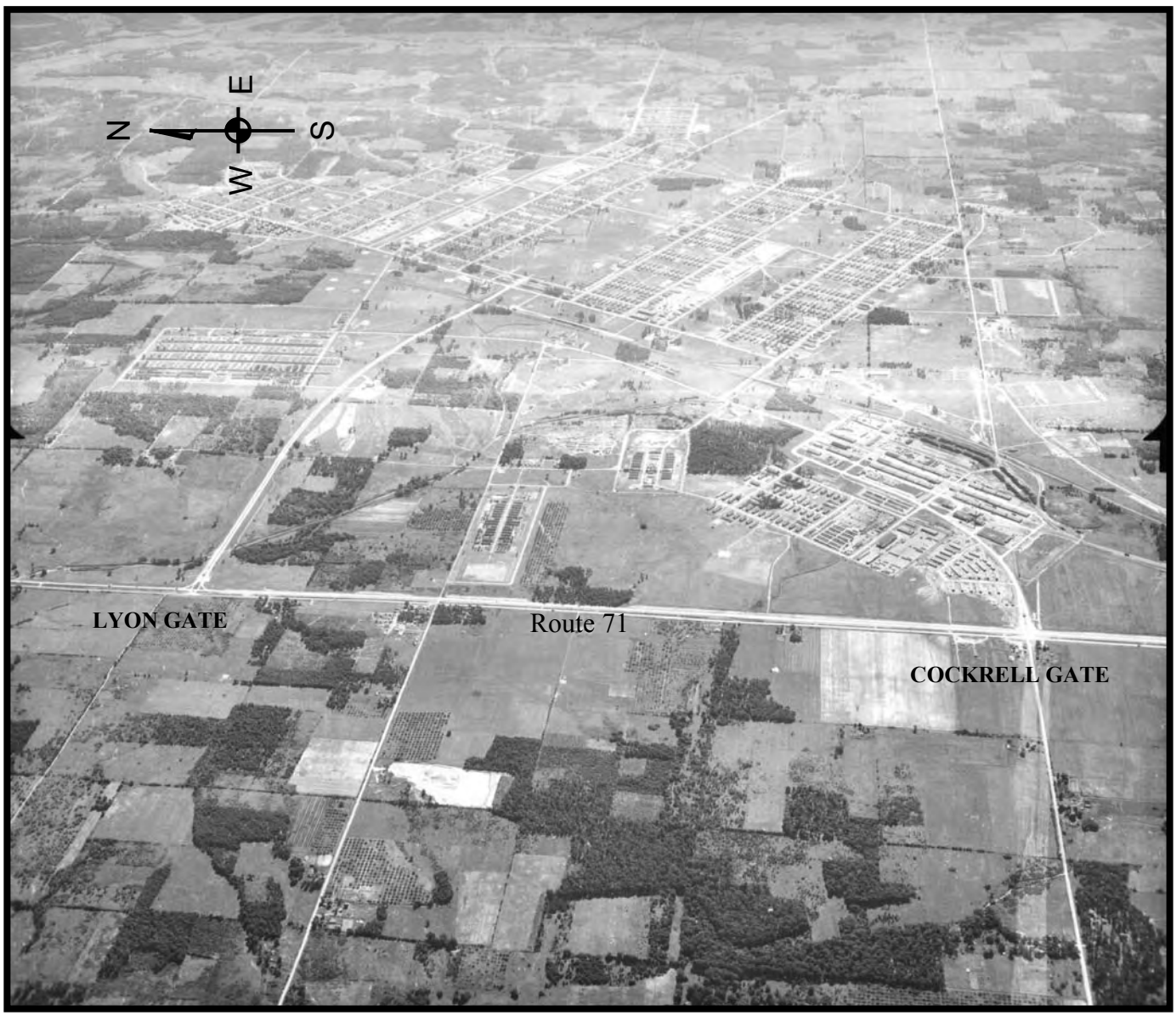




1942-1953 ANALYSIS ATOP 1996/97 ORTHOPHOTO

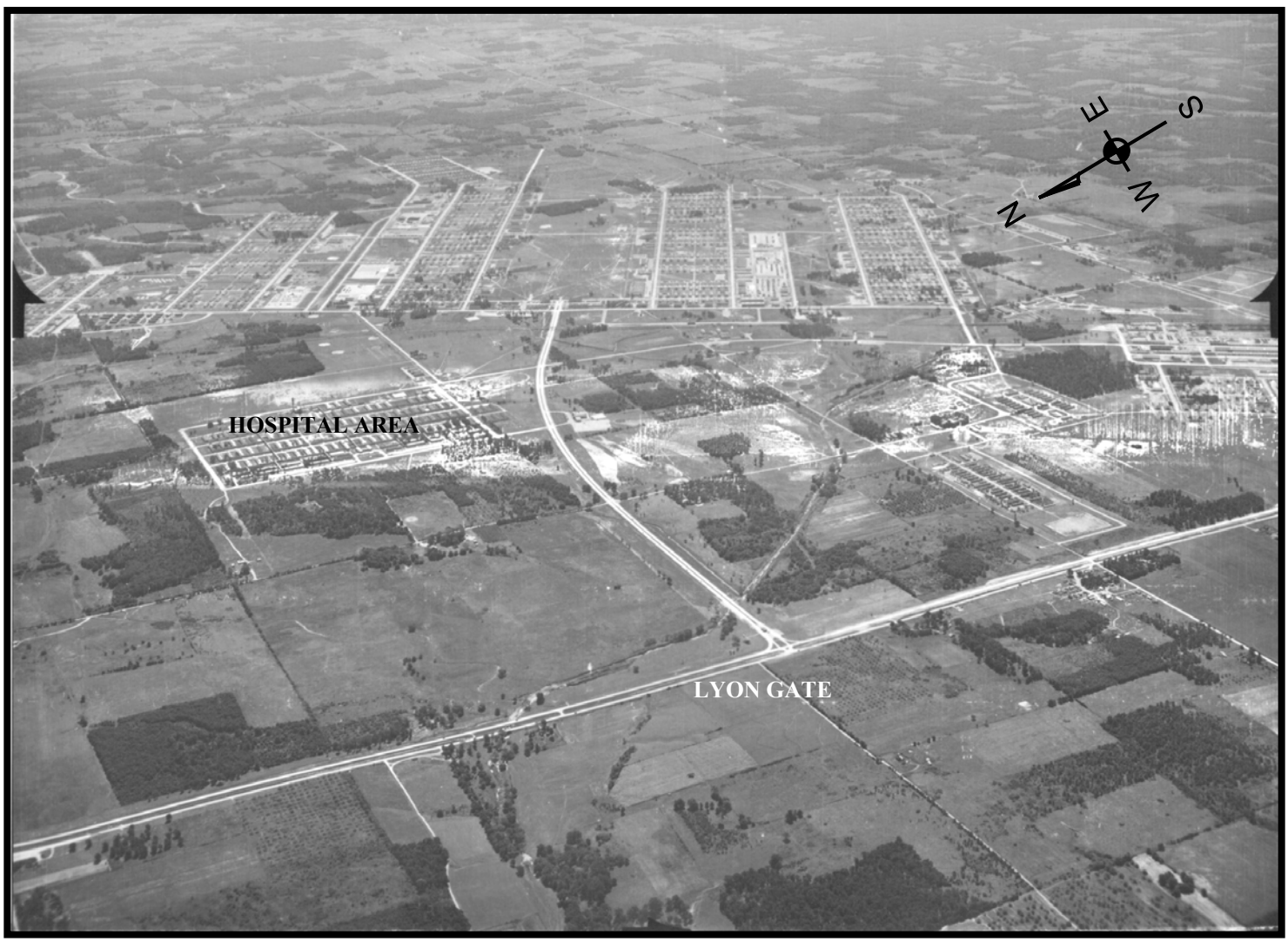


AUGUST 19, 1945 OBLIQUE AERIAL VIEW



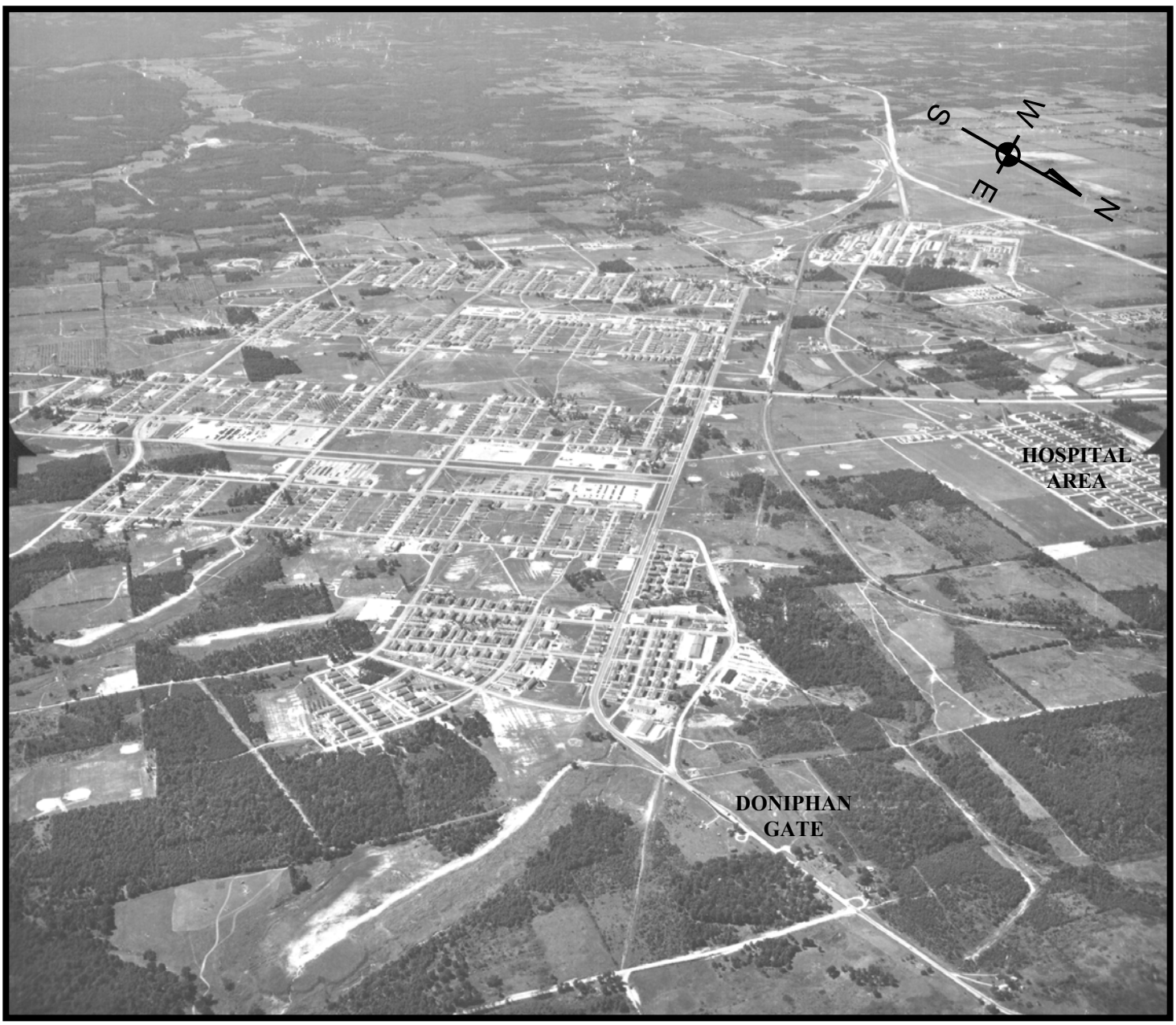
LOOKING EAST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



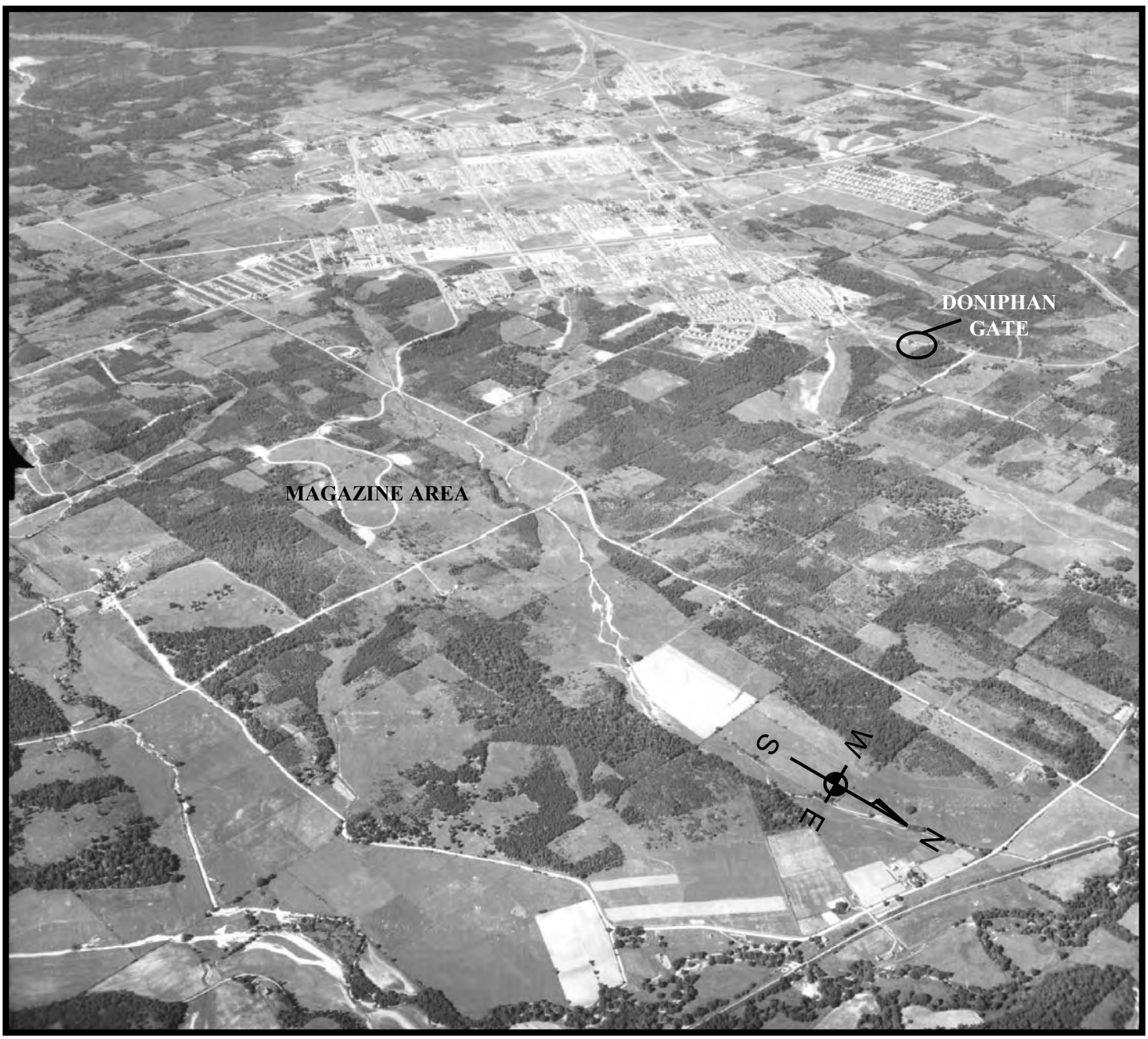
LOOKING SOUTHEAST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



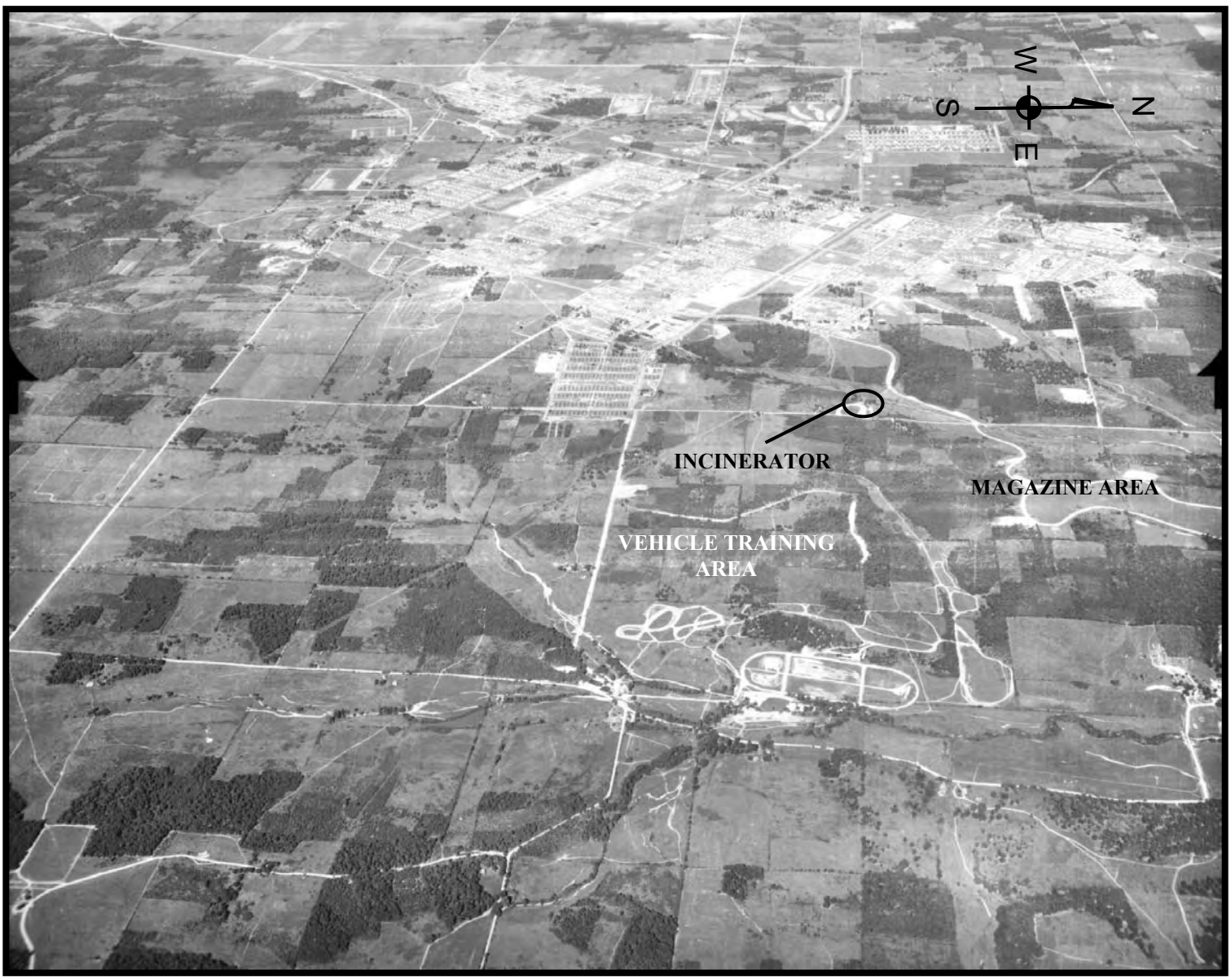
LOOKING SOUTHWEST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



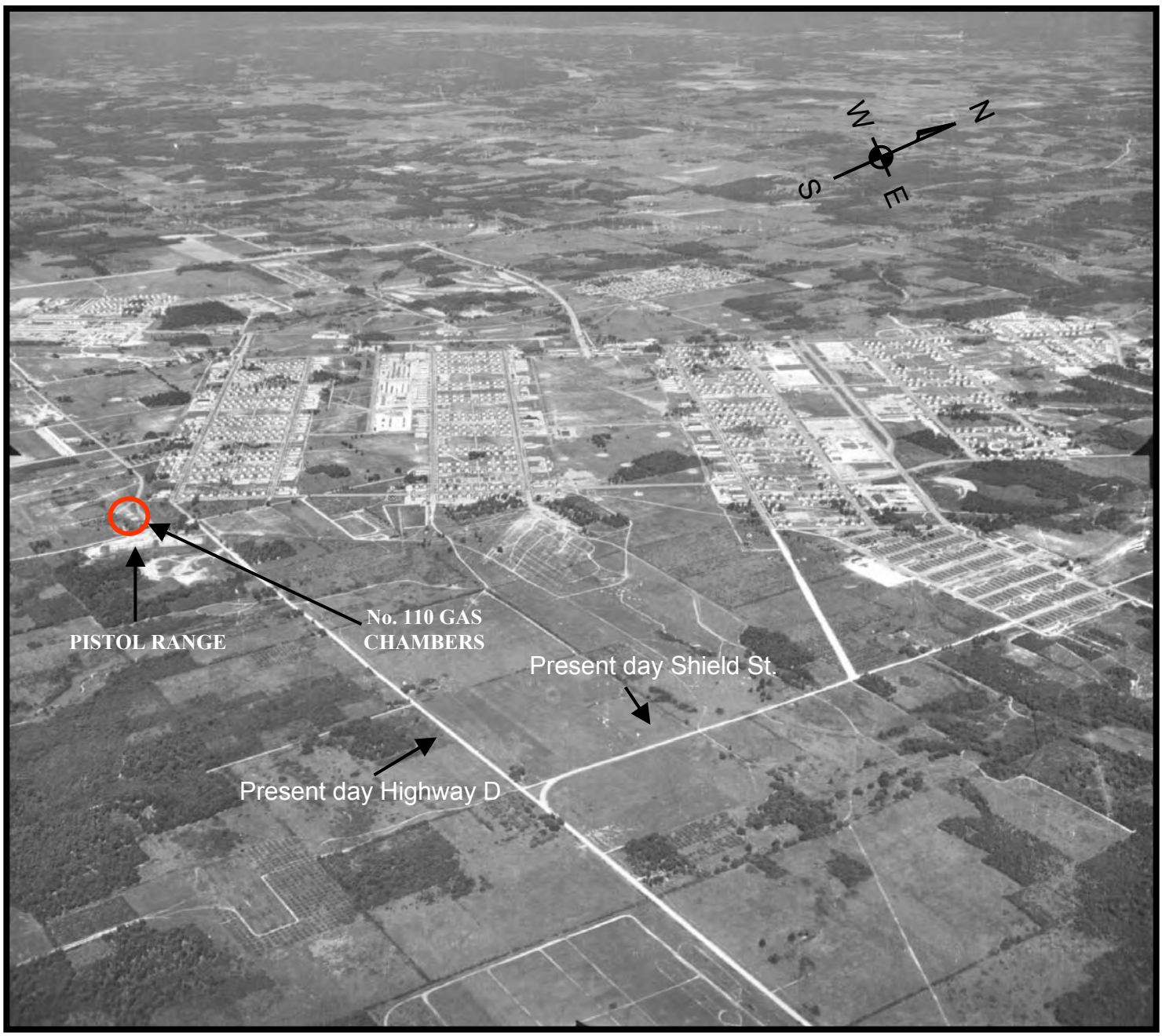
LOOKING SOUTHWEST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



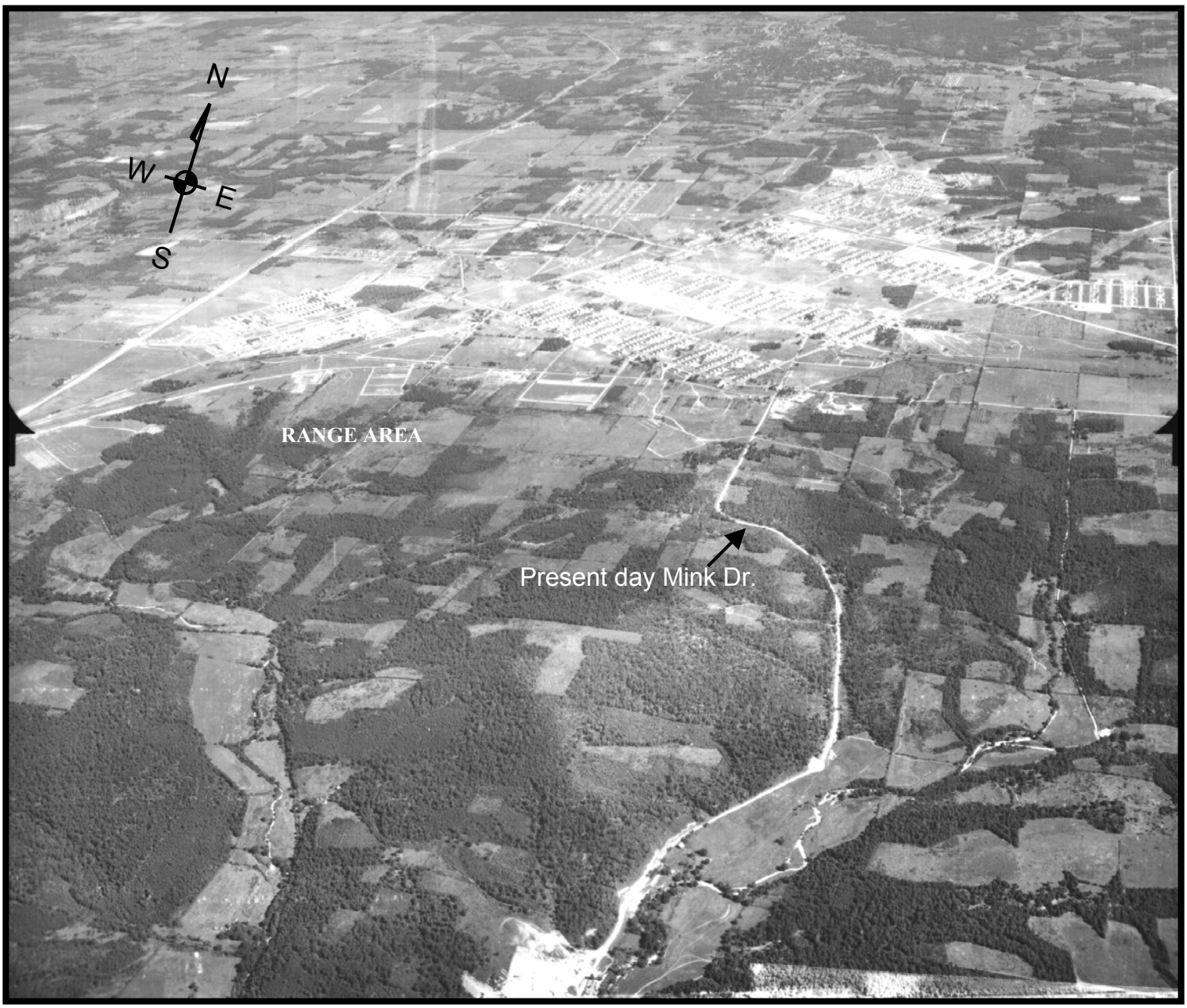
LOOKING WEST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



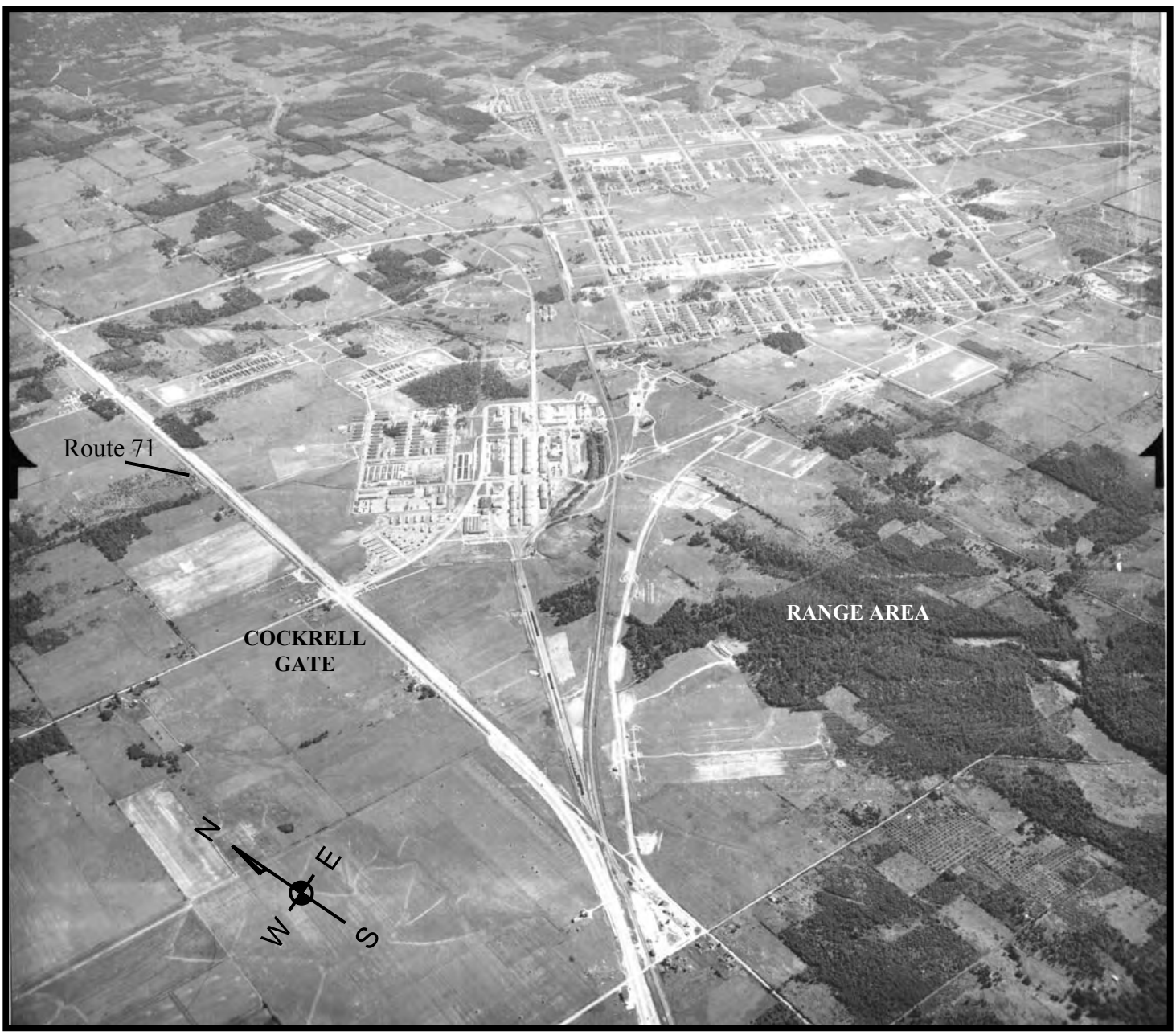
LOOKING NORTHWEST

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



LOOKING NORTH

AUGUST 19, 1945 OBLIQUE AERIAL VIEW



LOOKING NORTHEAST

GLOSSARY

BERM - linear, raised feature, often made of earthen material. May be associated with range activity.

DEPRESSION - a falling in of the surface; a sinking below its true place; a cavity or hollow; as, roughness consists in little protuberances and *depressions*.

DISTURBED GROUND - rough ground surface that has been cleared, overturned, dug up, filled and/or changed from the surrounding area.

EXCAVATION - cavity in the earth formed by digging or scooping out materials.

GROUND SCAR - ground surface, vegetated or not, where marks (generally uniform in appearance) from a previous activity or feature, or from a subterranean feature, are visible.

MOUNDED MATERIAL - material that has been placed in a pile or mound.

OBSTACLE COURSE - a military training course filled with obstacles (as hurdles, fences, walls, and ditches) that must be negotiated.

ORDNANCE - military supplies including weapons, ammunition, combat vehicles, and maintenance tools and equipment.

ORTHOPHOTO - continuous-tone image created from aerial photographs with geometric distortions and relief displacements removed. Depicts terrain features in their true geographic position.

RANGE - area of military training. May be associated with weapons training.

REFERENCES

U.S. Army Corps of Engineers, St. Louis District. *Archives Search Report Findings, Camp Crowder, Newton County, Missouri*. Project No. B07MO0138. April 1993.

U.S.G.S. 7.5 minute Quadrangles, *Neosho East and Neosho West, Missouri,* Dated 1981.

DATA VALIDATION SUMMARY REPORTS

Data Validation Report
for environmental samples collected from Camp Crowder, Missouri November 3, 2003

Data Verifier: Tammy Chang
Parsons – Austin

The following data validation report covers two soil samples collected from Camp Crowder, Missouri on November 3, 2003.

A chemist at Parsons has reviewed the data submitted by STL-Savannah and STL-Tallahassee. The data package included the following samples:

CRDR-FPR-B1P-1B4 and CRDR-FPR-B1P-1AFT

These samples were analyzed for explosive by SW8330 and metals by SW6010B and SW7471A. Metals include arsenic, barium, cadmium, chromium, lead, selenium, silver and mercury.

Samples were collected by Parsons, explosives analyses were performed by STL-Tallahassee, and metals analyses were performed by STL-Savannah.

Review Criteria

Data submitted by the laboratories have been reviewed. Information reviewed included chain of custody, case narratives, sample results, matrix spike and matrix spike duplicate results (MS and MSD), surrogate recoveries, method blanks, holding time, laboratory control spike (LCS) recoveries, instrument initial calibration summaries, calibration verification summaries, calibration blanks, ICP interference check samples, serial dilution, post digestion, extraction logs, and raw data. The conclusions in the report are based on the reviewed criteria and whether the project required tolerances were met.

Accuracy

Accuracy is determined by evaluating the percent recovery (%R) of the LCSs and surrogate spikes for explosive analyses and percent recovery (%R) of the LCSs for metal analyses. All LCSs and surrogate spike recoveries met the project required tolerances. The lab randomly selected sample CRDR-FPR-B1P-1AFT as the parent sample for the MS/MSD explosives analyses. The %R for all explosive compounds was compliant in both MS and MSD samples.

Precision

Precision is normally determined by comparing the Relative Percent Difference (%RPD) of the MS/MSD and parent/field duplicates (FD). No FD samples were collected during this sampling event.

The %RPDs of the MS/MSD in the explosive analyses were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing actual analytical procedures to those described in the COC;
- Evaluating holding times; and
- Examining laboratory blanks for contamination of samples during the analysis.

All samples were prepared and analyzed following the COC. All metal analyses were conducted within the hold time required by the methods. The explosive samples were extracted 2 days passed holding time.

Samples were kept at the base for 8 days before the shipment, due to instrumentation problems with the MINICAMS. After Parsons received word that samples were clear of chemical warfare material (CWM), samples were shipped out on the same date. STL-Savannah forwarded the samples to STL-Tallahassee. By the time the samples arrived at STL-Tallahassee, the lab had only 4 days remaining until holding time expired. STL-Tallahassee initiated the notification on November 19, 2003 which was 2 days passed holding time.

Considering the difficulty of recollecting these two soil samples and the significance of the holding time having been missed by two days, Ms. Deborah Walker at USACE instructed a Parsons' chemist to apply "UJ" flags to all non-detected explosives data. Parsons will initiate corrective action to prevent this from happening again in the future.

All instrument initial calibration and continuing calibration verification criteria were met.

Interference check samples for the SW6010B were compliant. Serial dilution and post digestion spike were performed with sample CRDR-FPR-B1P-1B4 and all results were compliant.

All method blanks and calibration blanks results were reviewed and found to be free of target analytes above the method detection limit (MDL) except barium and chromium which were detected above the MDL but below half of the reporting limit (RL) in the method blank.

Completeness

Completeness was evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results for the samples in this data package were usable. The completeness is 100%.

Detected Analytes:

Metal	CRDR-FPR-B1P-1B4 (mg/kg dw)	CRDR-FPR-B1P-1AFT (mg/kg dw)
Arsenic	9.6	7.6
Barium	41	54
Chromium	60	42
Lead	14	16
Mercury	0.041	0.045

Data Validation Summary Report
for soil samples collected from
Camp Crowder
November 3 and 5, 2003

Data Validator: Tammy Chang
Parsons – Austin

The following data validation report covers five (5) soil samples collected from Camp Crowder on November 3 and 5, 2003.

A chemist at Parsons has reviewed the data submitted by ECBC Monitoring Branch. The data package included the following samples:

Field Sample ID	Lab Sample ID	Sample Collection Date
CRDR-FPR-BIP-1B4	MB031381-M01	November 3, 2003
CRDR-FPR-BIP-1AFT	MB031382-M01	November 3, 2003
CRDR-FPR-TR-1-BOT	MB031383-M01	November 5, 2003
CRDR-FPR-TR-1-LEFT	MB031384-M01	November 5, 2003
CRDR-FPR-TR-1-RIGHT	MB031385-M01	November 5, 2003

All samples were analyzed for 1,4-Dithiane, 1,4-Thioxane, HD, HN-1, HN-3, and L as requested on the chain of custody. Samples were collected by Parsons and analyzed by ECBC. Batch number assigned to this sample delivery group was 03110703.

Review Criteria

Data submitted by the laboratory has been reviewed. Information reviewed included case narrative, chain of custody, sample results, surrogate recoveries, matrix spike and matrix spike duplicate recovery (MS/MSD), method blank, instrument blank, holding time, laboratory control spike and duplicate (LCS/LCSD) recoveries, practical reporting limits (PQL), instrument tuning records, instrument initial calibration curve (ICAL), continuing calibration verifications (CCVs), and raw data. The conclusions in the report are based on the criteria stated in the laboratory Internal Operating Procedure (IOP) MT-8, Revision 2 and whether the laboratory derived tolerances were met. Data flags used in the final report were based on the definition of USEPA National Functional Guidelines for Data Review (USEPA, 1999 & 2002). ADR was not provided by the ECBC laboratory and couldn't be used as part of data validation by Parsons' chemist.

PQLs and Control limits used during the analysis are:

	PQL (ug/kg)	LCS/LCSD (%R)	%RPD	MS/MSD (%R)	%RPD
1,4-Dithiane	200	74 - 124	30	74 - 124	30
1,4-Thioxane	200	74 – 124	30	74 – 124	30
HD	200	71 – 130	30	71 – 130	30
HN-1	200	70 – 130*	30	70 – 130*	30
HN-3	200	70 – 130*	30	70 – 130*	30
L	400	56 – 139	48	56 – 139	48
Surrogate (BFB)	NA	44 - 140	30	44 - 140	30

*Advisory limits, corrective action is not required when %R is non-compliant.

Accuracy

Accuracy is determined by evaluating the percent recovery (%R) of the LCS/LCSD, MS/MSD, and surrogate (BFB). Lab performed the MS/MSD analyses with sample CRDR-FPR-BIP-1B4.

Analyte	LCS (%R)	LCSD (%R)	MS (%R)	MSD (%R)
1,4-Dithiane	60*	64*	66*	67*
1,4-Thioxane	61*	66*	67*	69*
HD	60*	64*	66*	67*
HN-1	27*	27*	67*	71
HN-3	62*	67*	70	72
L	45*	51*	58	60

* %R was lower than the lower control limit or the lower advisory limit.

As stated in the Appendix II of the IOP that the %R of the LCS and LCSD has to meet the control limits for each target compound. If not, reanalyze. If either one fails again, the entire batch must be re-extracted. Sample analysis can not begin until both LCS and LCSD meet all criteria. Lab did not reanalyze or re-extract the entire batch. The revised analytical narrative stated "…after examining all quantification reports, it was decided that the results were acceptable and reanalysis was not required". Parsons data validator does not agree with this decision.

Since %R of the surrogate in LCS, LCSD, MS, and MSD were all close to 100% which indicated the extraction and analysis procedures were accurate. The low %R of these target compounds might contributed to either one or all of the three listed possibilities: (1) degradation occurred in the spiking solution (2) improper spiking technique (3) faulty syringe used in the spiking process. Lab was instructed to review the control charts during November 2003 and re-evaluate the cause of the low %recoveries.

All 1,4-Dithiane, 1,4-Thioxane, HD, and L results were flagged with "UJ" due to non-compliant LCS/LCSD recoveries. No flag were needed for HN-1 and HN-3 since the control limits for these two compounds were only serve as advisory limits.

Precision

Precision is determined by comparing the Relative Percent Difference (%RPD) of the LCS/LCSD and MS/MSD. All %RPDs were compliant

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing actual analytical procedures to those described in the COC;
- Evaluating holding times; and
- Examining laboratory blanks for contamination of samples during analysis.

All samples were prepared and analyzed following the COC. All samples were prepared and analyzed within the hold time required for the analysis.

All instrument blanks and method blank were reviewed and found to be free of target analytes above the PQL.

- Instrument was calibrated on October 29, 2003. Linearity was compliant for all target compounds with the lowest point either equal to or less than the PQL for each compound. Lab did not include the calibration verification immediately after the establishment of the ICAL in the data package.
- Instrument was properly tuned on November 7, 2003 prior to the analysis.
- There was one CCV before the analysis and another CCV at the end of the instrument run. Both CCVs were compliant.

In conclusion, instrument operation procedures were acceptable.

Completeness

Completeness was evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results for the samples in this data package were usable. The completeness is 100%.

Flag Definition

U – The analyte was analyzed for, but was not detected above the PQL.

UJ – The analyte was not detected above the PQL. However, the PQL is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Data Usability

All 1,4-Dithiane, 1,4-Thioxane, HD, and L results were flagged with "UJ" due to the non-compliant LCS/LCSD recoveries.

Thiodiglycol (TDG) was not analyzed due to the non-detected of HD, 1,4-Dithiane and 1,4-Thioxane.

2-Chlorovinyl Arsenous Acid (CVAA) and 2-Chlorovinyl Arsenous Oxide (CVAO) were derivatized to the same product as L did. Data reported for L could be any of or combination of these three compounds. Since all sample results had <PQL amount of L, it can be concluded that there were no L/CVAA/CVAO existed at PQL level in any of samples reported in this SDG.

The DQOs for this project were met and all results are usable.

Data Validation Summary Report
for soil samples collected from
Camp Crowder
November 12 and 13, 2003

Data Validator: Tammy Chang
Parsons – Austin

The following data validation report covers fifteen (15) soil samples collected from Camp Crowder on November 12 and 13, 2003.

A chemist at Parsons has reviewed the data submitted by ECBC Monitoring Branch. The data package included the following samples:

Field Sample ID	Lab Sample ID	Sample Collection Date
CRDR-FPR-TR-2-BOT	MB031431-M01	November 12, 2003
CRDR-FPR-TR-2-RIGHT	MB031432-M01	November 12, 2003
CRDR-FPR-TR-2-LEFT	MB031433-M01	November 12, 2003
CRDR-FPR-TR-3-BOT	MB031434-M01	November 12, 2003
CRDR-FPR-TR-3-RIGHT	MB031435-M01	November 12, 2003
CRDR-FPR-TR-3-LEFT	MB031436-M01	November 12, 2003
CRDR-FPR-TR-4-BOT	MB031437-M01	November 12, 2003
CRDR-FPR-TR-4-LEFT	MB031438-M01	November 12, 2003
CRDR-FPR-TR-4-RIGHT	MB031439-M01	November 12, 2003
CRDR-FPR-TR-5-BOT	MB031440-M01	November 13, 2003
CRDR-FPR-TR-5-RIGHT	MB031441-M01	November 13, 2003
CRDR-FPR-TR-5-LEFT	MB031442-M01	November 13, 2003
CRDR-FPR-TR-6-BOT	MB031443-M01	November 13, 2003
CRDR-FPR-TR-6-RIGHT	MB031444-M01	November 13, 2003
CRDR-FPR-TR-6-LEFT	MB031445-M01	November 13, 2003

All samples were analyzed for 1,4-Dithiane, 1,4-Thioxane, HD, HN-1, HN-3, and L as requested on the chain of custody. Samples were collected by Parsons and analyzed by ECBC. Batch number assigned to this sample delivery group was 03111801.

Review Criteria

Data submitted by the laboratory has been reviewed. Information reviewed included case narrative, chain of custody, sample results, surrogate recoveries, matrix spike and matrix spike duplicate recovery (MS/MSD), method blank, instrument blank, holding time, laboratory control spike and duplicate (LCS/LCSD) recoveries, practical reporting limits (PQL), instrument tuning records, instrument initial calibration curve (ICAL), continuing calibration verifications (CCVs), and raw data. The conclusions in the report are based on the criteria stated in the laboratory Internal Operating Procedure (IOP) MT-8, Revision 2 and whether the laboratory derived tolerances were met. Data flags used in the final report were based on the definition of USEPA National Functional Guidelines for Data Review (USEPA, 1999 & 2002). ADR was not provided by the ECBC laboratory and couldn't be used as part of data validation by Parsons' chemist.

PQLs and Control limits used during the analysis are:

	PQL (ug/kg)	LCS/LCSD (%R)	%RPD	MS/MSD (%R)	%RPD
1,4-Dithiane	200	74 - 124	30	74 - 124	30
1,4-Thioxane	200	74 – 124	30	74 – 124	30
HD	200	71 – 130	30	71 – 130	30
HN-1	200	70 – 130*	30	70 – 130*	30
HN-3	200	70 – 130*	30	70 – 130*	30
L	400	56 – 139	48	56 – 139	48
Surrogate (BFB)	NA	44 - 140	30	44 - 140	30

* advisory limits, no corrective action is required when results are non-compliant

Accuracy

Accuracy is determined by evaluating the percent recovery (%R) of the LCS/LCSD, MS/MSD, and surrogate (BFB). Lab performed the MS/MS analyses with sample CRDR-FPR-TR-2-BOT.

Analyte	LCS (%R)	LCSD (%R)	MS (%R)	MSD (%R)
1,4-Dithiane	68*	70*	67*	72*
1,4-Thioxane	69*	71*	68*	72*
HD	68*	70*	68*	73
HN-1	29*	30*	70	74
HN-3	67*	70	71	75
L	50*	52*	65	69

* outside of control limits or advisory limits

As stated in the IOP that the %R in the LCS and LCSD has to meet the control limits for each target compound. The case narrative stated "…after examining all quantification reports, it was decided that the results were acceptable and reanalysis was not required." Parsons data validator does not agree with this decision.

Since the recovery of surrogate in all QC runs and samples were compliant, it indicated that the sample extraction and analysis procedures were fairly accurate. The low %recovery of most target compounds in the LCS, LCSD, MS, and MSD indicated possible degradation in the spiking solution, IV-55-1, or inaccurate spiking technique might be involved. Suggestions were made to the lab to review control charts of LCS/LCSD runs after November 18, 2003. If consistent low %Rs occurred after November 18, 2003, the spiking solution had been degraded. If %Rs collected after November 18, 2003 were compliant, the low %Rs in this SDG was a one-time occurrence.

"UJ" flag was applied to the 1,4-Dithiane, 1,4-Thioxane, HD, and L results to all samples in this SDG. No flag were applied to HN-1 and HN-3 data since lab only had advisory limits during the analysis and no corrective action was required.

Precision

Precision is determined by comparing the Relative Percent Difference (%RPD) of the LCS/LCSD and MS/MSD. All %RPDs were compliant

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing actual analytical procedures to those described in the COC;
- Evaluating holding times; and
- Examining laboratory blanks for contamination of samples during analysis.

All samples were prepared and analyzed following the COC. All samples were prepared and analyzed within the hold time required for the analysis.

All instrument blanks and method blank were reviewed and found to be free of target analytes above the PQL.

- Instrument was properly tuned on November 18, 2003 prior to the analysis.
- Instrument was calibrated on November 18, 2003. Linearity was compliant for all target compounds with the lowest point either equal to or less than the PQL for each compound.
- There was one CCV before the analysis and another CCV at the end of the instrument run. Both CCVs were compliant.

In conclusion, instrument operation procedures were acceptable.

Completeness

Completeness was evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results for the samples in this data package were usable. The completeness is 100%.

Flag Definition

U – The analyte was analyzed for, but was not detected above the PQL.

UJ – The analyte was not detected above the PQL. However, the PQL is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Data Usability

"UJ" flag was applied to the 1,4-Dithiane, 1,4-Thioxane, HD, and L results to all samples in this SDG due to the low %recoveries in the LCS and LCSD analyses.

Thiodiglycol (TDG) was not analyzed due to the non-detected of HD, 1,4-Dithiane and 1,4-Thioxane.

2-Chlorovinyl Arsenous Acid (CVAA) and 2-Chlorovinyl Arsenous Oxide (CVAO) were derivatized to the same product as L did. Data reported for L could be any of or combination of these three compounds. Since all sample results had <PQL amount of L, it can be concluded that there were no L/CVAA/CVAO existed at PQL level in any of samples reported in this SDG.

The DQOs for this project were met and all results are usable.

Data Validation Summary Report
for soil samples collected from Camp Crowder November 18 and 19, 2003

Data Validator: Tammy Chang
Parsons – Austin

The following data validation report covers twelve (12) soil samples collected from Camp Crowder on November 18 and 19, 2003.

A chemist at Parsons has reviewed the data submitted by ECBC Monitoring Branch. The data package included the following samples:

Field Sample ID	Lab Sample ID	Sample Collection Date
CRDR-GCA-TR-1-BOT	MB031453-M01	November 18, 2003
CRDR-GCA-TR-1-RIGHT	MB031454-M01	November 18, 2003
CRDR-GCA-TR-1-LEFT	MB031455-M01	November 18, 2003
CRDR-GCA-TR-2-BOT	MB031456-M01	November 18, 2003
CRDR-GCA-TR-2-RIGHT	MB031457-M01	November 18, 2003
CRDR-GCA-TR-2-LEFT	MB031458-M01	November 18, 2003
CRDR-GCA-TR-3-BOT	MB031459-M01	November 19, 2003
CRDR-GCA-TR-3-RIGHT	MB031460-M01	November 19, 2003
CRDR-GCA-TR-3-LEFT	MB031461-M01	November 19, 2003
CRDR-GCA-TR-4-BOT	MB031462-M01	November 19, 2003
CRDR-GCA-TR-4-RIGHT	MB031463-M01	November 19, 2003
CRDR-GCA-TR-4-LEFT	MB031464-M01	November 19, 2003

All samples were analyzed for 1,4-Dithiane, 1,4-Thioxane, HD, HN-1, HN-3, and L as requested on the chain of custody. Samples were collected by Parsons and analyzed by ECBC. Batch number assigned to this sample delivery group was 03112002.

Review Criteria

Data submitted by the laboratory has been reviewed. Information reviewed included case narrative, chain of custody, sample results, surrogate recoveries, matrix spike and matrix spike duplicate recovery (MS/MSD), method blank, instrument blank, holding time, laboratory control spike and duplicate (LCS/LCSD) recoveries, practical reporting limits (PQL), instrument tuning records, instrument initial calibration curve (ICAL), continuing calibration verifications (CCVs), and raw data. The conclusions in the report are based on the criteria stated in the laboratory Internal Operating Procedure (IOP) MT-8, Revision 2 and whether the laboratory derived tolerances were met. Data flags used in the final report were based on the definition of USEPA National Functional Guidelines for Data Review (USEPA, 1999 & 2002). ADR was not provided by the ECBC laboratory and couldn't be used as part of data validation by Parsons' chemist.

PQLs and Control limits used during the analysis are:

	PQL (ug/kg)	LCS/LCSD (%R)	%RPD	MS/MSD (%R)	%RPD
1,4-Dithiane	200	74 - 124	30	74 - 124	30
1,4-Thioxane	200	74 – 124	30	74 – 124	30
HD	200	71 – 130	30	71 – 130	30

HN-1	200	70 – 130*	30	70 – 130*	30
HN-3	200	70 – 130*	30	70 – 130*	30
L	400	56 – 139	48	56 – 139	48
Surrogate (BFB)	NA	44 - 140	30	44 - 140	30

* Advisory limits, corrective action is not required when %R is non-compliant.

Accuracy

Accuracy is determined by evaluating the percent recovery (%R) of the LCS/LCSD, MS/MSD, and surrogate (BFB). Lab performed the MS/MSD analyses with sample CRDR-GCA-TR-1-BOT.

Analyte	LCS (%R)	LCSD (%R)	MS (%R)	MSD (%R)
1,4-Dithiane	72*	80	73*	80
1,4-Thioxane	74	83	76	83
HD	71	81	74	81
HN-1	25*	30*	76	84
HN-3	70	81	75	83
L	50*	56	57	62

* %R was lower than the lower control limit or the lower advisory limit.

As stated in the IOP that the %R in the LCS and LCSD has to meet the control limits for each target compound. All %Rs (both LCS and LCSD) met the control limits except %R for 1,4-Dithiane was at 72% (control limits are 74% - 124%) and %R for L was 50% (control limits are 56-139%) in the LCS sample. Since the non-compliant %R of these two compounds were not significantly low and all %Rs in the LCSD were compliant. It is data validator's opinion that associated results were not seriously affected. Only the associated results of L were flagged with "UJ". Neither corrective action nor flag is needed for HN-1 data since the control limits were set as advisory limits.

All MS/MSD and surrogate spike recoveries met the laboratory derived tolerances except %R of 1,4-Dithiane was recovered 1% below the control limit.

Precision

Precision is determined by comparing the Relative Percent Difference (%RPD) of the LCS/LCSD and MS/MSD. All %RPDs were compliant

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing actual analytical procedures to those described in the COC;
- Evaluating holding times; and
- Examining laboratory blanks for contamination of samples during analysis.

All samples were prepared and analyzed following the COC. All samples were prepared and analyzed within the hold time required for the analysis.

All instrument blanks and method blank were reviewed and found to be free of target analytes above the PQL.

- Instrument was calibrated on November 19, 2003. Linearity was compliant for all target compounds with the lowest point either equal to or less than the PQL for each compound. Lab did not include the calibration verification immediately after the establishment of the ICAL in the data package.
- Instrument was properly tuned on November 20, 2003 prior to the analysis.
- There was one CCV before the analysis and another CCV at the end of the instrument run. Both CCVs were compliant.

In conclusion, instrument operation procedures were acceptable.

Completeness

Completeness was evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results for the samples in this data package were usable. The completeness is 100%.

Flag Definition

U – The analyte was analyzed for, but was not detected above the PQL.

UJ – The analyte was not detected above the PQL. However, the PQL is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Data Usability

All results are usable with "L" results flagged with "UJ" due to the non-compliant recovery of this compound in the LCSD.

Thiodiglycol (TDG) was not analyzed due to the non-detected of HD, 1,4-Dithiane and 1,4-Thioxane.

2-Chlorovinyl Arsenous Acid (CVAA) and 2-Chlorovinyl Arsenous Oxide (CVAO) were derivatized to the same product as L did. Data reported for L could be any of or combination of these three compounds. Since all sample results had <PQL amount of L, it can be concluded that there were no L/CVAA/CVAO existed at PQL level in any of samples reported in this SDG.

The DQOs for this project were met and all results are usable.

DIGSHEETS

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
1	4073601.84	378680.56	10.49	High Priority	8/29/2003																			G			Same Anomaly as 104
2	4073503.52	378483.44	10.97	High Priority	8/29/2003			10/18/2003	OT	BARBED WIRE 4" L	1							3"	11/17/2003					G	BGH		No Contact
3	4073502.88	378816.16	11.12	High Priority	8/29/2003		5	10/9/2003	OT	HOGWIRE, 6" L	1							0"	11/6/2003					G	BGH		
4	4073508.24	378560.16	11.19	High Priority	8/29/2003		15	10/14/2003	OT	NO FLAG, APPROX LOCATION, 20" L 2 GAGE WIR	1							5"	11/20/2003					G	BGH		Moved Flag 3' W
5	4073495.76	378796.96	11.28	High Priority	8/29/2003		7	10/9/2003	ORS	EXPENDED RFL GRENADE BODY	1								11/3/2003					G	BGH		Moved Flag 1' E
6	4073510.56	378811.68	11.85	High Priority	8/29/2003		12	10/9/2003	OT	NAIL 20PENNY	1		18"	S				2"	11/6/2003					G	BGH		In Road Hit 1' SW of Dot
7	4073529.52	378726.96	12.09	High Priority	8/29/2003		11	10/9/2003	OT	2 PIECE BARBED WIRE 8" L	2							2"	11/14/2003					G	BGH		
8	4073513.36	378747.68	12.11	High Priority	8/29/2003		8	10/9/2003	OT	2 NAILS	2							2"	11/3/2003				11/3	G	BGH		Moved Flag 1' N
9	4073577.92	378689.04	12.56	High Priority	8/29/2003		7	10/8/2003	OT	NAIL 4" L, WIRE 14" L X 1/4" OD	2							4"	11/14/2003					G	BGH		
10	4073498.4	378745.6	12.69	High Priority	8/29/2003		14	10/9/2003	OT	BARBED WIRE	1	.2 LB						5"	11/3/2003				11/3	G	BGH		Moved Flag 1.5 ' NE
11	4073489.68	378794.32	12.93	High Priority	8/29/2003		12	10/9/2003	OT	WIRE 2" L	2							1"	11/3/2003					G	BGH		Moved Flag 1.5' NE
12	4073580.16	378673.68	13.12	High Priority	8/29/2003		22	10/8/2003	OT	NAIL 4" L,	1							1"	11/14/2003					G	BGH		
13	4073571.84	378704.48	13.15	High Priority	8/29/2003		4	10/8/2003	OT	NAILS, 4" L	3							3"	11/13/2003					G	BGH		
14	4073511.84	378776.8	13.15	High Priority	8/29/2003		3	10/9/2003	OT	BANDING MAT'L (2)/.45 CAL SLUG	3								11/3/2003					G	BGH		
15	4073598.08	378737.68	13.57	High Priority	8/29/2003		7	10/8/2003	OT	NAILS 4" + 5" (1 EA)	2							3"	11/4/2003					G	BGH		
16	4073505.44	378573.52	13.91	High Priority	8/29/2003		12	10/10/2003	OT	HOT ROCK, NAIL	2							2"-12"	11/18/2003					G	BGH		Moved Flag 1.5 NW
17	4073491.76	378476.48	14.03	High Priority	8/29/2003		7	10/18/2003	OT	HAY RAKE TINE 10" L	1							6"	11/17/2003					G	BGH		Moved Flag 1.5' NE
18	4073498.72	378482.64	14.46	High Priority	8/29/2003		3	10/18/2003	OT	WIRE 6" L	1							6"	11/17/2003					G	BGH		Moved Flag 1' S
19	4073573.84	378730	14.55	High Priority	8/29/2003		14	10/8/2003	OT	8 PENNY NAIL/.45 CAL SLUG SMALL SHEET META	3							4"	11/4/2003					G	BGH		
20	4073514	378749.6	14.79	High Priority	8/29/2003		5	10/9/2003	OT	NAIL/COAT HANGER	2							1"	11/3/2003					G	BGH		
21	4073525.04	378743.68	15.29	High Priority	8/29/2003		10	10/9/2003	OT	HOT ROCKS/18"BARBED WIRE	2							2"	11/14/2003					G	BGH		Moved Flag 2' SE
22	4073576.08	378678.16	15.63	High Priority	8/29/2003		7	10/8/2003	OT	2 WIRES 10" L, 6' L INSULATORS	2							6"	11/14/2003					G	BGH		
23	4073497.84	378777.76	15.73	High Priority	8/29/2003		11	10/9/2003	OT	WIRE, NAIL BOTH 4" L	2							3"	11/3/2003					G	BGH		Moved Flag 1.5' NE
24	4073587.68	378687.04	15.90	High Priority	8/29/2003		10	10/8/2003	OT	NAILS	2							6"	11/10/2003					G	BGH		
25	4073501.68	378781.12	16.70	High Priority	8/29/2003		9	10/9/2003	OT	.45 CAL SLUGS	2							4"	11/3/2003					G	BGH		Moved Flag .5' SE
26	4073496.4	378484.08	16.92	High Priority	8/29/2003		4	10/18/2003	OT	WIRE 6" L, NAIL 4" L	1							4"	11/17/2003					G	BGH		
27	4073494.88	378767.36	16.94	High Priority	8/29/2003		18	10/9/2003	OT	BARBED WIRE 24"	1							2"	11/3/2003					G	BGH		
28	4073508.08	378478.32	17.31	High Priority	8/29/2003		6	10/18/2003	OT	BARBED WIRE 10" L	1							6"	11/17/2003					G	BGH		
29	4073498.72	378574.88	17.35	High Priority	8/29/2003		13	10/10/2003	OT	BANDING 15"L x 1" W	1							2"	11/19/2003					G	BGH		
30	4073594.32	378679.92	17.56	High Priority	8/29/2003		15	10/8/2003	OT	16 PENNY NAIL	1							9"	11/10/2003					G	BGH		Moved Flag 1.5' E
31	4073602.4	378722.8	17.57	High Priority	8/29/2003		6	10/8/2003	OT	SHEET METAL PIECES, LARGEST 10"x10", NAIL, WIRE, METAL DISH	4							10"-12"	11/14/2003					G	BGH		
32	4073501.04	378458.96	17.67	High Priority	8/29/2003		9	10/18/2003	OT	WIRE 12" L	1							6"	11/17/2003					G	BGH		
33	4073595.84	378678.48	17.74	High Priority	8/29/2003		7	10/8/2003	NC	NO CONTACT	0								11/10/2003					G	BGH		Numerous Targets
34	4073527.2	378748.88	17.74	High Priority	8/29/2003		14	10/9/2003	OT	WIRE (2) 10" L, 4" L	2							2"	11/3/2003					G	BGH		Moved Flag 1' E
35	4073485.44	378584.96	17.79	High Priority	8/29/2003		17	10/14/2003	OT	MTL 1" W X 1/4" T X 5" L	1							5"	11/20/2003					G	BGH		Moved Flag 0.5' W
36	4073481.037	378483.167	17.92	High Priority	8/29/2003		4	10/18/2003	OT	WIRE 6" L	1							3"	11/17/2003					G	BGH		Moved Flag 3' SW; Weak Anomaly
37	4073597.2	378677.28	18.01	High Priority	8/29/2003		15	10/8/2003	OT	10PENNY NAIL	1							2"	11/10/2003					G	BGH		
38	4073514	378793.44	18.09	High Priority	8/29/2003		12	10/9/2003	OT	NAIL 6" L x 1/4" OD	1							5"	11/6/2003					G	BGH		Moved Flag 1' E
39	4073586.72	378676.96	18.11	High Priority	8/29/2003		13	10/8/2003	NC	NO CONTACT									11/14/2003					P	BGH		
40	4073588.4	378693.04	18.39	High Priority	8/29/2003		4	10/8/2003	NC	NO CONTACT	0								11/10/2003					P	BGH		
41	4073497.28	378458.32	18.64	High Priority	8/29/2003		8	10/18/2003	OT	7" BOLT W/WASHER + NUT, NAIL 4" L	2							3"-4"	11/17/2003					G	BGH		
42	4073608	378682.96	18.83	High Priority	8/29/2003		18	10/8/2003	OT	2 CHUNKS REINFORCED CONCRETE	2							12"	11/10/2003					G	BGH		
43	4073572.32	378729.68	18.91	High Priority	8/29/2003		9	10/8/2003	OT	NAILS (5)	5							1"-4"	11/4/2003					G	BGH		Moved Flag .5' S
44	4073578.48	378719.6	19.20	High Priority	8/29/2003		9	10/8/2003	OT	4"L NAILS, 3' BARBED WIRE	2							1.5'	11/14/2003					G	BGH		Moved Flag .5' SE
45	4073603.92	378699.28	19.31	High Priority	8/29/2003		14	10/8/2003	OT	SEE#83, GROUNDING ROD (2 EA)	1							2"-3"	11/14/2003					G	BGH		
46	4073497.92	378765.12	19.58	High Priority	8/29/2003		19	10/9/2003	U	LIVE MINE FUZE	1							4"	11/3/2003					G	BGH		Moved Flag 1' N
47	4073499.2	378488.48	20.16	High Priority	8/29/2003		12.8	10/18/2003	OT	HINGE 4" X 4"	1							4"	11/17/2003					G	BGH		Moved Flag 0.5' W
48	4073595.76	378674.56	20.53	High Priority	8/29/2003		10	10/8/2003	OT	WIRE, 2' L (COAT HANGER LIKE)	1							0"-10"	11/10/2003					G	BGH		
49	4073497.84	378781.6	20.56	High Priority	8/29/2003		15	10/9/2003	OT	PAIL BAIL 18" L	1							4"	11/3/2003					G	BGH		Moved Flag 1' N
50	4073572.64	378681.76	20.57	High Priority	8/29/2003		8	10/8/2003	OT	ASSORTED NAILS	1							4"-18"	11/13/2003					G	BGH		
51	4073499.04	378569.6	20.99	High Priority	8/29/2003		21	10/10/2003	OT	NAIL	1							5"	11/19/2003					G	BGH		
52	4073596	378683.76	21.47	High Priority	8/29/2003		11	10/8/2003	OT	WIRE IN BALL	1							SURFACE	11/10/2003					G	BGH		
53	4073496.64	378570	21.61	High Priority	8/29/2003		20	10/10/2003	OT	NAIL	1							3"	11/19/2003					G	BGH		Moved Flag 0.5' S
54	4073515.04	378812.64	22.35	High Priority	8/29/2003		11	10/9/2003	OT	VIENNA SAUS. CAN LID	1							6"	11/6/2003					G	BGH		Moved Flag 1'E
55	4073515.28	378801.28	22.72	High Priority	8/29/2003		12	10/9/2003	NC	NO CONTACT	0								11/6/2003					P	BGH		8' Long Anomaly
56	4073503.28	378793.12	23.02	High Priority	8/29/2003		26	10/9/2003	OT	WIRE 2" + 3"	2							2"	11/3/2003					G	BGH		Moved Flag 2' SE
57	4073573.84	378679.44	23.59	High Priority	8/29/2003		11	10/8/2003	OT	NAIL 4" L / TWISTED WIRE 3' L	2							8"	11/14/2003					G	BGH		

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS
Background Value (mV / nT): _____

Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator
Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
58	4073568.08	378679.36	23.64	High Priority	8/29/2003		11	10/8/2003	OT	DBL STRAND BARBED WIRE 6'	1							4"	11/13/2003					G	BGH		
59	4073501.6	378778.72	24.06	High Priority	8/29/2003		25	10/9/2003	OT	BARBED WIRE 3" L	1							3"	11/3/2003					G	BGH		Moved Flag 1' W
60	4073593.12	378693.76	24.58	High Priority	8/29/2003		15	10/8/2003	OT	COPPER GROUNDING ROD	1							36"	11/10/2003					G	BGH		
61	4073500.48	378481.12	24.69	High Priority	8/29/2003		13	10/18/2003	OT	WIRE 18" L	1							4"-7"	11/17/2003					G	BGH		Moved Flag 0.5' W
62	4073498.08	378450.96	25.26	High Priority	8/29/2003		25	10/18/2003	OT	WIRE 6" L	1							4"	11/17/2003					G	BGH		
63	4073496.56	378575.44	25.31	High Priority	8/29/2003		12	10/10/2003	OT	NO FLAG, APPROX LOCATION, STRAPPING 16"L X 1" W X 1/8"	1							1"	11/20/2003					G	BGH		
64	4073583.6	378720.88	25.52	High Priority	8/29/2003		24	10/8/2003	OT	2 NAILS 4" L	1							3"	11/14/2003					G	BGH		Moved Flag .5 NW
65	4073600.8	378677.92	25.61	High Priority	8/29/2003		15	10/8/2003	OT	WIRE, SIZE OF COAT HANGER	1							3"	11/10/2003					G	BGH		
66	4073494.8	378737.04	25.68	High Priority	8/29/2003		23	10/9/2003	OT	DRIFT PIN	1	1 LB					3"		11/3/2003		Y		11/3	G	BGH		Moved Flag 1' W
67	4073591.44	378684.8	25.84	High Priority	8/29/2003		19	10/8/2003	OT	1/4" WIRE 10" L	1							2"	11/10/2003					G	BGH		
68	4073487.36	378576.16	25.96	High Priority	8/29/2003		16	10/14/2003	OT	HORSE SHOE	1							8"	11/20/2003					G	BGH		
69	4073591.44	378736.32	26.11	High Priority	8/29/2003		8	10/8/2003	OT	NAILS 4" L	3							1"-3"	11/4/2003					G	BGH		
70	4073572.08	378694.56	26.11	High Priority	8/29/2003		20	10/8/2003	OT	NAILS	4							3"-6"	11/13/2003					G	BGH		
71	4073490.88	378576.32	26.45	High Priority	8/29/2003		11	10/14/2003	OT	NAILS	1							3"	11/20/2003					G	BGH		Moved Flag 0.5' E
72	4073557.84	378692.64	28.50	High Priority	8/29/2003		23	10/8/2003	OT	COAX CABLE 15'	1							SURFACE	11/13/2003					G	BGH		
73	4073502.96	378583.84	28.79	High Priority	8/29/2003		22	10/10/2003	OT	15 ROW DISC PLOW	1		60"	TO THE N					11/20/2003					G	BGH		
74	4073607.36	378699.6	29.65	High Priority	8/29/2003		15	10/8/2003	OT	WIRE 14" L	1							6"	11/14/2003					G	BGH		
75	4073516.16	378794	30.27	High Priority	8/29/2003		25	10/9/2003	OT	METAL STRAPPING 3' EACH	2	2 LBS						2"-3"	11/6/2003					G	BGH		Hit 1' N of Dot
76	4073592.72	378678.88	31.24	High Priority	8/29/2003		14	10/8/2003	OT	BARBED WIRE, 3'	1							10"	11/10/2003					G	BGH		
77	4073512.32	378796.88	31.60	High Priority	8/29/2003		22	10/9/2003	OT	REINFORCING WIRE 18"	1							6"	11/6/2003					G	BGH		
78	4073605.44	378704.48	31.71	High Priority	8/29/2003		43	10/8/2003	OT	COILED WIRE 10" L	1							8"	11/14/2003					G	BGH		
79	4073600.08	378738.48	32.21	High Priority	8/29/2003		25	10/8/2003	OT	PIPE 1/4" x 4" L/2.5" x 3" L	2							4" & 8"	11/4/2003					G	BGH		Moved Flag 1' NW
80	4073569.84	378734.16	32.48	High Priority	8/29/2003		38	10/8/2003	OT	ANIMAL TRAP W/ ANCHOR AND CHAIN	1							12"	11/4/2003					G	BGH		Moved Flag 1' SE
81	4073502.64	378569.36	32.93	High Priority	8/29/2003		15	10/10/2003	OT	2 NAILS	1							8"	11/19/2003					G	BGH		
82	4073493.76	378775.84	33.53	High Priority	8/29/2003		20	10/9/2003	OT	PITCHFORK, 3 TINES	1							2"-7"	11/3/2003					G	BGH		Moved Flag .5' N
83	4073605.76	378698.4	34.73	High Priority	8/29/2003		19	10/8/2003	OT	SEE #45, GROUNDING RODS (2 EA)	1							2"-3"	11/14/2003					G	BGH		
84	4073594.96	378693.92	35.92	High Priority	8/29/2003		19	10/8/2003	OT	REINFORCED CONCRETE 3/8" REBAR	1							18"	11/10/2003					G	BGH		
85	4073588.051	378735.442	35.95	High Priority	8/29/2003		18	10/8/2003	OT	NAILS 3-4" L	5							0"-4"	11/4/2003					G	BGH		Moved Flag .5' S
86	4073569.28	378734.32	36.18	High Priority	8/29/2003				OT	SEE #80 - ANIMAL TRAP W/ ANCHOR AND CHAIN	1							12"	11/4/2003					G	BGH		Pulled Flag Same as 80
87	4073500.96	378568.48	37.86	High Priority	8/29/2003		30	10/10/2003	OT	BANDING 14"L X 1/2" W	1							6"	11/19/2003					G	BGH		
88	4073559.76	378690.48	38.51	High Priority	8/29/2003		25	10/8/2003	OT	BANDING MATERIAL 1-5" W X 15" L	1							12"	11/13/2003					G	BGH		
89	4073516.96	378753.52	38.83	High Priority	8/29/2003		38	10/9/2003	OT	REBAR 8" L	1							24"	11/3/2003					G	BGH		Moved Flag 1' W
90	4073487.76	378571.36	38.90	High Priority	8/29/2003		25	10/14/2003	NC	NO FLAG, NO CONTACT	0								11/20/2003					P	BGH		Moved Flag 1' NW
91	4073517.52	378794.16	39.09	High Priority	8/29/2003			10/9/2003	OT	TIN CAN REMAINS	1								11/6/2003					G	BGH		Same Anomaly as 75 Pulled Flag
92	4073509.2	378756	44.23	High Priority	8/29/2003		35	10/9/2003	OT	METAL STRAPPING 12 EA 16 PENNY NAILS	13							SURFACE	11/3/2003					G	BGH		Moved Flag .5' N
93	4073594.32	378690.32	44.30	High Priority	8/29/2003		20	10/8/2003	OT	5/8" REBAR 3" L - CONCRETE	1							10"	11/10/2003					G	BGH		
94	4073509.68	378781.12	44.87	High Priority	8/29/2003		24	10/9/2003	OT	2 RODS 16" + 10"/BANDING 24"	3							18"	11/3/2003					G	BGH		
95	4073501.28	378563.12	44.91	High Priority	8/29/2003		43	10/10/2003																G	BGH		Moved Flag 1' S
96	4073584.08	378713.04	45.53	High Priority	8/29/2003		19	10/8/2003	OT	NAILS	1							SURFACE	11/14/2003					G	BGH		
97	4073569.76	378689.76	45.83	High Priority	8/29/2003		52	10/8/2003	OT	BOLT 10"L X 3/4" DIA W/NUT & WASHER	1							6"	11/13/2003					G	BGH		
98	4073503.6	378577.2	47.97	High Priority	8/29/2003		34	10/14/2003	OT	3/8" WIRE 15" L	1							6"	11/19/2003					G	BGH		
99	4073498.4	378579.36	48.52	High Priority	8/29/2003		40	10/10/2003	OT	NAIL	1							2"	11/19/2003					G	BGH		
100	4073501.36	378584.64	49.59	High Priority	8/29/2003		40	10/10/2003	OT	6" FILE	1		18"	E OF FLAG				5"	11/20/2003					G	BGH		
101	4073525.52	378756.08	50.10	High Priority	8/29/2003		50	10/9/2003	OT	THREADED ROD W/ NUT 3/4" X 4'	1							5"	11/3/2003					G	BGH		Moved Flag 1' E
102	4073499.52	378581.76	52.82	High Priority	8/29/2003		30	10/10/2003	OT	SMALL NAIL	1							8"	11/19/2003					G	BGH		
103	4073484.89	378488.514	57.35	High Priority	8/29/2003		50	10/18/2003	OT	BENT ROD 3/8 DIA X 30" L	1							6"	11/17/2003					G	BGH		Moved Flag 0.5' W
104	4073602.16	378680.56	74.78	High Priority	8/29/2003		61	10/8/2003	OT	1/2" REBAR 8" L	1							4"	11/10/2003					G	BGH		
105	4073490.48	378801.12	70.21	High Priority	8/29/2003		92	10/9/2003	OT	BOLT 5/8" DIAMETER X 16" L	1							1"	11/3/2003					G	BGH		Moved Flag 1' E
106	4073517.52	378794.16	39.09	High Priority	8/29/2003				OT	SEE 91, TIN CAN REMAINS	1								11/6/2003					G	BGH		Same as 91 Not Done
107	4073516.32	378784.8	94.11	High Priority	8/29/2003		51	10/9/2003	OT	5 GAL BUCKET	1								11/6/2003					G	BGH		
108	4073499.44	378782.8	21826.03	High Priority	8/29/2003		3800	10/9/2003	OT	DRUM TOP 2' DIA	1							2"-7"	11/3/2003					G	BGH		
109	4073502.72	378778.16	80.27	High Priority	8/29/2003		47	10/9/2003	OT	NAILS 4" L	2							8"	11/3/2003					G	BGH		
110	4073520.48	378773.28	120.48	High Priority	8/29/2003		82	10/9/2003	OT	2 NAILS/1.5" DIA X 16" L, CONVEYOR ROLLER/CAN LID	4							SURFACE	11/6/2003					G	BGH		
111	4073521.52	378759.44	91.72	High Priority	8/29/2003		60	10/9/2003	OT	SOFT METAL (CHUNK)	1	2 LB						SURFACE	11/3/2003					G	BGH		Flag on Ground, Hit Laying on Surface (Lead Chunk)
112	4073509.2	378756	44.23	High Priority	8/29/2003																			G	BGH		Same as 92 Pulled Flag
113	4073504.24	378747.12	137.60	High Priority	8/29/2003		105	10/9/2003	OT	STRAPPING/2 CYLINDERS 1.5" X 15"	4							0"-14"	11/3/2003					G	BGH		Moved Flag 1.5' N

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results									Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
114	4073594.48	378743.28	118.22	High Priority	8/29/2003		118	10/10/2003	OT	1/2" REBAR 2' L	1							2"	11/4/2003					G	BGH		
115	4073561.92	378730.8	458.25	High Priority	8/29/2003		255	10/8/2003	NC	NO FLAG/NO CONTACT									11/14/2003					P	BGH		Moved Flag .5' SE
116	4073537.76	378727.36	653.04	High Priority	8/29/2003		615	10/9/2003	OT	20" TRASH CAN LID	1							4"	11/14/2003					G	BGH		
117	4073580.08	378724.16	194.69	High Priority	8/29/2003		133	10/8/2003	OT	4" NAIL/STEEL STRAPPING 2" W X 12" L X 1/4"	2							SURFACE - 1"	11/4/2003					G	BGH		
118	4073581.76	378712.4	46.59	High Priority	8/29/2003		38	10/8/2003	OT	NAILS 7 EA	1							3"-4"	11/14/2003					G	BGH		
119	4073579.2	378705.52	204.76	High Priority	8/29/2003		175	10/8/2003	OT	CONDUIT 30" L	1							SURFACE	11/13/2003					G	BGH		
120	4073598.24	378693.36	38.55	High Priority	8/29/2003		19	10/8/2003	OT	CAST IRON GRATE IN PIECES 6" X 6"	1							8"	11/10/2003					G	BGH		
121	4073557.52	378687.28	36.57	High Priority	8/29/2003		27	10/8/2003	OT	POLE 3/4" DIA X 12" L W/ SQ NUT	1							12"	11/13/2003					G	BGH		
122	4073564	378679.44	106.02	High Priority	8/29/2003		45	10/8/2003	OT	RUSTED REMNANTS OF CAN	1							8"	11/13/2003					G	BGH		Channel 1 - 260 mv
123	4073569.68	378672.96	63.19	High Priority	8/29/2003		25	10/8/2003	OT	NAIL 4" L	1							1"	11/14/2003					G	BGH		
124	4073498.32	378592.56	37.32	High Priority	8/29/2003		32	10/14/2003	OT	NO FLAG, APPROX LOCATION, FENCE POST W/BARBED WIRE	1							5"-1"	11/20/2003					G	BGH		Moved Flag 1.8' NE
125	4073499.28	378585.44	69.43	High Priority	8/29/2003		31	10/10/2003	OT	2 20 PENNY NAILS	1		18"	E OF FLAG				4"	11/20/2003					G	BGH		
126	4073487.6	378580.88	117.57	High Priority	8/29/2003		129	10/14/2003	OT	PART OF PLOW TINE	1	5 LBS						5"	11/20/2003					G	BGH		Moved Flag 1.5' E
127	4073504.72	378568.16	64.24	High Priority	8/29/2003		42	10/10/2003	OT	SQ. LID 5" X 5"	1							5"	11/19/2003					G	BGH		Moved Flag 1.5 SE
128	4073503.36	378561.52	81.14	High Priority	8/29/2003		150	10/10/2003	OT	FLAT IRON 15" L X 1" W X 1/4" THICK	1							4"	11/19/2003					G	BGH		
129	4073481.04	378487.04	46.75	High Priority	8/29/2003		53	10/18/2003	OT	1/2" OD ROD 18" L	1							6"	11/17/2003					G	BGH		Moved Flag 2.5' N
130	4073506.8	378487.04	64.87	High Priority	8/29/2003		59	10/18/2003	OT	WIRE 12" L	1							3"	11/17/2003					G	BGH		Moved Flag 1.5' SW
131	4073492.48	378486.4	115.84	High Priority	8/29/2003		59	10/18/2003	OT	10 WIRES 12" - 16" L	1							3"	11/17/2003					G	BGH		
132	4073475.36	378484.96	376.34	High Priority	8/29/2003		448	10/18/2003	OT	SOME SORT OF GUARD, SHEET METAL 10" ACROSS	1							4"	11/17/2003					G	BGH		Moved Flag 0.5' E
133	4073486.08	378482.64	43.37	High Priority	8/29/2003		78	10/18/2003	OT	METAL 12" L X 1" W X 1/4" THICK	1							10"	11/17/2003					G	BGH		Moved Flag 1' S
134	4073506.8	378458.24	106.90	High Priority	8/29/2003		103	10/18/2003	OT	1/2" REBAR 60" L	1							2"	11/17/2003					G	BGH		Moved Flag 1' N
135	4073608.5	378691.75	137.04	High Priority	8/29/2003		139	10/8/2003	OT	REINF. CONCRETE, TRIANGULAR SHAPED, 30" X 24" X 36" X 4" THICK	1							12"	11/10/2003					G	BGH		
136	4073601	378732.563	52.64	High Priority	8/29/2003		80	10/8/2003	OT	GUY WIRE ANCHOR	1							0"-18"	11/4/2003					G	BGH		Moved Flag 1.5' N
137	4073602	378715.031	53.84	High Priority	8/29/2003		33	10/8/2003	OT	1" BOLT 2" L	1							6"	11/14/2003					G	BGH		Moved Flag .5' SE
138	4073398.4	378607.68	278.80	Piglike	8/29/2003		253	10/18/2003																			Moved Flag 1.5' SW
139	4073365.36	378607.12	129.57	Piglike	8/29/2003		117	10/18/2003																			
140	4073553.6	378782.32	320.78	Piglike	8/29/2003		480	10/8/2003																			Moved Flag 2' S
141	4073601.76	378412	920.18	Piglike	8/29/2003			10/18/2003																			Fence Post
142	4073464.32	378878.08	20852.82	Piglike	8/29/2003		2400	10/9/2003	OT	CONCRETE PIPE, MISSING MANHOLE COVER	1							18"	11/6/2003					G	BGH		
143	4073495.92	378845.44	119.73	Piglike	8/29/2003		144	10/9/2003																			
144	4073400	378412.8	258.72	Piglike	8/29/2003		253	10/18/2003																			
145	4073405.44	378551.6	913.03	Piglike	8/29/2003		1021	10/18/2003																			
146	4073378.08	378611.2	1210.52	Piglike	8/29/2003		781	10/18/2003																			
147	4073481.04	378815.6	122.88	Piglike	8/29/2003		140	10/9/2003	OT	FARM IMPLEMENT 8"L X 4" W X 4" TALL	1	2 LBS							11/6/2003					G	BGH		
148	4073512.64	378807.44	972.70	Piglike	8/29/2003		680	10/9/2003	OT	LAMP BASE 12" DIA, 3" PIPE, 18" L	1	10 LBS						6"	11/6/2003					G	BGH		
149	4073572.32	378719.44	1823.80	Piglike	8/29/2003		1200	10/8/2003	OT	8" DIA PIPE 3.5' L X 1/4" THICK	1							6"	11/14/2003					G	BGH		
150	4073443.04	378655.76	169.40	Piglike	8/29/2003		138	10/10/2003																			Moved Flag 1.5' S
151	4073619.68	378808.32	503.13	Piglike	8/29/2003		250	10/9/2003	OT	6" PIPE, 3' L SPLIT IN HALF	1	20 LBS						10"	11/5/2003					G	BGH		Moved Flag 2.5' SW
152	4073437.12	378546.56	185.95	Piglike	8/29/2003		170	10/15/2003																			Moved Flag 1.5' W
153	4073486.32	378783.44	542.55	Piglike	8/29/2003		410	10/9/2003	OT	PIPE 3" DIA X 20" L	1							2"	11/6/2003					G	BGH		
154	4073508.56	378872.4	870.31	Piglike	8/29/2003		555	10/9/2003	OT	STEEL PLATE 1" X 3" X 1/2"	1							12"-18"	11/6/2003					G	BGH		
155	4073391.2	378566.32	172.37	Piglike	8/29/2003		102	10/18/2003																			Moved Flag 1' S
156	4073528.4	378845.52	502.35	Piglike	8/29/2003		280	10/8/2003																			
157	4073458.24	378678.4	176.01	Piglike	8/29/2003		92	10/9/2003																			
158	4073356.56	378463.12	188.86	Piglike	8/29/2003		130	10/18/2003																			Moved Flag 0.5' W; Multiple Contacts
159	4073571.84	378807.04	173.26	Piglike	8/29/2003		135	10/8/2003																			
160	4073562.4	378786.32	205.14	Piglike	8/29/2003		187	10/8/2003																			
161	4073514	378846.48	621.29	Piglike	8/29/2003			10/9/2003																			Surface Metal
162	4073519.2	378744.64	131.70	Piglike	8/29/2003		130	10/9/2003	OT	REBAR 8" L (6 EA)	6							2"-6"	11/3/2003					G	BGH		Moved Flag 1' W
163	4073368.24	378603.12	673.77	Piglike	8/29/2003		680	10/18/2003																			
164	4073493.76	378580.72	205.00	Piglike	8/29/2003		125	10/14/2003	OT	BRIDLE FOR HORSE; CHAIN LINKS 7" L X 6" W	2							6"	11/19/2003					G	BGH		Moved Flag 1' W
165	4073633.84	378770.96	167.51	Piglike	8/29/2003		225	10/9/2003	OT	REBAR 6" L	1							1"	11/5/2003					G	BGH		
166	4073573.76	378765.28	203.47	Piglike	8/29/2003		238	10/8/2003	OT	ELEC CONDUIT (2 WIRE) 4' L X 1" DIA	1							1"	11/13/2003					G	BGH		Moved Flag 1.5' SE
167	4073510.08	378853.2	152.18	Piglike	8/29/2003		125	10/9/2003																			
168	4073538.96	378572.72	155.36	Piglike	8/29/2003		55	10/14/2003	OT	NO FLAG, LOCATED W/SCHONSTEDT 15" L 7/16" SQ HEAD BOLT	1							4"	11/20/2003					G	BGH		Moved Flag 1.5' NW

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
169	4073395.76	378572.08	166.18	Piglike	8/29/2003		223	10/18/2003																		
170	4073494.24	378574.48	35.23	Piglike	8/29/2003		20	10/10/2003	OT	NAILS	1							4"	11/20/2003					G	BGH		
171	4073384.32	378607.2	117.25	Piglike	8/29/2003		67	10/18/2003																			
172	4073434.16	378606.16	50.98	Piglike	8/29/2003		18	10/15/2003																			Moved Flag 0.25' S
173	4073531.04	378580.24	112.63	Piglike	8/29/2003		109	10/14/2003	OT	8" GROUNDING ROD + 24" BRAIDED CABLE	1							3"	11/20/2003					G	BGH		
174	4073560.56	378691.2	46.22	Piglike	8/29/2003		28	10/8/2003	OT	GROUNDING ROD	1							24"	11/13/2003					G	BGH		
175	4073592	378448.8	46.47	Piglike	8/29/2003		30	10/18/2003																			Moved Flag 1.5' N
176	4073514.56	378550	46.74	Piglike	8/29/2003		76	10/14/2003	OT	FARM TOOL 10" L X 2" W	1							4"	11/19/2003					G	BGH		Moved Flag 1' SE
177	4073458.56	378551.36	47.49	Piglike	8/29/2003		68	10/15/2003	OT	STEEL RING 4.5" OD X 1" W X 1/4" THICK	1							6"	11/19/2003					G	BGH		
178	4073525.52	378756.08	50.10	Piglike	8/29/2003																						Same as 101 Not There Pulled Flag
179	4073482.32	378614.56	45.96	Piglike	8/29/2003		26	10/15/2003																			
180	4073490.48	378570.16	51.57	Piglike	8/29/2003		56	10/14/2003	OT	NAILS	1							1"-3"	11/19/2003					G	BGH		Moved Flag 1' E
181	4073526.32	378386.08	51.94	Piglike	8/29/2003		70	10/18/2003																			2 Contacts
182	4073487.04	378631.36	53.41	Piglike	8/29/2003		94	10/14/2003																			
183	4073364.4	378506.48	53.86	Piglike	8/29/2003		59	10/18/2003																			
184	4073583.28	378399.12	55.86	Piglike	8/29/2003		79	10/18/2003																			Moved Flag 1.5' SE
185	4073529.36	378466.16	57.99	Piglike	8/29/2003		206	10/18/2003	OT	W/BRASS TURNBUCKLES STRAPPING 18" L X 2" W X 1/4" THICK	1								11/18/2003					G	BGH		2 Contacts
186	4073616.24	378722	58.21	Piglike	8/29/2003		45	10/9/2003	OT	REBAR/DEBRIS/BRICK	1								11/5/2003					G	BGH		
187	4073466	378860.64	46.20	Piglike	8/29/2003		40	10/9/2003	OT	BARBED WIRE 10" L	1							6"-8"	11/6/2003					G	BGH		
188	4073507.52	378581.04	59.23	Piglike	8/29/2003		616	10/14/2003	OT	FARM IMPLEMENT	1							SURFACE	11/19/2003					G	BGH		Possible surface scrap - disc
189	4073507.28	378572.88	45.75	Piglike	8/29/2003		36	10/10/2003	OT	HAMMER	1							4"	11/19/2003					G	BGH		
190	4073533.76	378419.2	38.50	Piglike	8/29/2003		17	10/18/2003																			
191	4073468.88	378589.84	40.82	Piglike	8/29/2003		25	10/14/2003																			Moved Flag 1' N
192	4073439.44	378475.12	36.80	Piglike	8/29/2003		25	10/18/2003																			
193	4073592.48	378398.4	37.47	Piglike	8/29/2003		33	10/18/2003																			
194	4073355.44	378570.08	37.67	Piglike	8/29/2003		26	10/18/2003																			
195	4073464.16	378446.88	37.70	Piglike	8/29/2003		37	10/18/2003	OT	1/2" REBAR 24" L	1							3"	11/19/2003					G	BGH		
196	4073493.36	378448.8	38.02	Piglike	8/29/2003		41	10/18/2003	OT	HORSE SHOE	1							1"	11/17/2003					G	BGH		2 Contacts; 2nd Contact 2' NW
197	4073507.28	378400.56	45.08	Piglike	8/29/2003		40	10/18/2003																			
198	4073551.76	378800.8	45.04	Piglike	8/29/2003		48	10/8/2003																			
199	4073599.6	378722.16	41.04	Piglike	8/29/2003		22	10/8/2003	OT	PART OF LEAF SPRING 14" L X 2" W	1							12"-14"	11/14/2003					G	BGH		
200	4073563.6	378516.48	41.16	Piglike	8/29/2003		27	10/18/2003	OT	3/8" OD FENCE POST	1							SURFACE	11/18/2003					G	BGH		
201	4073651.2	378786.08	42.26	Piglike	8/29/2003		90	10/9/2003	OT	2 PIECES 3/8" REBAR 1'L/BAILING WIRE	3							4"-6"	11/5/2003					G	BGH		Moved Flag 2' S
202	4073410.32	378630.32	42.98	Piglike	8/29/2003		28	10/18/2003																			
203	4073458.24	378583.12	42.99	Piglike	8/29/2003		40	10/15/2003																			
204	4073536	378844.96	43.51	Piglike	8/29/2003		40	10/9/2003																			
205	4073606.88	378434.72	59.21	Piglike	8/29/2003		50	10/18/2003																			Moved Flag 2' E
206	4073566.72	378858.8	113.62	Piglike	8/29/2003		180	10/9/2003																			
207	4073558.4	378858.08	91.21	Piglike	8/29/2003		120	10/9/2003																			Moved Flag .5' N
208	4073422.72	378562.08	86.77	Piglike	8/29/2003		59	10/18/2003																			Moved Flag 5' W
209	4073567.36	378745.76	83.44	Piglike	8/29/2003		87	10/8/2003	OT	VW TYPE TIRE IRON	1							1"	11/14/2003					G	BGH		
210	4073407.36	378616.4	85.68	Piglike	8/29/2003		52	10/18/2003																			
211	4073404.48	378562.56	79.05	Piglike	8/29/2003		69	10/18/2003																			
212	4073513.12	378781.52	87.06	Piglike	8/29/2003		130	10/9/2003	OT	.45 CAL SLUG, HINGE 1.5" W X 10" L/5 NAILS	7							6"-10"	11/3/2003					G	BGH		Moved Flag 1' N
213	4073621.36	378782.48	87.91	Piglike	8/29/2003		140	10/9/2003	OT	STEEL STRAPPING 2" W X 3.5' L	1							5"-24"	11/5/2003					G	BGH		Moved Flag 1' S
214	4073516.24	378750.64	79.90	Piglike	8/29/2003		90	10/9/2003	OT	REBAR 12" X 7/16"	1							24"	11/3/2003					G	BGH		Moved Flag 1.5' N
215	4073383.6	378563.36	92.44	Piglike	8/29/2003		33	10/18/2003																			
216	4073555.76	378746.24	95.70	Piglike	8/29/2003		29	10/8/2003	NC	NO CONTACT									11/14/2003					P	BGH		
217	4073451.76	378509.12	100.34	Piglike	8/29/2003		126	10/18/2003	OT	IRON PIPE 6" L X 5" W	1	4 LBS						1"	11/18/2003					G	BGH		
218	4073558.56	378510.16	102.93	Piglike	8/29/2003		222	10/18/2003	OT	FLAT STEEL 8" L X 18" W X 1/8" THICK	1							3"	11/18/2003					G	BGH		
219	4073580.4	378734.24	104.47	Piglike	8/29/2003		80	10/8/2003	OT	STRAPPING/HVY GAGE WIRE	2							SURFACE-3"	11/4/2003					G	BGH		Moved Flag 1' SW
220	4073491.84	378585.6	107.57	Piglike	8/29/2003		92	10/14/2003	OT	NO FLAG, APPROX LOCATION, NAIL	1							1"	11/20/2003					P	BGH		Moved Flag 1' NW
221	4073641.52	378809.52	109.06	Piglike	8/29/2003		81	10/9/2003	OT	SEE 201, REBAR (2)/BAILING WIRE	3							4"-6"	11/5/2003					G	BGH		
222	4073567.12	378687.68	80.89	Piglike	8/29/2003		48	10/8/2003	OT	REBAR 18" L	1							16"	11/13/2003					G	BGH		
223	4073595.68	378734.88	59.96	Piglike	8/29/2003		32	10/8/2003	OT	PIPE 1"OD X 7" L	1							3"	11/4/2003					G	BGH		
224	4073436.4	378514	79.52	Piglike	8/29/2003		70	10/18/2003																			Moved Flag 3' NE

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS
Background Value (mV / nT): _____ _____

Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator
Background Value (mV / nT): _____ _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
225	4073365.52	378435.2	64.30	Piglike	8/29/2003		74	10/18/2003																		Moved Flag 1' N
226	4073540.32	378378.4	77.81	Piglike	8/29/2003		73	10/18/2003																		
227	4073579.04	378729.36	61.59	Piglike	8/29/2003		45	10/8/2003	OT	2 8" X 3/4" DRIFT PINS/4" NAIL	3							6"-4"	11/4/2003					G	BGH		
228	4073465.44	378624.96	61.68	Piglike	8/29/2003		123	10/15/2003																		Moved Flag 0.5' N
229	4073584.64	378683.92	62.55	Piglike	8/29/2003		62	10/8/2003	OT	METAL STRAP 1'L X 1.5"WX 1/4" T	1							4"	11/14/2003					G	BGH		
230	4073648	378701.12	63.10	Piglike	8/29/2003		46	10/10/2003	OT	SPRING 3/8 DIA X 15" L	1							2"	11/5/2003					G	BGH		
231	4073488.56	378869.92	63.31	Piglike	8/29/2003		42	10/9/2003	OT	5" X 5" X 25" PIECE OF STEEL	1							2"	11/6/2003					G	BGH		
232	4073504.88	378611.28	79.26	Piglike	8/29/2003		102	10/15/2003																		
233	4073605.36	378706.88	72.92	Piglike	8/29/2003		56	10/8/2003	OT	CIRC. FLANGE 6" DIA X 1.5" THICK	1							10"	11/14/2003					G	BGH		
234	4073364.56	378563.2	75.67	Piglike	8/29/2003		57	10/18/2003																		
235	4073355.6	378506.64	75.87	Piglike	8/29/2003		62	10/18/2003																		Moved Flag 1' E
236	4073561.04	378685.2	75.89	Piglike	8/29/2003		50	10/8/2003	OT	METAL STRAPPING 15" L X 1.5" W X 1/8" THICK	1							10"	11/13/2003					G	BGH		
237	4073607.04	378737.12	77.78	Piglike	8/29/2003		42	10/10/2003	OT	4"x4" REBAR MESH	1							1"	11/4/2003					G	BGH		Moved Flag 1.5' S
238	4073498.16	378674.64	60.01	Piglike	8/29/2003		64	10/8/2003																		
239	4073363.12	378618.72	78.66	Piglike	8/29/2003		60	10/18/2003																		
240	4073578.4	378783.2	47.86	Piglike	8/29/2003		30	10/8/2003	OT	PLOW POINT	1	3 LBS						10"	11/13/2003					G	BGH		
241	4073604	378895.35	150.08	Piglike	8/29/2003		74	10/9/2003	OT	CONCRETE W/REINF. MESH	1							24"-36"	11/5/2003					G	BGH		
242	4073546.23	378805.65	110.04	Piglike	8/29/2003			10/8/2003																		No Detect - Pulled Flag
243	4073535.59	378865.7	107.02	Piglike	8/29/2003		145	10/9/2003																		
244	4073486.39	378676.06	83.12	Piglike	8/29/2003		91	10/8/2003																		
245	4073450.29	378559.02	71.25	Piglike	8/29/2003		67	10/15/2003																		Moved Flag 0.5' SW
246	4073549.27	378806.03	89.17	Piglike	8/29/2003		130	10/8/2003																		Moved Flag 3' S
247	4073539.01	378822.37	163.05	Piglike	8/29/2003		76	10/9/2003																		Moved Flag 4' N
248	4073571.31	378885.09	60.07	Piglike	8/29/2003		33	10/9/2003																		Moved Flag 1.5' S
249	4073397.84	378623.25	39.29	Piglike	8/29/2003		51	10/18/2003																		
250	4073548.13	378783.99	84.72	Piglike	8/29/2003			10/8/2003																		No Detect Pulled Flag
251	4073650.88	378820.24	595.83	High Amplitude, Not Piglike	8/29/2003		460	10/9/2003	OT	ELEC. CONDUIT 1" DIA X 8' L	1							4"-12"	11/5/2003					G	BGH		
252	4073635.76	378782.24	79.42	High Amplitude, Not Piglike	8/29/2003		60	10/9/2003																		
253	4073632.72	378886	293.68	High Amplitude, Not Piglike	8/29/2003		160	10/9/2003	NC	NO CONTACT	0								11/5/2003					P	BGH		Moved Flag .5' SW
254	4073625.6	378772.88	40.16	High Amplitude, Not Piglike	8/29/2003		37	10/9/2003	OT	1/4" OD WIRE 6' L TWISTED	1							6"	11/5/2003					G	BGH		
255	4073624.4	378731.84	143.77	High Amplitude, Not Piglike	8/29/2003		103	10/9/2003	OT	PIPE 1" DIA X 18"	1							2"	11/5/2003					G	BGH		Moved Flag 1.5' N
256	4073622.4	378717.12	56.50	High Amplitude, Not Piglike	8/29/2003		38	10/9/2003	OT	FOUNDATION PIECES + TIN	1								11/5/2003					G	BGH		
257	4073619.6	378797.52	201.45	High Amplitude, Not Piglike	8/29/2003		260	10/9/2003	OT	1" PIPE 2' L	1							SURFACE	11/5/2003					G	BGH		
258	4073616.48	378849.44	65.45	High Amplitude, Not Piglike	8/29/2003		54	10/9/2003																		Moved Flag .5' S
259	4073612.32	378836.64	87.78	High Amplitude, Not Piglike	8/29/2003		106	10/9/2003																		
260	4073612.24	378715.92	193.91	High Amplitude, Not Piglike	8/29/2003		186	10/9/2003	OT	REINFORCED CONCRETE	1							6" +	11/14/2003					G	BGH		
261	4073611.6	378787.6	124.53	High Amplitude, Not Piglike	8/29/2003		152	10/9/2003																		Moved Flag 1' SE
262	4073608.48	378806.24	39.50	High Amplitude, Not Piglike	8/29/2003		36	10/9/2003																		Moved Flag .5' S
263	4073607.36	378752.08	453.23	High Amplitude, Not Piglike	8/29/2003		416	10/8/2003	OT	3/4" PIPE (BENT) 5'L/4' COAX CABLE	2							2"	11/4/2003					G	BGH		
264	4073607.2	378859.2	61.64	High Amplitude, Not Piglike	8/29/2003		92	10/9/2003																		

CWM Scoping and Security Study
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Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS
Background Value (mV / nT): _____

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Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
265	4073605.12	378743.6	36.23	High Amplitude, Not Piglike	8/29/2003		11	10/10/2003	OT	CONCRETE, REINFORCED	1							36"	11/4/2003					G	BGH		
266	4073600.56	378792.32	95.41	High Amplitude, Not Piglike	8/29/2003		132	10/8/2003																			
267	4073595.04	378411.28	43.10	High Amplitude, Not Piglike	8/29/2003																						
268	4073588.16	378470.96	574.43	High Amplitude, Not Piglike	8/29/2003																						
269	4073584.96	378847.76	48.85	High Amplitude, Not Piglike	8/29/2003		60	10/9/2003																			Moved Flag 2' S
270	4073580.32	378861.04	77.44	High Amplitude, Not Piglike	8/29/2003		70	10/9/2003																			
271	4073580.24	378745.68	53.92	High Amplitude, Not Piglike	8/29/2003		52	10/8/2003	OT	STRAPPING 14" L	1							10"	11/4/2003					G	BGH		Moved Flag 8" N
272	4073579.12	378793.76	99.04	High Amplitude, Not Piglike	8/29/2003		93	10/8/2003	OT	POSSIBLE TARGET STAND	1								11/13/2003					G	BGH		
273	4073578.4	378739.68	51.94	High Amplitude, Not Piglike	8/29/2003		30	10/8/2003	OT	STEEL STRAPPING 2" W X 12" L X 1/4"	1								11/4/2003					G	BGH		
274	4073568.72	378831.76	40.44	High Amplitude, Not Piglike	8/29/2003		46	10/9/2003																			
275	4073566.4	378771.68	668.69	High Amplitude, Not Piglike	8/29/2003			10/8/2003																			Non Detect - Pulled Flag
276	4073565.04	378828.64	62.83	High Amplitude, Not Piglike	8/29/2003		34	10/9/2003																			
277	4073560.08	378752.32	102.04	High Amplitude, Not Piglike	8/29/2003		70	10/8/2003	OT	1/4" WIRE 2.5' L	1							6"	11/14/2003					G	BGH		
278	4073558.48	378852.32	90.90	High Amplitude, Not Piglike	8/29/2003		34	10/9/2003																			Moved Flag .5' S
279	4073558.16	378776	95.86	High Amplitude, Not Piglike	8/29/2003		100	10/8/2003																			
280	4073555.84	378763.04	57.31	High Amplitude, Not Piglike	8/29/2003		35	10/8/2003	OT	PIPE 6" OD X 1/4" THICK X 8" L	1							18"	11/14/2003					G	BGH		Moved Flag .5' W
281	4073551.76	378773.36	244.10	High Amplitude, Not Piglike	8/29/2003		176	10/8/2003																			
282	4073547.44	378833.44	442.00	High Amplitude, Not Piglike	8/29/2003		410	10/9/2003																			Moved Flag 1' N
283	4073544.88	378802.8	372.12	High Amplitude, Not Piglike	8/29/2003		280	10/8/2003																			
284	4073543.12	378774.48	96.43	High Amplitude, Not Piglike	8/29/2003		46	10/8/2003	OT	BANDING MAT'L 3.5" L X 1" W X 1/4" THICK	1							6"	11/12/2003					G	BGH		
285	4073539.68	378559.92	51.20	High Amplitude, Not Piglike	8/29/2003		50	10/14/2003	OT	MTL BAND 3/16" THICK X 4" DIA X 3/4" W	1								11/20/2003					G	BGH		
286	4073535.12	378862.24	46.21	High Amplitude, Not Piglike	8/29/2003		118	10/9/2003																			Moved Flag .5' SW
287	4073534.96	378531.12	137.53	High Amplitude, Not Piglike	8/29/2003		530	10/18/2003																			Moved Flag 0.5' SE
288	4073534.32	378574	108.86	High Amplitude, Not Piglike	8/29/2003		106	10/14/2003	OT	FLAT IRON 12" L X 1-1/4" W X 1/4" THICK	1							4"	11/20/2003					G	BGH		Moved Flag 0.5' E
289	4073531.68	378379.76	81.88	High Amplitude, Not Piglike	8/29/2003																						
290	4073527.04	378574.32	58.37	High Amplitude, Not Piglike	8/29/2003		32	10/14/2003	OT	APPROXIMATELY 12 NAILS	1							3"	11/20/2003					G	BGH		

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Background Value (mV / nT): _____ _____

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Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
291	4073525.36	378578.24	69.51	High Amplitude, Not Piglike	8/29/2003		53	10/14/2003	OT	SNAPPLE BIT + 16 PENNY NAIL	1							1"	11/20/2003					G	BGH		Moved Flag 1' E
292	4073521.92	378580.4	250.98	High Amplitude, Not Piglike	8/29/2003		200	10/14/2003	OT	SPIKE 5" L	1							2"	11/20/2003					G	BGH		
293	4073521.36	378546.64	240.61	High Amplitude, Not Piglike	8/29/2003		321	10/14/2003	OT	SHEET MTL CAP 5" W X 8" L X 1/16" THICK	1							1"	11/20/2003					G	BGH		
294	4073517.12	378554	49.31	High Amplitude, Not Piglike	8/29/2003		55	10/14/2003	OT	18" L GROUNDING ROD W/ 2- 1" NUTS ON END	1							2"-20"	11/20/2003						BGH		
295	4073516.32	378517.12	258.07	High Amplitude, Not Piglike	8/29/2003																						
296	4073513.12	378502.88	427.64	High Amplitude, Not Piglike	8/29/2003																						
297	4073504.88	378825.92	49.15	High Amplitude, Not Piglike	8/29/2003		3	10/9/2003	OT	TOP OF 5 GAL BUCKET	1							4"	11/6/2003					G	BGH		190 Channel 1
298	4073504.32	378866.64	43.64	High Amplitude, Not Piglike	8/29/2003		30	10/9/2003	ORS	AFT PORTION OF RIFLE GRENADE	1								11/6/2003					G	BGH		Moved Flag .5' NE
299	4073503.2	378512.32	37.86	High Amplitude, Not Piglike	8/29/2003																						
300	4073501.44	378628.88	133.62	High Amplitude, Not Piglike	8/29/2003		112	10/15/2003																			
301	4073499.12	378548.4	615.47	High Amplitude, Not Piglike	8/29/2003		513	10/14/2003	OT	LG BUNCH OF NAILS	1								11/20/2003					G	BGH		Moved Flag 0.5' SW
302	4073495.84	378626	57.33	High Amplitude, Not Piglike	8/29/2003		29	10/15/2003																			Moved Flag 0.8' NE
303	4073494.16	378496.16	39.94	High Amplitude, Not Piglike	8/29/2003				NC	NO CONTACT	0								11/17/2003					G	BGH		
304	4073490.64	378595.36	122.77	High Amplitude, Not Piglike	8/29/2003		110	10/15/2003																			Moved Flag 2' S
305	4073489.76	378829.12	58.69	High Amplitude, Not Piglike	8/29/2003		95	10/9/2003	OT	2' OF 3/8" REBAR	1							2"	11/6/2003					G	BGH		1' NW of Dot
306	4073486	378627.12	488.59	High Amplitude, Not Piglike	8/29/2003		264	10/15/2003																			
307	4073481.68	378663.12	176.39	High Amplitude, Not Piglike	8/29/2003		156	10/8/2003																			
308	4073479.44	378501.76	77.99	High Amplitude, Not Piglike	8/29/2003				NC	NO CONTACT/NO FLAG	0								11/18/2003						BGH		
309	4073478.48	378578.48	73.22	High Amplitude, Not Piglike	8/29/2003		64	10/15/2003	OT	NO FLAG, APPROX LOCATION, HANDLE FM KNIFE 4" X 1/2" X 1/4"	1							1"	11/20/2003					G	BGH		
310	4073475.76	378703.28	48.95	High Amplitude, Not Piglike	8/29/2003		36	10/9/2003																			
311	4073472.64	378418.64	51.65	High Amplitude, Not Piglike	8/29/2003																						
312	4073472.4	379030.24	166.56	High Amplitude, Not Piglike	8/29/2003																						
313	4073470.32	378566.88	114.65	High Amplitude, Not Piglike	8/29/2003		108	10/15/2003	OT	NO FLAG, APPROX LOCATION, MTL STRIP 10" L X 2" W X 1/4" THICK	1							8"	11/20/2003					G	BGH		
314	4073462.8	378579.28	92.14	High Amplitude, Not Piglike	8/29/2003		86	10/15/2003	OT	8" X 6" X 1" TRIANGLE PLOW POINT	1	2-3 LBS						6"	11/20/2003					G	BGH		
315	4073461.44	378570.48	101.72	High Amplitude, Not Piglike	8/29/2003			10/15/2003	OT	3/8" OD FENCE POST 36" L	1							1"	11/20/2003					G	BGH		
316	4073460.64	378564.96	297.40	High Amplitude, Not Piglike	8/29/2003		161	10/15/2003	OT	BANDING 4" L + NAIL	1							1"	11/20/2003					G	BGH		Surface Metal

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS
Background Value (mV / nT): _____ _____

Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator
Background Value (mV / nT): _____ _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
317	4073459.04	379003.28	54.82	High Amplitude, Not Piglike	8/29/2003																					
318	4073458.56	378410.32	115.23	High Amplitude, Not Piglike	8/29/2003																					
319	4073456.48	378531.76	291.77	High Amplitude, Not Piglike	8/29/2003				NC	NO CONTACT/NO FLAG	0								11/18/2003					P	BGH		
320	4073455.04	379000.48	47.46	High Amplitude, Not Piglike	8/29/2003																					
321	4073452.96	378682.24	74.04	High Amplitude, Not Piglike	8/29/2003		44	10/9/2003																	BGH	
322	4073448	378555.6	98.45	High Amplitude, Not Piglike	8/29/2003		55	10/15/2003																	BGH	
323	4073444.24	378442.48	44.16	High Amplitude, Not Piglike	8/29/2003																					
324	4073440.56	378686.96	267.17	High Amplitude, Not Piglike	8/29/2003		295	10/9/2003																	BGH	
325	4073423.36	378483.6	479.89	High Amplitude, Not Piglike	8/29/2003																					
326	4073419.36	378603.2	59.30	High Amplitude, Not Piglike	8/29/2003		78	10/18/2003																	BGH		Moved Flag 1' E
327	4073416	378612.56	42.21	High Amplitude, Not Piglike	8/29/2003		30	10/18/2003																	BGH		Moved Flag 1.5' SW
328	4073400.88	378463.04	69.33	High Amplitude, Not Piglike	8/29/2003																					
329	4073392.32	378590.16	40.61	High Amplitude, Not Piglike	8/29/2003		26	10/18/2003																	BGH		Moved Flag 1' NW
330	4073391.6	378404.56	56.28	High Amplitude, Not Piglike	8/29/2003																					
331	4073385.12	378477.2	48.07	High Amplitude, Not Piglike	8/29/2003																					
332	4073380.24	378437.92	46.75	High Amplitude, Not Piglike	8/29/2003																					
333	4073377.68	378557.92	81.81	High Amplitude, Not Piglike	8/29/2003		95	10/18/2003																	BGH	
334	4073372.08	378378.8	77.52	High Amplitude, Not Piglike	8/29/2003																					
335	4073368.32	378622.08	70.64	High Amplitude, Not Piglike	8/29/2003		47	10/18/2003																	BGH	
336	4073362.88	378573.36	36.69	High Amplitude, Not Piglike	8/29/2003		28	10/18/2003																	BGH	
337	4073359.68	378589.84	63.87	High Amplitude, Not Piglike	8/29/2003		21	10/18/2003																	BGH	
338	4073555.73	378740.65	60.33	High Amplitude, Not Piglike	8/29/2003		250	10/8/2003	OT	CONCRETE + REBAR	1								11/4/2003					G	BGH		
339	4073445.34	378676.44	183.12	High Amplitude, Not Piglike	8/29/2003			10/9/2003																			No Detect Pulled Flag
340	4073551.55	378866.84	334.66	High Amplitude, Not Piglike	8/29/2003		215	10/9/2003																			Moved Flag 1.5' SE
341	4073643.91	378877.11	85.11	High Amplitude, Not Piglike	8/29/2003		149	10/9/2003	OT	1" OD SPIKE 30" L	1							2"	11/5/2003					G	BGH		Moved Flag 3' NW
342	4073471.96	378569.28	98.88	High Amplitude, Not Piglike	8/29/2003		119	10/15/2003	OT	HINGE 18" L X 3" W X 1/4" THICK	1								11/20/2003					G	BGH		Moved Flag 1.2' SW

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
343	4073547.37	378760.42	121.71	High Amplitude, Not Piglike	8/29/2003		250	10/8/2003	OT	1" PIPE 12" L	1							2"	11/14/2003					G	BGH		Moved Flag 4' N
344	4073547.75	378802.23	149.08	High Amplitude, Not Piglike	8/29/2003			10/8/2003																			Non-Detect Pulled Flag
345	4073583.69	378474.27	287.09	High Amplitude, Not Piglike	8/29/2003																						
346	4073608.94	378756.62	233.39	High Amplitude, Not Piglike	8/29/2003		250	10/8/2003	OT	3/8" PIPE 5'L (BENT)	1							SURFACE	11/4/2003					G	BGH		Moved Flag 3' SW
347	4073547.75	378868.74	245.99	High Amplitude, Not Piglike	8/29/2003		350	10/9/2003																			Moved Flag 3' W
348	4073484.5	378632	36.11	High Amplitude, Not Piglike	8/29/2003		22	10/15/2003																			Moved Flag 1.5' NW
A1	4073503.05	378758.48							OT	PLASTIC, WINDOW GLASS 4"L X 2" W, NAILS, HOT								8"-24"	11/12/2003					G	BGH		
A1	4073523.96	378764.88								ROCKS - 2"-3" DIA. PIPE CRIMPED ON ONE END																	
A1	4073522.25	378771.28								5 (EA) THOUGHT TO BE A TARGET HOLDING																	
A1	4073500.91	378760.61		Polygon	8/29/2003			10/8/2003		"SPIKE" - 18" BARBED WIRE	MANY																
A2	4073538.47	378774.69								2 TARGET SPIKES, BANDING MATERIAL 3.5' L									11/12/2003								
A2	4073549.56	378777.25							OT	X 1" W X 1/4" THICK														G	BGH		
A2	4073547.00	378784.08																									
A2	4073538.47	378778.53		Polygon	8/29/2003			10/8/2003			3																
B	4073570.04	378703.85							OT	NAILS, 12 EACH @ 4-10" REBAR 1/2" DIA X 30" L	6							0"-10"	11/13/2003					G	BGH		
B	4073566.20	378715.80								SURFACE CONCRETE 2.5'L X 12' WX 12" THICK																	
B	4073549.13	378711.96								2 GUY ANCHORS																	
B	4073550.41	378700.01								TOP OF 55 GAL DRUM																	
B	4073568.34	378702.15		Polygon	8/29/2003			10/8/2003																			
C	4073598.64	378761.89							OT	METAL CHUNKS, POSSIBLE 5 GAL BUCKET,	MANY							24"-48"	11/13/2003					G	BGH		
C	4073601.20	378772.13								CONCRETE W/REINFORCING WIRE, CHARCOAL +																	
C	4073600.77	378777.68								WIRE (BURNT PALLET?), WIRE CABLE, CON-																	
C	4073592.24	378780.67								STRUCTION DEBRIS, TRASH, POSSIBLE METAL																	
C	4073587.11	378775.97								LINING OF AMMO CRATE																	
C	4073590.10	378772.56																									
C	4073592.24	378762.75																									
C	4073597.78	378759.76		Polygon	8/29/2003			10/8/2003																			
D	4073622.53	378709.40							OT	CONSTRUCTION RUBBLE,	MANY							36"	11/5/2003					G	BGH		
D	4073634.48	378711.54								REINFORCED WIRE, CONCRETE,																	
D	4073635.76	378720.50								PIPE, RED BRICK, GROUNDING																	
D	4073637.04	378726.90								RODS																	
D	4073628.51	378727.33																									
D	4073626.38	378718.36																									
D	4073628.51	378717.08																									
D	4073628.51	378714.52																									
D	4073622.11	378713.24		Polygon	8/29/2003			10/8/2003																			
E	4073453.54	378535.32							OT	NAILS	MANY								11/18/2003					G	BGH		
E	4073471.04	378540.01							OT	NAILS	MANY							1" - 10"	11/19/2003					G	BGH		
E	4073467.20	378548.97																									
E	4073460.37	378549.40																									
E	4073452.69	378537.02		Polygon	8/29/2003			10/15/2003																			
F	4073468.05	378496.91							OT	40+ NAILS	MANY							SURFACE - 8"	11/18/2003					G	BGH		
F	4073474.45	378500.32								DISC WHEEL W/BRACKET																	
F	4073472.32	378513.55																									
F	4073463.78	378513.55																									
F	4073459.09	378513.12																									
F	4073461.65	378502.03																									
F	4073461.22	378493.92																									
F	4073467.63	378493.49																									
F	4073467.63	378494.77		Polygon	8/29/2003			10/15/2003																			

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____ _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____ _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
G	4073503.47	378519.10							OT	7 HITS - NAILS	11							SURFACE - 8"	11/19/2003					G	BGH		
G	4073510.73	378526.35								1 PIECE CYCLE MOWER 8" L X 2" W X 2" THICK																
G	4073499.63	378526.35								1 PIECE SHEET METAL 10" OD																
G	4073492.80	378535.74								1 GEAR 4" DIA																
G	4073487.26	378549.40								1 WIRE + NAILS																
G	4073474.45	378543.00								HOT ROCKS																
G	4073480.00	378534.46																								
G	4073484.69	378529.77																								
G	4073481.71	378521.23																								
G	4073488.54	378517.82																								
G	4073490.67	378521.66																								
G	4073499.63	378517.39																								
G	4073503.47	378517.39		Polygon	8/29/2003			10/15/2003																		
H	4073531.21	378561.77							OT	BROKEN PLATES, WIRE, SHEET METAL,	MANY							12" - 30"	11/19/2003					G	BGH		
H	4073517.55	378573.72								HOUSEHOLD TRASH, REBAR, MISCELLANEOUS																
H	4073515.42	378583.96								FERROUS ANOM.																
H	4073506.89	378577.56																								
H	4073508.59	378569.03																								
H	4073508.59	378563.05																								
H	4073513.71	378561.77																								
H	4073524.81	378557.93																								
H	4073530.36	378560.49		Polygon	8/29/2003			10/15/2003																		
I	4073610.81	378738.06							OT	REINFORCED CONCRETE	1							30"	11/13/2003					G	BGH		
I	4073617.91	378740.43																								
I	4073615.54	378748.13																								
I	4073605.48	378745.17																								
I	4073609.62	378735.69		Polygon	8/29/2003			10/8/2003																		
B-1				Mag and Flag																						
B-2				Mag and Flag																						
B-3				Mag and Flag																						
B-4				Mag and Flag																						
B-5				Mag and Flag																						
B-6				Mag and Flag																						
B-7				Mag and Flag																						
B-8				Mag and Flag																						
B-9				Mag and Flag																						
B-10				Mag and Flag																						
B-11				Mag and Flag																						
B-12				Mag and Flag																						
B-13				Mag and Flag																						
B-14				Mag and Flag																						
B-15				Mag and Flag																						
B-16				Mag and Flag																						
B-17				Mag and Flag																						
B-18				Mag and Flag																						
B-19				Mag and Flag																						
B-20				Mag and Flag																						

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Camp Crowder
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Project Name: Camp Crowder
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Background Value (mV / nT): _____

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Unique Target ID	Original Survey					Reacquisition Survey			Dig Results											Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
B-21				Mag and Flag																							
B-22				Mag and Flag																							
B-23				Mag and Flag																							
B-24				Mag and Flag																							
B-25				Mag and Flag																							
B-26				Mag and Flag																							
B-27				Mag and Flag																							
B-28				Mag and Flag																							
B-29				Mag and Flag																							
B-30				Mag and Flag																							
B-31				Mag and Flag																							
B-32				Mag and Flag																							
B-33				Mag and Flag																							
B-34				Mag and Flag																							
B-35				Mag and Flag																							
B-36				Mag and Flag																							
B-37				Mag and Flag																							
B-38				Mag and Flag																							
B-39				Mag and Flag																							
B-40				Mag and Flag																							
B-41				Mag and Flag																							
B-42				Mag and Flag					OT	MILK BTL GLASS FRAG, THREADED ROD BANDING/WIRE 3/8" CABLE X 20'L/ SHEET METAL	6								11/6/2003							
B-43				Mag and Flag																							
B-44				Mag and Flag																							
B-45				Mag and Flag																							
B-46				Mag and Flag																							
B-47				Mag and Flag																							
B-48				Mag and Flag																							
B-49				Mag and Flag																							
B-50				Mag and Flag					OT	RUST, SURFACE DEBRIS	0							SURFACE	11/3/2003							
B-51				Mag and Flag																							
B-52				Mag and Flag																							
B-53				Mag and Flag																							
B-54				Mag and Flag					OT	HOT ROCKS	0								11/3/2003							
B-55				Mag and Flag																							
B-56				Mag and Flag																							
B-57				Mag and Flag																							
B-58				Mag and Flag																							
B-59				Mag and Flag																							

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B-60				Mag and Flag																							
B-61				Mag and Flag																							
B-62				Mag and Flag																							
B-63				Mag and Flag																							
B-64				Mag and Flag					OT	REINFORCED CONCRETE	1							8"	11/6/2003								
B-65				Mag and Flag					OT	20 PENNY NAILS	5							0"-4"	11/6/2003								
B-66				Mag and Flag																							
B-67				Mag and Flag																							
B-68				Mag and Flag																							
B-69				Mag and Flag					OT	WIRE 14" L	1							1"	11/6/2003								
B-70				Mag and Flag																							
B-71				Mag and Flag																							
B-72				Mag and Flag					OT	RUST, SURFACE DEBRIS	0							SURFACE	11/3/2003								
B-73				Mag and Flag																							
B-74				Mag and Flag																							
B-75				Mag and Flag																							
B-76				Mag and Flag																							
B-77				Mag and Flag					OT	WORM GEAR 1.5" DIA X 2' L	1							18"	11/6/2003								
B-78				Mag and Flag																							
B-79				Mag and Flag					OT	HOT ROCKS	0								11/3/2003								
B-80				Mag and Flag																							
B-81				Mag and Flag																							
B-82				Mag and Flag																							
B-83				Mag and Flag																							
B-84				Mag and Flag																							
B-85				Mag and Flag																							
B-86				Mag and Flag																							
B-87				Mag and Flag																							
B-88				Mag and Flag					OT	HOT ROCKS	0								11/3/2003								
B-89				Mag and Flag																							
B-90				Mag and Flag																							
B-91				Mag and Flag					OT	SMALL NAIL	1							SURFACE	11/3/2003								
B-92				Mag and Flag					NC	HOT ROCKS									11/14/2003								
B-93				Mag and Flag																							
B-94				Mag and Flag					OT	HOT ROCKS	0								11/3/2003								
B-95				Mag and Flag																							
B-96				Mag and Flag					OT	BARBED WIRE 10" L	1							SURFACE	11/3/2003								
B-97				Mag and Flag																							
B-98				Mag and Flag																							

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS — Background Value (mV / nT): _____
Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector; Trimble RTK 4700 GPS; Schonstedt GA52CX Fluxgate Magnetic Locator — Background Value (mV / nT): _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results										Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset: Distance (ft / m)	Offset: Direction (N, NE, etc.)	Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm): Top	Depth (in/cm): Center of Mass	Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
B-99				Mag and Flag																						
B-100				Mag and Flag																						
B-101				Mag and Flag																						
B-102				Mag and Flag																						
B-103				Mag and Flag																						
B-104				Mag and Flag																						
B-105				Mag and Flag																						
B-106				Mag and Flag																						
B-107				Mag and Flag																						
B-108				Mag and Flag																						
B-109				Mag and Flag																						
B-110				Mag and Flag					NC	HOT ROCKS									11/14/2003							
B-111				Mag and Flag					OT	3/8" TUBING 18" L X/90° BEND	1							6"	11/3/2003							
B-112				Mag and Flag					OT	SMALL PIECE OF WIRE	1							SURFACE	11/14/2003							
B-113				Mag and Flag					OT	METAL SIDING 2' L X 4" W	1							1"	11/3/2003							
B-114				Mag and Flag					OT	SMALL PIECE OF WIRE	1							SURFACE	11/14/2003							
B-115				Mag and Flag					OT	BARBED WIRE 3" L	1							2"	11/3/2003							
B-116				Mag and Flag					OT	HOG WIRE 20" L	1							4"	11/3/2003							
B-117				Mag and Flag																						
B-118				Mag and Flag																						
B-119				Mag and Flag					OT	HOT ROCKS	0								11/3/2003							
B-120				Mag and Flag																						
B-121				Mag and Flag					OT	BROKEN BOTTLE W/METAL CAP	1							2"	11/14/2003							
B-122				Mag and Flag					OT	20 PENNY NAIL	1							1"	11/14/2003							
B-123				Mag and Flag					OT	SMALL PIECE OF WIRE	1							2"	11/14/2003							
B-124				Mag and Flag																						
B-125				Mag and Flag					OT	FENCE WIRE 3" L	1							SURFACE	11/14/2003							
B-126				Mag and Flag																						
B-127				Mag and Flag					OT	WIRE 10' L	1							SURFACE	11/14/2003							
B-128				Mag and Flag					OT	HOT ROCKS									11/14/2003							
B-129				Mag and Flag					OT	HOT ROCKS									11/14/2003							
B-130				Mag and Flag																						
B-131				Mag and Flag																						
B-132				Mag and Flag																						
B-133				Mag and Flag																						
B-134				Mag and Flag																						
B-135				Mag and Flag																						
B-136				Mag and Flag					NC	NO CONTACT									11/14/2003							
B-137				Mag and Flag																						

CWM Scoping and Security Study
Camp Crowder
Geophysical Dig Sheet and Target History

Project Name: Camp Crowder
Geophysical Contractor: Parsons
Project Geophysicist: Bart Hoekstra
Field Team: _____
Survey Area ID: _____
Sector: _____ Grid: _____

Project Location: Neosho, Missouri
Design Center POC: _____
Site Geophysicist: Bart Hoekstra
Date: _____
Coordinate System: UTM Zone 17, NAD 83, meters

Scanning Geophysical Equipment Used: EM61 MkII Metal Detector
Trimble RTK 4700 GPS
Background Value (mV / nT): _____ _____

Reacquisition Geophysical Equipment Used: EM61 MkII Metal Detector
Trimble RTK 4700 GPS
Schonstedt GA52CX Fluxgate Magnetic Locator
Background Value (mV / nT): _____ _____

Unique Target ID	Original Survey					Reacquisition Survey			Dig Results											Post-Dig Excavation QC Results			Post-Dig Geophysical QC			Comments
	Northing Coord.	Easting Coord.	Size (mV)	Priority	Date	# of Contacts to dig	Maximum Amplitude (mV / nT)	Date	Anomaly type *	Description	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset		Orientation of Nose (Azimuth deg) **	Inclination of Nose (deg) **	Depth (in/cm)		Date	Team Leader Initials	Excavation Hole Cleared?	QC Initials	Date	Agreement between Dig Results & Geophysical Data? (G=good, P=poor,	Geophysicist QC Initials	Date	
													Distance (ft / m)	Direction (N, NE, etc.)			Top	Center of Mass									
B-138				Mag and Flag					OT	HINGE 6"L WHEN EXTENDED	1							3"	11/14/2003								
B-139				Mag and Flag																							
B-140				Mag and Flag					OT	ELEC. CONDUIT W/WIRE 8' L	1							SURFACE	11/14/2003								
B-141				Mag and Flag					OT	HOG WIRE 10" L	1							2"	11/14/2003								
B-142				Mag and Flag					OT	SEE B42									11/6/2003								
B-143				Mag and Flag																							
B-144				Mag and Flag																							

Note: * For ***Anomaly type***, use U for UXO, OE (non-UXO), ORS for ordnance related scrap, SA for small arms ammunition, NC for no contact, OT for other.
** Optional Fields - refer to SOW for applicability to Specific Project

IDW REPORTS

PARSONS

5390 TRIANGLE PARKWAY • SUITE 100 • NORCROSS, GEORGIA 30092 • (770) 446-4900 • FAX: (770) 446-4910 • WWW.PARSONS.COM

August 2, 2004

Ms. Betina Martin Johnson
U.S. Army Engineering and Support Center, Huntsville
ATTN: CEHNC-OE-PM
4280 University Square
Huntsville, Alabama 35807-4301

Re: CWM Scoping and Security Study
Investigative Derived Waste (IDW) Report
Former Camp Crowder, Neosho, Missouri

Dear Ms. Martin Johnson:

An intrusive investigation was conducted at the Former Camp Crowder as a part of the Chemical Warfare Materiel (CWM) Scoping and Security Study during the fall of 2003. The intrusive investigation began on November 3, 2003, and was completed on November 20, 2003. During the investigation at the Former Camp Crowder, approximately 250 anomalies and 10 anomalous areas were investigated on the eastern and western sides of Mink Drive.

As a result of this investigation, various types of investigative derived waste were created at the site. These include:

- Scrap metal and construction debris excavated from anomalies throughout the project,
- Personal Protective Equipment (PPE),
- Laboratory waste generated by the Edgewood Chemical Biological Center (ECBC),
- Graywater collected at the Personnel Decontamination Station (PDS), and
- A diesel-gasoline mixture.

Manageable scrap metal uncovered during the intrusive operation was collected and disposed of in the solid waste dumpster after being inspected by the UXO team leader. Larger pieces of scrap metal and construction debris were returned to the excavation after inspection. Since there were no detections of chemical warfare agents during air monitoring or laboratory analysis of soil samples, PPE was disposed of with the ordinary solid wastes generated during the project. These wastes were removed and disposed of by a local contractor in approved area landfills. The hazardous wastes were removed from the Former Camp Crowder by Onyx Environmental Services on February 3, 2004.

Below is a table listing the IDW removed by Onyx and a brief description of the waste and final disposition.

Table 1
IDW at Former Camp Crowder

Shipping Name	Type	State (Liquid or Solid)	Approximate Quantity	Hazard Class	Waste Code	UN/NA Number
A. Flammable Liquids	Diesel-Gasoline Mixture	Liquid	5 gallons	3	D001	UN 1993, II
B. Toxic Solids, Organic	Solid Laboratory Waste (ECBC)	Solid	1 pound	6.1	F001	UN 2811, II
C. Corrosive Liquid, Basic, Organic	Laboratory Bleach Solution (ECBC)	Liquid	750 milliliters	8	D002	UN 3267, II

A. Flammable Liquids

A 5-gallon can of a diesel-gasoline mixture generated during the project. The flammable mixture was created when a gasoline powered Gator® was filled with diesel. In order to repair the Gator®, the gasoline tank had to be drained. The resulting waste stream was collected in a 5-gallon gasoline container. When Onyx arrived on site, the container was placed in a 14-gallon drum. The drum was in turn transported to the Onyx Environmental Services incinerator, 7 Mobile Avenue, Sauget, Illinois (also known as TWI) and incinerated.

B. Toxic Solids, Organic

General laboratory wastes generated during the operations. The waste included laboratory glassware, nitrile gloves, calibration vials, and caps. The solid laboratory waste was picked up by Onyx and incinerated at the Onyx Environmental Services incinerator, 7 Mobile Avenue, Sauget, Illinois (also known as TWI).

C. Corrosive Liquid, Basic, Organic

Decontaminated solution generated during the operation. Any calibration equipment containing or in contact with low concentrations of chemical warfare agent was neutralized with bleach. This waste stream was picked up by Onyx and incinerated at the Onyx Environmental Services incinerator, 7 Mobile Avenue, Sauget, Illinois (also known as TWI).

During the operations at the Former Camp Crowder, a 55-gallon liquid drum was used to collect the graywater at the PDS. At the end of the intrusive investigation, the drum contained 15-20 gallons of decontamination water. The waste stream from the PDS contained water and a small amount of soap. No CWM was found and no chemical warfare agent was detected during air monitoring of the operations at Camp Crowder; therefore, Brian Beamer, Moark Supervisor, suggested that the PDS personnel dump the drum in the truck decontamination area located on the Moark property. The Moark property had a decontamination pad for cleaning vehicles. The vehicles were cleaned with various solutions in order to protect the Moark livestock from communicable diseases potentially transported from farm to farm. Since only soap and water was used during the project, and no CWM was encountered, the water was poured into the decontamination pad's catch basin.

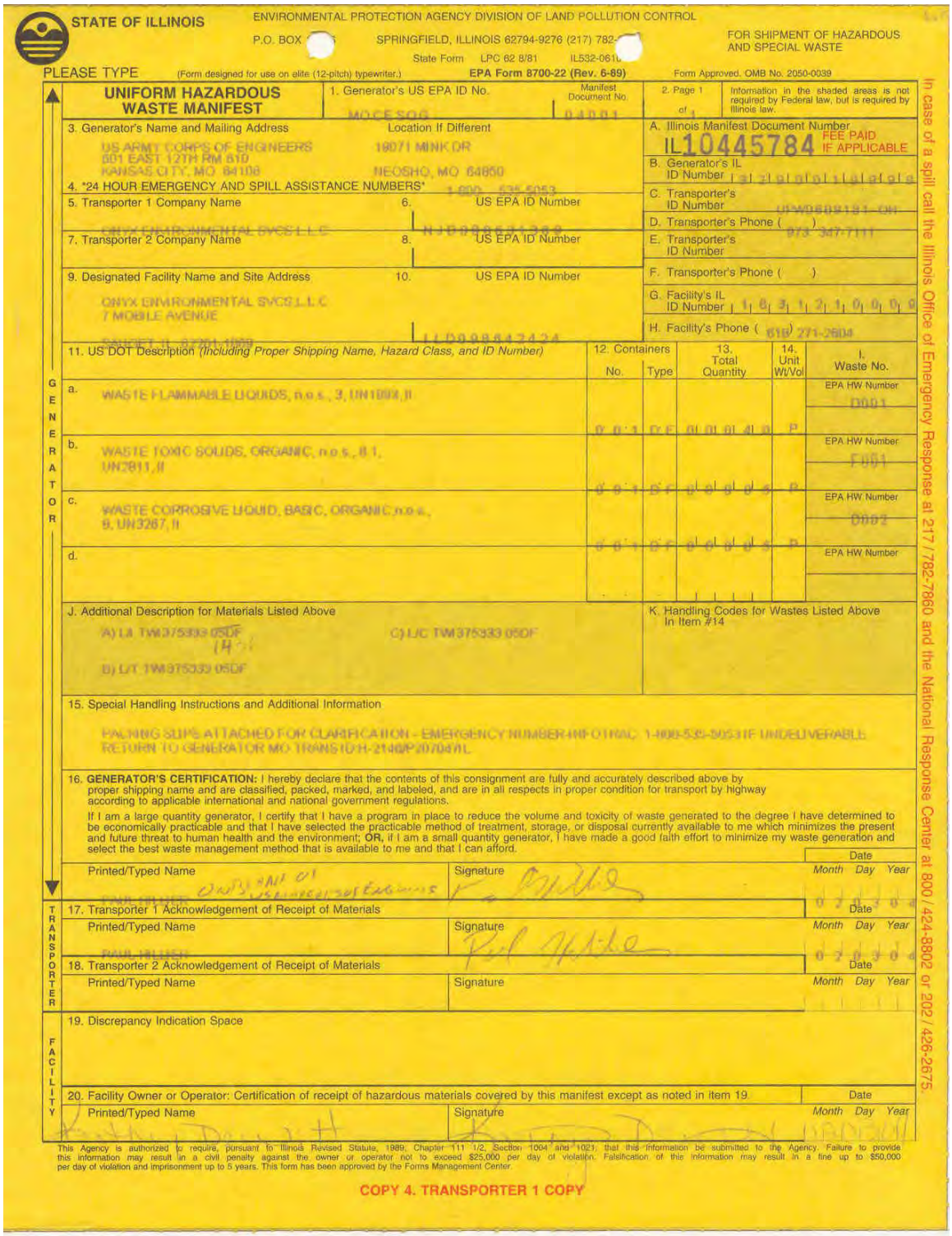
Attached with this letter report is a copy of the completed waste manifest. If you have any questions regarding this submittal, please do not hesitate to contact us at 678-969-2453 and 678-969-2344.

Sincerely,
PARSONS

Clay Edmondson
Site Manager

Joe Cudney
Project Manager

ATTACHMENT A



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX [redacted] SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-[redacted]
FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE
State Form LPC 62 8/81 IL532-0610
PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MOCESOO Manifest Document No. 04001
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
US ARMY CORPS OF ENGINEERS
601 EAST 12TH RM 619
KANSAS CITY, MO 64106

Location If Different
18071 MINK DR
NEOSHO, MO 64850

A. Illinois Manifest Document Number IL10445784 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0 0 0 0 0 0 0 0 0 0 0 0
C. Transporter's ID Number [redacted]
D. Transporter's Phone ( ) 973 347-7111
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 1 1 8 3 1 2 1 0 0 0 9
H. Facility's Phone (618) 271-2604

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 1-800-535-5053
5. Transporter 1 Company Name — 6. US EPA ID Number
ONYX ENVIRONMENTAL SVCS L.L.C. — NJD988543424
7. Transporter 2 Company Name — 8. US EPA ID Number
9. Designated Facility Name and Site Address — 10. US EPA ID Number
ONYX ENVIRONMENTAL SVCS L.L.C
7 MOBILE AVENUE
SWEET, IL 62781-1002 — ILD988643424

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE LIQUIDS, n.o.s., 3, UN1993, II	001	DF	000040	P	EPA HW Number D001
b. WASTE TOXIC SOLIDS, ORGANIC, n.o.s., 6.1, UN2811, II	001	DF	000005	P	EPA HW Number F001
c. WASTE CORROSIVE LIQUID, BASIC, ORGANIC n.o.s., 8, UN3267, II	001	DF	000005	P	EPA HW Number D002
d.					EPA HW Number

J. Additional Description for Materials Listed Above
A) LA TW1375333 05DF
B) LIT TW1375333 05DF
C) LIC TW1375333 05DF

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION - EMERGENCY NUMBER-INFOTRAC 1-800-535-5053 IF UNDELIVERABLE RETURN TO GENERATOR MO TRANSTD H-2140/P2070/IL

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR,** if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: PAUL HILLER — Signature — Date: Month 07 Day 03 Year 04

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: PAUL HILLER — Signature — Date: Month 07 Day 03 Year 04

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19
Printed/Typed Name — Signature — Date: Month Day Year

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 4. TRANSPORTER 1 COPY

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

Figure 1: Waste manifest for the Former Camp Crowder

ATTACHMENT B

Figure 1: IDW storage at the Former Camp Crowder

FACT SHEET

US Army Corps of Engineers ®
Kansas City District

Corps Facts

Vol. 1 No. 2

Date: March, 2005

SUBJECT: FORMER CAMP CROWDER Chemical Warfare Materiel Scoping and Security Study

Background

The U.S. Army Corps of Engineers is conducting the first nationwide effort to identify, manage, prioritize, and develop cost estimates for future actions at Formerly Used Defense Sites where historical documentation indicates that chemical warfare materiel had been used, produced, stored, and/or tested.

Formerly Used Defense Sites were used by the military to train Soldiers, airmen, sailors, and Marines, as well as to test new weapons and warfare capabilities. After wartime, many of these properties were no longer needed, and they were cleaned up according to the best practices available at the time and then transferred to other owners. Congress established the Formerly Used Defense Sites Program in the mid-1980s to restore properties formerly owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary of Defense. The U.S. Army Corps of Engineers is responsible for carrying out the program. The scope and magnitude of the Formerly Used Defense Sites Program is significant, with more than 9,000 properties identified for potential inclusion. Approximately 100 to 200 of these properties have been identified as suspect chemical warfare materiel sites.

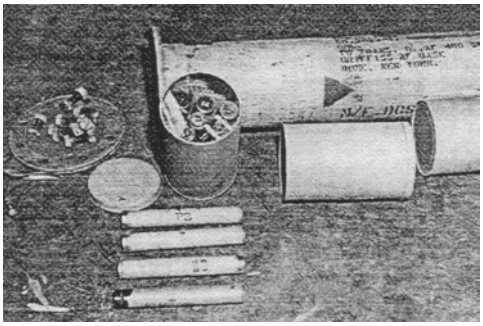
Two areas on the former Camp Crowder property, the No. 110 Gas Chambers Area and the former Pistol Range, were the subject of an intrusive investigation in November 2003. Based on historical usage and physical evidence found in 1986, both locations were suspected of potentially containing chemical warfare materiel by the U.S. Army Corps of Engineers.

Site History

The former Camp Crowder, established during World War II, was built in 1941 on 42,803 acres of land about three miles southeast of Neosho, Missouri. From 1942 through 1946, the camp was operated as a Signal Corps Replacement Training Center. The camp was

deactivated in 1946 and reactivated in 1951 as an Army Reception Center for the Korean conflict.

Camp Crowder was named for Judge Advocate General and U.S. Ambassador to Cuba Enoch H. Crowder. Thousands of soldiers went through basic training at the former Camp Crowder, including Mort Walker, who immortalized the camp as Camp Swampy in his syndicated comic strip.



During World War II, three gas chambers were built to train troops in gas mask proficiency. Chemical agent identification sets were used to familiarize troops with various war gases. Chemical agent identification sets, also known as war gas identification sets, were produced for use by all branches of the military between the 1930s and the 1960s to train soldiers in the safe identification, handling, and decontamination of chemical agents. The sets consist of small quantities of various chemical agents placed in various glass containers, then packed in metal shipping containers or wooden boxes.

From 1953 to 1958, the former Camp Crowder was used as a U.S. Branch Disciplinary Barracks. Starting in 1962, the bulk of the land comprising the former Camp Crowder was declared excess property and sold. Today, of the 42,803 acres of land, approximately 4,358 acres of the former Camp Crowder is used for training by the Missouri National Guard. Other land uses include commercial, educational, and industrial, including a public college and well-known manufacturing companies. In addition, various government agencies including the Missouri Conservation Commission and the Department of the Interior use portions of the former Camp Crowder.

In 1986, the U.S. Army Technical Escort Unit (TEU) responded to an incident at the former Pistol Range. The TEU personnel removed military debris from an area that had just been graded by a bulldozer that was preparing the property for commercial development. The military debris included mine fuzes and mine fuze components, surface trip flares, grenade fuses, an aircraft signal, and glass vials containing chemical agent or chemical agent simulants. The TEU carefully cleared the site of munitions and vials by sifting the loose dirt moved by the bulldozer. A total of eight inches of soil was removed and sifted during the operation.

Project Description

An intrusive investigation was completed at the former Camp Crowder in November 2003. The objective of the operation was to investigate suspect chemical warfare materiel issues raised in the 1993 Archives Search Report. The project team reviewed the Archives Search Report and other information including an analysis of aerial photographs. Based on the available data, the project team planned the intrusive investigation accordingly with the cooperation of the property owners. Approximately 30 acres of the former

Camp Crowder was intrusively investigated. The areas of interest were historically used for small arms ammunition training and gas chamber exercises.

During the intrusive operations at the former Camp Crowder, no evidence of chemical agent identification sets was found. There were no detections of chemical warfare agent or industrial chemicals during air monitoring and soil sample analysis. The intrusive activities did find a practice mine fuze and ordnance related scrap from two rifle grenade bodies. The rest of the anomalies investigated consisted of common scrap metal items consistent with building materials and farm equipment. The common scrap metal items discovered included barbed wire, reinforced concrete, metal cable, rebar, sheet metal, tractor parts, and horse shoes.

Although the Site Inspection conducted in 2003 did not uncover any chemical warfare materiel, the potential for buried chemical agent identification sets remaining at the site exists. The recommended action for the former Camp Crowder is to conduct a programmatic Remedial Investigation and Feasibility Study (RI/FS) involving the development of a Public Involvement Plan (PIP), with subsequent implementation of local Educational Awareness and Training to mitigate potential risks to public health and the environment.

For More Information

The U.S. Army Corps of Engineers wants the public to be a part of study efforts as we work hard to ensure the public's safety, the safety of our on-site workers, and to protect the environment. For more information about the Formerly Used Defense Sites Chemical Warfare Materiel Scoping and Security Study or the former Camp Crowder, contact the U.S. Army Corps of Engineers, Kansas City District Public Affairs Office at 813-983-3486 or visit the Formerly Used Defense Sites Program Web site at:

http://hq.environmental.usace.army.mil/programs/fuds/fuds.html.

COSTS

Property Name: **Fort Crowder**
Property Number: **B07MO0138**
Project Number: **01**
Estimated By: **John Chulick** **Phone:** 678-969-2409
Address: Parsons, 5390 Triangle Parkway, Norcross, GA 30092
Email: john.a.chulick@parsons.com
QC Reviewed By: **Madhu Gunta** **Phone:** 678-969-2319
Address: Parsons, 5390 Triangle Parkway, Norcross, GA 30092
Email: mahdu.gunta@parsons.com
Date: **10 March 2005**

Project Information:

The Inventory Project Report (INPR) prepared by the United States Army Corps of Engineers (USACE) Kansas City District approved the former Fort Crowder as a Formerly Used Defense Site (FUDS). The former Fort Crowder is located south of Neosho, Missouri and comprised of more than 42,800 acres in Newton and McDonald counties. Fort Crowder began operations in 1941 and operated until its deactivation in 1946.

TCT-St. Louis prepared an Archives Search Report (ASR) for the former Fort Crowder in 1992. The USACE St. Louis District issued an ASR for the former Fort Crowder in April 1993. The ASR confirmed that Chemical Agent Identification Sets (CAIS) were used, stored, and disposed of at the former Fort Crowder.

Although the Site Inspection conducted in 2003 did not uncover any Chemical Warfare Materiel (CWM), the potential for buried CAIS to remain at the site exists. The recommended action for the former Fort Crowder is to conduct a programmatic Remedial Investigation and Feasibility Study (RI/FS) involving the development of a Public Involvement Plan (PIP), with subsequent implementation of local Educational Awareness and Training to mitigate potential risks to public health and the environment.

Cost Estimate Information:

The work to be performed at this property consists of the Remedial Actions (RA) that result from the programmatic RI/FS. The costs associated with RA will be part of the Cost to Complete (CTC) estimate to be reported as a future environmental liability. Although this estimate includes the information and sheets for calculating all possible phases, only those required for estimating all future remedial phases have been used.

RI/FS Phase: The programmatic RI/FS is planned to be completed within Year 1. No site costs are required.

Remedial Action Phase: A public meeting will be conducted at the start of the Remedial Action Phase in Year 2. The initial Educational Awareness and Training will also be conducted.

Long Term Management Phase: 30 years of 5-year reviews and PIP updates, beginning in Year 7

Project Close Out: This will occur on completion of the 30 Years of Long Term Management.

Changes in Reported Estimate from Fiscal Year 2004 and Fiscal Year 2005:

The cost to complete estimated reported for this project in Fiscal Year 2004 was based on very preliminary data available in either the Inventory Project Report or the Archives Search Report. The estimate was based on a determination of whether the effort to complete remediation of the project was high, medium, medium-low, or low. The cost estimate previously reported was based on a generic cost model specifically associated with each level of effort. The current cost estimate is based on more detailed information that was developed under the Chemical Warfare Materiel (CWM) Scoping and Security Study. The information and recommendation provided within the CWM Study have been used to prepare the new cost to complete estimate. The newly developed estimate is site specific and based on probable remedial actions for the project. This new estimate will be used for reporting Future Environmental Liabilities associated with this project.

Cost Estimate Team Qualifications

Cost Estimator: John Chulick

Education: B.S. (Geophysics) and M.S. (Geophysics)

Experience:
20 years experience in geophysics and project management. Managed numerous CWM Projects including four projects for USACE. Tasks performed included cost estimating, tracking of costs, implementation of project work, preparation of reports, and corresponding with the regulatory agencies.

QC Reviewer: Madhu Gunta
Education: B.S. (Civil Engineering) and M.S. (Civil and Environmental Engineering)
Experience:
10 years experience in environmental engineering. Estimated costs for numerous remediation and munition & explosives of concern [MEC] related projects. Specifically performed cost estimates for several USAESCH MEC projects.

Cost to Complete Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
CWM Scoping and Security Study
10 March 2005

Phase	Phase Description	Contractor Cost	Government Cost						Task Total Cost
			Huntsville	District	TEU	ECBC	USATCES	USACHPPM	
RI/FS	**Remedial Investigation and Feasability Study**	$0	$0	$0	$0	$0	$0	$0	$0
RD	**Remedial Design***	$0	$0	$0	$0	$0	$0	$0	$0
RA-C	**Remedial Action - Construction**	$56,800	$26,900	$26,200	$0	$0	$0	$0	$109,900
LTM	**Long Term Management**	$34,200	$57,600	$61,800	$0	$0	$0	$0	$153,600
PCO	**Project Close-out**	$8,000	$5,600	$18,200	$0	$0	$0	$0	$31,800
CTC	**Total Cost To Complete**	**$99,000**	**$90,100**	**$106,200**	**$0**	**$0**	**$0**	**$0**	**$295,300**

Notes:

* Remedial Design (RD) costs are included in the programmatic RI/FS.
Costs presented are rounded to the nearest 100 dollars

Schedule of Cost to Complete
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
CWM Scoping and Security Study
10 March 2005

Phase Description	Cost to Complete Distributed Over 30 Years																															Total
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	Year 31	Year 32	Year 33	
Remedial Investigation and Feasability Study	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Remedial Design*	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Remedial Action - Construction	$0	$109,900	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$109,900
Long Term Management	$0	$0	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$153,600
Project Close-out	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$31,800	$31,800
Total Cost By Year	$0	$109,900	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$0	$0	$0	$0	$25,600	$31,800	$295,300

Notes:
* Remedial Design (RD) costs are included in the programmatic RI/FS.
Costs presented are rounded to the nearest 100 dollars

Cost Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Task	Task Description	Contractor Cost	Government Cost					
			Huntsville	District	TEU	ECBC	USATCES	USACHPM
1.0	**Site Visit**	$9,190	$10,254	$4,657	$5,117	$5,257	$0	$0
2.0	**Public Involvement Plan (PIP) Updates**	$4,468	$2,400	$2,040	$0	$0	$0	$0
3.0	**Right-of-Entry**	$1,233	$1,600	$6,800	$0	$0	$0	$0
4.0	**Conceptual Site Plan (CSP)**							
4.1	Meeting for Conceptual Site Plan	$9,952	$8,654	$3,977	$3,517	$3,657	$0	$0
4.2	Conceptual Site Plan Preparation	$19,827	$12,000	$6,120	$2,400	$2,400	$0	$0
5.0	**Work Plan**	$43,672	$13,760	$4,080	$2,400	$4,800	$0	$0
6.0	**Chemical Safety Submission (CSS)**	$21,867	$6,560	$1,360	$800	$800	$0	$0
7.0	**Educational Awareness & Training**							
7.1	Public Notification	$4,963	$2,600	$1,360	$0	$0	$0	$0
7.2	Preparation/Logistics	$11,765	$2,400	$4,080	$0	$0	$0	$0
7.3	Training Sessions	$9,552	$8,922	$7,962	$0	$0	$0	$0
7.4	Follow-Up Documentation	$3,027	$400	$340	$0	$0	$0	$0
8.0	**Brush Clearing**							
8.1	Mobilization/Demobilization	$14,704	$0	$0	$0	$0	$0	$0
8.2	Brush Clearing (10 Acres)	$20,383	$0	$0	$0	$0	$0	$0
9.0	**Geophysics**							
9.1	Mobilization/Demobilization	$15,398	$2,688	$0	$0	$0	$0	$0
9.2	Geophysics (10 Acres)	$16,391	$5,043	$0	$0	$0	$0	$0
10.0	**Intrusive Investigation**							
10.1	Mobilization/Demobilization	$29,422	$2,448	$0	$16,154	$51,318	$0	$0
10.2	Set-Up	$152,963	$0	$0	$0	$0	$0	$0
10.3	Pre-Operation Excercises (Week)	$63,130	$19,383	$4,945	$22,717	$36,503	$5,545	$5,545
10.4	Intrusive Investigation (Week)	$62,069	$5,735	$680	$31,464	$48,924	$0	$0
11.0	**Sample Analysis (20 samples)**	$11,911	$6,600	$0	$0	$40,000	$0	$0
12.0	**Report**	$43,754	$13,560	$2,720	$2,400	$4,800	$0	$0
13.0	**Contract Administration**	$0	$45,240	$25,840	$0	$0	$0	$0
14.0	**Regulatory Correspondence and Meetings**	$0	$0	$4,786	$0	$0	$0	$0
15	**Public Meeting**							
15.1	Public Notification	$4,963	$2,600	$1,360	$0	$0	$0	$0
15.2	Meeting Preparation/Logistics	$11,508	$2,400	$4,080	$0	$0	$0	$0
15.3	Meeting	$7,542	$7,054	$6,334	$0	$0	$0	$0
15.4	Follow-Up Documentation	$3,027	$400	$340	$0	$0	$0	$0

Task 7.1 - Public Notification
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare notifications(news release, PSA, flyer) and invitation letter(draft/final electronic deliverables); prepare letter for distribution by the District; Coordinate with the Huntsville and District

Huntsville - Coordination and publishing an advertisement in the local newspaper

District - Coordination and distribute notifications to media

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination (0.5 days)
Scientist, Senior - AD	$ 103.46	/hour	32	$3,311	Preparation of materials (4 days)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative activities (2 days)
	Subtotal Hours/Labor Cost		52	$4,422	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	50	$200	Telephone calls for public notification preparation
Facsimile	$ 0.50	/page	50	$25	Faxes needed for public notification preparation
	Subtotal In-House Services Cost			$225	
	SUBTOTAL ODCs COSTs			$225	
	SUBTOTAL LABOR COST			$4,422	
	Project Management Costs			$316	7% of Labor Costs, 3% Other Direct Costs
	TASK 7.1 CONTRACTOR TOTAL COST			**$4,963**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	8	$800	Coordination; Review and Comment (1 day)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Coordination; Review and Comment (1 day)
	Subtotal Hours/Labor Cost		16	$1,600	
OTHER DIRECT COSTS					
OTHER					
Paid Advertisement in Newspaper	$ 1,000.00	/ad	1	$1,000	One Advertisement in the local newspaper
	Subtotal Other Cost			$1,000	
	SUBTOTAL ODCs COSTs			$1,000	
	SUBTOTAL LABOR COST			$1,600	
	TASK 7.1 HUNTSVILLE TOTAL COST			**$2,600**	

Task 7.1 - Public Notification
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	8	$680	Coordination (1 day)
PAO Officer GS-12-1	$ 85.00	/hour	8	$680	Coordination (1 day)
	Subtotal Hours/Labor Cost		16	$1,360	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$1,360	
			TASK 7.1 DISTRICT TOTAL COST	**$1,360**	

Task 7.2 - Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare/produce handouts, agenda, signs, sign-in sheets; Prepare/produce displays; Prepare Presentation (all Draft/Final); Coordinate with District and USACE, Huntsville; Set-up meeting (secure locations, coordinate with community, ship materials, etc.,)

Huntsville and District - Coordination and review of the training materials

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	8	$792	Coordination (1 day)
Engineer, Senior - CX	$ 94.59	/hour	16	$1,513	Coordination and preparation of the meeting materials (2 days)
Scientist, Senior - AD	$ 103.46	/hour	48	$4,966	Preparation of the meeting materials (6 days)
GIS Analyst - AP	$ 54.59	/hour	8	$437	GIS support for the preparation of meeting materials (1 day)
Administrative Support - EV	$ 44.70	/hour	24	$1,073	Administrative activities (3 days)
	Subtotal Hours/Labor Cost		104	$8,781	
OTHER DIRECT COSTS					
MATERIALS AND SUPPLIES					
Job Supplies	$ 25.00	/day	1	$25	Supplies for meeting materials
	Subtotal Materials and Supplies Cost			$25	
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	50	$200	Telephone calls for the meeting materials preparation
Facsimile	$ 0.50	/page	50	$25	Faxes needed for the meeting materials preparation
GIS Workstation	$ 30.00	/hour	8	$240	GIS workstation hours needed for the preparation of meeting materials
FED Exp Package (50 lbs)	$ 75.00	/each	4	$300	Distribution of the meeting materials
	Subtotal In-House Services Cost			$765	
REPRODUCTION					
Color Copies	$ 1.50	/page	500	$750	Color copies for the meeting materials
Color Copies-Large Maps	$ 15.00	/page	4	$60	Posters for the meeting materials
Laminate Displays	$ 50.00	/page	4	$200	Lamination for the posters
	Subtotal Reproduction Cost			$1,010	
OTHER					
Room Rental	$ 250.00	/event	2	$500	Room rental for the training sessions
	Subtotal Other Cost			$500	
	SUBTOTAL ODCs COSTs			$2,300	
	SUBTOTAL LABOR COST			$8,781	
	Project Management Costs			$684	7% of Labor Costs, 3% Other Direct Costs
	TASK 7.2 CONTRACTOR TOTAL COST			**$11,765**	

Task 7.2 - Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	16	$1,600	Support the meeting materials preparation and review (2 days)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Review of meeting materials (1 day)
	Subtotal Hours/Labor Cost		24	$2,400	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$2,400	
			TASK 7.2 HUNTSVILLE TOTAL COST	**$2,400**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	16	$1,360	Support the meeting materials preparation and review (2 days)
PAO Officer GS-12-1	$ 85.00	/hour	32	$2,720	Coordinate, support, and review the meeting materials preparation (4 days)
	Subtotal Hours/Labor Cost		48	$4,080	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$4,080	
			TASK 7.2 DISTRICT TOTAL COST	**$4,080**	

Task 7.2 - Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare/produce handouts, agenda, signs, sign-in sheets; Prepare/produce displays; Prepare Presentation (all Draft/Final); Coordinate with District and USACE, Huntsville; Set-up meeting (secure locations, coordinate with community, ship materials, etc.,)

Huntsville and District - Coordination and review of the training materials

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	8	$792	Coordination (1 day)
Engineer, Senior - CX	$ 94.59	/hour	16	$1,513	Coordination and preparation of the meeting materials (2 days)
Scientist, Senior - AD	$ 103.46	/hour	48	$4,966	Preparation of the meeting materials (6 days)
GIS Analyst - AP	$ 54.59	/hour	8	$437	GIS support for the preparation of meeting materials (1 day)
Administrative Support - EV	$ 44.70	/hour	24	$1,073	Administrative activities (3 days)
	Subtotal Hours/Labor Cost		104	$8,781	
OTHER DIRECT COSTS					
MATERIALS AND SUPPLIES					
Job Supplies	$ 25.00	/day	1	$25	Supplies for meeting materials
	Subtotal Materials and Supplies Cost			$25	
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	50	$200	Telephone calls for the meeting materials preparation
Facsimile	$ 0.50	/page	50	$25	Faxes needed for the meeting materials preparation
GIS Workstation	$ 30.00	/hour	8	$240	GIS workstation hours needed for the preparation of meeting materials
FED Exp Package (50 lbs)	$ 75.00	/each	4	$300	Distribution of the meeting materials
	Subtotal In-House Services Cost			$765	
REPRODUCTION					
Color Copies	$ 1.50	/page	500	$750	Color copies for the meeting materials
Color Copies-Large Maps	$ 15.00	/page	4	$60	Posters for the meeting materials
Laminate Displays	$ 50.00	/page	4	$200	Lamination for the posters
	Subtotal Reproduction Cost			$1,010	
OTHER					
Room Rental	$ 250.00	/event	2	$500	Room rental for the training sessions
	Subtotal Other Cost			$500	
	SUBTOTAL ODCs COSTs			$2,300	
	SUBTOTAL LABOR COST			$8,781	
	Project Management Costs			$684	7% of Labor Costs, 3% Other Direct Costs
	TASK 7.2 CONTRACTOR TOTAL COST			**$11,765**	

Task 7.2 - Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	16	$1,600	Support the meeting materials preparation and review (2 days)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Review of meeting materials (1 day)
	Subtotal Hours/Labor Cost		24	$2,400	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$2,400	
			TASK 7.2 HUNTSVILLE TOTAL COST	**$2,400**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	16	$1,360	Support the meeting materials preparation and review (2 days)
PAO Officer GS-12-1	$ 85.00	/hour	32	$2,720	Coordinate, support, and review the meeting materials preparation (4 days)
	Subtotal Hours/Labor Cost		48	$4,080	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$4,080	
			TASK 7.2 DISTRICT TOTAL COST	**$4,080**	

Task 7.3 - Training Sessions
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare summary document (write summary of sessions, compile all supporting documentation, i.e., materials, sign-in, photos, copies of media coverage, etc.); Create electronic copy and post on website; Follow-up with any vendors; Coordinate with Huntsville and District.

Huntsville and District - Review and comment on the summary document

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	32	$3,169	Attend Meeting; 4 Days includes travel
Scientist, Senior - AD	$ 103.46	/hour	32	$3,311	Attend Meeting; 4 Days includes travel
	Subtotal Hours/Labor Cost		64	$6,480	
OTHER DIRECT COSTS					
MATERIALS AND SUPPLIES					
Film & Developing	$ 20.00	/roll	1	$20	Pictures of the meeting
	Subtotal Materials and Supplies Cost			$20	
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	8	$728	Perdiem for 4 days each for 2 persons
Parking	$ 8.00	/day	8	$64	Parking for 4 days each for 2 vehicles
Auto Rental	$ 70.00	/day	4	$280	1 auto rental for 4 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rental vehicle
		Subtotal Travel Cost		$2,522	
		SUBTOTAL ODCs COSTs		$2,542	
		SUBTOTAL LABOR COST		$6,480	
		Project Management Costs		$530	7% of Labor Costs, 3% Other Direct Costs
		TASK 7.3 CONTRACTOR TOTAL COST		**$9,552**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	32	$3,200	Attend Meeting; 4 Days includes travel
Technical Manager GS-13-1	$ 100.00	/hour	32	$3,200	Attend Meeting; 4 Days includes travel
	Subtotal Hours/Labor Cost		64	$6,400	
OTHER DIRECT COSTS					
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	8	$728	Perdiem for 4 days each for 2 persons
Parking	$ 8.00	/day	8	$64	Parking for 4 days each for 2 vehicles
Auto Rental	$ 70.00	/day	4	$280	One Auto Rental for 4 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rented vehicle
		Subtotal Travel Cost		$2,522	
		SUBTOTAL ODCs COSTs		$2,522	
		SUBTOTAL LABOR COST		$6,400	
		TASK 7.3 HUNTSVILLE TOTAL COST		**$8,922**	

Task 7.3 - Training Sessions
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	32	$2,720	Attend Meeting; 4 Days includes travel
PAO Officer GS-12-1	$ 85.00	/hour	32	$2,720	Attend Meeting; 4 Days includes travel
	Subtotal Hours/Labor Cost		64	$5,440	
OTHER DIRECT COSTS					
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	8	$728	Perdiem for 4 days each for 2 persons
Parking	$ 8.00	/day	8	$64	Parking for 4 days each for 2 vehicles
Auto Rental	$ 70.00	/day	4	$280	One Auto Rental for 4 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rented vehicle
		Subtotal Travel Cost		$2,522	
		SUBTOTAL ODCs COSTs		$2,522	
		SUBTOTAL LABOR COST		$5,440	
		TASK 7.3 DISTRICT TOTAL COST		**$7,962**	

Task 7.4 Follow-Up Documentation
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Action - Construction
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Project Manager and Senior Scientist will present the training materials; public education session and emergency responder training on separate days

Huntsville and District - Attend training sessions

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination (0.5 day)
Scientist, Senior - AD	$ 103.46	/hour	16	$1,655	Preparation of the meeting documentation (2 days)
Administrative Support - EV	$ 44.70	/hour	8	$358	Administrative activities (1 day)
Accounting/ Procurement - EW	$ 77.88	/hour	4	$312	Vendor follow-up (0.5 day)
	Subtotal Hours/Labor Cost		32	$2,721	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	25	$100	Telephone calls for follow-up documentation
Facsimile	$ 0.50	/page	25	$13	Faxes needed for follow-up documentation
	Subtotal In-House Services Cost			$113	
	SUBTOTAL ODCs COSTs			$113	
	SUBTOTAL LABOR COST			$2,721	
	Project Management Costs			$194	7% of Labor Costs, 3% Other Direct Costs
	TASK 7.4 CONTRACTOR TOTAL COST			**$3,027**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	4	$400	Review and Comment (0.5 day)
	Subtotal Hours/Labor Cost		4	$400	
OTHER DIRECT COSTS					
	SUBTOTAL ODCs COSTs			$0	
	SUBTOTAL LABOR COST			$400	
	TASK 7.4 HUNTSVILLE TOTAL COST			**$400**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	4	$340	Review and Comment (0.5 day)
	Subtotal Hours/Labor Cost		4	$340	
OTHER DIRECT COSTS					
	SUBTOTAL ODCs COSTs			$0	
	SUBTOTAL LABOR COST			$340	
	TASK 7.4 DISTRICT TOTAL COST			**$340**	

Task 15.1 - Public Notification
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare notifications(news release, PSA, flyer) and invitation letter(draft/final electronic deliverables); prepare letter for distribution by the District; Coordinate with the Huntsville and District

Huntsville - Coordination and publishing an advertisement in the local newspaper

District - Coordination and distribute notifications to media

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination (0.5 days)
Scientist, Senior - AD	$ 103.46	/hour	32	$3,311	Preparation of materials (4 days)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative activities (2 days)
	Subtotal Hours/Labor Cost		52	$4,422	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	50	$200	Telephone calls for public notification preparation
Facsimile	$ 0.50	/page	50	$25	Faxes needed for public notification preparation
	Subtotal In-House Services Cost			$225	
	SUBTOTAL ODCs COSTs			$225	
	SUBTOTAL LABOR COST			$4,422	
	Project Management Costs			$316	7% of Labor Costs, 3% Other Direct Costs
	TASK 15.1 CONTRACTOR TOTAL COST			**$4,963**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	8	$800	Coordination; Review and Comment (1 day)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Coordination; Review and Comment (1 day)
	Subtotal Hours/Labor Cost		16	$1,600	
OTHER DIRECT COSTS					
OTHER					
Paid Advertisement in Newspaper	$ 1,000.00	/ad	1	$1,000	One Advertisement in the local newspaper
	Subtotal Other Cost			$1,000	
	SUBTOTAL ODCs COSTs			$1,000	
	SUBTOTAL LABOR COST			$1,600	
	TASK 15.1 HUNTSVILLE TOTAL COST			**$2,600**	

Task 15.1 - Public Notification
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	8	$680	Coordination (1 day)
PAO Officer GS-12-1	$ 85.00	/hour	8	$680	Coordination (1 day)
	Subtotal Hours/Labor Cost		16	$1,360	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$1,360	
			TASK 15.1 DISTRICT TOTAL COST	**$1,360**	

Task 15.2 - Meeting Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare/produce handouts, agenda, signs, sign-in sheets; Prepare/produce displays; Prepare Presentation (all Draft/Final); Coordinate with District and USACE, Huntsville; Set-up meeting (secure locations, coordinate with community, ship materials, etc.,)

Huntsville and District - Coordination and review of the presentation

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	8	$792	Coordination (1 day)
Engineer, Senior - CX	$ 94.59	/hour	16	$1,513	Coordination and preparation of the meeting materials (2 days)
Scientist, Senior - AD	$ 103.46	/hour	48	$4,966	Preparation of the meeting materials (6 days)
GIS Analyst - AP	$ 54.59	/hour	8	$437	GIS support for the preparation of meeting materials (1 day)
Administrative Support - EV	$ 44.70	/hour	24	$1,073	Administrative activities (3 days)
	Subtotal Hours/Labor Cost		104	$8,781	
OTHER DIRECT COSTS					
MATERIALS AND SUPPLIES					
Job Supplies	$ 25.00	/day	1	$25	Supplies for meeting materials
	Subtotal Materials and Supplies Cost			$25	
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	50	$200	Telephone calls for the meeting materials preparation
Facsimile	$ 0.50	/page	50	$25	Faxes needed for the meeting materials preparation
GIS Workstation	$ 30.00	/hour	8	$240	GIS workstation hours needed for the preparation of meeting materials
FED Exp Package (50 lbs)	$ 75.00	/each	4	$300	Distribution of the meeting materials
	Subtotal In-House Services Cost			$765	
REPRODUCTION					
Color Copies	$ 1.50	/page	500	$750	Color copies for the meeting materials
Color Copies-Large Maps	$ 15.00	/page	4	$60	Posters for the meeting materials
Laminate Displays	$ 50.00	/page	4	$200	Lamination for the posters
	Subtotal Reproduction Cost			$1,010	
OTHER					
Room Rental	$ 250.00	/event	1	$250	Room rental for the meeting
	Subtotal Other Cost			$250	
	SUBTOTAL ODCs COSTs			$2,050	
	SUBTOTAL LABOR COST			$8,781	
	Project Management Costs			$676	7% of Labor Costs, 3% Other Direct Costs
	TASK 15.2 CONTRACTOR TOTAL COST			**$11,508**	

Task 15.2 - Meeting Preparation/Logistics
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	16	$1,600	Support the meeting materials preparation and review (2 days)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Review of meeting materials (1 day)
	Subtotal Hours/Labor Cost		24	$2,400	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$2,400	
			TASK 15.2 HUNTSVILLE TOTAL COST	**$2,400**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	16	$1,360	Support the meeting materials preparation and review (2 days)
PAO Officer GS-12-1	$ 85.00	/hour	32	$2,720	Coordinate, support, and review the meeting materials preparation (4 days)
	Subtotal Hours/Labor Cost		48	$4,080	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$4,080	
			TASK 15.2 DISTRICT TOTAL COST	**$4,080**	

Task 15.3 - Meeting
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Project Manager and Senior Scientist will attend the meeting/information session.

Huntsville and District - Attend meeting/information session

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	24	$2,377	Attend Meeting; 3 Days includes travel
Scientist, Senior - AD	$ 103.46	/hour	24	$2,483	Attend Meeting; 3 Days includes travel
	Subtotal Hours/Labor Cost		48	$4,860	
OTHER DIRECT COSTS					
MATERIALS AND SUPPLIES					
Film & Developing	$ 20.00	/roll	1	$20	Pictures of the meeting
	Subtotal Materials and Supplies Cost			$20	
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	6	$546	Perdiem for 3 days each for 2 persons
Parking	$ 8.00	/day	6	$48	Parking for 3 days each for 2 vehicles
Auto Rental	$ 70.00	/day	3	$210	1 auto rental for 3 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rental vehicle
		Subtotal Travel Cost		$2,254	
		SUBTOTAL ODCs COSTs		$2,274	
		SUBTOTAL LABOR COST		$4,860	
		Project Management Costs		$408	7% of Labor Costs, 3% Other Direct Costs
	TASK 15.3 CONTRACTOR TOTAL COST			**$7,542**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	24	$2,400	Attend Meeting; 3 Days includes travel
Technical Manager GS-13-1	$ 100.00	/hour	24	$2,400	Attend Meeting; 3 Days includes travel
	Subtotal Hours/Labor Cost		48	$4,800	
OTHER DIRECT COSTS					
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	6	$546	Perdiem for 3 days each for 2 persons
Parking	$ 8.00	/day	6	$48	Parking for 3 days each for 2 vehicles
Auto Rental	$ 70.00	/day	3	$210	One Auto Rental for 3 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rented vehicle
		Subtotal Travel Cost		$2,254	
		SUBTOTAL ODCs COSTs		$2,254	
		SUBTOTAL LABOR COST		$4,800	
	TASK 15.3 HUNTSVILLE TOTAL COST			**$7,054**	

Task 15.3 - Meeting
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	24	$2,040	Attend Meeting; 3 Days includes travel
PAO Officer GS-12-1	$ 85.00	/hour	24	$2,040	Attend Meeting; 3 Days includes travel
	Subtotal Hours/Labor Cost		48	$4,080	
OTHER DIRECT COSTS					
TRAVEL					
Airfare	$ 700.00	/each	2	$1,400	Airfare for 2 persons
Perdiem (Neosho, MO)	$ 91.00	/day	6	$546	Perdiem for 3 days each for 2 persons
Parking	$ 8.00	/day	6	$48	Parking for 3 days each for 2 vehicles
Auto Rental	$ 70.00	/day	3	$210	One Auto Rental for 3 days
Gasoline	$ 50.00	/week	1	$50	Gasoline for rented vehicle
		Subtotal Travel Cost		$2,254	
		SUBTOTAL ODCs COSTs		$2,254	
		SUBTOTAL LABOR COST		$4,080	
		TASK 15.3 DISTRICT TOTAL COST		**$6,334**	

Task 15.4 Follow-Up Documentation
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Remedial Investigation and Feasability Study
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - Prepare meeting summary document (write summary of meeting, compile all supporting documentation, i.e., materials, sign-in, photos, copies of media coverage, etc.); Create electronic copy and post on website; Follow-up with any vendors; Coordinate with Huntsville and District.

Huntsville and District - Review and comment on the summary document

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination (0.5 day)
Scientist, Senior - AD	$ 103.46	/hour	16	$1,655	Preparation of the meeting documentation (2 days)
Administrative Support - EV	$ 44.70	/hour	8	$358	Administrative activities (1 day)
Accounting/ Procurement - EW	$ 77.88	/hour	4	$312	Vendor follow-up (0.5 day)
	Subtotal Hours/Labor Cost		32	$2,721	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$ 4.00	/call	25	$100	Telephone calls for follow-up documentation
Facsimile	$ 0.50	/page	25	$13	Faxes needed for follow-up documentation
	Subtotal In-House Services Cost			$113	
	SUBTOTAL ODCs COSTs			$113	
	SUBTOTAL LABOR COST			$2,721	
	Project Management Costs			$194	7% of Labor Costs, 3% Other Direct Costs
	TASK 15.4 CONTRACTOR TOTAL COST			**$3,027**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	4	$400	Review and Comment (0.5 day)
	Subtotal Hours/Labor Cost		4	$400	
OTHER DIRECT COSTS					
	SUBTOTAL ODCs COSTs			$0	
	SUBTOTAL LABOR COST			$400	
	TASK 15.4 HUNTSVILLE TOTAL COST			**$400**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	4	$340	Review and Comment (0.5 day)
	Subtotal Hours/Labor Cost		4	$340	
OTHER DIRECT COSTS					
	SUBTOTAL ODCs COSTs			$0	
	SUBTOTAL LABOR COST			$340	
	TASK 15.4 DISTRICT TOTAL COST			**$340**	

Cost Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

Task	Task Description	Units	Unit of Measure	Contractor Cost	Government Cost				
					Huntsville	District	TEU	ECBC	USATCES
1.0	**Public Involvement Plan (PIP) Updates**	**6**	**EA**	$0	$48,000	$40,800	$0	$0	$0
2.0	**Training Materials Update**	**6**	**EA**	$15,600	$9,600	$8,400	$0	$0	$0
3.0	**Mailing Fact Sheets**	**6**	**EA**	$18,600	$0	$12,600	$0	$0	$0
Summary of All Tasks				**$34,200**	**$57,600**	**$61,800**	**$0**	**$0**	**$0**

Notes:

Costs presented are rounded to the nearest 100 dollars

Cost Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

Task	Task Description	Contractor Cost	Government Cost					
			Huntsville	District	TEU	ECBC	USATCES	USACHPP!
1.0	**Public Involvement Plan (PIP) Updates**	$0	$8,000	$6,800	$0	$0	$0	$0
2.0	**Training Materials Update**	$2,570	$1,600	$1,360	$0	$0	$0	$0
3.0	**Mailing Fact Sheets**	$3,078	$0	$2,040	$0	$0	$0	$0

Task 1.0 - PIP Updates
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Contractor - None

Huntsville - Review and comment; District - Coordinate with stakeholders to document changing conditions/concerns and determine need to modify education materials/training and/or conduct additional training; assume minor revisions to materials and distribute

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
	Subtotal Hours/Labor Cost		0	$0	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$0	
			Project Management Costs	$0	7% of Labor Costs, 3% Other Direct Costs
			TASK 1.0 CONTRACTOR TOTAL COST	**$0**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	40	$4,000	PIP Update Review and Comment (5 days)
Technical Manager GS-13-1	$ 100.00	/hour	40	$4,000	PIP Update Review and Comment (5 days)
	Subtotal Hours/Labor Cost		80	$8,000	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$8,000	
			TASK 1.0 HUNTSVILLE TOTAL COST	**$8,000**	

Task 1.0 - PIP Updates
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	40	$3,400	PIP Update, contacting stakeholders (5 days)
PAO Officer GS-12-1	$ 85.00	/hour	40	$3,400	PIP Update, contacting stakeholders (5 days)
	Subtotal Hours/Labor Cost		80	$6,800	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$6,800	
			TASK 1.0 DISTRICT TOTAL COST	**$6,800**	

Task 2.0 - Training Materials Update
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Prime Contractor -Coordinate with District and update site-specific training materials.

Huntsville/District - Review and comment

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Scientist, Senior - AD	$ 103.46	/hour	16	$1,655	Update training materials (2 days)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative activities; make materials available online (2 days)
	Subtotal Hours/Labor Cost		32	$2,371	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$4.00	/call	5	$20	Telephone calls for updating training materials
Facsimile	$0.50	/page	25	$13	Faxes for updating training materials
	Subtotal In-House Services Cost			$33	
	SUBTOTAL ODCs COSTs			$33	
	SUBTOTAL LABOR COST			$2,371	
	Project Management Costs			$167	7% of Labor Costs, 3% Other Direct Costs
	TASK 2.0 CONTRACTOR TOTAL COST			**$2,570**	

Task 2.0 - Training Materials Update
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	8	$800	Review and comment (1 day)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Review and comment (1 day)
	Subtotal Hours/Labor Cost		16	$1,600	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$1,600	
			TASK 2.0 HUNTSVILLE TOTAL COST	**$1,600**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	8	$680	Review and comment (1 day)
PAO Officer GS-12-1	$ 85.00	/hour	8	$680	Review and comment (1 day)
	Subtotal Hours/Labor Cost		16	$1,360	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$1,360	
			TASK 2.0 DISTRICT TOTAL COST	**$1,360**	

Task 3.0 - Mailing Fact Sheets
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Long Term Management
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Prime Contractor - Verify distribution/stakeholder list; coordinate with print/mail vendor; limited distribution; coordinate with the District.

District - Provide support for mailing fact sheets

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Scientist, Staff - AE	$ 64.99	/hour	16	$1,040	Coordination with mailing vendor and support (2 days)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative activities (2 days)
	Subtotal Hours/Labor Cost		32	$1,755	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$4.00	/call	20	$80	Telephone calls for Mailing Fact Sheets
Facsimile	$0.50	/page	20	$10	Faxes for mailing fact sheets
FED Exp Letter/2 lb pack	$15.00	/each	5	$75	Delivery costs for mailing fact sheets
	Subtotal In-House Services Cost			$165	
SUBCONTRACTORS					
Print/Mail Subcontractor	$1,000.00	/each	1	$1,000	Costs for printing fact sheets
	Subtotal Subcontractors Cost			$1,000	
	SUBTOTAL ODCs COSTs			$1,165	
	SUBTOTAL LABOR COST			$1,755	
	Project Management Costs			$158	7% of Labor Costs, 3% Other Direct Costs
	TASK 3.0 CONTRACTOR TOTAL COST			**$3,078**	

GOVERNMENT COST
DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	8	$680	Provide Support for Preparation and Mailing Fact Sheets (1 day)
PAO Officer GS-12-1	$ 85.00	/hour	16	$1,360	Provide Support for Preparation and Mailing Fact Sheets (2 days)
	Subtotal Hours/Labor Cost		24	$2,040	
OTHER DIRECT COSTS					
	SUBTOTAL ODCs COSTs			$0	
	SUBTOTAL LABOR COST			$2,040	
	TASK 3.0 DISTRICT TOTAL COST			**$2,040**	

Cost Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

Task	Task Description	Units	Unit of Measure	Contractor Cost	Government Cost				
					Huntsville	District	TEU	ECBC	USATCES
1.0	**Public Meeting**								
1.1	Public Notification	**0**	**EA**	$0	$0	$0	$0	$0	$0
1.2	Meeting Preparation/Logistics	**0**	**EA**	$0	$0	$0	$0	$0	$0
1.3	Meeting	**0**	**EA**	$0	$0	$0	$0	$0	$0
1.4	Follow Up Documentation	**0**	**EA**	$0	$0	$0	$0	$0	$0
2.0	**PCO Material**	**1**	**EA**	$4,300	$4,000	$6,000	$0	$0	$0
3.0	**Public Notice**	**1**	**EA**	$3,700	$1,600	$7,400	$0	$0	$0
4.0	**Regulatory Correspondence and Meetings**	**1**	**EA**	$0	$0	$4,800	$0	$0	$0
Summary of All Tasks				**$8,000**	**$5,600**	**$18,200**	**$0**	**$0**	**$0**

Notes:

Costs presented are rounded to the nearest 100 dollars

Cost Summary
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

Task	Task Description	Contractor Cost	Government Cost					
			Huntsville	District	TEU	ECBC	USATCES	USACHPP!
1.0	**Public Meeting**							
1.1	Public Notification	$4,963	$2,600	$1,360	$0	$0	$0	$0
1.2	Meeting Preparation/Logistics	$11,508	$2,400	$4,080	$0	$0	$0	$0
1.3	Meeting	$7,542	$7,054	$6,334	$0	$0	$0	$0
1.4	Follow Up Documentation	$3,027	$800	$680	$0	$0	$0	$0
2.0	**PCO Material**	$4,272	$4,000	$5,960	$0	$0	$0	$0
3.0	**Public Notice**	$3,611	$1,600	$7,320	$0	$0	$0	$0
4.0	**Regulatory Correspondence and Meetings**	$0	$0	$4,786	$0	$0	$0	$0

Task 2.0 - PCO Material
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Prime Contractor - Prepare letter and compile report (draft/final) deliverable: hard copy letter and report, electronic supporting documentation; Assume 10 copies of draft/final report.

Huntsville/District - Submit letters, Coordinate with reviewing agencies, Review and Comment

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination and review (0.5 day)
Engineer, Senior - CX	$ 94.59	/hour	8	$757	Preparation and review of the report (1 day)
Scientist, Staff - AE	$ 64.99	/hour	24	$1,560	Preparation of the report (3 days)
GIS Manager - AT	$ 82.72	/hour	4	$331	GIS support for preparation of the report (0.5 day)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative activities (2 days)
	Subtotal Hours/Labor Cost		56	$3,759	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$4.00	/call	25	$100	Telephone calls for PCO Material
Facsimile	$0.50	/page	25	$13	Faxes neede for PCO Material
FED Exp Letter/2 lb pack	$15.00	/each	6	$90	Transmittal of the PCO Material
	Subtotal In-House Services Cost			$203	
REPRODUCTION					
CDs for Project Document Submittal	2	/each	20	$40	CDs for the PCO Material
	Subtotal Reproduction Cost			$40	
	SUBTOTAL ODCs COSTs			$243	
	SUBTOTAL LABOR COST			$3,759	
	Project Management Costs			$270	7% of Labor Costs, 3% Other Direct Costs
	TASK 2.0 CONTRACTOR TOTAL COST			**$4,272**	

Task 2.0 - PCO Material
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	16	$1,600	Coordination; Review and comment (2 days)
Technical Manager GS-13-1	$ 100.00	/hour	24	$2,400	Review and comment (3 days)
	Subtotal Hours/Labor Cost		40	$4,000	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$4,000	
			TASK 2.0 HUNTSVILLE TOTAL COST	**$4,000**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	24	$2,040	Review and comment (3 days)
PAO Officer GS-12-1	$ 85.00	/hour	32	$2,720	Review and comment (4 days)
Administrative Support GS-9-1	$ 50.00	/hour	24	$1,200	Administrative activities (3 days)
	Subtotal Hours/Labor Cost		80	$5,960	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$5,960	
			TASK 2.0 DISTRICT TOTAL COST	**$5,960**	

Task 3.0 - Public Notice
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

Prime Contractor - Prepare notice (electronic draft for review, publish final); Coordinate publication; Setup information repository; Coordinate with the District.

Huntsville - Review and Comment

District - Receive/track all comments; Respond to all public inquiries/info. Requests; Official response to comments; Maintain Info. Repository until decision document is final.

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Senior Project Manager - AQ	$ 99.03	/hour	4	$396	Coordination, review, and support (0.5 day)
Scientist, Staff - AE	$ 64.99	/hour	24	$1,560	Preparation of the notice (3 days)
Administrative Support - EV	$ 44.70	/hour	16	$715	Administrative support (2 days)
Accounting/ Procurement - EW	$ 77.88	/hour	4	$312	Procurement (0.5 day)
	Subtotal Hours/Labor Cost		48	$2,983	
OTHER DIRECT COSTS					
IN-HOUSE SERVICES					
Telephone	$4.00	/call	25	$100	Telephone calls for the public notice
Facsimile	$0.50	/page	25	$13	Faxes needed for the public notice
FED Exp Package (50 lbs)	$75.00	/each	1	$75	Delivery of the public notice package
	Subtotal In-House Services Cost			$188	
REPRODUCTION					
CDs for Project Document Submittal	$2.00	/each	10	$20	CDs for the public notice
3-ring Binders	$12.50	/each	10	$125	Binders for the public notice
Color Copies	$1.50	/page	50	$75	Color copies for the public notice
	Subtotal Reproduction Cost			$220	
OTHER					
Paid Advertisement in Newspaper	$1,000.00	/ad	1	$1,000	Advertisement in the newspaper
	Subtotal Other Cost			$1,000	
	SUBTOTAL ODCs COSTs			$408	
	SUBTOTAL LABOR COST			$2,983	
	Project Management Costs			$221	7% of Labor Costs, 3% Other Direct Costs
	TASK 3.0 CONTRACTOR TOTAL COST			**$3,611**	

Task 3.0 - Public Notice
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-13-1	$ 100.00	/hour	8	$800	Coordination; Review and comment (1 day)
Technical Manager GS-13-1	$ 100.00	/hour	8	$800	Review and comment (1 day)
	Subtotal Hours/Labor Cost		16	$1,600	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$1,600	
			TASK 3.0 HUNTSVILLE TOTAL COST	**$1,600**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	32	$2,720	Official response to comments; Maintain Info. Repository; (4 days)
PAO Officer GS-12-1	$ 85.00	/hour	40	$3,400	Receive/track all comments; Respond to all public inquiries/info. Requests; (5 days)
Administrative Support GS-9-1	$ 50.00	/hour	24	$1,200	Administrative activities (3 days)
	Subtotal Hours/Labor Cost		96	$7,320	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$7,320	
			TASK 3.0 DISTRICT TOTAL COST	**$7,320**	

Task 4.0 - Regulatory Correspondence and Meetings
Property Name: Fort Crowder, Property Number: B07MO0138, Project Number: 01
Project Close-out
CWM Scoping and Security Study
10 March 2005

Responsibility and Assumptions:

District - Annual base level effort for communications with regulators; assume one meeting.

CONTRACTOR COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
	Subtotal Hours/Labor Cost		0	$0	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$0	
			Project Management Costs	$0	7% of Labor Costs, 3% Other Direct Costs
			TASK 4.0 CONTRACTOR TOTAL COST	**$0**	

GOVERNMENT COST
HUNTSVILLE COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
	Subtotal Hours/Labor Cost		0	$0	
OTHER DIRECT COSTS					
			SUBTOTAL ODCs COSTs	$0	
			SUBTOTAL LABOR COST	$0	
			TASK 4.0 HUNTSVILLE TOTAL COST	**$0**	

DISTRICT COST

Classification	Unit Cost	Units	Quantity	Cost	Assumptions
LABOR COST					
Project Manager GS-12-1	$ 85.00	/hour	40	$3,400	Communications; one-day meeting with regulator (5 days)
Administrative Support GS-9-1	$ 50.00	/hour	24	$1,200	Administrative support (3 days)
	Subtotal Hours/Labor Cost		64	$4,600	
OTHER DIRECT COSTS					
TRAVEL					
Perdiem (Neosho, MO)	$91.00	/day	1	$91	Per diem for one day
Auto Rental	$70.00	/day	1	$70	One Auto Rental for 1 day
Gasoline	$50.00	/week	0.5	$25	Gasoline for rented vehicle
		Subtotal Travel Cost		$186	
		SUBTOTAL ODCs COSTs		$186	
		SUBTOTAL LABOR COST		$4,600	
		TASK 4.0 DISTRICT TOTAL COST		**$4,786**	

Contractor
Labor Classifications and Unit Cost
CWM Scoping and Security Study
10 March 2005

Classification	Unit Cost	Units
Senior Project Manager - AQ	$ 99.03	/hour
Technical Director - AD	$ 103.46	/hour
Engineer, Senior - CX	$ 94.59	/hour
Engineer, Staff - CZ	$ 73.75	/hour
Senior Geophysicist - AD	$ 103.46	/hour
Site Geophysicist - DB	$ 73.19	/hour
Geologist - AO	$ 70.35	/hour
Scientist, Senior - AD	$ 103.46	/hour
Scientist, Staff - AE	$ 64.99	/hour
GIS Manager - AT	$ 82.72	/hour
GIS Analyst - AP	$ 54.59	/hour
QC Manager - ER	$ 83.19	/hour
Computer Programer - AK	$ 71.29	/hour
Administrative Support - EV	$ 44.70	/hour
Accounting/ Procurement - EW	$ 77.88	/hour
Site Project Manager - DC	$ 78.48	/hour
SUXOS - AZ	$ 66.87	/hour
Engineer, Junior - DA	$ 54.12	/hour
UXO Safety - CP	$ 61.33	/hour
UXO Safety (4% HPD) - CQ	$ 63.76	/hour
UXO Safety (8% HPD) - CR	$ 66.19	/hour
UXO QCS - CI	$ 61.40	/hour
UXO QCS (4% HPD) - CJ	$ 63.85	/hour
UXO QCS (8% HPD) - CK	$ 66.31	/hour
UXO Techician II - BP	$ 46.20	/hour
UXO Techician II (4% HPD) - BQ	$ 47.99	/hour
UXO Techician II (8% HPD) - BR	$ 49.78	/hour
UXO Techician III - BW	$ 55.19	/hour
UXO Techician III (4% HPD) - BX	$ 57.34	/hour
UXO Techician III (8% HPD) - BY	$ 59.49	/hour

Huntsville, District, TEU, ECBC, USATCES, and USACHPM
Labor Classifications and Unit Cost
CWM Scoping and Security Study
10 March 2005

Classification	Unit Cost	Units
Project Manager GS-13-1	$ 100.00	/hour
Technical Manager GS-13-1	$ 100.00	/hour
Project Manager GS-12-1	$ 85.00	/hour
Technical Manager GS-12-1	$ 85.00	/hour
Technical Manager GS-11-1	$ 70.00	/hour
TEU Site Supervisor (WG)	$ 100.00	/hour
TEU Haz Mat Personnel	$ 85.00	/hour
TEU Haz Mat Personnel 4% HPD	$ 89.00	/hour
TEU Haz Mat Personnel 8% HPD	$ 92.00	/hour
TEU EOD	$ -	/hour
TEU Administrative Support GS-9-1	$ 50.00	/hour
ECBC Site Supervisor GS-13-1	$ 100.00	/hour
ECBC Site Personnel GS-12-1	$ 85.00	/hour
USATCES* Support Personnel GS-13-1	$ 100.00	/hour
USACHPM Support Personnel GS-13-1	$ 100.00	/hour
PAO Officer GS-12-1	$ 85.00	/hour
UXO Site Safety Support GS-12-1	$ 85.00	/hour
UXO Site Safety Support 4% HPD GS-12-1	$ 89.00	/hour
UXO Site Safety Support 8% HPD GS-12-1	$ 92.00	/hour
Contracting Officer GS-13-1	$ 100.00	/hour
Contracting Specialist GS-12-1	$ 85.00	/hour
Administrative Support GS-9-1	$ 50.00	/hour
Resource Management Officer GS-12-1	$ 85.00	/hour
Real Estate Specialist GS-12-1	$ 85.00	/hour

ODC Classifications and Unit Cost
Huntsville, District, TEU, ECBC, USATCES, and USACHPM
CWM Scoping and Security Study
10 March 2005

Item	Unit Price	Units
MATERIALS AND SUPPLIES		
Field Notebook	$14.00	/each
Engineers Tape 100'	$25.00	/each
Film & Developing	$20.00	/roll
Video reproduction	$60.00	/video
Duct Tape (dozen)	$72.00	/case
Survey Stake/Flag	$20.00	/bundle
Job Supplies	$125.00	/week
Job Supplies	$25.00	/day
Miscellaneous	$25.00	/day
EQUIPMENT		
Digital Camera	$300.00	/each
Video camera (1 Nos.)	$700.00	/each
Computer, portable (4 Nos.)	$8,000.00	/each
Computer, Desktop (1 Nos.)	$1,500.00	/each
Computer, Desktop (1 Nos.)	$150.00	/week
Computer Network Setup	$1,000.00	/each
Printer/Copier/Fax (1 Nos.)	$500.00	/each
PDA's	$200.00	/each
Field Radios (15 Nos.) Rental	$200.00	/week
Schonstedt Rental	$30.00	/week
Explosive Magazine Rental	$400.00	/month
Geophysical Survey Instruments Rental	$700.00	/week
Arc-Second Vulcan System	$7,500.00	/month
Trimble Robotic Laser	$2,400.00	/month
Trimble RTK GPS	$1,200.00	/week
Field Office Rental	$500.00	/week
Surviellance Camera	$500.00	/week
Backhoe/Forklift	$450.00	/week
Bobcat	$400.00	/week
Generator	$300.00	/week
Photo-Ionization Detector	$50.00	/week
Heat Stress Monitor	$40.00	/week
Dust Meter	$50.00	/week
Portacount Meter	$360.00	/week
Sanitation	$50.00	/week
Towed Array System (ATV/Computer)	$250.00	/week
Air Conditioning Unit	$1,300.00	/week
PPE for Field Teams	$50.00	/week
Interspiro S4, 60 min bottle, 915 regulator	$100.00	/week
North 7600 respirator	$200.00	/each
Air Purifying Cartridges	$20.00	/pair
TEU Equipment Supplies	$4,000.00	/week
HEALTH & SAFETY EQUIPMENT		
Drinking Water/Ice	$75.00	/week
Field Safety Kits	$150.00	/week
TRAVEL		
* Airfare	$700.00	/each
Perdiem **(Neosho, MO)**	$91.00	/day
Parking	$8.00	/day
Auto Rental	$70.00	/day
Auto Rental	$300.00	/week
SUV Vehicle Rental	$400.00	/week
Gasoline	$50.00	/week
IN-HOUSE SERVICES		
Telephone	$4.00	/call
Web Host Fee	$40.00	/month
GIS Workstation	$30.00	/hour
CADD/Graphics	$10.00	/hour
Facsimile	$0.50	/page
Work Station Plotter	$5.00	/plot
FED Exp Letter/2 lb pack	$15.00	/each
FED Exp Package (50 lbs)	$75.00	/each
Mail 4-lb pack	$5.00	/pack
Mail Letters	$0.50	/letter
Shipping/Multiple Geo Instr. Boxes. One-way	$400.00	/each
Web Site Development	$10,000.00	/each

ODC Classifications and Unit Cost
Huntsville, District, TEU, ECBC, USATCES, and USACHPM
CWM Scoping and Security Study
10 March 2005

Item	Unit Price	Units
REPRODUCTION		
Photocopier	$0.00	/page
Aerial Photo Repro	$20.00	/photo
Blueline Repro	$3.00	/sheet
CDs for Project Document Submittal	$2.00	/each
3-ring Binders	$12.50	/each
Color Copies	$1.50	/page
Color Copies-Large Maps	$15.00	/page
Laminate Displays	$50.00	/page
SUBCONTRACTORS		
Explosives		/each
Brush Cut Subcontractor	$1,600.00	/acre
Brush Cut Subcontractor	$10,000.00	/each
Land Survey Subcontractor		/acre
Scrap Disposal Sub - FACT		/each
Installation of IC Signage		/each
Backhoe and Operator		/day
Access Road Subcontractor	$10,000.00	/each
Positional Equipment Subcontractor		/day
Print/Mail Subcontractor	$1,000.00	/each
Ambulance Service	$4,000.00	/week
Crane	$1,000.00	/each
Electrician	$1,500.00	/each
Lightning Suppression System	$2,500.00	/each
Security Guards	$4,000.00	/week
Fence contractor	$8,000.00	/each
Hospital Training	$40,000.00	/each
HTW Laboratory	$900.00	/sample
SAIC Hospital Training	$8,000.00	/each
OTHER		
Paid Advertisement in Newspaper	$1,000.00	/ad
Room Rental	$250.00	/event
ECBC Operation and Maintenance		/each
ECBC Project Management Cost		/each
GOVERNMENT PROCURED EQUIPMENT		
MINICAMS		/each
DAAMS Pumps		/acre
Mobile Analytical Platform		/each
Analytical Laboratory	$900.00	/sample
CWM Analyses	$2,000.00	/sample

* - Average airfare from Huntsville to LosAngeles, Denver, Seattle, Washington D.C., and Orlando.
Based on round-trip ticket with full restrictions and 1-week advance notice.

ECBC DAILY SITUATION REPORTS

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 29 October, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

   A. MSD DAAMS Tube Results:

   B. MINICAMS Results: PDS

   C. MINICAMS Results: Headspace

4. Comments: We are still in a holding pattern here at Camp Crowder. All equipment continues to be kept running and challenged daily.

I am sending this blank SITREP to check everyone's e-mail address.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 03 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

   A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311030003-CRO POS-A	ND	ND	ND	ND
0311030004-CRO POS-B	ND	ND	ND	ND
0311030005-CRO POS-C	ND	ND	ND	ND
0311030006-CRO POS-D	ND	ND	ND	ND

   B. MINICAMS Results: PDS and Digsite
   No detections on any calibrated compound.

   C. MINICAMS Results: Headspace
   Nothing headspaced today.

4. **Comments:** Clearance to proceed arrived over the weekend. Intrusive operations began this morning.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 04 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

   A. MSD DAAMS Tube Results: HN1 HD XL HN3

   B. MINICAMS Results: PDS and Digsite
   No detections on any calibrated compound.

   C. MINICAMS Results: Headspace
   Nothing headspaced today.

4. **Comments:** The only big news about this SITREP is the lack of results from DAAMS tubes. A late afternoon thunderstorm soaked all DAAMS tube positions. I did not want to damage the MS/GC so I held off running these tubes until I can get guidance from home as to how to proceed.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 05 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311050016-CRO POS-A	ND	ND	ND	ND
0311050017-CRO POS-B	ND	ND	ND	ND
0311050018-CRO POS-C	ND	ND	ND	ND
0311050019-CRO POS-D	ND	ND	ND	ND
0311050020-CRO POS-E	ND	ND	ND	ND

B. MINICAMS Results: PDS and Digsite
No detections on any calibrated compound.

C. MINICAMS Results: Headspace
Nothing headspaced today.

4. Comments: Minicams were causing us a lot of grief today. (Always happens at the worst time-today we had the local PD on site to block traffic along the highway and had to finish all the flags that were near the road). HN1 gave the technician problems both at the inital calibration in the morning, and at the four hour challenge. The weather has changed to cold and rain or drizzel. The sample lines were not insulated for cold weather. All the ECBC crew stayed late tonight to insulate the lines. We will also try a fresh set of standards tomorrow.

I'll probably have a sick crew tomorrow, its very cold and everyone left tonight soaking wet and muddy. Mo, Laura, and Theron all did a great job out there crawling around in the mud.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 06 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311060023-CRO POS-A	ND	ND	ND	ND
0311060024-CRO POS-B	ND	ND	ND	ND
0311060025-CRO POS-C	ND	ND	ND	ND
0311060026-CRO POS-D	ND	ND	ND	ND
0311060027-CRO POS-E	ND	ND	ND	ND

0311060028-CRO Soils

B. MINICAMS Results: PDS and Digsite
No detections on any calibrated compound.

C. MINICAMS Results: Headspace
Nothing headspaced by Minicams today.

4. Comments: Much better day than yesterday. Still having a minor problem with the Minicams but I believe we have the solution. We (ECBC) will be working for awhile tomorrow to clean the heated sample lines and do some maintainance.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 12 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Magretha Palepale**

3. **Monitoring Results:**

A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311060031-CRO POS-A	ND	ND	ND	ND
0311060032-CRO POS-B	ND	ND	ND	ND
0311060033-CRO POS-C	ND	ND	ND	ND
0311060034-CRO POS-D	ND	ND	ND	ND
0311060035-CRO POS-E	ND	ND	ND	ND

B. MINICAMS Results: PDS and Digsite
No detections on any calibrated compound.

C. MINICAMS Results: Headspace
Nothing headspaced by Minicams today.

4. **Comments:** Still having problems with the Minicams. No obvious solution is in sight.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 13 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Libby Horn**

3. **Monitoring Results:**

A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311120038-CRO POS-A	ND	ND	ND	ND
0311120039-CRO POS-B	ND	ND	ND	ND
0311120040-CRO POS-C	ND	ND	ND	ND
0311120041-CRO POS-D	ND	ND	ND	ND
0311120042-CRO POS-E	ND	ND	ND	ND

B. MINICAMS Results: PDS and Digsite
No detections on any calibrated compound.

C. MINICAMS Results: Headspace

3113001	CRDR-FPR-TR-2 BOT
3113002	CRDR-FPR-TR-2 RIGHT
3113003	CRDR-FPR-TR-2 LEFT
3113004	CRDR-FPR-TR-3 BOT
3113005	CRDR-FPR-TR-3 RIGHT
3113006	CRDR-FPR-TR-3 LEFT
3113007	CRDR-FPR-TR-4 BOT
3113008	CRDR-FPR-TR-4 LEFT
3113009	CRDR-FPR-TR-4 RIGHT

4. **Comments:** Still having problems with the Phosgene on the Minicams. Discussions are being held to come up with a solution.

ECBC DAILY SITUATION REPORT

LOCATION: Camp Crowder, MO.
DATE: 14 November, 2003
Prepared by: Mark Leach

1. **Primary Points of Contact on Site:**
   Huntsville Corps of Engineers: **Dave Becker**
   Parsons Site Manager: **Clay Edmondson**
   Parsons SSHO: **Ken Cargel**

2. **ECBC Personnel on Site:**
   POC/ MAP Analyst: **Mark Leach**
   Minicams: **Laura Elliott / Theoron Tatuem**
   DAAMS Technician: **Libby Horn**

3. **Monitoring Results:**

   A. MSD DAAMS Tube Results:

	HN1	HD	XL	HN3
0311130045-CRO POS-A	ND	ND	ND	ND
0311130046-CRO POS-B	ND	ND	ND	ND
0311130047-CRO POS-C	ND	ND	ND	ND
0311130048-CRO POS-D	ND	ND	ND	ND
0311130049-CRO POS-E	ND	ND	ND	ND

   B. MINICAMS Results: PDS and Digsite
   No detections on any calibrated compound.

   C. MINICAMS Results: Headspace

4. **Comments:** Much better day today. Successful challenges on phosgene today. I expect there will be delays at times but we should be able to finish this project.

Edgewood Chemical Biological Center (ECBC)
Daily Situation and Clearance Report

LOCATION: Camp Crowder, MO

DATE: 17 November 2003

1.0 Site Personnel
COE Safety: Dave Becker
POC: Eric Copeland
DAAMS: Libby Horn
MAP Analyst: James Fackett
MINICAMS: Theron Tateum ; Antoine Brown

2.0 Perimeter Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description	HN-1(ng)	HN-3(ng)	HD(ng)	L(ng)
031114052-CRO	POS A	08:12 - 16:12	AIR	ND	ND	ND	ND
031114053-CRO	POS B	08:12 - 16:12	AIR	ND	ND	ND	ND
031114054-CRO	POS C	08:12 - 16:12	AIR	ND	ND	ND	ND
031114055-CRO	POS D	08:12 - 16:12	AIR	ND	ND	ND	ND
031114056-CRO	POS E	08:12 - 16:12	AIR	ND	ND	ND	ND

Notes: ND- not detected

3.0 Headspace Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description	HN-1(ng)	HN-3(ng)	HD(ng)	L(ng)

None
ND= Non Detect, NA= Not Applicable

4.0 Headspace Monitoring (MINICAMS)

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description

None

Comments: Today the Command Post, PDS and Bruker Van were moved up range to continue with further anomalies. Also, today we had successful minicam challenges on all compounds.

Prepared By: Eric Copeland

Edgewood Chemical Biological Center (ECBC)
Daily Situation and Clearance Report

LOCATION: Camp Crowder, MO

DATE: 18 November 2003

1.0 Site Personnel
COE Safety: Dave Becker / Douglas Roads
POC: Eric Copeland
DAAMS: Libby Horn
MAP Analyst: James Fackett
MINICAMS: Theron Tateum ; Antoine Brown

2.0 Perimeter Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number Location Time Interval Sample Description HN-1(ng) HN-3(ng) HD(ng) L(ng)

Wet samples

Notes: ND- not detected

3.0 Headspace Monitoring (MINICAMS)

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description	HN-1	HN-3	HD	L
CRDR-GCA-TR-1	BOTTOM	18:30 - 18:50	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-1	RIGHT	18:30 - 18:50	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-1	LEFT	18:30 - 18:50	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-2	BOTTOM	18:30 - 18:50	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-2	RIGHT	18:30 - 18:50	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-2	LEFT	18:30 - 18:50	SOIL	ND	ND	ND	ND

ND= Non Detect, NA= Not Applicable

4.0 Headspace Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number Location Time Interval Sample Description
None

Comments: Dusty Roads took Dave Beckers place as COE Safety. DAAMS tubes were not analyzed from yesterday or today do to excessive moisture inside the tubes. Today's project was halted this afternoon because of inclement weather conditions. As a result DAAMS tubes experienced water damage, which has

jeopardized our DAAMS tube supply. Preparations have been made for more DAAMS tubes to be shipped via FEDEX. However, our current supply of tubes should holdout for the remainder of this project. Granted pumps are ran during ideal weather conditions.

Minicam operators had a difficult time seeing lewisite. This problem was solved after a good sample line cleaning.

Prepared By: Eric Copeland

Edgewood Chemical Biological Center (ECBC)
Daily Situation and Clearance Report

LOCATION: Camp Crowder, MO

DATE: 19 November 2003

1.0 Site Personnel
COE Safety: Dave Becker / Douglas Rhodes
POC: Eric Copeland
DAAMS: Libby Horn
MAP Analyst: James Fackett
MINICAMS: Theron Tateum ; Antoine Brown

2.0 Perimeter Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/ Clearance Number	Location	Time	Description	HN-1	HN-3	HD	L
0311180074	POS.CQ	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180075	POS.CQ	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180076	POS.A	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180077	POS.B	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180078	POS.C	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180079	POS.D	08:55-13:35	Wet Sample	NA	NA	NA	NA
0311180080	POS.E	08:55-13:35	Wet Sample	NA	NA	NA	NA

Notes: ND- not detected

3.0 Headspace Monitoring (MINICAMS)

ECBC Sample/ Clearance Number	Location	Time	Description	HN-1	HN-3	HD	L
CRDR-GCA-TR-3	BOTTOM	15:01-15:23	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-3	LEFT	15:01-15:23	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-3	RIGHT	15:01-15:23	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-4	BOTTOM	15:01-15:23	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-4	RIGHT	15:01-15:23	SOIL	ND	ND	ND	ND
CRDR-GCA-TR-4	LEFT	15:01-15:23	SOIL	ND	ND	ND	ND

ND= Non Detect, NA= Not Applicable

4.0 Headspace Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description
None			

Comments: Today we had no problems with DAAMS. Weather was sunny and clear. Correction to yesterday's (11/18) minicam headspace time 18:21 - 18:41. Minicam sample line probe malfunctioned today. Operators replaced the old probe for new. Probe reactor tube was also replaced. After probe swap out minicams were operational for the remainder of the day.

Prepared By: Eric Copeland

Edgewood Chemical Biological Center (ECBC)
Daily Situation and Clearance Report

LOCATION: Camp Crowder, MO

DATE: 20 November 2003

1.0 Site Personnel
COE Safety: Dave Becker / Douglas Rhodes
POC: Eric Copeland
DAAMS: Libby Horn
MAP ANDlyst: James Fackett
MINICAMS: Theron Tateum ; Antoine Brown

2.0 Perimeter Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/ Location	Time	Description	HN-1	HN-3	HD	L Clearance Number
0311190088	POS.A	08:53-16:53	Background Monitoring	ND	ND	ND ND
0311190089	POS.B	08:53-16:53	Background Monitoring	ND	ND	ND ND
0311190090	POS.C	08:53-16:53	Background Monitoring	ND	ND	ND ND
0311190091	POS.D	08:53-16:53	Background Monitoring	ND	ND	ND ND
0311190092	POS.E	08:53-16:53	Background Monitoring	ND	ND	ND ND
0311200102	POS.A	08:31-12:00	Background Monitoring	ND	ND	ND ND
0311200103	POS.B	08:31-12:00	Background Monitoring	ND	ND	ND ND
0311200104	POS.C	08:31-12:00	Background Monitoring	ND	ND	ND ND
0311200105	POS.D	08:31-12:00	Background Monitoring	ND	ND	ND ND
0311200106	POS.E	08:31-12:00	Background Monitoring	ND	ND	ND ND

ND= Non Detect, NA= Not Applicable

3.0 Headspace Monitoring (MINICAMS)

ECBC Sample/ Location	Time	Description	HN-1	HN-3	HD	L Clearance Number
None						

ND= Non Detect, NA= Not Applicable

4.0 Headspace Monitoring (DAAMS) Results Analyzed by GC/MS

ECBC Sample/Clearance Number	Location	Time Interval	Sample Description
None			

ND= Non Detect, NA= Not Applicable

Comments: Today we completed the project with uncovering the last of the remaining anomalies. I spoke with Denni Hall about what needs to be shipped back to Edgewood, so we can start packing up our equipment. Movers should arrive by next Monday. I received the FEDEX package with DAAMS tubes. Once again Minicams had trouble-seeing CG this morning.

Prepared By: Eric Copeland