

# **DRAFT FINAL ENVIRONMENTAL ASSESSMENT**

## **CONSTRUCTION OF A JOINT MARINE-NAVY RESERVE CENTER IN THE DES MOINES, IOWA REGION**

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## EXECUTIVE SUMMARY

The U.S. Marine Forces Reserve (MARFORRES) prepared this Environmental Assessment (EA) to evaluate the potential impacts of constructing a new Joint Marine-Navy Reserve Center in Polk County, Iowa. The proposed plan calls for a 46,200-square foot reserve training building, a 3,250-square foot vehicle maintenance facility, an 800-square foot vehicle wash rack, and associated parking facilities.

The new Joint Marine-Navy Reserve Center would be home to the Navy Operational Support Center Des Moines and the Marine Corps Rifle Company E, 2nd Battalion, 24th Marine Regiment, 4th Marine Division. The Navy Operational Support Center Des Moines is composed of seven active duty and up to 207 Navy reserve personnel. The Marine Corps unit is composed of 10 active duty Marines and 181 Marine Forces Reserve personnel. Currently, the Navy Operational Support Center and Marine Corps Reserve leases facilities from the Department of the Army (Army) at Fort Des Moines in Des Moines, Iowa.

The purpose of the Proposed Action is to provide adequate and efficiently configured facilities to support training, vehicle maintenance, administrative, storage, armory, and recruiting functions in the Des Moines area. The need for the project is to support the Navy and Marine reserve mission and comply with the Anti-Terrorism/Force Protection standards.

This EA has been prepared in accordance with relevant environmental laws, regulations, and Executive Orders. These authorities include the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, National Historic Preservation Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Act, Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), and Executive Order 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*).

This EA analyzes the Proposed Action and a No Action Alternative. Under the No Action Alternative, a new reserve center would not be constructed and the Navy and Marine Reserve units would remain in Building 47 at Fort Des Moines, which does not meet current training and operational requirements. Navy and Marine Reserve units would continue to operate and train in an inadequate facility and would continue to use workarounds for training, drilling, and maintenance, including borrowing space from the Army, when available, and storing equipment and gear outside due to the limited size of the current facility. The No Action Alternative does not meet the MARFORRES purpose and need.

The categories of resources addressed in this EA are cultural resources, biological resources, water resources, land use, and environmental justice. Construction activities associated with the Proposed Action would be expected to result in less than significant impacts to biological resources and land use. Implementation of the Proposed Action would not be expected to result in significant impacts to any of the resource areas.

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## LIST OF ACRONYMS AND ABBREVIATIONS

<b>AT/FP</b>	Anti-Terrorism/Force Protection
<b>Army</b>	Department of the Army
<b>CAA</b>	Clean Air Act
<b>CWA</b>	Clean Water Act
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CEQ</b>	Council on Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>EA</b>	Environmental Assessment
<b>EIS</b>	Environmental Impact Statement
<b>ESA</b>	Endangered Species Act
<b>FONSI</b>	Finding of No Significant Impact
<b>FPPA</b>	Farmland Protection Policy Act
<b>IDNR</b>	Iowa Department of Natural Resources
<b>MARFORRES</b>	U.S. Marine Forces Reserve
<b>MBTA</b>	Migratory Bird Treaty Act
<b>MDAS</b>	Material Documented as Safe
<b>MEC</b>	munitions or explosives of concern
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NEPA</b>	National Environmental Policy Act
<b>NHPA</b>	National Historic Preservation Act
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PAH</b>	polycyclic aromatic hydrocarbon
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>SHPO</b>	State Historic Preservation Office
<b>U.S.</b>	United States
<b>USFWS</b>	U.S. Fish and Wildlife Service

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# 1 Purpose and Need for the Proposed Action

## 1.1 Introduction

The U.S. Marine Forces Reserve (MARFORRES) prepared this Environmental Assessment (EA) to evaluate the potential impacts of constructing a new Joint Marine-Navy Reserve Center in Polk County, Iowa. The proposed plan calls for a 46,200-square foot reserve training building, a 3,250-square foot vehicle maintenance facility, an 800-square foot vehicle wash rack, and associated parking facilities.

The new Joint Marine-Navy Reserve Center would be home to the Navy Operational Support Center Des Moines and the Marine Corps Rifle Company E, 2nd Battalion, 24th Marine Regiment, 4th Marine Division. The Navy Operational Support Center Des Moines is composed of seven active duty and up to 207 Navy reserve personnel. The Marine Corps unit is composed of 10 active duty Marines and 181 Marine Forces Reserve personnel.

Currently, the Navy Operational Support Center and Marine Corps Reserve leases facilities from the Department of the Army (Army) at Fort Des Moines in Des Moines, Iowa. The present location is approximately 15 miles from Camp Dodge, where the reserve units train. MARFORRES is proposing to construct the new Joint Marine-Navy Reserve Center on a parcel located 0.25 miles northwest from the Camp Dodge property boundary (Figure 1-1).

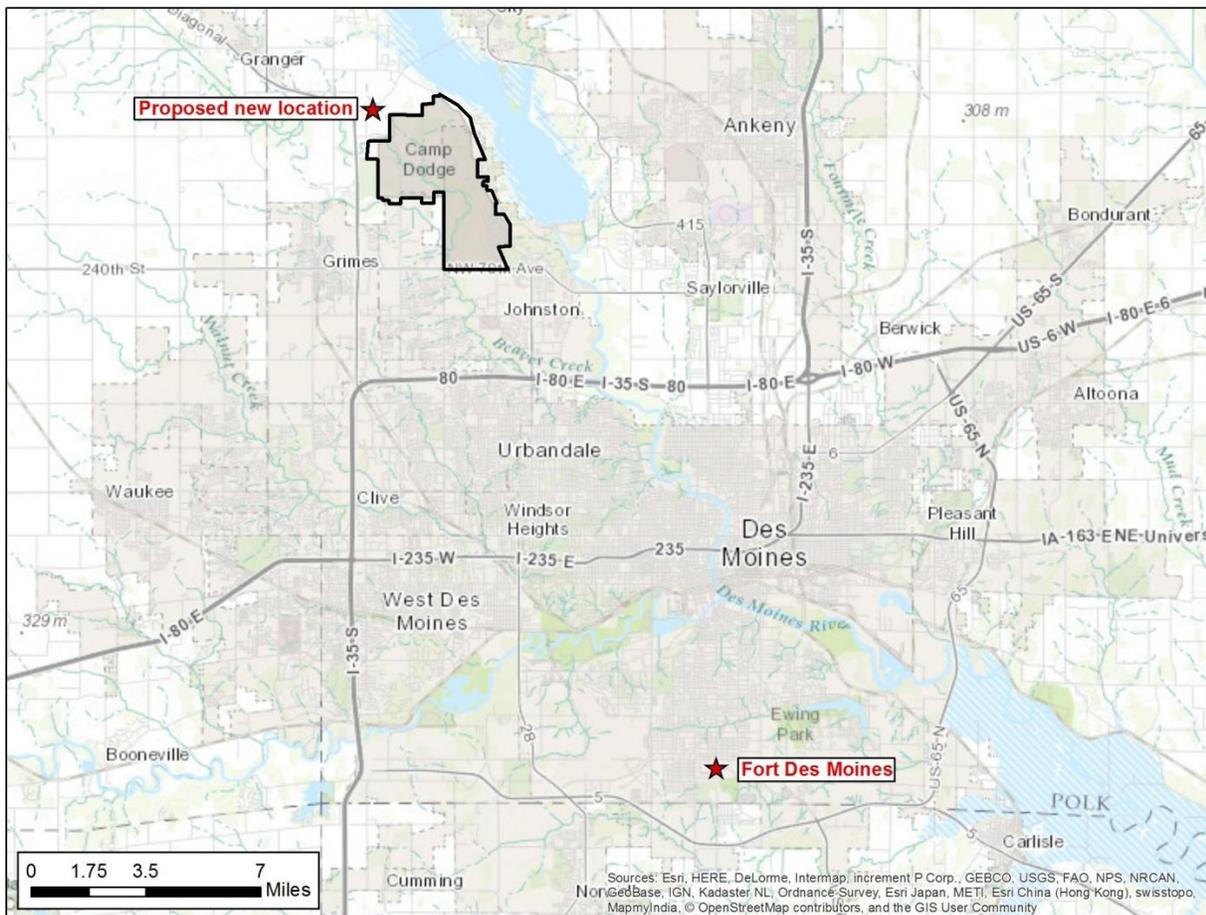


Figure 1-1 Project Location Map

## 1.2 Background

### 1.3.1 MARFORRES

The MARFORRES is the reserve component of the Marine Corps and is headquartered in New Orleans, Louisiana. It is organized, administered, trained, and supplied under the direction of the Commander of the Marine Forces Reserve.

The mission of MARFORRES is to augment and reinforce active duty Marine Corps forces in times of war, national emergency or contingency operations; provide personnel and operational tempo relief for the active forces in peacetime; and provide service to the community.

MARFORRES is equipped, trained, and educated to the same rigorous, high standards as active Marine Corps forces to include training in joint operations and the ability to provide rapid response when called upon. MARFORRES reservists typically train one weekend per month in addition to one annual two-week training.

### 1.3.2 Camp Dodge

The Marine Corps Reserve unit trains at Camp Dodge, also known as the Camp Dodge Joint Maneuver Training Center. Camp Dodge has a total area of approximately 4,400 acres and has the capacity to train 2,400 Soldiers at one time. Camp Dodge serves as a training area for the Army National Guard, Air National Guard, Army Reserve, Marine Corps Reserve, Reserve Officer's Training Corps, as well as state law enforcement agencies. In addition to military training, Camp Dodge is used by state agencies, youth organizations, veteran's groups, and environmental groups. Camp Dodge training areas are also used for hunting and fishing.

The reserve unit utilizes the small arms ranges at Camp Dodge and performs field training exercises, including patrolling and land navigation training. MARFORRES training activities occurring at Camp Dodge would not change. Bases that host training are responsible for providing environmental compliance associated with training activities.

### 1.3.3 Fort Des Moines Joint Marine-Navy Reserve Center

The current Joint Marine-Navy Reserve Center is located in Building 47 at Fort Des Moines, an Army reserve installation that is home to a host of activities and commands with varied missions and operations. The building is owned by the Army and leased to the Marine Corps and Navy reserve units. Building 47 is listed in the National Register of Historic Places as a contributing property to the Fort Des Moines National Historic Landmark. Conversion of the building into a reserve training facility occurred in the mid-1950s and consisted of constructing a reserve training building inside the outer red brick envelope of the historic structure, historically referred to as the "Riding Hall" (see Figure 1-2).



**Figure 1-2 Joint Marine-Navy Reserve Center (Building 47) at Fort Des Moines**

### 1.3 Purpose and Need

The purpose of the Proposed Action is to provide facilities to support MARFORRES training, vehicle maintenance, administrative, storage, armory, and recruiting functions in the Des Moines area. The need for the project is to support the Navy and Marine reserve mission through providing adequate and efficiently configured facilities and comply with the Anti-Terrorism/Force Protection (AT/FP) standards.

The current Joint Marine-Navy Reserve Center in Building 47 can no longer support the mission requirements for the Marine and Navy reserve units due to space and structural constraints. The Center has no vehicle maintenance facility resulting in the inability to accomplish proper maintenance on tactical vehicles. In order to conduct vehicle maintenance activities, the Marine reserve unit borrows maintenance space from the Department of the Army, when it is available.

Due to lack of storage space, the Marine reserve unit is not able to maintain required and authorized equipment on site. As a workaround, the Marines transport personal protective and combat equipment from their homes to drills and store tactical and training equipment in personally-owned vehicles. The unit is also forced to store equipment and gear outside due to the limited size of storage areas. Due to parking constraints on site, the reserve units have to park their personally owned vehicles off-site and walk to the drill site. In addition, classroom activities are held in non-classroom areas.

Structural constraints are related to the fact that the reserve center is a separate structure built inside the envelope of historically significant horse training facility that was originally constructed in 1903. Alterations cannot occur to the outer building without adverse effect to cultural resources. Expanding the building to meet MARFORRES space requirements has the potential to be a challenging and time consuming process.

In addition, the current Joint Marine-Navy Reserve Center does not meet Anti-Terrorism/Force Protection (AT/FP) requirements. The purpose of the AT/FP standards is to minimize the possibility of mass casualties and establish a level of protection against terrorist attacks. These standards are mandatory for all new military construction and any building that requires renovations, modifications, repairs, and restorations in excess of 50 percent of its replacement cost. The reserve center at Fort Des Moines does not meet AT/FP standards, which places Navy and Marine Reserve personnel at greater risks from terrorist attacks. The new facilities will comply with Anti-Terrorism/Force Protection (AT/FP) standards (Unified Facilities Criteria 4-010-01, 22 January 2007) requiring standoff distances depending on wall type and whether the building is within a controlled perimeter. The standoff distance for Building 47 is 80 feet.

## 1.4 The Environmental Review Process

### 1.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 requires the consideration of potential environmental consequences of federal actions. Regulations for federal agency implementation of the Act were established by the President's Council on Environmental Quality (CEQ). Under NEPA, federal agencies must prepare an environmental assessment (EA) or an environmental impact statement (EIS) for any major federal action, except those actions that are determined to be "categorically excluded" from further analysis.

An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a proposed action are significant, resulting in the preparation of an EIS, or not significant, resulting in the preparation of a Finding of No Significant Impact (FONSI). An EIS is prepared for those federal actions that may significantly affect the quality of the human environment. Thus, if MARFORRES were to determine that the Proposed Action would have a significant impact on the quality of the human environment, an EIS would be prepared. An EA should include: brief discussions of the purpose and need for the proposal, the proposed action, the alternatives, the affected environment, the environmental impacts of the proposed action and alternatives, agencies and persons consulted and a discussion of the cumulative impacts associated with the alternatives.

An EA notice of availability will be published in the local newspaper in Des Moines, Iowa describing a 15-day comment period. All comments would be included and considered in the Final EA document.

The lead agency, MARFORRES will review the Final EA and make a determination regarding the Proposed Action and whether a FONSI or an EIS is appropriate. Should MARFORRES conclude that a FONSI is appropriate; a FONSI summarizing the issues presented in this EA will be prepared. The FONSI would be signed by MARFORRES and a notice of availability would be published in local newspaper in Des Moines, Iowa.

MARFORRES has prepared this EA in accordance with applicable federal and state regulations and instructions, as well as with other applicable laws, rules and policies. These include, but are not limited to, the following:

- NEPA as amended by Public Law 94-52, July 3, 1975 (42 U.S. Code of Federal Regulations [CFR] 4321 *et seq.*), which requires environmental analysis for major federal actions significantly affecting the quality of the environment.
- CEQ regulations, as contained in 40 CFR Parts 1500 to 1508, which direct federal agencies on how to implement the provisions of NEPA.
- Department of the Navy Regulations for Implementing NEPA 32 CFR Part 775.
- Marine Corps Order, Environmental and Protection Manual (MCO P5090.2A Ch 2).

#### 1.4.2 Agency Coordination

This EA will focus its analysis of impacts based on the appropriate and relevant laws, regulations, permits, and licenses that are applicable to the proposed action, including the following (see Appendix A for agency correspondence):

- Compliance with the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).
- To comply with Section 106 of the National Historic Preservation Act (NHPA), MARFORRES consulted with the Iowa State Historic Preservation Office (SHPO) and other interested stakeholders.
- Coordination with the U.S. Fish and Wildlife Service (USFWS) on the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Act.
- Compliance with the Clean Water Act (CWA) and Executive Order 11990 *Protection of Wetlands*.
- Compliance with the Clean Air Act (CAA).
- Compliance with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and Executive Order 13045, *Environmental Health Risks and Safety Risk to Children*.

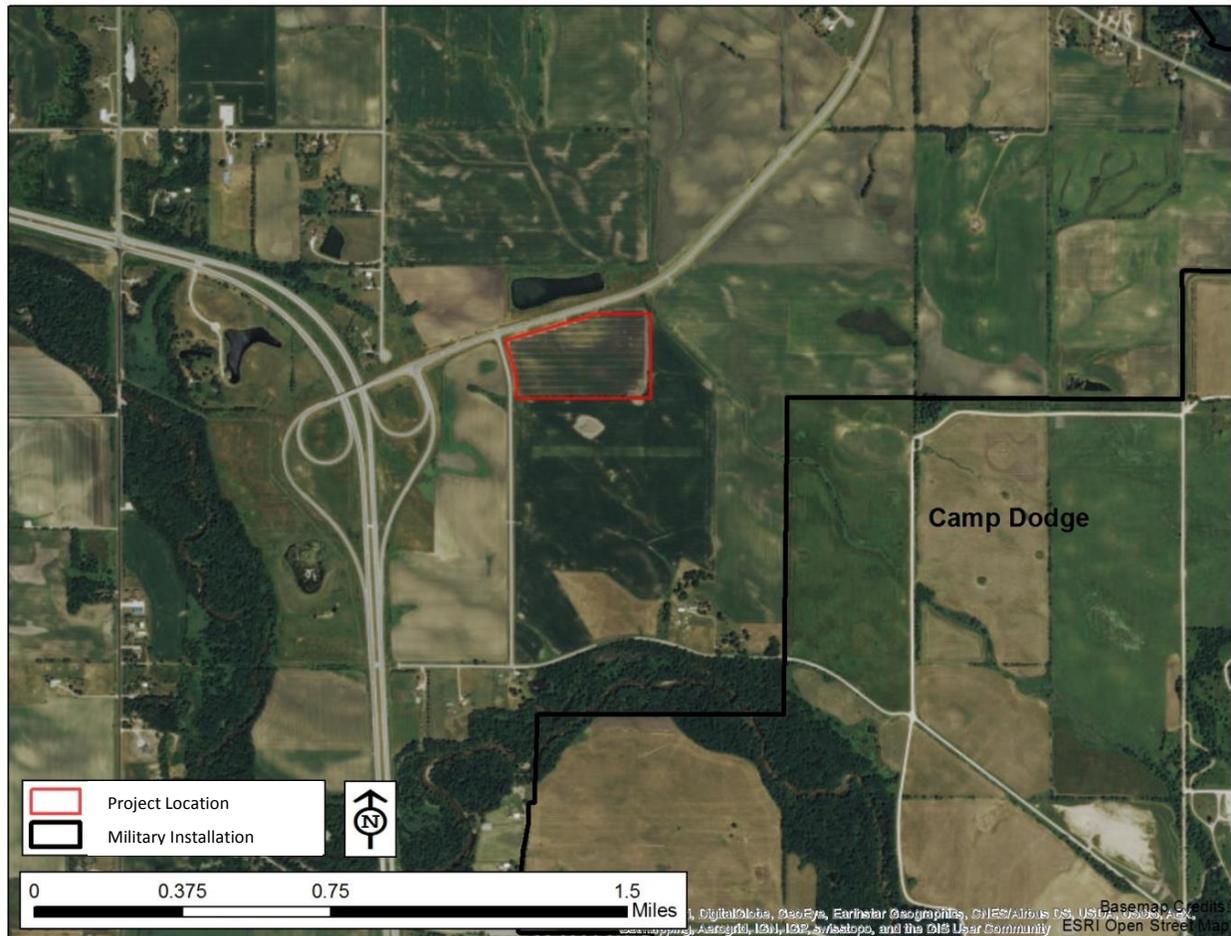
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## 2 Proposed Action and Alternatives

This chapter provides a detailed description of the Proposed Action and a description of project alternatives.

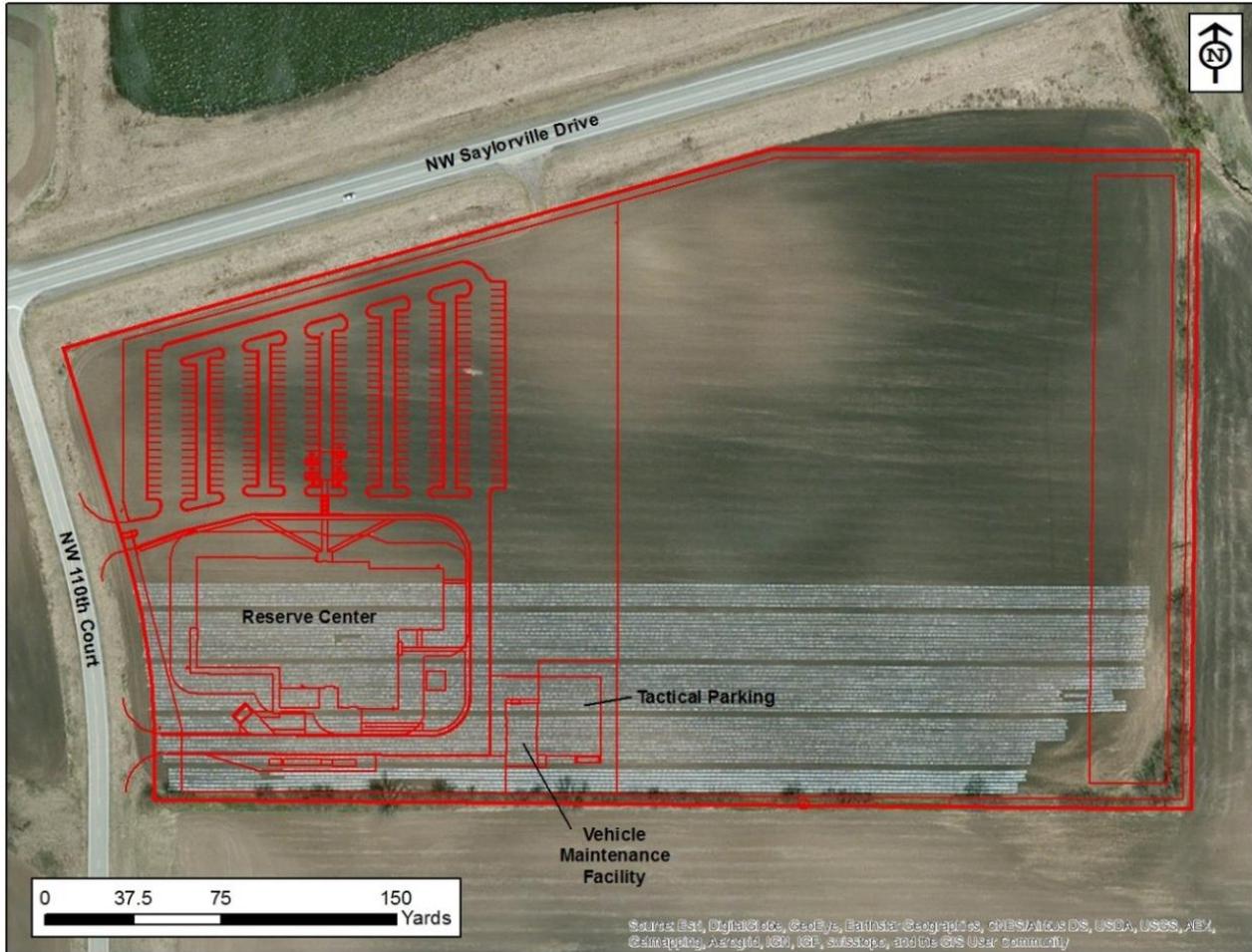
### 2.1 Proposed Action

The MARFORRES is proposing to construct a new Joint Marine-Navy Reserve Center in Polk County, Iowa. In 2015, MARFORRES acquired a 24.42 acre parcel located at the corner of NW Saylorville Drive and NW 110<sup>th</sup> Court in Jefferson Township, Polk County, Iowa. The parcel is located 0.25 miles from the northwest property boundary of Camp Dodge, where the Navy and Marine Corps reserve units train (Figure 2-1).



**Figure 2-1 Project Location**

The proposed facilities include a 46,200-square foot reserve training building, an 800-square foot vehicle wash rack, and associated parking facilities (Figure 2-2). The facilities would be constructed on the western portion of the parcel to make use of the existing roadways along the boundary. The eastern portion of the parcel would be utilized for stormwater management.



**Figure 2-2 Joint Marine-Navy Reserve Center Site Concept Plan**

Site preparations would include site clearing, excavation, filling, and preparation for construction. Paving and site improvements would include grading, parking for approximately 270 vehicles, roadway paving, sidewalks, landscaping, fencing, signage, and storm water drainage. The parcel is undeveloped property that was previously utilized for agricultural crop production. No buildings exist on the property (Figure 2-3).



**Figure 2-3 Property looking east (DoN 2014)**

Approximately 191 Marines and 154 Navy personnel would be relocated to the new reserve center. The Navy Operational Support Center Des Moines is composed of seven active duty and up to 207 Navy reserve personnel. The Marine Corps unit is composed of 10 active duty Marines and 181 Marine Forces Reserve personnel. Two HMMWV (Humvee) vehicles would be the only tactical vehicles stationed at the new reserve center.

Administrative and equipment maintenance activities will take place at the reserve center but are no different than those that occur at the current location, therefore these activities will not be discussed further in this document. Once the new reserve center is constructed and the Navy and Marine Reserve personnel and vehicles have been relocated, the Army would retain ownership of Building 47 and the reserve center's current leased area. The Army would manage the property in accordance with its Integrated Cultural Resource Management Plan for Army Property at Fort Des Moines.

## 2.2 Alternatives to the Proposed Action

The CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508, 1986) establish a number of policies for federal agencies, including "using the NEPA process to identify and assess reasonable alternatives to the Proposed Action that would avoid or minimize adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2 (e)).

The new Joint Marine-Navy Reserve Center must be built in the Des Moines area and this location is the only property owned by MARFORRES in that area. No training is included in this document. The site concept was designed specifically for this property and planned development is positioned in a way that minimizes environmental impacts. For these reasons, there are no other alternatives to the Proposed Action beyond the No Action Alternative.

### 2.2.1 No Action Alternative

Under the No Action Alternative, a new Joint Marine-Navy Reserve Center would not be constructed and the Navy and Marine Reserve units would remain in Building 47 at Fort Des Moines, which does not meet current training and operational requirements (see section 1.2).

Under the No Action Alternative, Navy and Marine Reserve units would continue to operate and train in an inadequate facility. The Navy and Marine Reserves units would continue to use workarounds for training, drilling, and maintenance, including borrowing space from the Army, when available, and storing equipment and gear outside due to the limited size of the current facility. The Marine Reserves unit would not be able to accomplish proper maintenance on larger vehicles due to space constraints and lack of a vehicle maintenance facility at the existing reserve center.

The No Action Alternative does not meet the MARFORRES purpose and need. However, the No Action Alternative represents the baseline condition against which potential consequences of the Proposed Action can be compared and is carried forward for analysis in this EA.

### 3 Affected Environment

This chapter describes existing conditions at and around the proposed new Joint Marine-Navy Reserve Center to provide a baseline from which to identify and evaluate potential impacts that could result from implementation of the Proposed Action. The affected environment is described and analyzed according to categories of resources.

The categories of resources addressed in this EA are cultural resources, biological resources, land use, and environmental justice.

Several resource areas have been eliminated from further discussion as it was concluded that these resources areas would not be impacted by the Proposed Action. The resources excluded from the analysis and the reasons for excluding these resources are as follows:

**Air quality.** The CAA and its subsequent amendments established the National Ambient Air Quality Standards (NAAQS) for seven “criteria” pollutants. This area of Iowa is in attainment for all of the regulated air pollutants (EPA 2015a). The Proposed Action would result in short-term, minor impacts on regional air quality during construction activities, primarily from operation of construction equipment. The emissions generated during construction activities would be temporary and minor. Commuter emissions should be unchanged since the current and new reserve centers are in the same airshed. All training utilizing tactical vehicles would continue to occur at Camp Dodge at the current levels except for general maintenance. Therefore it is reasonable to assume that construction of the Joint Marine-Navy Reserve Center would not impact air quality.

**Noise.** Although there would be a temporary increase in the overall noise exposure during construction, once the reserve center is operational, noise exposure would be very similar to that from the current agricultural use on the property. Therefore, construction of the Joint Marine-Navy Reserve Center is not expected to impact the noise environment.

**Soils and topography.** Construction activities associated with the Joint Marine-Navy Reserve Center would result in soil disturbance. All land disturbing activities would occur on the western portion of the property (Figure 2-1), which would avoid the majority of area mapped as hydric soils (Appendix B). Site investigations revealed that the upper 34 centimeters of the soil was indicative of a robust plow zone overlaying a deeper relic plowed transition zone (DoN 2014a). Years of crop agricultural practices at this location and throughout the area, have altered soil horizons and flattened topography. Therefore, no further impacts on soils and topography would be expected. For discussion of prime farmlands, see section 3.3 Land Use.

**Transportation.** Moving the Joint Marine-Navy Reserve Center from inside the city limits of Des Moines to a rural area north of town would reduce traffic in town and reduce the commute of reservists to Camp Dodge for training activities. Transport from the proposed new location to Camp Dodge is approximately one mile and can occur using several routes. The Proposed Action would not result in an increase in the number of personnel reporting to the reserve center. In addition, reservists are expected to only report to this location one weekend per month, so there should be no noticeable increase in traffic.

**Socioeconomics.** Given the relatively small nature of the Proposed Action, the local workforce would not be noticeably impacted by the conversion of farmfield to reserve center. Construction activities associated with the reserve center would be short-term and temporary and may result in a slight, temporary boost to the local economy in the area. Since the Proposed Action would not

measurably affect the local economy or workforce, no impacts on socioeconomic resources are expected. For discussion of environmental justice, see section 3.4.

***Hazardous Materials and Waste.*** A Phase I and II Environmental Site Assessment IAW ASTM 1527 (4/13/2015) was conducted on the parcel prior to MARFORRES acquiring the property (Appendix B). The Phase I identified a 1918 topographic map that depicted a historic railroad spur on the property and that is was within a historic military artillery range. In the early part of the 20<sup>th</sup> century, railroad companies commonly used spent motor oil as a spray for weed control adjacent to the railroad track, so soils were sampled for polychlorinated biphenyls, semi-volatiles/polycyclic aromatic hydrocarbons (PAHs), target analyte list metals, Toxicity Characteristic Leaching Procedure RCRA metals, and asbestos. None of the soils samples exhibited contaminant concentrations above the Iowa Statewide Standards for Contaminants in Soil and Groundwater. Surveys to detect munitions or explosives of concerns (MECs) were undertaken on the property. All excavated items were determined to be Material Documented as Safe (MDAS) and no military material or munitions of any kind were excavated or observed on the soil surface. In addition, soil samples did not indicate the presence of military ordnance or munitions residue. A UXO

Construction activities associated with the Proposed Action would require the use of certain hazardous materials, such as paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during construction would be minimal and their use would be of short duration. The Contractor would be responsible for the management of hazardous materials, including waste products, which would be handled in accordance with Federal and state regulations. Any hazardous materials stored onsite during operation would also be handled in accordance with Federal and state regulations. Therefore, implementation of the Proposed Action is not expected to have an impact from use or management of hazardous materials or wastes.

***Public Health and Safety.*** Construction and operation activities at the new reserve center would not pose a threat to public health and safety. The project site was surveyed for military material or munitions and no military material or munitions of any kind were excavated or observed on the surface. All excavated items were determined to be MDAS and disposed of in accordance with the approved plans. During construction activities, best management practices for construction site safety would be implemented. As an extra safety precaution, an unexploded ordnance team would be onsite during excavation activities below three feet in depth. Therefore, implementation of the Proposed Action is not expected to have an impact on public and occupational health and safety.

## 3.1 Cultural Resources

### 3.1.1 Definition of the Resource

Cultural resources are defined as districts, landscapes, sites, structures, objects, and ethnographic resources, as well as other physical evidence of human activities that are considered important to a culture, subculture, or community of scientific, traditional, religious, or other reasons. Cultural resources include archaeological resources, historical architectural resources, and traditional cultural properties related to precontact (prior to European contact) and post-contact periods. Historic properties, as defined by the National Historic Preservation Act, represent the subset of cultural resources listed in, or eligible for, inclusion in the National Register of Historic Places.

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their actions on cultural resources listed in or eligible for inclusion in the National Register of Historic Places. Consultation with the Iowa State Historic Preservation Office and other stakeholders as required by Section 106 of the National Historic Preservation Act was completed as part of this assessment (see Appendix A for Agency Correspondence).

### 3.1.2 Existing Conditions

A Phase I Cultural Resources Investigation (DoN 2014a) of the parcel was completed in May 2014 (Appendix B). The preliminary assessment of the project area was that it possessed a low probability for containing any archaeological deposits from Prehistoric or Historic occupation. The landform and topographic location of the parcel did not fit any accepted predictive model for prehistoric archaeological site distribution and based upon historic maps dating from 1875 through to the present, there is no indication of any buildings or structures within the study area.

The field investigation did not identify any Native American or Pre-1900 European American archaeological deposits or artifacts. The bed of a circa 1918 railroad spur was identified, matching the location on the 1918 U.S. Geological Service 15-foot Camp Dodge Topographic Quadrangle. Also, a period culvert/cistern was recorded along the railroad bed. The culvert/cistern was recorded as an historic feature associated with the railroad spur and was issued site number 13PK1004 and entered into the State of Iowa's archaeological site database. Based upon the results of this survey, no further cultural resource investigations were recommended.

## 3.2 Biological Resources

### 3.2.1 Definition of the Resource

Biological resources refer to the plants and animal species that occur at this location and the habitat conditions that are important to their survival. Individual species in this area can receive protection through the Endangered Species Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act.

**The Endangered Species Act** of 1973 (16 U.S.C. § 1531 et seq.) establishes protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. In Iowa, U.S. Fish and Wildlife Service (USFWS) administers the ESA and is responsible for the listing of species (designating a species as either threatened or endangered). The ESA allows the designation of geographic areas as critical habitat for threatened or endangered species. Section 7(a)(2) requires each federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a federal agency's action may affect a listed species, that agency is required to consult with USFWS (50 C.F.R. 402.14[a]).

**The Migratory Bird Treaty Act** of 1918 (16 U.S.C. § 703 et seq.) and the Migratory Bird Conservation Act (16 U.S.C. §§ 715–715d, 715e, 715f–715r) of 18 February 1929, are the primary laws in the United States established to conserve migratory birds. The MBTA prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds,

unless authorized by the U.S. Fish and Wildlife Service (USFWS). Take is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, would, kill, trap, capture, or collect” (50 CFR 10.12). Migratory bird hunting regulations, established by the USFWS, allow the taking, during designated seasons, of ducks, geese, doves, rail, woodcock, and some other species (IANG 2013). The 2003 National Defense Authorization Act results in the Armed Forces being exempt from the incidental take prohibitions of the MBTA during military readiness activities (50 CFR 21.3). Congress defined military readiness activities as all training and operations of the Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Since the construction of the reserve center is not a military readiness activity, takes of migratory birds are prohibited during construction.

Similar to the MBTA, the **Bald and Golden Eagle Protection Act** (16 U.S.C. § 668-668d) protects two species of eagle from taking without a permit issued by the Secretary of the Interior (U.S. Fish & Wildlife Service 2012). Taking includes molesting or disturbing the birds as well as their parts, nests, or eggs. The act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The purpose of the Bald and Golden Eagle Protection Act is to prevent abuse to eagles, interference with its substantial lifestyle, including shelter, breeding, feeding, or nest abandonment.

### 3.2.2 Existing Conditions

#### 3.2.2.1 Protected Species

All protected species provided by USFWS Information for Planning and Conservation (IPaC) Trust Resource Report for this property are included in Table 3.1 along with the species’ protection status, preferred habitat and potential for occurrence based on presence of habitat. This property is in active agricultural cultivation. The habitat onsite includes plowed agricultural field surrounding by herbaceous field-edge, and a “single-tree” border along the property line (Figure 2-2).

#### Mammals

Two mammals are listed by USFWS for this area; the Indiana bat (*Myotis sodalists*) listed as Endangered and the Northern long-eared bat (*Myotis septentrionalis*) listed as Threatened.

Both bats winter in caves or mines and prefer forested habitat containing standing dead or dying trees that have peeling bark for summer roosting. Both bats breed before hibernation in the fall and migrate to their summer habitat after emerging from caves in the spring. Pregnant females will roost in large maternity colonies, have only one pup each, and stay with that colony throughout the summer. Foraging on insects occurs mostly at dusk in forests and forest edges. Indiana bat prefers stream corridors with well-developed forest. Bats will return to the same caves and trees each year, if the habitat remains suitable. Threats historically include disturbance of cave and forest habitat, but most immediate threat is white-nose syndrome, a disease associated with a white fungus often found growing on the muzzle of hibernating bats (USFWS 2014 and 2015c). The disease causes the bats to use up fat stores during hibernation, awaken early and leave the cave in winter conditions when there is no available food (USFWS et al. 2015).

**Table 3-1 Protected Species potentially occurring in the study area (E=Endangered, T=Threatened, BoCC=Bird of Conservation Concern).**

Common Name	Status		Habitat	Potential for Occurrence
	Endangered Species Act	Migratory Bird Treaty Act		
<b>MAMMALS</b>				
Indiana Bat	E	-	Forests containing trees with loose bark	Minimal - habitat does not exist onsite
Northern Long-eared Bat	T	-	Forests containing trees with loose bark	Minimal - habitat does not exist onsite
<b>PLANTS</b>				
Western Prairie Fringed Orchid	T	-	Wet grassland	Minimal - habitat does not exist onsite
<b>BIRDS</b>				
Bald Eagle	-	BoCC	Forest adjacent to large water body	Minimal - habitat does not exist onsite
Bell's Vireo	-	BoCC	Dense scrub	Minimal - habitat does not exist onsite
Black-billed Cuckoo	-	BoCC	Dense forest	Minimal - habitat does not exist onsite
Dickcissel	-	BoCC	Tall grassland	Minimal - habitat does not exist onsite
Henslow's Sparrow	-	BoCC	Tall grassland	Minimal - habitat does not exist onsite
Least Bittern	-	BoCC	Marsh with tall emergent vegetation	Minimal - habitat does not exist onsite
Loggerhead Shrike	-	BoCC	Cropland/hedgerow or grassland with suitable hunting perch	Low
Pie-billed Grebe	-	BoCC	Lakes and ponds	Minimal - habitat does not exist onsite
Prothonotary Warbler	-	BoCC	Wooded swamp	Minimal - habitat does not exist onsite
Red-headed Woodpecker	-	BoCC	Open forest	Minimal - habitat does not exist onsite
Rusty Blackbird	-	BoCC	Wet forest	Minimal - habitat does not exist onsite
Short-eared Owl	-	BoCC	Grassland	Minimal - habitat does not exist onsite
Upland Sandpiper	-	BoCC	Dry grassland	Minimal - habitat does not exist onsite
Wood Thrush	-	BoCC	Hardwood or mixed forest	Minimal - habitat does not exist onsite

The Iowa Department of Natural Resources (IDNR) Iowa Natural Areas reports sightings of the Indiana bat from several of the counties surrounding Polk County, but reports no confirmed siting in Polk County (IDNR 2015). Northern long-eared bats are reported to occur in Polk and the surrounding counties. No critical habitat has been designated for the Indiana bat or Northern long-eared bat (USFWS 2015c). Neither bat has been identified in surveys conducted at Camp Dodge (IANG 2013).

### Plants

The only plant species listed by USFWS for this area is the Western prairie fringed orchid (*Platanthera praeclar*). The Western prairie fringed orchid (Threatened) occurs most often in moist, unplowed, calcareous prairies and sedge meadows but have been found in old fields and roadside ditches (USFWS 2003). Up to 40, nocturnally fragrant, white flowers occur on stalks up to 47 in tall. Pollen is transferred with the assistance of the hawkmoth and proper plant growth depends on a symbiotic relationship with a soil-inhabiting fungus. This plant is known to occur in about 75 sites west of the Mississippi River. Threats to this orchid include habitat loss, primarily through conversion to agriculture, and impacts to the hawkmoth through the use of pesticides. The IDNR Natural Resources Inventory reports the Western prairie fringed orchid throughout Iowa, including Polk County (IDNR 2015). No critical habitat has been designated for the Western prairie fringed orchid (USFWS 2015b). No federally protected plant species have been found in Camp Dodge during vegetation surveys (IANG 2013).

### Birds

There are fourteen birds of conservation concern that may occur in the study area (USFWS 2015b). The suite of birds that occur in the study area will vary according to time of year and available habitats. No federally protected birds have been found in Camp Dodge (IANG 2013).

The IDNR and the Iowa Ornithologists Union-Breeding Bird Atlas II website reports the results of bird surveys conducted throughout Iowa from 2008-2012. The survey reported the closest sitings in Polk County of Bell's vireo, black-billed cuckoo, least bittern, dickcissel, Henslow's sparrow, pied-billed grebe, red-headed woodpecker, and wood thrush from a site 1.5 miles southeast of the property on Camp Dodge. The closest bald eagle nest is reported to be over three miles away. Also reported was the prothonotary warbler (closest siting was seven miles away), upland sandpiper (15 miles), loggerhead shrike (20 miles), and short-eared owl (27 miles) (IDNR and IOU 2015).

As outlined in Table 3.1, all but one of the listed birds prefer forest or grassland habitat that does not exist on the property and will not be discussed further in this document. The disturbance area does contain some marginally suitable habitat for one of the listed bird species; the loggerhead shrike. This bird prefers open grasslands, croplands with hedgerows or other prairie-like habitat with suitable perches. This bird forages for insects, rodents, lizards, and birds; the larger of which get impaled on thorns or barbed wire fences to be eaten later (CU 2015).

#### 3.2.2.2 Habitat and Wildlife

Habitats are any areas that support populations of species, including vital areas that are utilized throughout the life cycle of that species. Habitat types occurring at this site include agricultural field, herbaceous field edge, and "single-tree" border along the property line. This site has been in crop agriculture for over 80 years and contains no forested areas. Agricultural activities

occurring onsite include plowing fields, harvesting crops, and mowing field edges (Figure 3-3). Crops common to this area include corn, soybeans, or hay.

Common upland tree species known to the area include green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*), Siberian elm (*Ulmus pumila*), slippery elm (*Ulmus rubra*), and eastern cottonwood (*Populus deltoides*) (IANG 2013). The single-tree border (a row of trees and shrubs having the width of a single tree) around the property may include many of these species. Mowed areas immediately adjacent to the field may consist of brome grasses and goldenrods.

Two state-listed endangered plant species have potential habitat on the new reserve center property, cliff conobea (*Leucospora multifida*) and waxleaf meadowrue (*Thalictrum revolutum*). Cliff conobea occur on gravel bars along rivers, moist ground of fields and prairies, rocky depressions in limestone bluffs, mud flats, low woods, and roadsides (Tenaglia 2015, Hilty 2015). This plant is often found in disturbed areas that are partially shaded (Hilty 2015). The waxleaf meadowrue prefers mesic black soil prairies, thickets and woodland borders, savannas, and areas along railroads and roadsides, especially where remnant prairies occur (Hilty 2015). The southern and eastern portion of the property between plowed field and property boundary may contain habitats similar to the roadsides, thickets, and moist field habitats described above. All land disturbing activities would occur in the eastern portion of the property and none of the potential habitats for the state listed plants would be disturbed.

The 2013 Camp Dodge Integrated Natural Resources Management Plan contains an inventory of all species identified by field surveys on Camp Dodge and includes information such as preferred habitat and frequency of occurrence. Species listed below prefer field edge/roadside or scrub habitats that occur on the proposed reserve center site and were listed as common or abundant on Camp Dodge, which is less than one mile away from the project location (IANG 2013).

Common amphibians include American toad (*Bufo americanus*), cricket frog (*Acris crepitans*) western chorus frog (*Pseudacris triseriata*) and common reptiles include northern brown snake (*Storeria dekayi texana*), red-sided garter snake (*Thamnophis sirtalis parietalis*), and prairie ringneck snake (*Diadophis punctatus arnyi*). Common birds in the area include the mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), common yellowthroat (*Geothlypis trichas*), dickcissel (*Spiza Americana*), and red-winged blackbird (*Agelaius phoeniceus*). Abundant mammals include house mouse (*Mus musculus*), deer mouse (*Peromyscus maniculatus*), eastern cottontail (*Sylvilagus floridanus*), and white-tailed deer (*Odocoileus virginianus*) (IANG 2013).

### 3.3 Water Resources

#### 3.3.1 Definition of the Resource

Water resources includes all waters of the U.S., including rivers, streams, and wetlands. Flood hazard zones and stormwater are also discussed in this section.

#### 3.3.2 Existing Conditions

The USFWS National Wetlands Inventory (NWI) mapping indicates that no wetlands occur on or in the vicinity of the property (Appendix B). The nearest wetlands mapped by NWI are to the south and west along Beaver Creek, approximately 3,000 feet south of the property (DON 2014b).

Although hydric soils are mapped on the eastern portion of the property, site investigations did not indicate current or past wetland conditions (DON 2014b). During site investigations, a tile drain was discovered that serves to drain excess water from the field.

An un-named stream exists just east of the northeastern corner of the property but no flow was observed during site investigations (DON 2014b).

The National Flood Insurance Program maps do not indicate the presence of any floodplains or flood hazard zones in the vicinity of the proposed reserve center (Appendix B). The entire property is designated Zone X (FEMA 2015) (Appendix B).

## 3.4 Land Use

### 3.4.1 Definition of the Resource

The Food and Agriculture Organization of the United Nations (FAO) defines land use as “characterised by the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it” (FAO 2015).

The Farmland Protection Policy Act (FPPA) 7 U.S.C. § 4201-4209 is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Construction for national defense purposes is not subject to FPPA (USDA 2015).

### 3.4.2 Existing Conditions

This parcel has been in agricultural use since the deeded date of 1931 (DON 2015). The surrounding area is primarily agriculture with very few residences. The construction of the reserve center would represent a conversion from agricultural to military land use. The location is 0.25 miles away from the northwestern boundary of Camp Dodge (Figure 2-1).

Soil types on this parcel include Webster clay loam, zero to two percent slopes and Clarion loam, two to six percent slopes, both of which are considered prime farmland soils by Natural Resources Conservation Service (NRCS) (NRCS 2015). The most recent development project in the vicinity was the 2003 completion of Northwest Saylorville Drive – IA 415 (adjacent to the northern property boundary) that resulted in the conversion approximately 26.5 acres (7,700 x 150 ft) from agriculture to transportation land use.

The property is currently zoned Estate Residential along with all surrounding properties except the property immediately across NW 110<sup>th</sup> Ct, which is zoned General Commercial (Polk County 2010)(Appendix B). The county land use plan, Polk 2030-The Polk County Comprehensive Plan, describes this area’s existing land use as “Agriculture” but future land use is planned as “Estate Residential with Conservation Design”, which is intended for very low-density, rural residential development where natural features are maintained to create a connected network of open space (Polk County 2006). Despite the historic presence of Camp Dodge, there is no zoning district nor land use category for military installations. Unincorporated portions of Camp Dodge are zoned “Agricultural”.

## 3.5 Environmental Justice

### 3.5.1 Definition of the Resource

The Environmental Protection Agency defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA 2015b).

Executive Order 12898, (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 1994), directs federal agencies to incorporate environmental justice into their mission and activities. Federal agencies are to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, or subject communities to discrimination under such actions, because of their race, color, or national origin.

Executive Order 13045, (*Protection of Children from Environmental Health Risks and Safety Risks*, 1997), requires each federal agency to identify and assess environmental health and safety risks to children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.”

Data utilized to evaluate environmental justice is reported in Summary File 1 data tables from the 2010 Census which includes information about a community's entire population, including cross-tabulations of age, sex, households, families, relationship to householder, housing units, detailed race and Hispanic or Latino origin groups, and group quarters (U.S. Census 2015). The U.S. Census is required to collect population data every ten years.

### 3.5.2 Existing Conditions

According to 2010 US Census data (reported by EPA mapping tool EJView), this property is located in a Block (smallest geographical unit of the US Census) with only 39 residents (less than 18 persons per square mile) and contains zero minorities. Only 13 percent are under the age of 18. Six percent are below poverty and zero percent are renters. Per capita income is over \$57,000/year and over 50 percent have a college degree (EPA 2015d). Since there are no affected resources used by minority or low income communities, there is no disproportionately high and adverse effect on minority or low-income communities due to Proposed Action and therefore will not be discussed further in this document.

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## 4 Environmental Consequences

Under NEPA, effects to resources are analyzed in terms of significance. CEQ 40 CFR Part 1508, states that “significantly” as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Short-term and long-term effects are analyzed with respect to context. Intensity refers to the severity of the impact. Intensity factors include, but are not limited to, the degree to which the proposed action affects public health or safety; unique characteristics of the geographic area such as proximity to cultural resources, park lands, wetlands or ecologically critical areas; the degree to which the action may adversely affect cultural resources and endangered or threatened species or its habit that has been determined to be critical under the ESA; and whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

This chapter does not include discussion of potential environmental impacts on air quality, noise, water resources, soils and topography, transportation, socioeconomics, environmental justice, hazardous materials and waste, and public health and safety as these resource areas have been omitted from further detailed analysis in this EA, as discussed in Chapter 3.

### 4.1 Cultural Resources

#### 4.1.1 Proposed Action

The Phase I Cultural Resources Investigation did not identify any Native American or Pre-1900 European American archaeological deposits or artifacts on the parcel. The field investigation did identify a site 13PK1004, a circa 1918 culvert/cistern associated with the railroad spur that was entered into the State of Iowa’s archaeological site database. This site is located in the extreme southeastern corner of the property, away from the construction area.

In accordance with Section 106 of the National Historic Preservation Act, the U.S. Navy, in consultation with the Iowa State Historic Preservation Office, determined that site 13PK1004 was not eligible for inclusion in the National Register of Historic Places. Based upon the results of the survey, no further cultural resource investigations were recommended at site 13PK1004 or any part of the parcel.

The U.S. Navy consulted or corresponded with the Iowa State Historic Preservation Office, the Iowa State Archaeologist, the Advisory Council on Historic Preservation, the National Park Service, the National Trust for Historic Preservation, the City of Des Moines, the City of Johnston, the County of Polk, and Preservation Iowa on the Proposed Action. In addition, letters were sent to 12 federally recognized tribes regarding their interest in the project location and the Proposed Action. The Advisory Council of Historic Preservation declined to participate in continued consultation by letter dated October 21, 2014. No party expressed concerns with the Proposed Action.

Furthermore, the U.S. Navy determined the Proposed Action would result in “No adverse effect” on historic properties. The Iowa State Historic Preservation Office concurred with the U.S. Navy’s no adverse effect determination on March 30, 2015 (see Appendix A for correspondence).

In conclusion, no significant impacts to cultural resources would be expected from implementation of the Proposed Action.

#### 4.1.2 No Action Alternative

Under the No Action Alternative, the Joint Marine-Navy Reserve Center would not be constructed. Existing conditions would remain the same as described in Section 3.1.2. No impacts to cultural resources would be expected from implementation of the No Action Alternative.

## 4.2 Biological Resources

### 4.2.1 Proposed Action

#### 4.2.1.1 Protected Species

A protected species survey was conducted onsite and no protected species were observed (DON 2014b).

#### Mammals

This site has been in crop agriculture for over 80 years and contains no forested areas (Figure 2-3). Since both the Indiana or Northern long-eared bats prefer forested areas that include trees with peeling bark, no impacts are anticipated to these protected bats because no suitable habitat exists on or in the vicinity of this property.

#### Plants

This site has been in crop agriculture for many years and contains no wet grassland areas (Figure 2-3). Since the orchid prefers undisturbed wet grasslands, no impacts are anticipated to the orchid because no suitable habitat exists on or in the vicinity of this property for the western prairie fringe orchid.

#### Birds

All land disturbing activities would occur in former agricultural field which does not contain suitable bird habitat. No trees would be removed as a part of this project. Noise has the potential to disturb birds but noise generated by construction equipment should be temporary and very similar to noise generated by agricultural equipment currently utilized onsite.

As outlined in Table 3.1, all but one of the listed birds prefer habitat that does not exist on the property including forests or grasslands. The construction area does contain some marginally suitable habitat for the loggerhead shrike. Although unlikely, if the shrike was to utilize the single line of trees and shrubs that grow along the property line as a hunting perch or for nesting, these areas are outside of the area of land disturbance and should not be affected by the Proposed Action. Surrounding properties are in agriculture and would continue to provide foraging opportunities to migratory birds.

#### Conclusions

No significant impacts to mammals, plants or bird populations are expected to result from implementation of the Proposed Action. MARFORRES has determined the proposed actions and undertakings will have “No effect” to the Indiana bat, Northern long-eared bat and western prairie fringe orchid. Consultation was initiated on August 4, 2015 via email correspondence

(Appendix A). On August 13, 2015, a discussion occurred with USFWS Rock Island Field Office staff and it was explained that due to limited staffing, USFWS was no longer issuing concurrence for “No effect” determinations and advised MARFORRES to make a note to file (S. Schmucker, pers. comm. 2015).

The analysis presented indicates that the Proposed Action would not result in a “take” of migratory birds as defined by MBTA regulations or eagles as defined in the Bald and Golden Eagle Act.

#### 4.2.1.2 Habitat and Wildlife

Since this property has been actively cultivated for years, the habitat present is highly disturbed and does not represent natural conditions. The row-crop, field edge/roadside, and scrub habitats do not support a high diversity of species and are the predominant habitat types in the surrounding area. The disturbance area for the new reserve center is entirely within the area currently disturbed by agricultural practices. Wildlife may avoid the area during construction activities but would likely return during operations due to an increase in habitat area/diversity. After construction is complete, although there would no longer be field-edge habitat, there would be extensive grassed areas that may allow for some native grasses to become established. The removal of the regular disturbance of plowing and reshaping the land surface may allow for a more natural hydrology to form, which would increase habitat diversity and contribute to an overall increase in habitat quality. All land disturbing activities would occur in the western portion of the property and therefore none of the potential habitats (moist roadside and scrub) for the state listed plants would be disturbed except for roadside for the driveway access. No significant impacts to wildlife or wildlife habitats are anticipated due to the Proposed Action.

#### 4.2.2 No Action Alternative

Under the No Action Alternative, the Joint Marine-Navy Reserve Center would not be constructed. Existing conditions would remain the same as described in Section 3.2.2. No additional impacts to biological resources would be expected from the No Action Alternative.

### 4.3 Water Resources

#### 4.3.1 Proposed Action

No streams or wetlands exist onsite (DON 2014b). To meet the definition of "jurisdictional wetland" under Section 404 of the Clean Water Act, an area must exhibit three traits: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology (USACE 1987). Areas that are periodically wet but do not meet all three criteria are not jurisdictional wetlands subject to Section 404 of the Clean Water Act. Since this property has been actively cultivated for years, the hydrology and vegetation components necessary for a jurisdictional wetland are not present, although hydric soil conditions still exist onsite.

All land disturbing activities would occur on the western portion of the property, reserving the eastern half for stormwater management. The Contractor would be responsible for designing and acquiring the appropriate permits for stormwater controls. Stormwater management shall be design to meet the requirements of the state of Iowa drainage laws and the DOD/Navy LID Policy. The Iowa Storm Water Program requires Construction Stormwater Permit (NPDES) and associated Stormwater Pollution Prevention Plan for construction activities greater than one acre. Storm water design shall incorporate DOD United Facilities Criteria 3-210-10, Low Impact

Development, which includes requirements for bioretention/infiltration basins, surface water wet pond/basin, vegetated swales, and other low impact stormwater management techniques. The concept plan contains approximately 5 acres of new impervious area.

For these reasons, construction of the Joint Marine-Navy Reserve Center is not expected to have an impact on water resources.

#### 4.3.2 No Action Alternative

Under the No Action Alternative, the Joint Marine-Navy Reserve Center would not be constructed. Existing conditions would remain as described in Section 3.3.2. No significant impacts to water resources would be expected from the No Action Alternative.

### 4.4 Land Use

#### 4.4.1 Proposed Action

Although the construction of the new reserve center is not consistent with the existing zoning as Estate Residential, the change in land use represented by the Proposed Action is consistent with the land uses currently present in the surrounding area including military (listed in Polk Land Use Plan as simply “Camp Dodge”), agricultural, estate residential (> 3 acres), rural residential (< 3 acres) (Polk County 2006). This property represents a small fraction of the available residential land in the area.

Although prime farmland soils exist onsite, construction for national defense purposes is not subject to FPPA and the property is surrounded by farmland containing these soils (**7 CFR § 658.3(b)** [citing **USC § 4208(b)**]). The two most abundant land uses in this area are agriculture and military. This project would result in the conversion of the land use of this property to one very similar to the existing land use, and therefore does not result in a significant impact on land use.

#### 4.4.2 No Action Alternative

Under the No Action Alternative, the Joint Marine-Navy Reserve Center would not be constructed. Existing conditions would remain as described in Section 3.4.2. No significant impacts to land use would be expected from the No Action Alternative.

## 5 Cumulative Impacts

### 5.1 Introduction

Council of Environmental Quality (CEQ) regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Recent CEQ guidance in considering cumulative effects involves defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographical and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergy exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

To identify cumulative effects, three fundamental questions need to be addressed:

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur. It is possible that analysis of cumulative impacts may go beyond the scope of the project-specific direct and indirect impacts to include expanded geographic and time boundaries and a focus on broad resource sustainability. This “big picture” approach is becoming increasingly important as growing evidence suggest that the most significant impacts result not from the direct impact of a particular action, but from the combination of individual, often minor, impacts of multiple actions over time. The underlying issue is whether or not a resource can adequately recover from the impact of an action before the environment is exposed to a subsequent action or actions.

### 5.2 Past, Present, and Reasonable Foreseeable Actions

A review of transportation, infrastructure and economic development projects within the region was completed using the 2030 Polk County Land Use Plan and the City of Des Moines and City of Johnston websites (Polk County 2013, City of Johnston 2015a, City of Johnston 2015b, and City of Des Moines 2015). While a number of economic development projects are planned throughout the region, none are planned within five miles of the project location, at the time of this assessment. Two transportation improvement projects and projects at Camp Dodge are planned within five miles of the project location and were considered when analyzing the potential cumulative impacts of the actions.

### 5.2.1 Transportation Improvement Projects

Polk County has a number of transportation projects planned through 2030 (Polk County 2013, City of Johnston 2015a). Two planned projects described in the land use plans are within close proximity of the project location. One project involves the widening of Saylorville Road from a two-lane to a four-lane undivided road and adding an interchange at the intersection with Iowa Highway 141. Four miles south of this road expansion, the second project involves the widening of Iowa Highway 141 from a four-lane to a six-lane divided highway from the I-35/80 interchange north to IA 44. Estimates of construction timeframe were not available at the time of this assessment.

There are no recently completed, under construction or scheduled transportation improvement projects in the vicinity of this project. The closest road construction project that has actually been scheduled to occur is over five miles away in the City of Johnston and will occur in the spring of 2016 (City of Johnston, 2015). The most recent development project in the vicinity was the 2003 completion of Northwest Saylorville Drive – IA 415 (adjacent to the northern property boundary).

### 5.2.2 Camp Dodge Projects

Minor improvement projects are planned to occur at Camp Dodge between the years 2015 and 2020. Construction associated with the renovations of eight buildings is planned along with minor improvement renovations to four buildings (C. Madsen, pers. comm. 2015). Estimates of construction timeframe were not available at the time of this assessment. All projects will occur within the cantonment area which is over three miles from the new reserve center property. The cantonment area is an approximately 400-acre area that has been previously developed. Renovations will not result in a noticeable increase in personnel, traffic or development in the area. No impacts to biological resources or land use are anticipated from these projects.

## 5.3 Potential Cumulative Impacts

The Proposed Action analyzed in this EA would not result in significant impacts to the environment. As discussed in Chapter 4 of this EA, environmental impacts of the Proposed Action may result in less than significant impacts to biological resources and land use. Potential interactions with other past, present, or reasonably foreseeable future actions would generally be those actions that also may have effects on biological resources and land use. No effects to cultural resources, water resources, or environmental justice would occur as a result of the Proposed Action and therefore, were not analyzed for cumulative impacts.

### 5.3.1 Biological Resources

Construction associated with the transportation improvement projects has the potential to impact biological resources. Impacts may include permanent conversion of habitat to a less suitable habitat, permanent stream and wetland impacts, increased stormwater runoff, and temporary avoidance by wildlife due to construction noise, dust, and emissions. These road expansion projects will impact a small area of existing roadside habitat, which is typically of poor quality for plants and wildlife. Wildlife that uses these areas may be forced to move to other areas during construction but sufficient nearby habitat is available. The transportation projects mentioned in the land use plans will not overlap with the Proposed Action in time and the project scheduled for 2016 will not overlap with the Proposed Action in space.

Construction associated with renovation projects planned for Camp Dodge will occur within the cantonment area, which is previously disturbed land that provides minimal habitat quality for most species. These projects are renovation projects with no significant expansion of building footprints. Any species currently utilizing the area will be subjected to short-term and minor noise and emission increases. These increases will be relatively minor compared to the background level in this urbanized area.

The impacts described above from the Proposed Action to biological resources are temporary and minor and the potential impacts from the above listed projects are minor or do not overlap in time or space with the Proposed Action. Therefore, the Proposed Action in conjunction with any past, present, or reasonably foreseeable future actions are not expected to result in significant impacts to biological resources.

### 5.3.2 Land Use

The planned road expansions will not result in a change to land use but may result in increased commercial and residential development in the area. The adjacent property to the west of the project location is zoned as “General Commercial” and was purchased in 2015. There are no Proposed Development Notices on the City of Johnston website regarding this property (City of Johnston 2015b).

The renovation projects occurring at Camp Dodge are over three miles away and will not involve a change to land use. The closest scheduled transportation project is over four miles away and the closest private construction is over five miles away from the site in the City of Johnston (City of Johnston 2015a). There are no other development projects within the area that are currently scheduled. These future projects will not result in a change to land use.

The estimated 26.5-acre land use conversion from agriculture to transportation resulting from Northwest Saylorville Drive combined with the 24.4-acre conversion from agriculture to military from the Proposed Action represents the only land use conversion in a 2+ mile radius over a 13-year or more timeframe. The approximately 50 acres of land use conversion is relatively minor in an area still dominated by agriculture (Figure 2-1).

Implementation of the Proposed Action would result in a conversion from agriculture to military land use. Therefore, the proposed action in conjunction with any past, present, or reasonably foreseeable future actions are not expected to result in significant impacts to land use.

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## **APPENDIX A - AGENCY CORRESPONDENCE**



**DEPARTMENT OF THE NAVY**  
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC  
6506 HAMPTON BLVD  
NORFOLK VA 23508-1278

5090 IN REPLY REFER TO:  
Ser EV54DC/00571

25 NOV 2014

Mr. Doug Jones  
Review and Compliance Program Manager  
State Historical Society of Iowa  
600 East Locust Street  
Des Moines, Iowa 50319

Dear Mr. Jones:

Naval Facilities Engineering Command, Atlantic (NAVFAC LANT), on behalf of Marine Forces Reserve (MARFORRES), and under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and implementing regulations at 36 CFR Part 800, considered the effects of the proposed relocation of Marine Corps Reserve Center Des Moines (MCRC Des Moines) on historic properties, and requests your concurrence on the Navy's effect determination. MCRC Des Moines currently resides within a contributing building of the Fort Des Moines National Historic Landmark (NHL). This facility does not meet the mission needs of the reservists, given certain training and security requirements. MCRC Des Moines must relocate within a limited geographic radius from its current location, and the new parcel must meet other size, locational, and environmental criteria.

The undertaking currently under consideration includes vacating the current, historic location of MCRC Des Moines and constructing a new reserve center on an undeveloped parcel north of Des Moines (Steddom parcel). The area of potential effects (APE) includes the leased area and Building 47 (formerly Cavalry Drill Hall) that currently houses MCRC Des Moines, within the Fort Des Moines NHL, and the Steddom parcel. The 24.42-acre Steddom parcel is located in Polk County and the City of Johnston, near the northwest perimeter of Camp Dodge, Iowa.

#### **Identification and Evaluation of Historic Properties**

In prior correspondence, the Navy consulted with the Iowa State Historic Preservation Office (Iowa SHPO) regarding the identification of historic properties. In May 2014, NAVFAC LANT conducted a comprehensive archaeological field reconnaissance of the entire Steddom parcel. The Navy submitted the resulting

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25 NOV 2014

report, titled Phase I Cultural Resource Investigation of the Marine Corps Reserve Center Relocation along NW Saylorville Road, Polk County, Johnston, Iowa, to the Iowa SHPO on August 14, 2014. The survey identified no eligible cultural resources within the Steddom parcel and recommended no further cultural resource investigations. In a September 19, 2014 email, the Iowa SHPO agreed with the recommendations of the report, but requested that the final report include a site form for a former railroad related culvert/crossing discovered within the APE. The revised report, with the requested additions, is included with this letter.

#### **Consultation Summary**

In fulfillment of Section 106 of the NHPA, the Navy consulted or corresponded with the Iowa SHPO, the Iowa State Archaeologist, the Advisory Council on Historic Preservation (ACHP), the National Park Service, the National Trust for Historic Preservation, the City of Des Moines (Iowa), the City of Johnston (Iowa), the County of Polk (Iowa), and Preservation Iowa, on the planned MCRC Des Moines undertaking. Additionally, the Navy sent letters to 12 federally recognized tribes regarding their interest in the Steddom parcel and the Navy's undertaking. The ACHP declined to participate in continued consultation by letter dated October 21, 2014. No party expressed concerns with the proposed relocation.

#### **Determination of Effect**

The APE for the proposed undertaking consists of two areas: 1) Building 47 and its environs within the Fort Des Moines NHL (current location of MCRC Des Moines); and, 2) the Steddom parcel (the preferred alternative location for MCRC Des Moines). Section 106 of the NHPA states that the, "Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure the long-term preservation of the property's historic significance," will result in an adverse effect determination for such an undertaking. Once vacated, the Army will retain ownership and management of Building 47 and the MCRC Des Moines leased area. This arrangement keeps the historic property within Federal ownership.

5090  
Ser EV54DC/00571  
2 5 NOV 2014

With continued Federal ownership of the current location and the lack of historic properties at the Steddom parcel, the Navy has determined that the proposed relocation of MCRC Des Moines will have no effect on historic properties. The Navy invites you to concur with this finding within 30 days after your receipt of this letter. The National Environmental Policy Act (NEPA) documentation will include the Section 106 consultation information and your response to this letter.

Thank you for your assistance throughout the Section 106 process for the relocation of MCRC Des Moines. Please contact Chris Hurst at (504) 697-9892 or by e-mail at christopher.a.hurst@usmc.mil with questions or concerns.

Sincerely,



CHERRYL F. BARNETT  
Environmental Business Line Manager  
By direction of the Commander

Enclosure: Archaeology report

Cc (w/ enclosure):  
Iowa State Archaeologist (J. Doershuk)

Cc (w/o enclosure):  
Headquarters, U.S. Marine Corps (S. Frear)  
MARFORRES (C. Hurst)  
NAVFAC Northwest (J. Sullivan)  
NAVFAC Mid-Atlantic (S. Bever)  
Advisory Council on Historic Preservation (K. Kerr)  
National Park Service (R. Franklin-Weekley)  
State Historical Society of Iowa (S. King)  
National Trust for Historic Preservation (J. Sandy)  
Preservation Iowa (G. Betcher)  
City of Des Moines (R. Conner)  
City of Johnston (A. Wolfe)  
County of Polk (B. VandeLune)



DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC  
6506 HAMPTON BLVD  
NORFOLK VA 23508-1278

NAVY  
131077090

IN REPLY REFER TO:  
5090  
Ser EV54DC/00085  
11 Mar 15

Mr. Doug Jones  
Review and Compliance Program Manager  
State Historical Society of Iowa  
600 East Locust Street  
Des Moines, Iowa 50319

RECEIVED  
MAR 23 2015  
by SHPO

Dear Mr. Jones:

In a November 2014 letter to your office (Enclosure 1), the Navy requested concurrence on a no effect determination for the proposed relocation of its reserve center at Des Moines, from the Fort Des Moines National Historic Landmark (Building 47) to a newly constructed facility on property in the nearby City of Johnston. In light of information you provided during a phone conversation on 6 March 2015, the Navy, on behalf of Marine Forces Reserve (MARFORRES), has determined that the project will more appropriately have no adverse effect on historic properties. Also, as a point of clarification, while MARFORRES has the lead on this project, the current reserve center is leased from the Army, with both Marine Corps and Navy reserve components as tenants. Likewise, the new facility will house both branches.

Once vacated, the Army will retain ownership of Building 47 and the reserve center's leased area. This arrangement keeps the historic property within Federal ownership, and the Army will manage the property in accordance with its Integrated Cultural Resources Management Plan (ICRMP) for Army property at Fort Des Moines. The Navy identified no historic properties at the proposed new location.

The Navy invites you to concur with the no adverse effect finding within 30 days after receiving this letter. The National Environmental Policy Act (NEPA) documentation will include the Section 106 consultation information and your response to this letter.

Thank you for your assistance throughout the Section 106 process for the relocation of MCRC Des Moines. Please contact Chris Hurst at (504) 697-9892 or christopher.a.hurst@usmc.mil with questions or concerns.

Sincerely,

BYRON C. BRANT  
Environmental Business Line Manager  
By direction of the Commander

Enclosure: 1. November 2014 letter

Copy to: Listed on second page

CONCUR

NAME Douglas W. Jones  
REVIEW & COMPLIANCE PROGRAM MANAGER  
DATE 3/30/2015 SHST

5090  
Ser EV54DC/00085  
11 Mar 15

Copy to: (without enclosure)  
Headquarters, U.S. Marine Corps (S. Frear)  
U.S. Marine Corps Forces Reserve (C. Hurst)  
Naval Facilities Engineering Command Northwest (J. Sullivan)  
Naval Facilities Engineering Command Mid-Atlantic (S. Bever)  
Advisory Council on Historic Preservation (K. Kerr)  
National Park Service (R. Franklin-Weekly)  
State Historical Society of Iowa (S. King)  
Iowa State Archaeologist (J. Doershuk)  
National Trust for Historic Preservation (J. Sandy)  
Preservation Iowa (G. Betcher)  
City of Des Moines (R. Conner)  
City of Johnston (A. Wolfe)  
County of Polk (B. VandeLune)

## **Baker, Jessi O CIV NAVFAC Atlantic, EV**

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**From:** Baker, Jessi O CIV NAVFAC Atlantic, EV  
**Sent:** Tuesday, August 04, 2015 14:39  
**To:** 'RockIsland@fws.gov'  
**Cc:** Hurst, Christopher A CIV Facilities, Facilities Environmental; Mintz, Christine M CIV NAVFAC LANT, EV  
**Subject:** New Marine Forces Reserve Center near Des Moines  
**Attachments:** MARFORRES Des Moines for USFWS.PDF; usfwsIPaCMARFORRESDesMoines.pdf  
**Signed By:** jessi.baker@navy.mil

USFWS Staff at the Rock Island Field Office,

The Marine Forces Reserve propose to construct a new 46,200-square foot reserve training building, a 3,250-square foot vehicle maintenance facility, wash rack, and associated parking on a 24-acre property north of Des Moines, IA (see figures in attached PDF). The property is located at the corner of NW Saylorville Drive and NW 110th Court in Jefferson Township, Polk County, Iowa.

The USFWS IPaC report (attached) generated for this project listed three ESA-protected species including Indiana bat, Northern long-eared bat, and the western prairie fringed orchid.

Naval Facilities Engineering Command Atlantic, on behalf of the Marine Forces Reserve, has made a no effect determination for these species but would like concurrence from USFWS. Attached are excerpts and figures from the Draft EA describing protected species identified by the IPaC report. If you have any questions or would like a copy of the complete draft EA, please contact me at (757) 322-4621 or jessi.baker@navy.mil.

Thank you so much for your consideration of this project.

Jessi Baker  
Environmental Planning  
U.S. Department of the Navy  
Naval Facilities Engineering Command Atlantic  
6506 Hampton Blvd | Norfolk, VA | 23508-1278  
757.322.4621

*Excerpts from the*  
**Marine Forces Reserve**  
**Joint Navy-Marine Reserve Center, Des Moines, IA**  
**Environmental Assessment**  
*for USFWS Concurrence*  
*8/4/15*

The Marine Forces Reserve propose to construct a new 46,200-square foot reserve training building, a 3,250-square foot vehicle maintenance facility, wash rack, and associated parking on a 24-acre property north of Des Moines, IA (Figure 1). The property is located at the corner of NW Saylorville Drive and NW 110th Court in Jefferson Township, Polk County, Iowa.

The USFWS IPaC report (attached) generated for this project listed three ESA protected species including Indiana bat, Northern long-eared bat, and the western prairie fringed orchid.

## Habitat

The property has been in cultivation agriculture for over 80 years and contains no wetland or forested habitat for these three species. Habitats occurring at this site include agricultural field, herbaceous field edge, and “single-tree” border along the property line. Since this property has been actively cultivated for years, the habitat present is highly disturbed and does not represent natural conditions (Figure 3 and 4). The cultivated field, herbaceous field edge, and single-tree wide scrub-like habitats do not support a high diversity of species and are the predominant habitat types in the surrounding area (Figure 2). Due to disturbance from agricultural practices, the hydrology and vegetation components necessary for a jurisdictional wetland are not present, even if hydric soil conditions still exist onsite. All land disturbing activities associated with construction will occur in the eastern portion of the property. The western portion of property will be utilized as an athletic field and for stormwater management.

## Protected Species

### Mammals

Two mammals are listed by USFWS for this area; the Endangered Indiana bat (*Myotis sodalist*) and the Threatened Northern long-eared bat (*Myotis septentrionalis*).

Both bats winter in caves or mines and prefer forested habitat containing standing dead or dying trees that have peeling bark for summer roosting. Both bats breed before hibernation in the fall and migrate to their summer habitat after emerging from caves in the spring. Pregnant females will roost in large maternity colonies, have only one pup each, and stay with that

colony throughout the summer. Foraging on insects occurs mostly at dusk in forests and forest edges. Indiana bat prefers stream corridors with well-developed forest. Bats will return to the same caves and trees each year, if the habitat remains suitable. Threats historically include disturbance of cave and forest habitat, but most immediate threat is white-nose syndrome, a disease associated with a white fungus often found growing on the muzzle of hibernating bats (USFWS 2014 and 2015c). The disease causes the bats to use up fat stores during hibernation, awaken early and leave the cave in winter conditions when there is no available food (USFWS et al. 2015).

The Iowa Department of Natural Resources (IDNR) Iowa Natural Areas Inventory is a web mapping tool that displays historical to present species observations throughout Iowa. Since rare species locations are considered sensitive information, species sightings are reported by county only. The inventory reports the Indiana bat from counties in the surrounding area but no confirmed siting in Polk County (IDNR 2015). Northern long-eared bats are reported to occur in Polk and the surrounding counties. No critical habitat has been designated for the Indiana bat or Northern long-eared bat (USFWS 2015c). Neither bat has been identified in surveys conducted at Camp Dodge, less than one mile away (IANG 2013).

This site has been in cultivation agriculture for over 80 years and contains no forested areas. Agricultural activities included plowing fields, harvesting crops, and mowing field edges (Figure 3). Since both the Indiana or Northern long-eared bats prefer forested areas that include trees with peeling bark, no adverse impacts are anticipated to these protected bats because no suitable habitat exists on or in the vicinity of this property.

### Plants

The only plant species is listed by USFWS for this area, the Western prairie fringed orchid (*Platanthera praeclar*). The Western prairie fringed orchid (Threatened) occurs most often in moist, unplowed, calcareous prairies and sedge meadows but have been found in old fields and roadside ditches (USFWS 2003). Up to 40, nocturnally fragrant, white flowers occur on stalks up to 47 in tall. Pollen is transferred with the assistance of the hawkmoth and proper plant growth depends on a symbiotic relationship with a soil-inhabiting fungus. This plant is known to occur in about 75 sites west of the Mississippi River. Threats to this orchid include habitat loss, primarily through conversion to agriculture, and impacts to the hawkmoth through the use of pesticides. The IDNR Natural Resources Inventory reports the Western prairie fringed orchid throughout Iowa, including Polk County (IDNR 2015). No critical habitat has been designated for the Western prairie fringed orchid (USFWS 2015b). No federally protected plant species have been found in Camp Dodge during vegetation surveys (IANG 2013).

This site has been in crop agriculture for many years and contains no wet grassland areas. Agricultural activities included plowing fields, harvesting crops, and mowing field edges (Figure 2-3). Since the orchid prefers undisturbed wet grasslands, no adverse impacts are anticipated to the orchid because no suitable habitat exists on or in the vicinity of this property for the western prairie fringe orchid.

## Birds

There are fourteen birds of conservation concern that may occur in the study area (USFWS 2015b). The suite of birds likely to occur in the study areas will vary according to time of year and available habitats. No federally protected birds have been found in Camp Dodge (IANG 2013).

According to the IDNR and the Iowa Ornithologists Union Breeding Bird Atlas II, the closest bald eagle nest is over three miles away. The website reports the results of surveys conducted throughout Iowa from 2008-2012. The survey reported the closest sightings in Polk County of Bell's vireo, black-billed cuckoo, least bittern, dickcissel, Henslow's sparrow, pied-billed grebe, red-headed woodpecker, and wood thrush from a site 1.5 miles southeast of the property on Camp Dodge. Also reported was the prothonotary warbler (closest sighting was seven miles away), upland sandpiper (15 miles), loggerhead shrike (20 miles), and short-eared owl (27 miles) (IDNR and IOU 2015). As outlined in Table 3.1, the majority of the listed birds prefer forest or grassland habitat that does not exist on the property and will not be discussed further in this document.

All land disturbing activities will occur in former agricultural field which does not contain suitable habitat for the majority of birds of conservation concern species. No trees will be removed as a part of this project. Noise has the potential to disturb birds but noise generated by construction equipment or reserve center equipment should be temporary and very similar to noise generated by agricultural equipment currently utilized onsite.

The majority of the listed birds prefer habitat that does not exist on the property including forests or grasslands. The construction area does contain suitable habitat for one of the listed bird species; the loggerhead shrike. This bird prefers open grasslands, croplands with hedgerows or other prairie-like habitat with suitable perches. This bird forages for insects, rodents, lizards, and birds; the larger of which get impaled on thorns or barbed wire fences to be eaten later (CU 2015). Although unlikely, if the birds were to utilize the single line of trees and shrubs that grow along the property line as a hunting perch or for nesting, these areas are outside of the area of land disturbance and should not be affected by the Proposed Action. Surrounding properties are in agriculture and would continue to provide foraging opportunities to migratory birds.

## Conclusions

No significant impacts to mammals, plants or bird populations are expected to result from implementation of the Proposed Action. Under the ESA, a no effect determination was made for the Indiana bat, Northern long-eared bat and western prairie fringe orchid and therefore consultation with USFWS was not required.

The analysis presented indicates that the Proposed Action would not have a significant adverse effect on migratory bird populations as defined by MBTA regulations or eagles as defined in the Bald and Golden Eagle Act. In addition, there are no impacts to wetlands or water quality in accordance with the Clean Water Act.



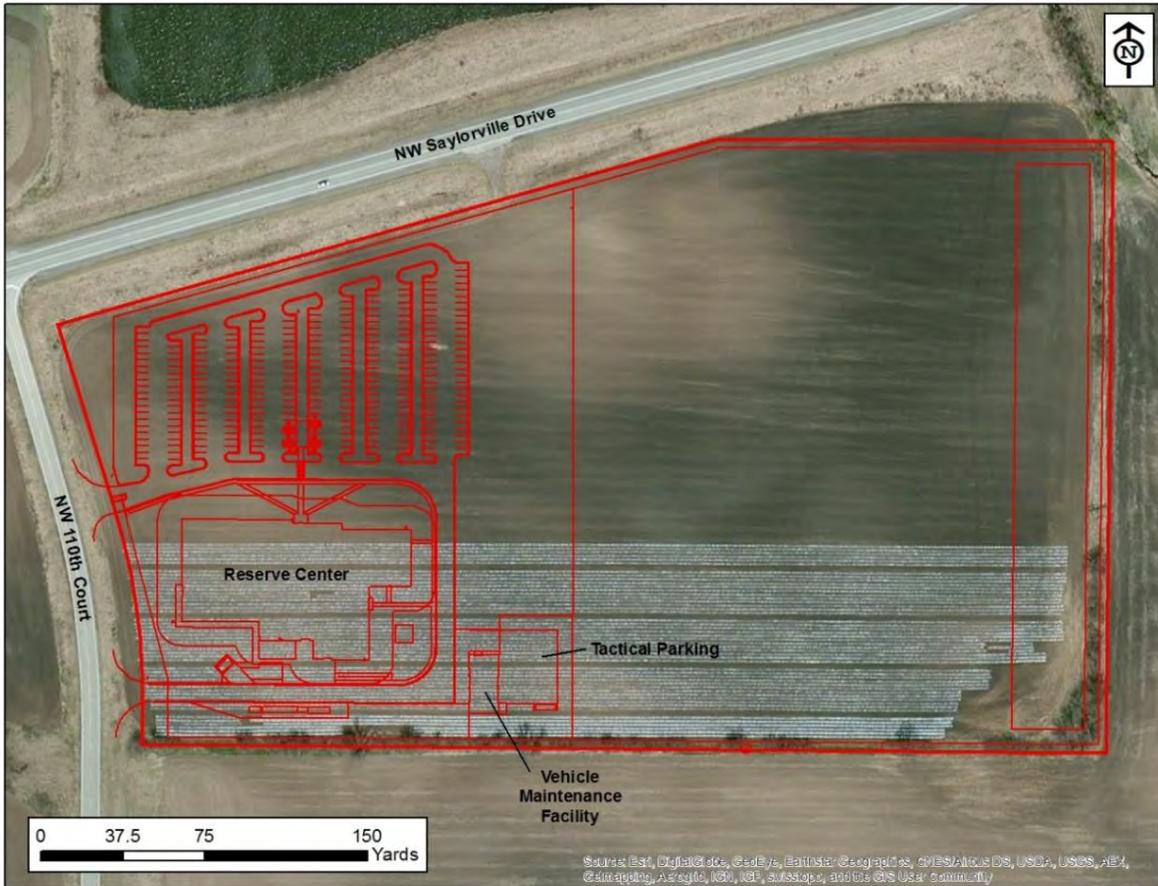


Figure 3. Proposed new reserve center concept plan.



Figure 4. Existing conditions onsite.

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- USFWS (U.S. Fish and Wildlife Service). 2006. Indiana Bat (*Myotis Sodalis*) [Factsheet]. Retrieved from <http://www.fws.gov/midwest/Endangered/mammals/inba/inbafactsht.html>.
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# My project

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## *IPaC Trust Resource Report*

Generated May 05, 2015 08:24 AM MDT



US Fish &amp; Wildlife Service

# IPaC Trust Resource Report



## Project Description

NAME

My project

PROJECT CODE

3HC2R-OUICN-HE7AS-DDBFA-SSKBNI

LOCATION

Polk County, Iowa

DESCRIPTION

No description provided



## U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

### Rock Island Ecological Services Field Office

Rock Island Ecological Services Field Office

1511 47TH AVE

Moline, IL 61265-7022

(309) 757-5800

# Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

## Flowering Plants

### Western Prairie Fringed Orchid

Threatened

#### DESCRIPTION

The Western prairie fringed orchid is a terrestrial member of the orchid family. This smooth, erect, perennial herb grows to 1.2 meters [4 feet (ft)] tall. Plants have two to five fairly thick, elongate, hairless leaves each. The open, spike-like flowering stalk bears up to 24 showy, 2.5 centimeters (cm) [1-inch (in)] wide, white flowers. The lower petal of each flower is deeply 3-lobed and fringed, hence the common name.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q2YD>

#### CRITICAL HABITAT

**No critical habitat** has been designated for this species.

## Mammals

### Indiana Bat

Endangered

#### DESCRIPTION

The Indiana bat is a medium-sized *Myotis*, closely resembling the little brown bat (*Myotis lucifugus*) but differing in coloration. Its fur is a dull grayish chestnut rather than bronze, with the basal portion of the hairs on the back a dull-lead color. This bat's underparts are pinkish to cinnamon, and its hind feet are smaller and more delicate than in *M. lucifugus*. The calcar (heel of the foot) is strongly keeled.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A000>

#### CRITICAL HABITAT

**No critical habitat** has been designated for this species.

### Northern Long-eared Bat

Threatened

#### DESCRIPTION

The northern long-eared bat is a medium-sized bat about 3 to 3.7 inches in length but with a wingspan of 9 to 10 inches. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, *Myotis*, which are actually bats noted for their small ears (*Myotis* means mouse-eared). The northern long-eared bat is found across much of the eastern and north central United States and all Canadian provinces from the Atlantic coast west to the southern No...

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0JE>

#### CRITICAL HABITAT

**No critical habitat** has been designated for this species.

## Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

# Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

## Bald Eagle

This is a **bird of conservation concern** and has the highest priority for conservation

### SEASON

Year-round

### DESCRIPTION

A large raptor, the bald eagle has a wingspread of about 7 feet. Adults have a dark brown body and wings, white head and tail, and a yellow beak. Juveniles are mostly brown with white mottling on the body, tail, and undersides of wings. Adult plumage usually is obtained by the 6th year. In flight, the bald eagle often soars or glides with the wings held at a right angle to the body.

## Bell's Vireo

This is a **bird of conservation concern** and has the highest priority for conservation

### SEASON

Breeding

### DESCRIPTION

No description available

## Black-billed Cuckoo

This is a **bird of conservation concern** and has the highest priority for conservation

### SEASON

Breeding

### DESCRIPTION

The Black-billed Cuckoo is a slender and long-tailed cuckoo bird generally measuring 28-31 cm in length and 45-55 g in weight. This bird has a moderately long and curved bill, marked by a hooked tip on the upper-mandible of the darkly colored bill. Plumage on the upper part of the head and body are a grayish-brown while the under-plumage areas are a dull weight. The ring around the pupil of the eye is generally a bright orange-red color (Bent 1940, Oberholser 1974, Nolan 1975, National Geogra...

## Dickcissel

This is a **bird of conservation concern** and has the highest priority for conservation

### SEASON

Breeding

### DESCRIPTION

No description available

## Henslow's Sparrow

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Least Bittern

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Loggerhead Shrike

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Pied-billed Grebe

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Prothonotary Warbler

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Red-headed Woodpecker

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

## Rusty Blackbird

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

No description available

## Rusty Blackbird

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

No description available

## Short-eared Owl

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

The short-eared owl is an owl of about 0.7 to 0.8 lbs with females slightly larger in size than males. Plumage is brown, buff, white and rust colors. Patches of brown and buff occur mostly on the back side, while the underside is colored more lightly, being mostly white. Females and males have similar plumage. Some distinguishing characteristics of this owl are its gray white fascial disk, and black coloring around yellow eyes. Juveniles have similar plumage to adults, but upper parts and head a...

## Upland Sandpiper

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

The Upland Sandpiper is a medium-sized shorebird of about 28-32 cm in length. Some distinguishing features of the Upland Sandpiper include its dove-like head, thin neck, long thin legs, camouflage olive-brown coloring, and yellow bill with a black tip. The under parts of the Upland Sandpiper are whitish or yellowish in color. The sides and breast of the Upland Sandpiper are strongly patterned with dark and pale brown buff. The call of the Upland Sandpiper is a distinctive, long wolf whistle. ...

## Wood Thrush

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

## Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

# Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

## DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

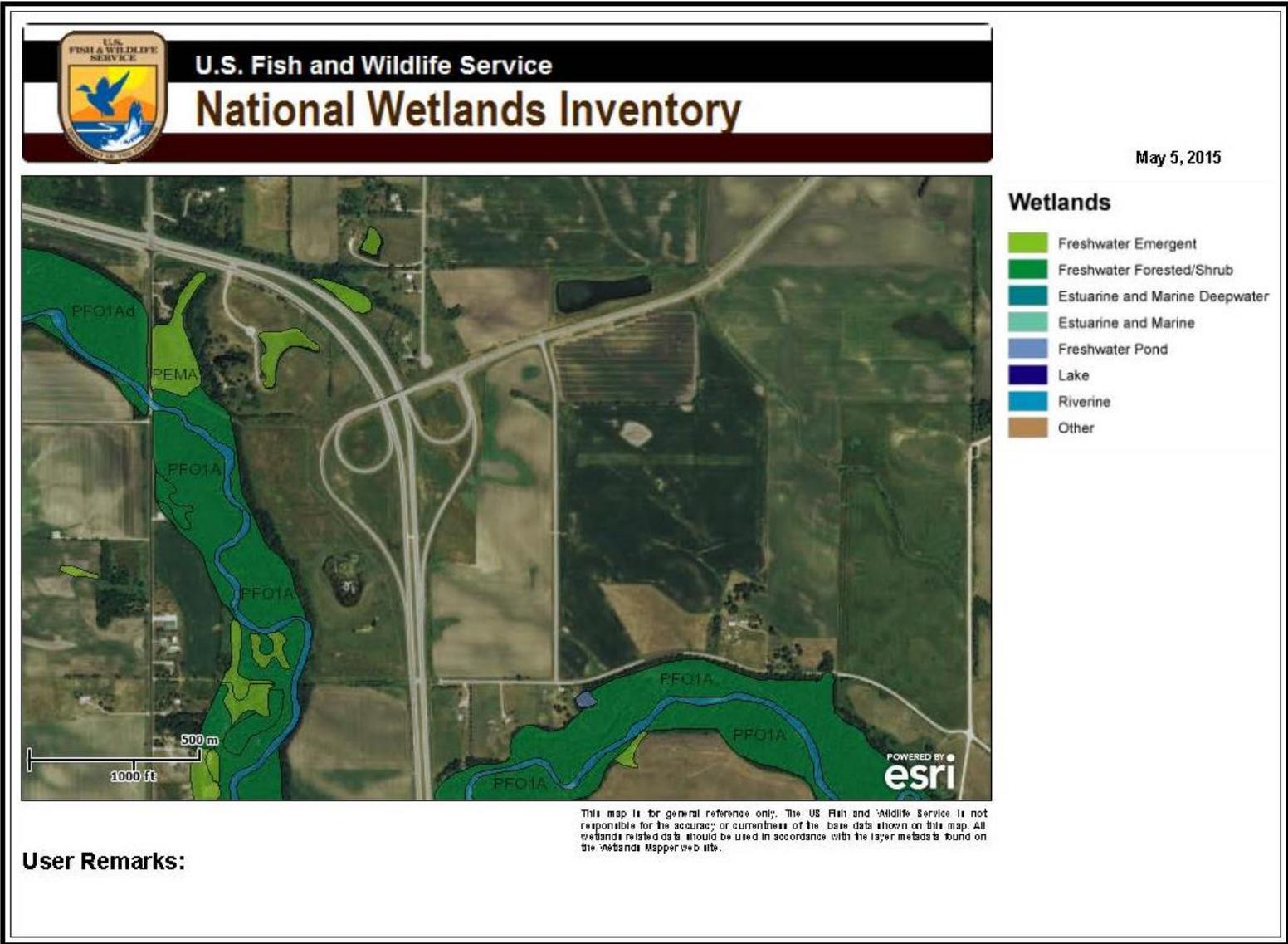
## DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

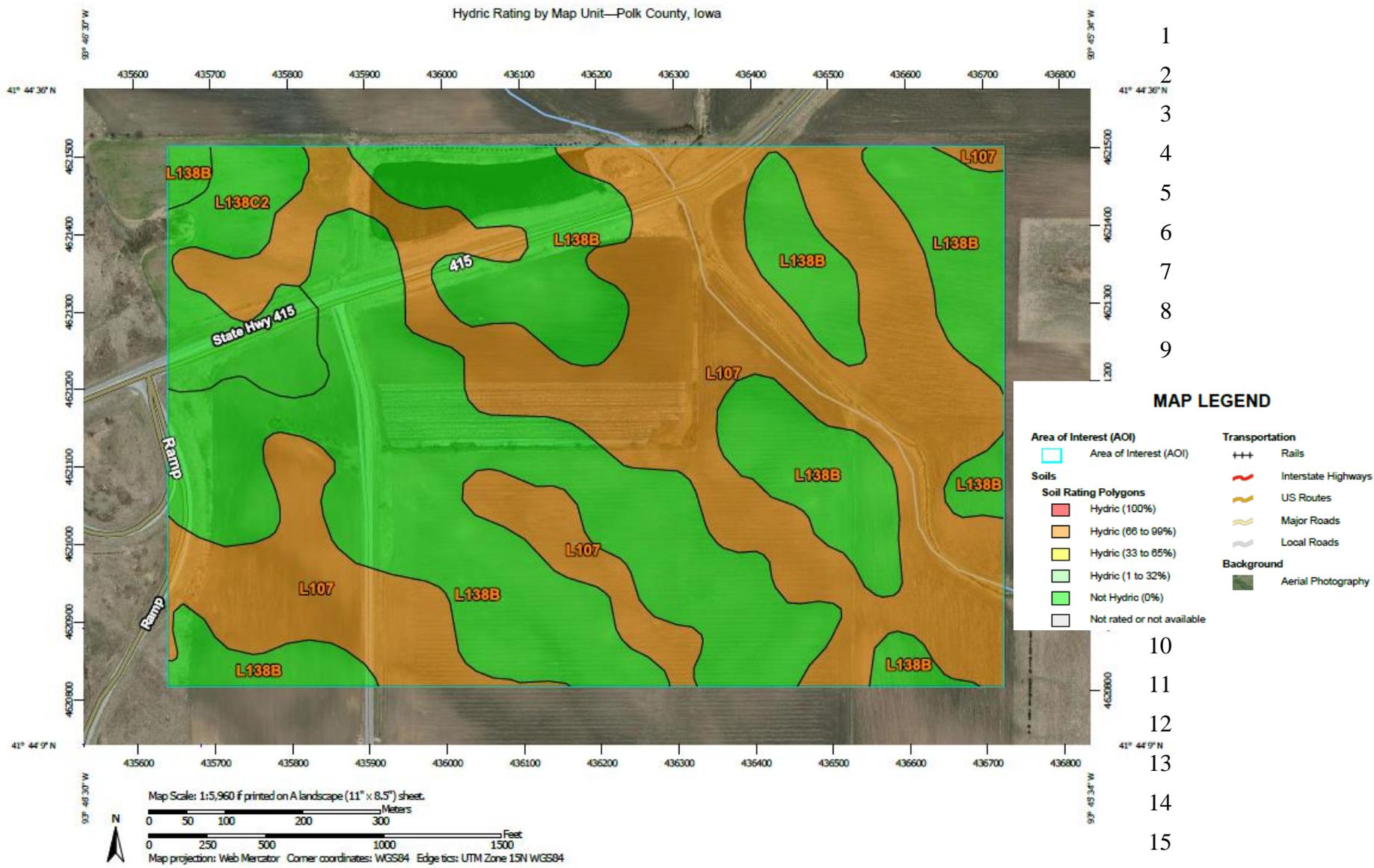
There are no wetlands identified in this project area

## **APPENDIX B – SUPPORTING MAPS**

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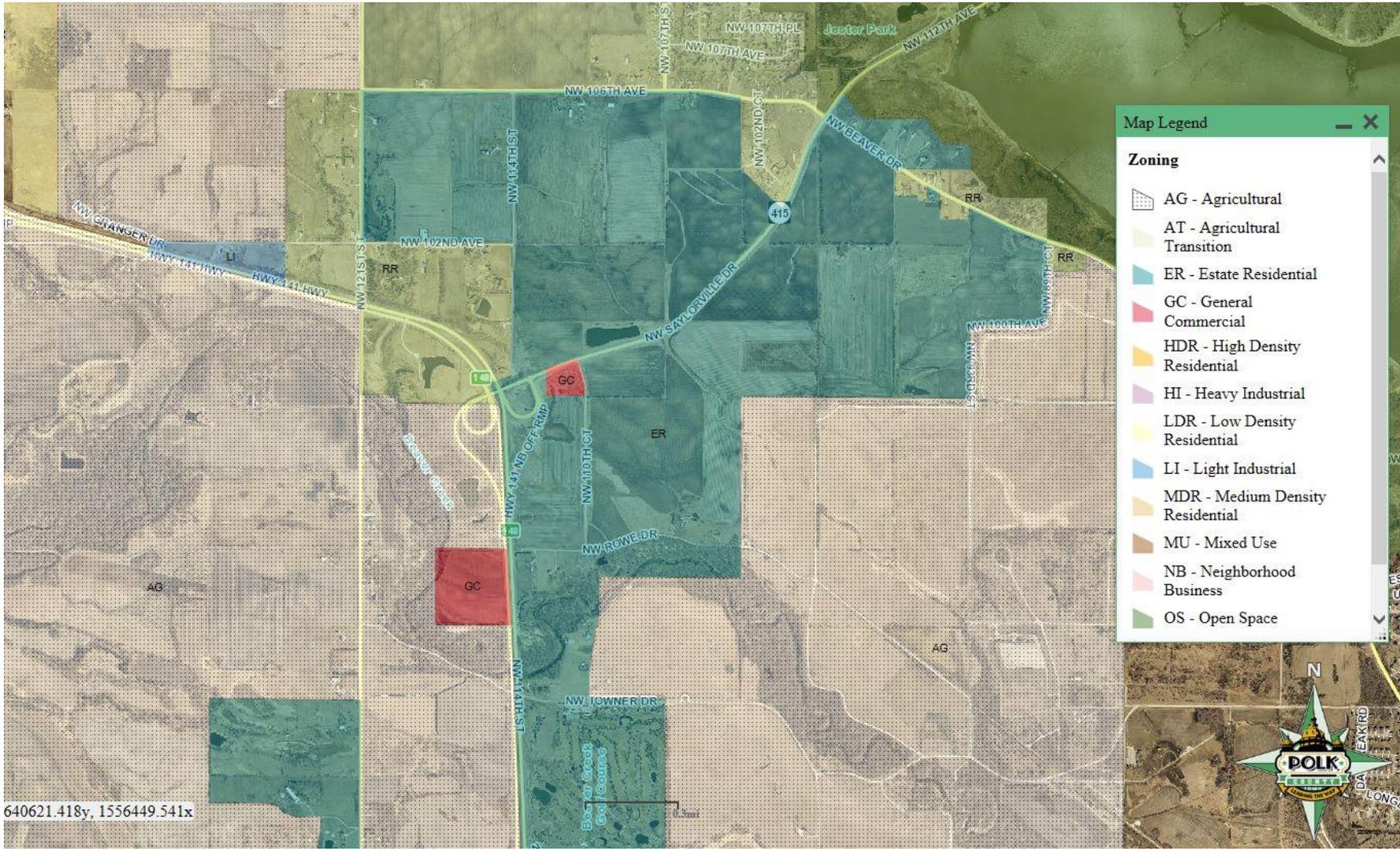


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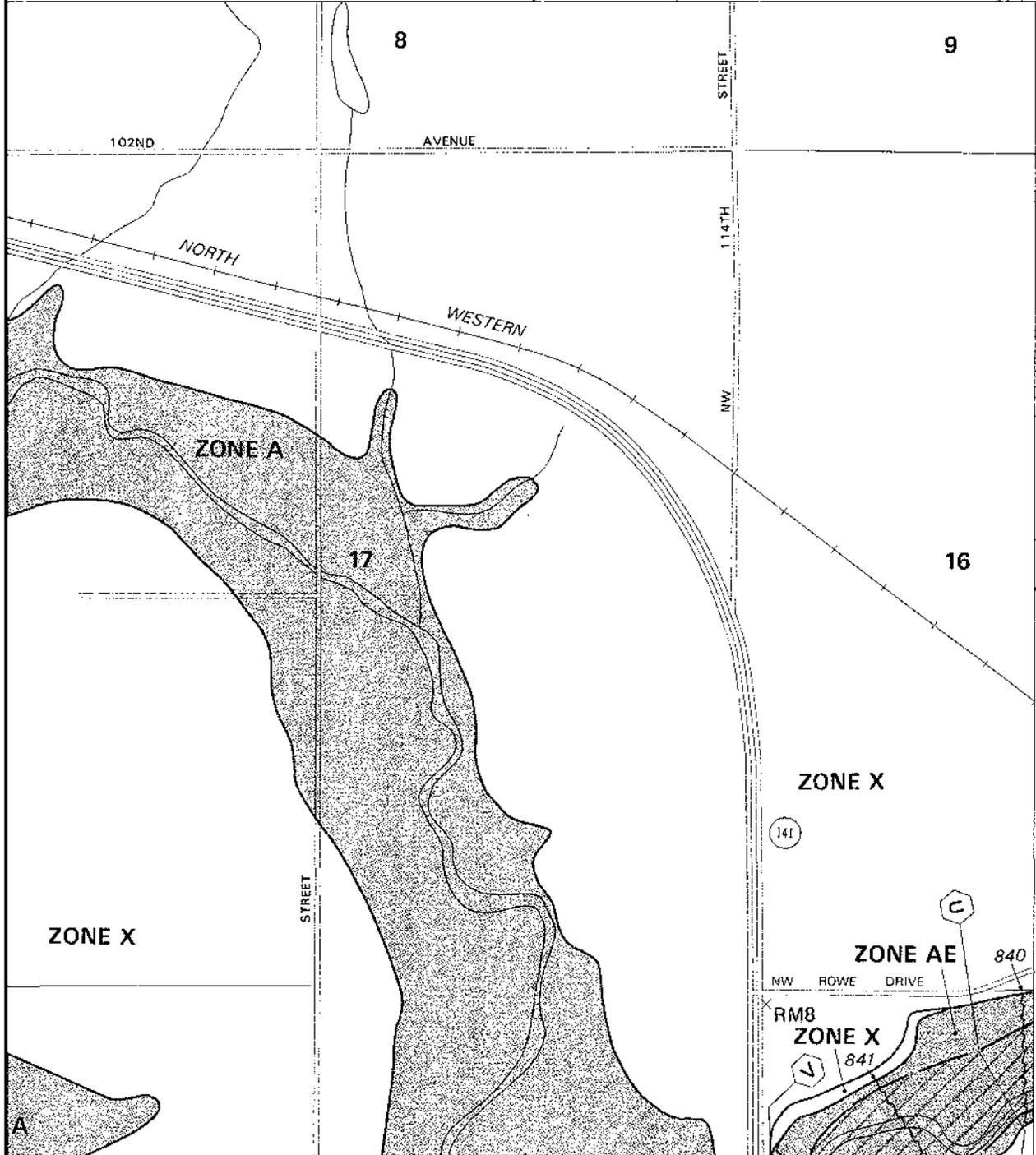
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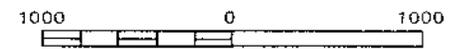
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JOINS PANEL 0025



APPROXIMATE SCALE IN FEET



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP

POLK COUNTY,  
IOWA  
(UNINCORPORATED AREAS)

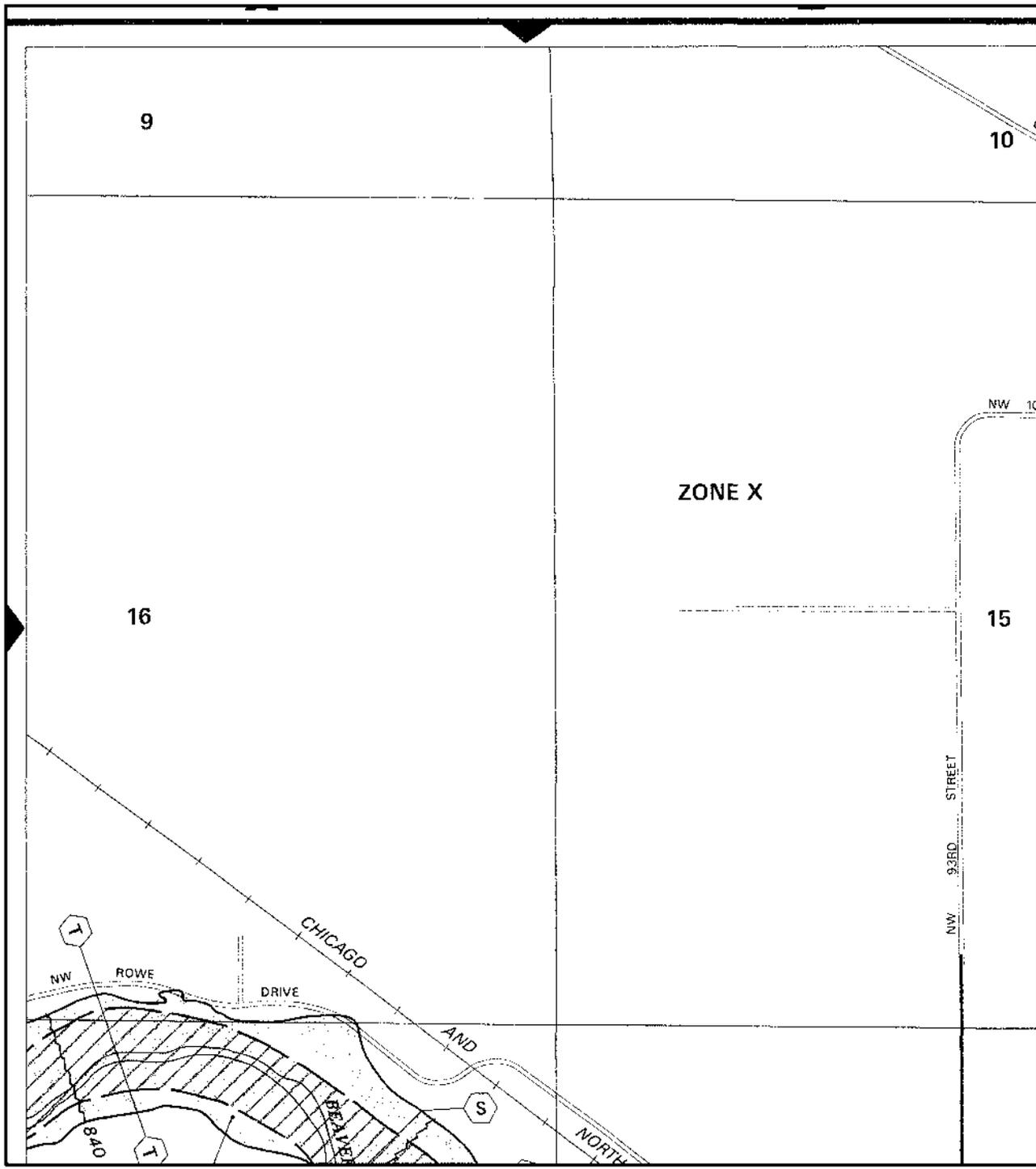
PANEL 80 OF 220  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY—PANEL NUMBER:  
190901 0080 C  
MAP REVISED:  
NOVEMBER 18, 1992



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



APPROXIMATE SCALE IN FEET



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
**FLOOD INSURANCE RATE MAP**

POLK COUNTY,  
 IOWA  
 (UNINCORPORATED AREAS)

**PANEL 85 OF 220**  
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

**COMMUNITY—PANEL NUMBER:**  
 190901 0085 D  
**MAP REVISED:**  
 JULY 19, 2000



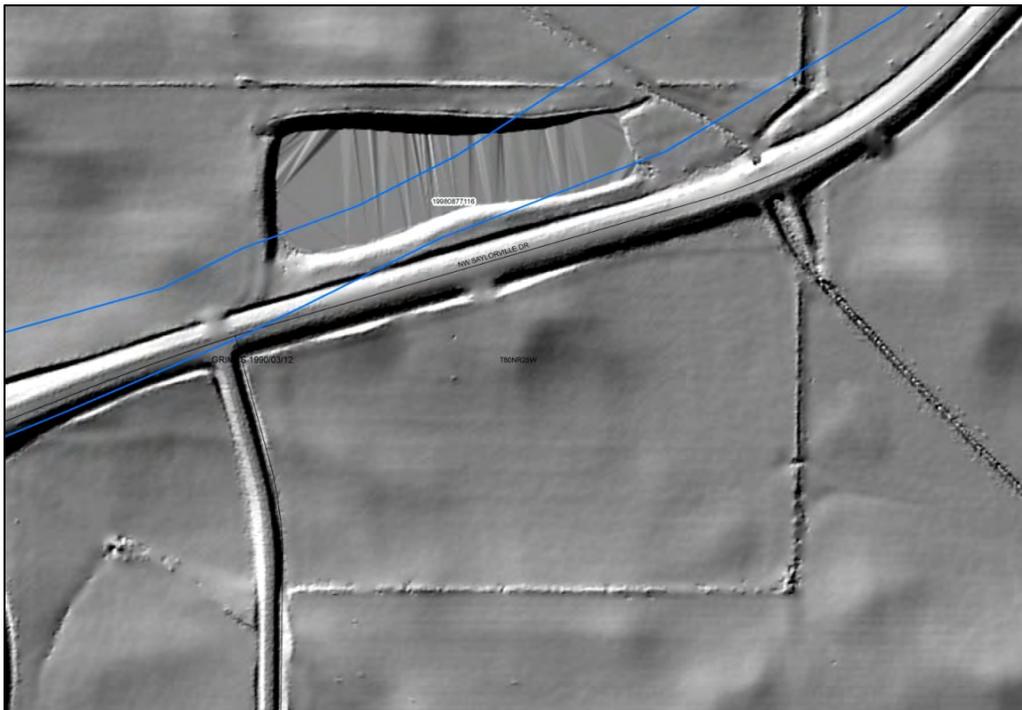
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## **APPENDIX C – SUPPORTING DOCUMENTS**

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PHASE I CULTURAL RESOURCE  
INVESTIGATION OF  
THE MARINE CORPS RESERVE  
CENTER RELOCATION  
ALONG NW SAYLORVILLE ROAD  
POLK COUNTY, JOHNSTON, IOWA



**AUGUST 2014**

PREPARED BY:  
BRUCE J. LARSON, M.A., RPA  
PRINCIPAL INVESTIGATOR



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# ABSTRACT

The U.S. Marine Corps Forces Reserve is preparing an Environmental Assessment to evaluate the potential impacts of acquiring approximately 20–25 acres and constructing a new Joint Marine-Navy Reserve Center in Des Moines, Iowa. The proposed plan calls for a 46,200-square-foot reserve training building; a 3,250-square-foot vehicle maintenance facility; a 1,600-square-foot fitness training shelter; an 800-square-foot wash rack; and associated parking facilities. The current reserve center houses the Navy Operational Support Center and Marine Corps Reserve Center and is located at Fort Des Moines.

The current Joint Marine-Navy Reserve Center is located in Building 47 at Fort Des Moines, an Army reserve installation that is home to a host of activities and commands with varied missions and operations. Building 47 is listed in the National Register of Historic Places as a contributing property to the Fort Des Moines National Historic Landmark and is considered a pivotal element within the historic district. The main reserve building is historically known as the Riding Hall and was constructed in 1903. It is a two-story masonry structure with Mission-Revival stylistic features. Conversion of the building into a reserve training facility occurred in the mid-1950s and consisted of constructing a reserve training building inside the outer red brick envelope of the historic structure.

Building 47 is a National Historic Landmark and is listed in the National Register of Historic Places, which means that it is subject to additional requirements under Section 106 of the National Historic Preservation Act. The barn-like original design has led to numerous heating, ventilation, and air conditioning system problems and steadily increasing maintenance costs over the years. The work and training spaces inside Building 47 are poorly configured and do not meet current operational training requirements. To conduct vehicle maintenance activities, the Marine reserve unit borrows maintenance space from the Department of the Army when it is available. In addition, the facility is located more than 13 miles from the Camp Dodge ranges where the reserve units train. (Joint Marine-Navy Reserve Center in Des Moines, Iowa: EA; DOPAA 2014)

In order to address the needs of the Marine Corps to develop a new Joint Marine-Navy Reserve Center a 24.42-acre parcel of land was selected for assessment. The Steddom Parcel is located in Polk County in the City of Johnston near the northwest perimeter of Camp Dodge, Iowa. Naval Facilities Engineering Command, Atlantic was tasked to conduct an archaeological assessment of the Steddom Parcel in support of this project. From 13–16 May, Naval Facilities Engineering Command, Atlantic conducted a comprehensive archaeological field reconnaissance of the entire 24.42-acre parcel. The soil visibility was excellent (100 percent) due to recent plowing followed by rain. One hand-excavated shovel test pit was placed on a small glacial moraine as a control to verify soil stratigraphy.

This survey effort did not identify any Native American or Pre-1900 European American archaeological deposits or artifacts. The bed of a ca 1918 railroad spur was identified as matching the location on the 1918 USGS 15 minute Camp Dodge Quadrangle. Also, a period culvert/cistern was recorded along the railroad bed and was recorded as 13PK1004 in the State of Iowa archaeological site database. Site 13PK1004, a concrete railroad culvert, is not considered eligible for inclusion in the National Register of Historic Places. On September 19, 2014, the State of Iowa Historic Preservation Office concurred with the Navy's determination. Based upon the results of this survey, no further cultural resource investigations are recommended.

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# CHAPTER 1

## INTRODUCTION

The U.S. Marine Corps Forces Reserve (MARFORRES) is preparing an Environmental Assessment (EA) to evaluate the potential impacts of acquiring approximately 20–25 acres and constructing a new Joint Marine-Navy Reserve Center in Des Moines, Iowa. The proposed plan calls for a 46,200-square-foot reserve training building; a 3,250-square-foot vehicle maintenance facility; a 1,600-square-foot fitness training shelter; an 800-square-foot wash rack; and associated parking facilities. The current reserve center houses the Navy Operational Support Center and Marine Corps Reserve Center and is located at Fort Des Moines.

In order to address the needs of the Marine Corp to develop a new Joint Marine-Navy Reserve Center a 24.42-acre parcel of land was selected for assessment. The Steddom Parcel is located in Polk County in the City of Johnston near the northwest perimeter of Camp Dodge, Iowa (figure 1). The Naval Facilities Engineering Command (NAVFAC), Atlantic was tasked to conduct an archaeological assessment of the Steddom Parcel in support of this project.

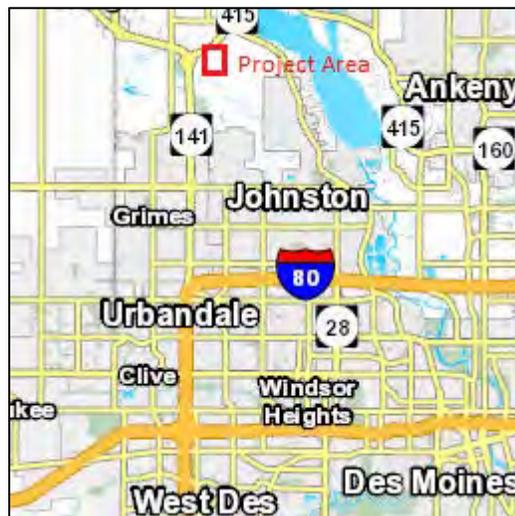


Figure 1. Project Area (<http://apps.polkcountyiowa.gov/GISMapping/MapView/View/1006>)

This survey effort did not identify any Native American or Pre-1900 European American archaeological deposits or artifacts. The bed of a ca 1918 railroad spur was identified as matching the location on the 1918 USGS 15-minute Camp Dodge Quadrangle. Also, a period culvert/cistern was recorded along the railroad bed. Only the culvert/cistern (13PK1004) was recorded as an archaeological site. This site was determined not eligible for NRHP inclusion by the U.S. Navy in consultation with the Iowa State Historic Preservation Office. Therefore, no cultural resources were identified within the Steddom Parcel that are eligible for inclusion in the National Register of Historic Places. Based upon the results of this survey no further cultural resource investigations are recommended.

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## CHAPTER 2

# PROJECT DESCRIPTION

From 13–16 May, NAVFAC Atlantic conducted a comprehensive archaeological field reconnaissance of the entire 24.42-acre parcel. The soil visibility was excellent (100 percent) due to recent plowing followed by rain. One hand-excavated shovel test pit (STP) was placed on a small glacial moraine as a control to verify soil stratigraphy.

The following technical report presents the results of Phase I archaeological survey conducted 14–16 May 2014. All aspects of this investigation were undertaken by Archaeologist Bruce J. Larson, M.A., RPA of the United States Navy, Naval Facilities Engineering Command, Atlantic based out of Norfolk, Virginia. This report was authored by Mr. Larson and edited by Ms. Tabettha Cohen (NAVFAC Atlantic) and has been prepared pursuant to the National Historic Preservation Act of 1966 (as amended through 1992); Section 106 as implemented by the Procedures for the Protection of Historic Properties (36 CFR 800).

The field investigations and technical report are designed to adhere to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register 48:190:44716-44742), as well as the current (1999) Guidelines for Archaeological Investigations in Iowa issued jointly by the Association of Iowa Archaeologists (AIA), the Iowa Office of the State Archaeologist (OSA), and the State Historical Society of Iowa (SHPO).

Mr. Larson served as both the project manager and principal investigator performing the investigation and exceeds the qualifications described in the Secretary of the Interior's Professional Qualifications Standards (Federal Register 48:190:44738-9).

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# CHAPTER 3

## DESCRIPTION OF PROJECT AREA

The project area consists of a 24.42-acre parcel of land currently owned by the Steddom family heirs and is located in Polk County near Johnston City in an unincorporated area currently under cultivation (figure 2). The legal location description is:

That part of the South Half of the NW1/4 of Section 16, T-80-N, R-25-W, of the 5th P.M., Jefferson Twp. Polk County, Iowa, laying South of Saylorville Drive and East of NW 110th Court as presently established.



Figure 2. Satellite image from 2012 showing the Steddom Parcel (Draft EA)

Peterson, in her 1994 Phase I survey for the 86th Street extension, provides a very succinct description of the physiographic setting of the MARFORESS/Steddom Parcel project area. The geo-archaeological overview presented by Peterson provides a solid ancillary statement on the evidence for glacial succession in this part of Iowa. The basic landforms in Iowa, as presented in Prior (1991), are shown in figure 3.

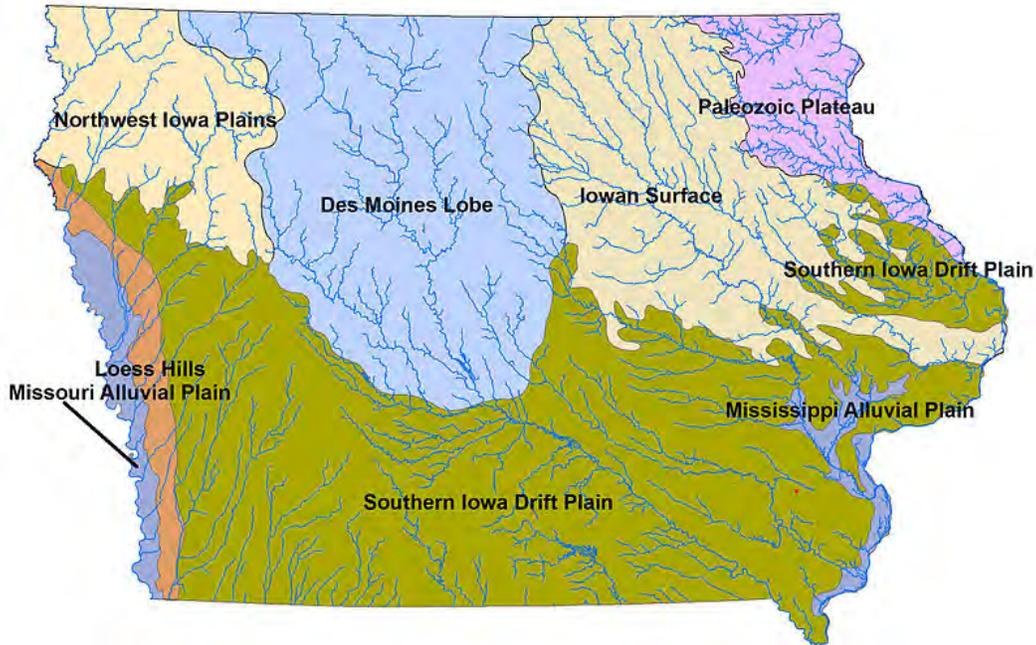


Figure 3. Landforms of Iowa, based on Prior (1991) and Calvin (1904), with major rivers and streams

Peterson’s more localized discussion captures the details of local soil geology clearly:

*The proposed project is located within the Iowa landform region known as the Des Moines Lobe. This region is underlain by glacial till deposited during the most recent ice advances into Iowa, approximately 12,000 to 14,000 years ago. The Bemis, Altamont, and Algona end moraines delimit the three major Late Wisconsin glacial ice margins. The surface of the Des Moines Lobe lacks a Wisconsin loess mantle.”*

*A history of the Beaver Creek Valley is provided by Bettis (1993), who conducted a geomorphological study of the nearby EMC-C Support Maintenance Facility and Battalion Complex in the southern part of Camp Dodge:*

*The major landscape elements in the project area formed during wastage of the Des Moines Lobe glacier between about 13,000 and 12,500 years ago. Beaver Creek Valley marks the position of the pre-Des Moines Lobe Des Moines Valley. This valley was covered by glacial ice during advance of the glacier to its terminal position in Des Moines 13,500 years ago. About 12,500 years ago the glacier was active at a position marked by the Altamont Moraine north of Ames. At that time the present Des Moines Valley had not formed and Beaver Creek was carrying melt water and outwash from the glacier's front. At that time stagnant glacial ice was still present adjacent to Beaver Creek in the Camp Dodge area. As the ice melted mud and other debris in the ice flowed down slope toward Beaver Creek Valley. These flows of debris are referred to as supraglacial till, the Morgan Member of the Dows Formation. ... Beaver Creek stopped carrying outwash about 12,200 years ago when the present Des Moines Valley began to incise (figure 2). (Prior 1991:39–40, 47)*

To continue with the valley history:

*Downcutting of the Des Moines River through the gorge left the former valley floor as a*

*terrace (Beaver Creek 1 or TBC1) above the new valley floor. The Beaver Creek 1 outwash channel is bisected by the Des Moines River valley today. A portion of it lies west of the present valley, the high terrace which the town of Johnston is built on, while the remainder is east of the present valley between Capitol Hill and Four Mile Ridge. Both these areas are underlain by up to 15 m of sand and gravel deposited during the earliest stages of Des Moines Lobe ice retreat from central Iowa. (Benn and Bettis 1981:11)*

In the same report, Benn and Bettis (1981:33) noted that, although some of TBC1 may be covered with recent colluvium, “for the most part cultural materials of Holocene age would be found on or near the surface of the TBC1 terrace.” The very southern edge of the current project area in Section 27 is located on the TBC1 terrace (figure 3). Small knobs of glacial till are also present, in Section 22 of the current project area. These knobs within the valley may be attributed to subglacial drainage lines (Joe Arte, personal communication 1993).

Peterson (1994) and Prior (1991) provided excellent overviews of the contemporary interpretation of the localized soil structure in the greater Camp Dodge area. Further discussion of the local soils is provided by James H. Lees, Assistant to the Iowa State Geologist, George F. Kay, in his monograph accompanying the 1918 15-foot USGS Quadrangle Map (figure 7).

“...the Wisconsin, advanced over central Iowa and covered the Des Moines valley as far south as the forks of the Raccoon River ...As it in turn melted away it left its load spread out as a level plain or here and there heaped into ridges very much as they exist today; altogether giving us an accurate picture, no doubt, of conditions as they were at the close of each of the older glacial occupancies [e.g. (Kansan, Illinoisan)]. Upon this level plain there were distributed innumerable ponds and lakes, many of which have persisted to the present day, while other parts of the plain are still so level that natural drainage lines have been but poorly or not at all established and swamps and sloughs occupy much of the surface—or did until man began to hasten the processes of Nature. These various features are well shown in the northern part of the Camp Dodge quadrangle.”

Lees goes on to state:

“...in speaking of the soils of our area that most of the mantle rock consisted of a yellow or gray pebbly clay... (Lees 1918, pp.29-31).

Lees summarizes with this statement:

“...there is no terminal moraine at the Southern extremity of the Wisconsin drift-plain...there are several recessional moraines some of which are well marked...one is shown on the topographic map. This moraine we may call the Camp Dodge moraine” (Lees 1918, pp41).

To summarize, these various descriptions made over the past one hundred years, the Steddom Parcel project area is located on the extreme southern perimeter of the Des Moines Lobe of the Wisconsin Glacier. The local topography and soil horizons match perfectly with the expected glacial till, cobble field, and clay substrate particularly as noted in Lees 1918 discussion of the Camp Dodge moraine.

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# CHAPTER 4

## RESULTS OF INVESTIGATION

### 4.1 BACKGROUND RESEARCH

The preliminary assessment of the project area was that it possessed a low probability for containing any archaeological deposits from Prehistoric or Historic occupation. The landform and topographic location of the Steddom Parcel simply doesn't fit any accepted predictive model for prehistoric archaeological site distribution and based upon historic maps dating from 1875 through to the present, there is no indication of any buildings or structures within the study area. The lone exception was the possible remains of a post-1914 railroad spur that would have been along the eastern property line which had been removed by 1930. The only remnant of the spur line is a concrete culvert/cistern recorded as site 13PK1004.

That said, in 1999 Paul Anderson prepared a very interesting, if limited, archaeological predictive model for the U.S. Army at Camp Dodge. Anderson's model is really a multivariate (pluralistic) type of approach to identifying those areas on Camp Dodge which have varying degrees of potential to possess archaeological deposits. Within Anderson's discussion of various modeling strategies, the Boolean and Environmental Diversity Models (Anderson 1999, pp 23-38) seemed most relevant for the discussion on site prediction in the area north of Beaver Creek where the Steddom Parcel is located, but are in effect focused on projections associated with larger known sites rather than a detailed exploration of the Pleistocene/Holocene interface through the Archaic periods, e.g. using geoarchaeological data to determine site distribution for these early prehistoric periods. This model provides an interesting baseline for assessing potential for sites near drainages and high-ranked waterways. Interesting data are discussed in Anderson's model that were generated during archaeological surveys conducted by Nepstead-Thornberry (1999) and Peterson (1994) where areas of moderated potential, according to these models, did not reveal any archaeological sites or deposits. The State of Iowa has clarified some of the value as well as problems with predictive modeling and must be taken into account when assessing the archaeological potential of any particular locale or region:

In our opinion, the prepared predictive model is good for looking at a limited number of site types, those being habitation sites of the Woodland and Late Prehistoric cultural periods. However, it appears to be of marginal quality for assessing what other types of sites may be represented at Camp Dodge during those same time periods or with any type(s) of sites associated with the PaleoIndian or Archaic cultural periods. As per the recommendations provided in the report, we agree that a predictive model that took into account the specialized activities, resources, site types, and information gathered from other locations where similar studies have been conducted would have been more useful. Also, a predictive model based primarily on landforms and potential for different types of archaeological sites to be located on the landforms has been found to be extremely useful in other locations in Iowa for cultural resource management applications. The information gathered for the Phase I survey on the archaeology and geomorphology of the identified landforms could serve as this type of a model. (Review comments by Iowa SHPO 1999: Douglas W. Jones, Archaeologist Community Programs Bureau)

The point of this discussion is to demonstrate there have been excellent archaeological investigations undertaken in the area in the past, and these studies prompted thoughtful academic discussion on the issue of archaeological site predictive modeling. These discussions are particularly useful in preparing the archaeological field methodological approach that would, to the extent possible, allow for the greatest likelihood of identification of any archaeological deposits which may be within the study area, and, therefore, be adversely affected by the proposed federal undertaking.

To assess the potential for historic era archaeological resources being located in the survey area, detailed maps dating from 1875 through 1965 were evaluated to determine if any buildings or structures were likely to be in the project area or immediate vicinity. In researching the historic maps and available documents (Deed) several things became clear. First, there is no indication of any building or structure on the Steddom Parcel dating back to 1875 (figure 4).



Figure 4. 1875 A.T. Andreas' Atlas map showing Section 16 north of Beaver Creek

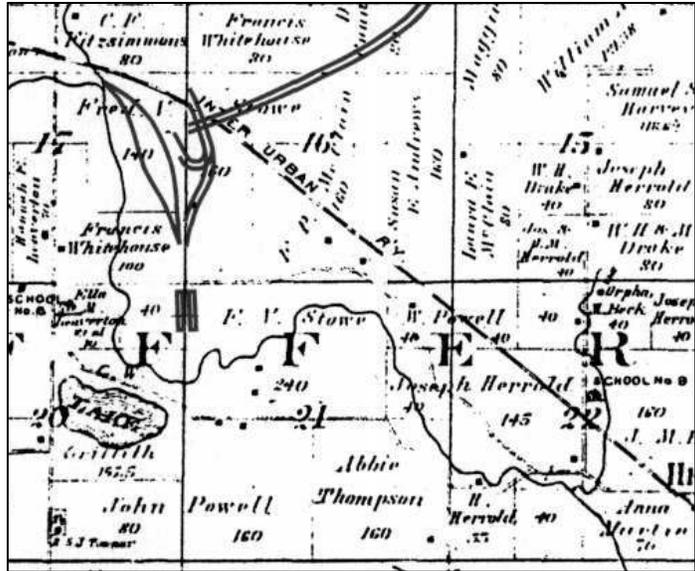


Figure 5. 1907 Map of project vicinity showing Section 16

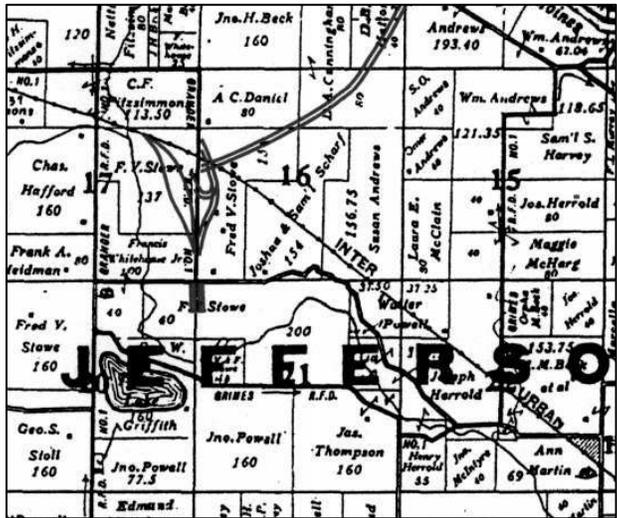


Figure 6. 1914 map of project vicinity, note that the railroad spur dividing sections 16 and 15 has not been constructed

Secondly, the railroad spur off the “Inter Urban Electric” Railroad line that traversed the eastern perimeter of the survey area (section 16) does not appear until after 1914 (figure 6) on the 1918 USGS 15-foot Quadrangle map of Camp Dodge (figure 7); and by 1938 the spur rail line is gone from the landscape as noted on the 1938 USDA aerial photograph of the Steddom Parcel (figure 8).

1918 TOPOGRAPHICAL MAP  
Source: EDR  
(Not to Scale)

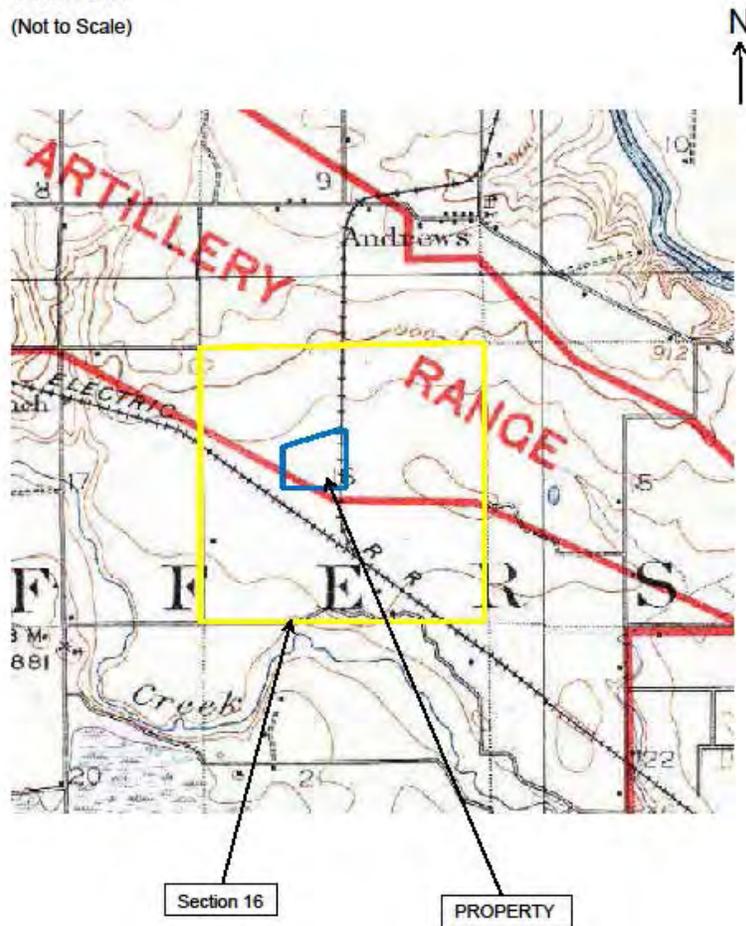


Figure 7. Portion of 1918 USGS 15' Camp Dodge Quadrangle showing project location and railroad spur



Figure 8. 1938 USDA aerial photo showing the project area (yellow). Note that the railroad spur no longer exists along the Section 16 east boundary.

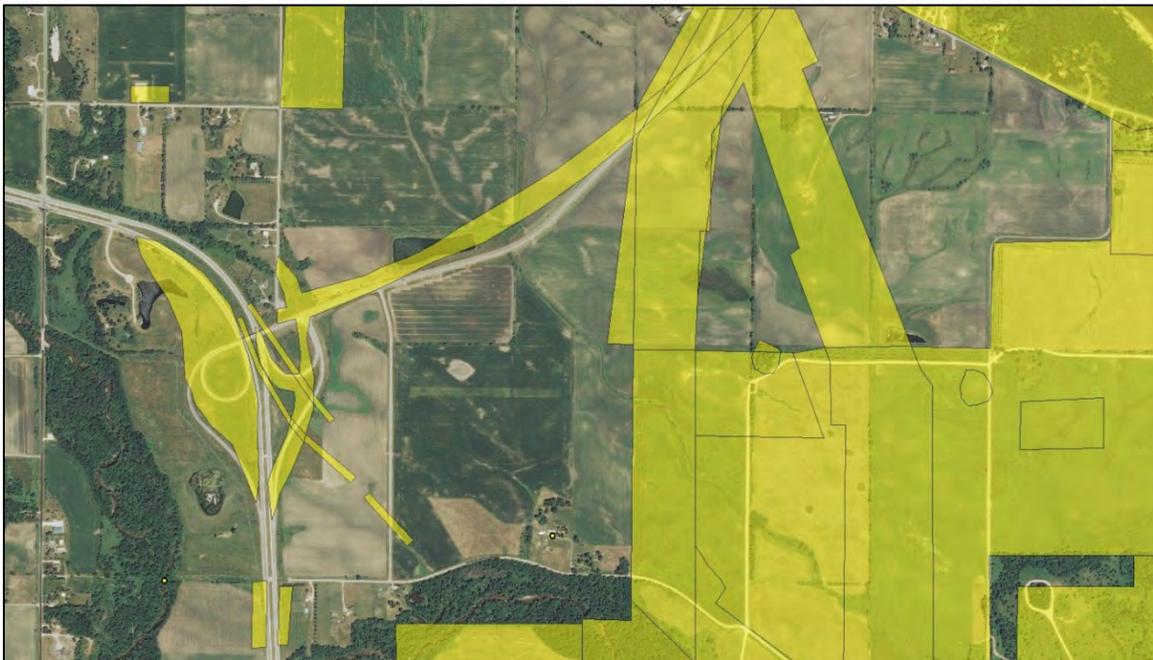


Figure 9. Satellite image from 2009 showing areas that have been comprehensively surveyed (yellow) for cultural resources; note project area has horizontal plow areas. (OSA Files 2014)





Figure 11. Steddom Parcel looking east



Figure 12. Steddom Parcel looking southeast



Figure 13. Steddom Parcel looking southwest



Figure 14. Steddom Parcel looking west

Further, just prior to the field inspection, the region experienced heavy rains. This combination of factors served to provide excellent surface visibility (100 percent); and, with the recent rains, the soil on any objects in the field was cleaned of dust and highlighted (figure 15).



Figure 15. Close-up view of a typical cobble scatter on the moraine typifying the excellent field conditions and surface visibility

Therefore, a field survey method was implemented that had been approved by the OSA and SHPO staff which consisted of parallel pedestrian transects 3–5 meters apart over the entire 24.42-acre project area. Further, since the surface visibility was extraordinarily clear, it was decided that STPs were not necessary. The exception however, was the placement of one STP on the deflated moraine hummock located in the north center of the parcel (figures 16 and 17). Appendix A is a copy of the field drawing of the north profile of STP 1.



Figure 16. Hand-excavated shovel test pit No. 1 placed on the moraine, showing C horizon interface at -33 cm



Figure 17. Overview of STP No.1

Also, this field investigation incorporated a reconnaissance of the vegetated field perimeter areas to the east and south in an attempt to determine if any trace of the railroad bed noted on the 1918 15-foot USGS Camp Dodge Quadrangle was in evidence.

The field methodology employed to conduct the survey of the 24.42-acre Steddom Parcel consisted of pedestrian transects spaced 3–5 meters apart covering the entire parcel. Further, even though the surface visibility was 100 percent and recent rains further highlighted objects in the field (figure 15), a hand excavated STP was placed in the study area to provide a view of the soil horizons present on site; (maximum depth -38cm).

The transect intervals were oriented on an east-west axis parallel to the southern perimeter of the parcel. Closer intervals were employed on three areas where exposures of the Pleistocene moraines were noted, most prominently by distinctly lighter soil coloration and high concentrations of cobbles (figure 18).



Figure 18. View looking northeast of the Steddom Parcel showing the moraine

The three areas containing cobbles were characterized by lighter soils than the surrounding dark-brown wet low landform. The typical moraine exposures were 5YR2.5/1 with a mix of 5YR3/2 (Munsell). No artifacts were noted; however, there is a consistent scatter of cobbles ranging in size from 2–3 cm to more than 20 cm. All cobbles exhibit glacial abrasions or are heavily burnished due to natural processes, e.g. glacial patenting.

One STP (STP-1) was placed as a control on the largest of the moraines close to Iowa State Route 415 (NW Saylorville Drive). STP-1 was hand excavated to a maximum depth of approximately 40cm below the surface.

Three distinct strata were identified (appendix A) in the STP:

**Strata 1:** 0–22cm: This stratum consists of a homogenous mixing of subsoil with inclusions of unsorted gravels and cobbles. This is defined as plow-zone (Ap).

Munsell: 5YR 2.5/1

**Strata 2:** -22–34cm: This stratum is best described as a transition zone which is likely a relic of deeper plowing in the past. Stratum 2 is defined as a rather consolidated zone including clay and sandy loam with unsorted gravel and cobbles inclusions, similar to the Ap.

Munsell: 5YR 2.5/1



Figure 19. View of moraine on Steddom Parcel looking to Northwest from the abandoned Railroad bed, arrow indicating location of STP-1

**Strata 3:** -34–40 cm: Stratum 3 appears to represent the intact Pleistocene subsoil, associated with moraine development during glacial events. This stratum contains numerous gravel and cobbles does not exhibit the mixing of clay and loam typical of stratum 2. That said, however, there are two distinct soil color ranges associated with these strata. The difference seems to be a textural one; this level is very dense coarse clays with inclusions of sandy loam, possibly from bio-turbation.

Munsell: 5YR3/2 and 7.5 YR 4/3

#### 4.3 DISCUSSION

Overall the soil structure revealed in STP-1 suggests that there is a robust plow zone overlaying a transitional zone which may be a B horizon that has been impacted by plowing on top of a B/C horizon (Stratum 3). This may be interpreted as eroded moraine exposures whereby the plowing and natural processes have deflated the soil exposing the glacial substrate with gravel and cobble inclusions. The lighter soils exposed in plowed fields are an indicator for moraines resulting from the retreat of the Des Moines Lobe of the Wisconsin Glacier during the Pleistocene/Holocene interface.

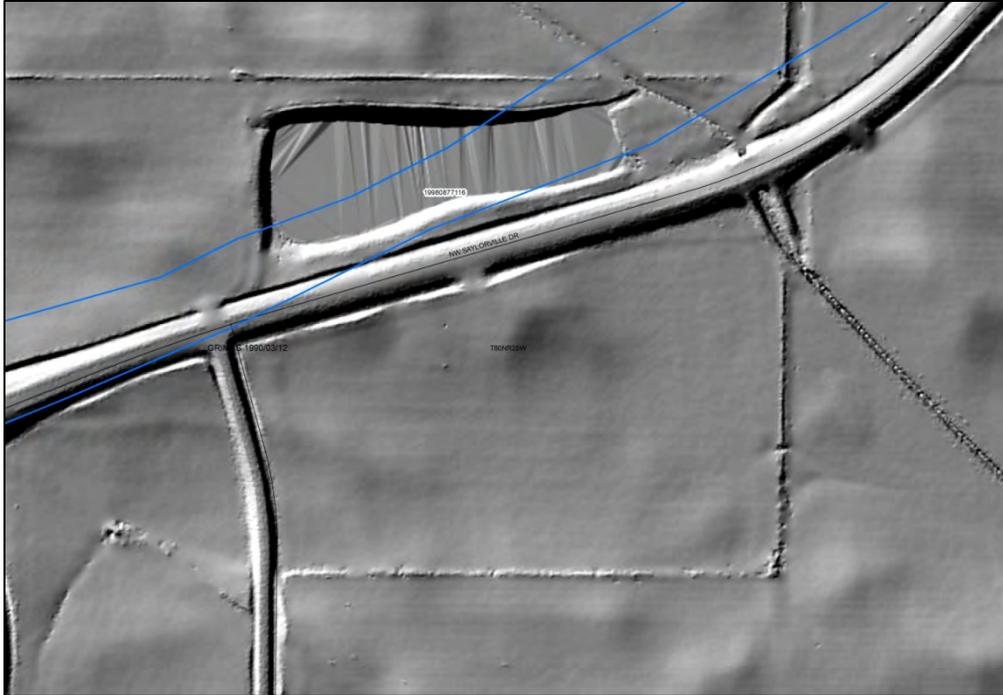


Figure 20. LiDAR image of the Steddum Parcel; note shadow labeled T80N/R25W; this is the terminal moraine (OSA)

During the survey, historic period landmarks shown on the 1918 USGS 15-foot Quadrangle for Camp Dodge and the USDA Aerials from 1938 and 1954 were relocated in the field. These included tree lines, streams, and abandoned railroad alignments. While no structures were noted on the Steddum Parcel, either in deeds or historic maps, this study provided an opportunity to determine what if anything remained of the old railroads noted in early twentieth century maps. Of particular interest was the spur railroad that formed the eastern Steddum property boundary between sections 16 and 15. While it was made clear the position of the State of Iowa on such features, a cursory inspection of the spur line was made in hopes of resolving the issue of possible fill in the southeast corner of the parcel and the disparity between a review of the property deed signed on June 21, 1905 indicating Fred V Stowe selling a 100-foot wide strip of land to the Inter Urban Railway Company. The deed required construction and maintenance of an underground crossing for stock. The deed also gave permission to build and maintain grade crossing with gates. What is interesting about this notation is that there is no mapped evidence until 1918 that any structures or railroad features were present on the Steddum Parcel (note figures 5 and 6).



Figure 21. View of the eastern fence line of the Steddum Parcel looking south; grass berm is the ca 1918 railroad bed towards site 13PK1004

The reconnaissance survey successfully identified the abandoned spur railroad bed (figure 21) oriented north/south along the eastern property boundary. This abandoned line was walked in its entirety and no remnants of the old rail line remained, only a slight elevated clay berm. At the far southeast corner of the Steddum Parcel are the ruinous remains of what appears to be a cistern and a support structure notched to accept rail ties (figures 22–24), which was recorded and entered into the State of Iowa archaeological site database as 13PK1004. The type of concrete is characteristic of early twentieth century product. The matrix consists of coarse sand/gravel aggregate; a type that seems to have been replaced by more sophisticated technology around the time of World War II.



Figure 22. View facing east showing site 13PK1004; the ca 1918 concrete culvert/cistern feature associated with the railroad



Figure 23. Site 13PK1004: View facing south of the ca 1918 concrete cistern

The function of these remains is unknown, there is no indication that they are farm related, and the 1918 map of Camp Dodge does not show a freight landing, etc. on this portion of the spur railroad line. Since the location of these concrete remnants is near the historic Camp Dodge boundary, they likely are associated with some type of army activity, or possibly as a cattle underpass, though that is unclear.



Figure 24. Site 13PK1004: View looking southwest of the concrete culvert associated with the 1918 railroad



Figure 25. Site 13PK1004: Close-up of the concrete feature illustrating a notch for placement of rail ties ca 1918

In any event, the spur railroad was completely removed by 1938, and along with it these remains (13PK1004) fell to ruin. Looking at the post World War II aerial photos of the project area and the 1966 7.5-foot Quadrangle, there is no evidence of any use of this portion of the Steddom property for anything other than a property boundary.

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## CHAPTER 5

# SUMMARY AND RECOMMENDATIONS

This survey effort did not identify any archaeological deposits or artifacts. The bed of a ca 1918 railroad spur was identified, matching the location on the 1918 USGS 15-foot Camp Dodge Quadrangle. Also a period culvert/cistern was recorded along the railroad bed. The culvert/cistern was recorded as an historic feature associated with the railroad spur and was issued site number 13PK1004 and entered into the State of Iowa's archaeological site database. The U.S. Navy, in consultation with the Iowa State Historic Preservation Office, has determined that site 13PK1004 is not eligible for inclusion in the National Register of Historic Places. Based upon the results of this survey, no further cultural resource investigations are recommended at site 13PK1004 or any part of the Steddom Parcel.

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**APPENDIX A**

**STP-1 Form**

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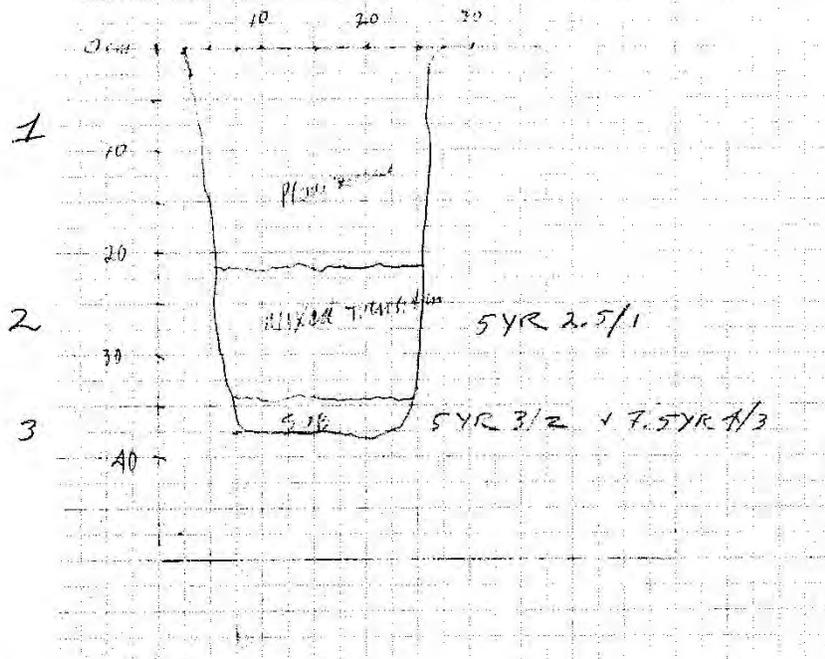
Excavation Unit Sheet

Site Name Ø Stoddard # Property Provenience Facing North

Observer B. LARSON Date 15 May 2014 Level & Depth OA - 38 cm

Cat. #s Ø Feature #s Ø

Photos 3 close up; Observations STP was placed in the middle at the corner point to property. Cobbles on surface PZ (1) (2) mixed clays/loamy strata w/ cobbles inclusions, (3) substrate with inserted cobbles



Scale 1cm. = \_\_\_\_\_

North

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**APPENDIX B**

**Archaeological Site Form: 13PK1004**

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### IOWA ARCHAEOLOGICAL SITE FORM

Office of the State Archaeologist  
700 Clinton Street Building  
University of Iowa  
Iowa City, Iowa 52242-1030

Site Number: 13PK1004  
County: POLK  
Name/Field: Inter Urban Electric  
No.: Railroad Spur  
New Form:  Supplemental:

#### I. SITE TYPE INFORMATION

**Legal**

**Location:**

Township: T80N

Range: R25W

Section: 16

SE 1/4 NW 1/4

Township: T80N

Range: R25W

Section: 16

SE 1/4 NW 1/4

**Quadrangle(s):** DES MOINES NW

**Reliability of Site Location:** Good

**Site Type/Function**

Railroad related -- Possibly a livestock culvert

**Period/Cultural Affiliation**

**Period:**

Historic  
Euro-  
American

**Phase/Affiliation:** WWI era concrete railroad culvert

**Basis:**

historic  
documentation

Railroad spur is not illustrated on the 1914 county land plat maps, however it does appear on the 1918 15' Camp Dodge Quad and is no longer in existence by the time the 1938 USDA aerial photographs were taken.

**Historic Date Range:**

1900-1925

#### II. CULTURAL MATERIALS: 13PK1004

**III. GEOGRAPHIC INFORMATION 13PK1004**

**Topography/Landform:** Terrace/Bench  
**Notes on Topography/Landform:** Des Moines Lobe  
**Nearest Water Source:** Perennial stream/river  
**Distance to Nearest Water:** 1500 m

**Site Size**  
**Dimensions:** 10 x 2 m  
**Area:** 20 sq m

**Map Method(s):** Paced

**Integrity:**  excellent  good  poor  completely destroyed  unknown

**Threats To Site**

Past/ Present	Future	Threat Type	Description
X		agriculture/livestock	
	X	development/construction	

**Notes on Current Land Use:** Farm-field Treeline

**IV. INVESTIGATION INFORMATION 13PK1004**

**Recorder(s)**

Name	Address
Larson, Bruce J.	other (describe), US Navy, NAVFACLANT, 6506 Hampton Blvd, Norfolk, VA

**Start Date of Investigation:** 5/13/2014

**Dates/Special Considerations:** Archaeological Survey took place between 13-16 May, 2014

**Level of Investigation:** Phase I

**Recommendations:** No further work

**National Register Eligibility Recommendation:** Not Eligible for NR

**Photo(s)**

Photo Type	Curated At
Digital	NAVFACLANT EV54 6506 Hampton Blvd Norfolk VA 23508

## V. VERBAL DESCRIPTION 13PK1004

**Location: Provide a verbal description of how to locate the site, including distances and direction.**

**This information must be sufficiently detailed to permit accurate site relocation. If possible, include permanent landmarks, roadways, and distances.**

I-80 West, exit onto Route 141 North, exit onto Route 415 (NW Saylorville Road) Site 13PK1004 is located in the SE corner of a cultivated field approximately 300M on the right after exiting onto Saylorville Rd

**Site Description: Describe the site and include dimensions, features, nature and content of artifacts**

**and concentrations, extent and location of disturbances, etc.**

At the far southeast corner of the Steddom Parcel are the ruinous remains of what appears to be a cistern and a support structure notched to accept rail ties (figures 22–24). The type of concrete is characteristic of early twentieth century product. The matrix consists of coarse sand/gravel aggregate; a type that seems to have been replaced by more sophisticated technology around the time of World War II. The function of these remains is unknown, there is no indication that they are farm related, and the 1918 map of Camp Dodge does not show a freight landing etc. on this portion of the spur railroad line. Since the location of these concrete remnants is near the historic Camp Dodge boundary, they likely are associated with some type of army activity, though that is unclear. In any event, the spur railroad was completely removed by 1938, and along with it these remains fell to ruin. Looking at the post World War II aerial photos of the project area and the 1966 7.5-foot Quadrangle, there is no evidence of any use of this portion of the Steddom property for anything other than a property boundary.

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**APPENDIX C**

**State Historical Preservation Officer  
Correspondence**

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DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC  
6506 HAMPTON BLVD  
NORFOLK VA 23508-1278

5090 IN REPLY REFER TO:  
Ser EV54DC/00415

14 AUG 2014

Mr. Steve King  
Iowa State Historic Preservation Office  
600 East Locust Street  
Des Moines, Iowa 50319

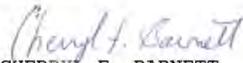
Dear Mr. King:

In continuing consultation on the proposed relocation of Marine Corps Reserve Center Des Moines (MCRC Des Moines), Naval Facilities Engineering Command, Atlantic (NAVFAC Atlantic) submits the enclosed report titled, Phase I Cultural Resource Investigation of the Marine Corps Reserve Center Relocation Along NW Saylorville Road, Polk County, Johnston, Iowa. MCRC Des Moines currently resides within the Fort Des Moines National Historic Landmark. This facility does not meet the mission needs of the reservists given certain training and security requirements. MCRC Des Moines must relocate within a limited geographic radius from its current location, and the new parcel must meet other size, locational, and environmental criteria. An undeveloped parcel north of Des Moines (Steddom parcel) is now considered the preferred alternative for the relocated MCRC Des Moines, and is the subject of the enclosed survey report.

The Steddom parcel is located in Polk County and the City of Johnston, near the northwest perimeter of Camp Dodge, Iowa. From May 13-16, 2014, NAVFAC Atlantic conducted a comprehensive archaeological field reconnaissance of the entire 24.42-acre parcel in support of the project. With excellent soil visibility due to recent plowing and rain, one hand-excavated shovel test pit was placed on a small glacial moraine as a control to verify soil stratigraphy. This survey did not identify any archaeological deposits or artifacts. The bed of a c.1918 railroad spur was identified, matching the location on the 1918 USGS 15 minute Camp Dodge Quadrangle. Also a period culvert/cistern was recorded along the railroad bed. None of these features are recommended to be recorded as sites. Therefore, no cultural resources were identified within the Steddom parcel. Based upon the results of this survey, no further cultural resource investigations are recommended.

We invite you to concur with the results of this survey in reply to this letter, and include any additional comments or edits you wish to see in the final report. If you have any questions about the survey, Mr. Bruce Larson may be reached at (757) 322-4885, or e-mail: bruce.larson@navy.mil.

Sincerely,

  
CHERYL F. BARNETT  
Environmental Business Line Manager  
By direction of the Commander

Enclosure: Phase I Cultural Resource Investigation Report August 2014

5090  
Ser EV54DC/00415

Marine Corps Forces Reserve (C. Hurst)  
Headquarters, U.S. Marine Corps (S. Frear)  
Naval Facilities Engineering Command Midwest (S. Bever)  
Iowa Cultural Affairs (C. Kramer)  
State Historical Society of Iowa (S. King)  
Iowa State Archaeologist (J. Doershuk)  
Preservation Iowa (G. Betcher)  
City of Johnston (A. Wolfe)  
County of Polk (B. Vandelune)

-----Original Message-----

From: Jones, Doug [DCA] [mailto:Doug.Jones@iowa.gov]

Sent: Friday, September 19, 2014 12:32 PM

To: Larson, Bruce J CIV NAVFAC LANT, EV

Cc: Jones, Doug [DCA]; Gourley, Kathy [DCA]; SHPO106

Subject: 131077090 Marine Corps and Naval Reserve Center Project Phase I Cultural Resource Investigation

September 19, 2014

Ms. Barnett and Mr. Larson,

We are in receipt of the above referenced correspondence that you recently provided to our office. We have reviewed the Phase I Cultural Resource Investigation report. We are in agreement with the findings and recommendations of the report. We did note during our review of the report that the former railroad related culvert/crossing was much more substantial than anticipated. Our office agrees that this structure does not meet any of the eligibility criteria for listing on the National Register of Historic Places. However, we would recommend that this structure should be recorded as an archaeological site since it is still there and represents additional railroad infrastructure beyond the former grade. I discussed this recommendation with Mr. Larson yesterday. We agreed to mutually consider the submitted report as a draft report. As time allows in his schedule, he will revise the report the report to reflect the recordation of this structure as an archaeological site. However, we have enough information to concur at this time with your proposed determination of effect of No Historic Properties Affected for this undertaking.

Be advised that the successful conclusion of consultation with the SHPO does not fulfill the agency's responsibility to consult with other parties that may have an interest in properties that may be affected by these projects. Nor does it override the sovereign status of federally recognized American Indian Tribes in the Section 106 consultation process.

If design changes are made for this project which would involve undisturbed new rights-of-way or easements, please forward additional information to our office for further comment along with the determination of effect. If project activities uncover an item(s) that might be of archeological, historical or architectural interest, or if important new archeological, historical or architectural data should be encountered in the project APE, the applicant should make reasonable efforts to avoid further impacts to the property until an assessment can be made by an individual that meets the Secretary of the Interior's Professional Qualification Standards (36 CFR 61) appropriate to the identified resource.

We have made these recommendations according to our responsibility defined by Federal law pertaining to the Section 106 process. Your agency does not have to follow our recommendations to comply with the Section 106 process. It remains your agency's decision on whether or not to provide additional information to our office. It also remains your agency's decision on how you will proceed from this point forward. If you choose not to follow our recommendations, please consult 36 CFR Part 800, as appropriate, for guidance on how to conclude the Section 106 consultation.

Please note that you will not receive a hard copy of this letter by mail. There is no need to reply to this email unless you have specific questions. If you have any further questions, please feel free to contact me.

Douglas W. Jones, Archaeologist and  
Review and Compliance Program Manager  
State Historical Society of Iowa  
600 East Locust  
Des Moines, Iowa 50319  
(515) 281-4358  
Doug.jones@iowa.gov <mailto:Doug.jones@iowa.gov>

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United States Navy; Naval Facilities Engineering Command Atlantic (NAVFACLANA)

2014 *Joint Marine-Navy Reserve Center Des Moines-DOPAA (Description of Proposed Action Alternatives)*. NAVFACLANA Code EV2 6506 Hampton Blvd, Norfolk, Virginia.



# **Phase I Environmental Site Assessment Report**

**HEIDI STEDDOM'S PROPERTY  
Part of S  $\frac{1}{2}$  of NW  $\frac{1}{4}$  of Section 16  
Jefferson Township  
Polk County, Iowa**

**DATE**

**April 10, 2014**

**Prepared for:**

**NAVFAC MIDWEST IPT  
Attn: Kenneth D Seymour  
Building 1A, 201 Decatur  
Great Lakes, IL 60088  
Phone: 847-688-2600 Ext 118**

**Prepared by:**

**Shekar Engineering**

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### Acronyms Used in this Report

AST	Above Ground Storage Tank
ASTM	ASTM International
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CORRACTS	Corrective Action Report
CONSENT	Superfund Consent Decrees
DEP	Department of Environmental Protection
EDR	Environmental Data Resources
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
LUST	Leaking Underground Storage Tank
NPL	National Priority List
OHM	Oil and hazardous materials
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
RCRA	Resources Conservation and Recovery Act
REC	Recognized Environmental Condition
ROD	Record of Decision
SHWS	State Hazardous Waste Sites
UST	Underground Storage Tank

## 1 SUMMARY

This Phase I Environmental Site Assessment (ESA) was conducted on Heidi Steddom's property (hereinafter referred to as PROPERTY or target PROPERTY) by Shekar Engineering (hereinafter referred to as SHEKAR), Des Moines, Iowa for Naval Facility Engineering Command Midwest (hereinafter referred to as NAVFAC), Great Lakes, Illinois.

The PROPERTY is a tract of land in Jefferson Township, Polk County, Iowa, which is approximately 24.42 acres in area. There are no buildings on the PROPERTY and is currently used for agricultural purposes. Access to the PROPERTY is from NW Saylorville Drive. The PROPERTY and the immediate vicinity to the north, east, and south are zoned ER (Estate Residential District); and the property immediately to the west is zoned GC (General Commercial).

Several private water wells were identified within one-mile radius of the PROPERTY. A drainage ditch was identified on the adjoining property to the east with a minimal amount of water discharged from a field tile.

Usage of the PROPERTY has been for the growing of sweet corn in recent years with last year's stubble still present. To the immediate SW, the historical right of way of the railroad bed is still visible but all tracks and the supporting rock base and timbers have been removed.

A site reconnaissance, review of the 1918 Topographic Map, and property deeds revealed possible recognized environmental conditions (RECs) at the PROPERTY. The 1918 Topographic Map indicates a railroad spur running along the eastern border of the PROPERTY from south to north servicing the small settlement of Andrews, Iowa. This map also indicates that the PROPERTY was located within the military's artillery range. A property deed dated October 31, 1931 conveyed an easement to Missouri Valley Pipeline Company. SHEKAR's research could not identify the location or type of pipeline or whether the pipeline was ever built.

Concerns may include the common practice of railroad companies using used motor oil as a spray for weed control, and any possible contamination of the soil from military ordinance/munitions residue. Due to the presence of possible RECs, SHEKAR recommends additional investigation.

## 2 INTRODUCTION

This Phase I Environmental Site Assessment (ESA) was performed on Heidi Steddom's property (PROPERTY) by Shekar Engineering (SHEKAR), Des Moines, Iowa for Naval Facility Engineering Command Midwest (NAVFAC), Great Lakes, Illinois. The PROPERTY is a tract of agricultural land in Polk County, Iowa, which is currently owned by Heidi Steddom (OWNER) of Mesa, Arizona.

This Phase I ESA was conducted in accordance with the ASTM E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and consisted of four components including records review, site reconnaissance, interviews, and this Phase I ESA report. The Phase I ESA was conducted from March 24 to April 4, 2014. The definitions and terms used within this report are in accordance with ASTM E1527-13. This section includes the purpose, detailed scope-of-services, significant assumptions, limitations and exceptions, special terms and conditions, and user reliance.

### 2.1 PURPOSE

The purpose of this Phase I ESA was to identify, to the extent feasible pursuant to the Scope of Services and budget limitations, recognized environmental conditions (RECs) with respect to the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). As such, this Phase I ESA is intended to permit NAVFAC to satisfy one of the requirements to qualify for the bona fide prospective purchaser; specifically, limitations on CERCLA liability: that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC §9601(35)(B).

To accomplish the goals of this Phase I ESA, the following four activities were accomplished:

- Records Review: The review of present and past land use activities for the PROPERTY and surrounding properties; and review of selected federal and state regulatory databases for information regarding existing and potential RECs at or near the PROPERTY.
- Interviews: Interviews with present owners, and occupants of the PROPERTY and interviews with local government officials were conducted to obtain information concerning history and conditions of the PROPERTY, the surrounding properties, and RECs.
- Site Reconnaissance: Physical inspection of the PROPERTY to determine visual indications of RECs.
- Report: A written Phase I ESA report provided detail activities and findings resulting from assessment activities.

## 2.2 DETAILED SCOPE-OF-SERVICES

The detailed scope-of-services for this Phase I ESA is presented in Appendix A. Generally, the scope-of-services included those tasks necessary for SHEKAR to conduct a Phase I ESA for the PROPERTY.

## 2.3 SIGNIFICANT ASSUMPTIONS

Any significant assumptions in conducting this Phase I ESA or in preparation of this report have been detailed in relevant sections of this report.

## 2.4 LIMITATIONS AND EXCEPTIONS

This report is an instrument of service prepared by SHEKAR for the exclusive use of NAVFAC. The findings and opinions conveyed in this Phase I ESA report are based on information obtained from a variety of sources enumerated herein, which SHEKAR considers reliable. Nonetheless, SHEKAR cannot and does not guarantee the reliability of the information obtained from various sources and contained within this report.

Additional limitations are noted in Section 6-1 relative to the PROPERTY. Areas of non-scope considerations not covered include:

- Asbestos-Containing Materials,
- Radon,
- Lead-Based Paint,
- Lead in Drinking Water,
- Regulatory Compliance,
- Cultural and Historic Resources,
- Industrial Hygiene,
- Health and Safety,
- Ecological Resources,
- Endangered Species,
- Indoor Air Quality
- Biological Agents, and
- Mold

## 2.5 SPECIAL TERMS AND CONDITIONS

No sampling activities were conducted during this Phase I ESA. Other special terms or conditions for this Phase I ESA, which are set forth by NAVFAC and the special conditions and limitations applicable to all uses of this report, are incorporated by reference herein from Appendix B of this report.

## **2.6 USER RELIANCE**

No party other than NAVFAC, and specific parties authorized in the agreement with SHEKAR, may rely on this instrument of SHEKAR's service. With the permission of NAVFAC, SHEKAR will meet a third party to help identify the additional services required, if any, to permit such third party to rely on the information contained in this report. Such third party may rely on the information contained in this report under the same contractual, technological, and other limitations to which NAVFAC has agreed.

### **3 SITE DESCRIPTION**

#### **3.1 LOCATION AND LEGAL DESCRIPTION**

The PROPERTY is located at the SE corner of the intersection NW Saylorville Drive and NW 110<sup>th</sup> Ct in Jefferson Township, Polk County, Iowa, and is referenced by the following:

- That part of S  $\frac{1}{2}$  of NW  $\frac{1}{4}$  of Section 16, Township 80 N, Range 25 W.

A copy of the Quit Claim Deed is included in Appendix E for the detailed legal description. The PROPERTY is currently zoned ER (Estate Residential District).

#### **3.2 SITE AND VICINITY GENERAL CHARACTERISTICS**

The PROPERTY is an agricultural land approximately 24.42 acres in area. Figure 3-1 and 3-2 are site vicinity maps showing the property location with respect to adjoining roads. Additional site maps are presented in Appendix C.

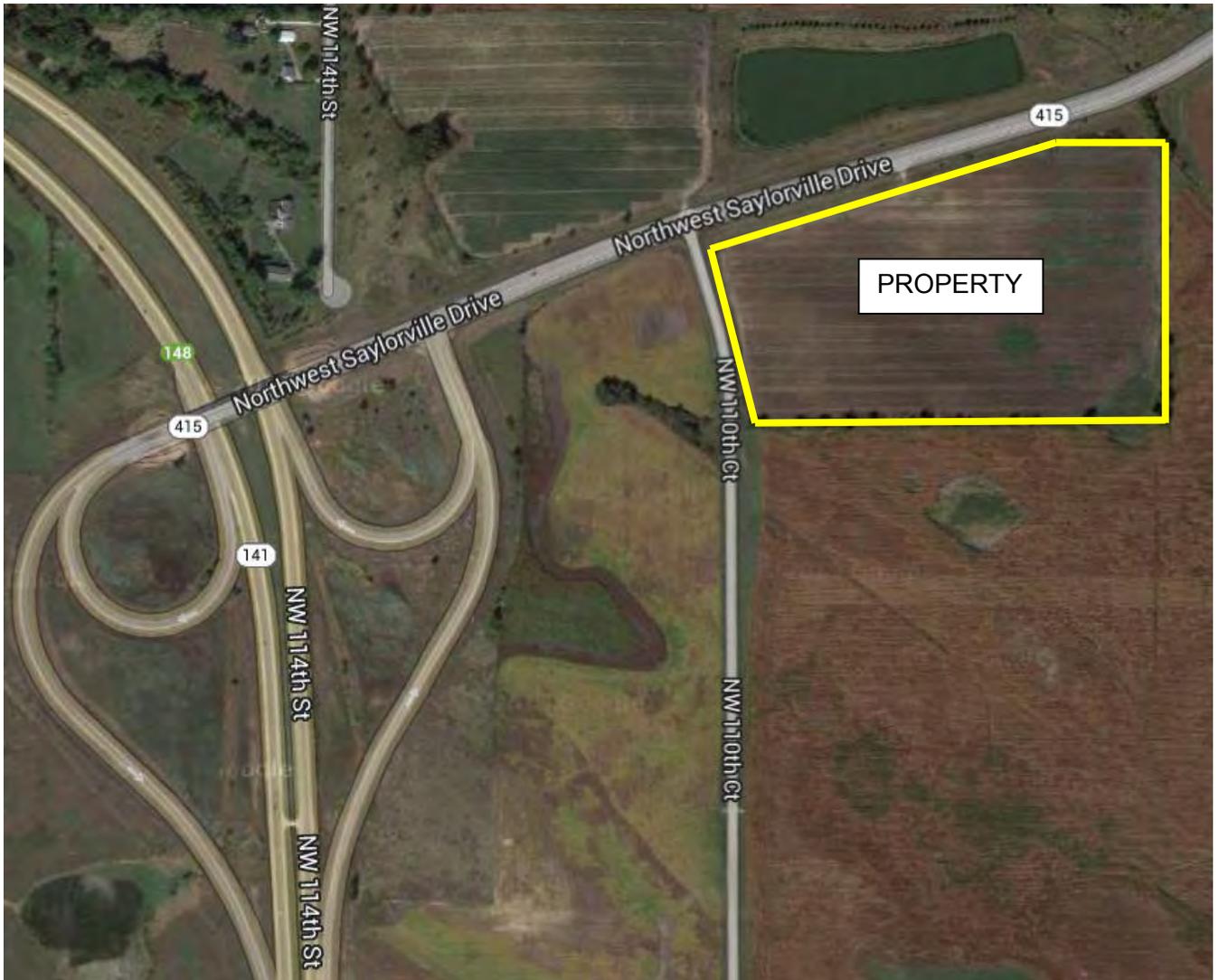


Figure 3-1 Site Vicinity Map



Figure 3-2 Site Vicinity Map

### 3.3 CURRENT AND PAST USES OF THE PROPERTY

The PROPERTY is currently used for agricultural purposes. There are no buildings on the PROPERTY. Based up on the historical records review, the PROPERTY has been used as agricultural land by the Steddom family since their deed dated October of 1931. Prior to that, the

1918 topographical map indicates that a railroad spur ran along the eastern border of the PROPERTY from south to north, and that the PROPERTY was within the bounds of the military's artillery range.

### 3.4 GENERAL DESCRIPTION OF STRUCTURES, ROADS, AND OTHER IMPROVEMENTS ON THE PROPERTY

The PROPERTY is approximately 24.42 acres of agricultural land with no buildings. A gravel driveway off of NW Saylorville Drive provides access to the PROPERTY. The public thoroughfares adjoining the PROPERTY include NW Saylorville Drive to the north and NW 110<sup>th</sup> Ct to the west. Both of these streets are paved.

### 3.5 CURRENT USES OF ADJOINING PROPERTIES

The adjoining properties and their current use are as follows:

Direction	Adjoining Properties and Current Use
North	NW Saylorville Drive, a public street is located immediately to the north of the PROPERTY. Across NW Saylorville Drive, a manmade pond is located.
East	Agricultural crop land
South	Agricultural crop land
West	NW 110 <sup>th</sup> Ct, a public street is located immediately to the west of the PROPERTY. Located west across NW 110 <sup>th</sup> Ct is agricultural land.

A Plat Map with current owners and their mailing addresses is included in Appendix E.

## 4 USER PROVIDED INFORMATION

### 4.1 TITLE RECORDS

The discussion on title records is included in Section 5.4.3 of this report.

### 4.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

According to the information provided by OWNER and Polk County, Iowa Recorder's Office, there are no environmental liens or activity and use limitations on the property.

### 4.3 SPECIALIZED KNOWLEDGE

Specialized knowledge or experiences that are material to RECs in connection with the PROPERTY were to be conveyed by the OWNER prior to SHEKAR conducting the site reconnaissance. No specialized knowledge or experience relevant to RECs was provided to SHEKAR.

### 4.4 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

The OWNER or NAVFAC did not make commonly known or reasonably ascertainable information available.

### 4.5 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

OWNER provided no information to SHEKAR relevant to OWNER's actual knowledge regarding the reduction in valuation of the property due to environmental issues.

A review of the historical valuation of the PROPERTY by the Polk County Assessor did not indicate reduction in property valuation – see table below for details (Source – Polk County Assessor's webpage: <http://web.assess.co.polk.ia.us/cgi-bin/web/tt/infoqry.cgi?tt=card/card&dp=24000259003006&amp;>).

Historical Values						
Yr	Type	Class	Kind	Land	Bldg	Total
2013	<a href="#">Assessment Roll</a>	Agricultural	Full	\$44,670	\$0	\$44,670
2011	<a href="#">Assessment Roll</a>	Agricultural	Full	\$36,690	\$0	\$36,690
2009	<a href="#">Assessment Roll</a>	Agricultural	Full	\$32,560	\$0	\$32,560
2007	<a href="#">Assessment Roll</a>	Agricultural	Full	\$20,020	\$0	\$20,020
2005	<a href="#">Assessment Roll</a>	Agricultural	Full	\$15,490	\$0	\$15,490
2003	<a href="#">Assessment Roll</a>	Agricultural	Full	\$15,390	\$0	\$15,390

#### **4.6 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION**

The OWNER of the property is Heidi S Steddom and her address is:

- 3615 E Oasis Circle, Mesa, AZ 85215. Phone: 480-252-1715

The PROPERTY is currently leased to:

- Ray Christiansen of Grimes, Iowa (Phone: 515-249-3609).

The property manager's information:

- NA: There is no property manager for the target PROPERTY.

#### **4.7 OTHER**

The OWNER or NAVFAC provided no other information to SHEKAR.

## 5 RECORDS REVIEW

The purpose of the records review component is to obtain and review records that can be used to help identify RECs in connection with the PROPERTY. To obtain a full understanding of these recognized environmental conditions, the following were investigated:

- Standard Environmental Record Sources (Federal and State)
- Additional Environmental Record Sources
- Physical Setting Sources
- Historical Use Information

### 5.1 STANDARD ENVIRONMENTAL RECORD SOURCES

A review of state and federal databases, as required by the ASTM E1527-13 standards, was conducted for SHEKAR by Environmental Data Resources, Inc. (EDR). This EDR Radius Map Report (EDR-RMR), presented in Appendix D, provides information from the review of the databases listed in Table 5-1 to ASTM-specified approximate minimum search distances.

**Table 5-1 Federal and State Databases Reviewed**

<b>Database</b>	<b>Approximate Minimum Search Distance in miles</b>
<b><i>Federal Databases</i></b>	
NPL Site List	1.0
Delisted NPL Site List	0.5
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List	0.5
CERCLIS NFRAP Site List	0.5
RCRA CORRACTS Facilities List	1.0
RCRA non-CORRACTS TSD Facilities List	0.5
RCRA Generators List	0.25
Institutional Control/Engineering Control Registries	0.5
ERNS List	Target Property
<b><i>State and Tribal Database</i></b>	
State and tribal-equivalent CERCLIS	1.0
State and Tribal Landfill and/or Solid Waste Disposal Site Lists	0.5
Leaking Storage Tank (LUST) sites	0.5
Leaking Aboveground Storage Tank (LAST) sites	0.5
Indian LUST sites	0.5
Underground Storage Tank (UST) sites	0.25
AST sites	0.25
Indian UST	0.25
FEMA UST	0.25
Institutional control / engineering control registries	0.5
Voluntary cleanup (VCP) sites	0.5
Indian VCP sites	0.5
State and Tribal Brownfield Sites	0.5

**5.1.1 The Results of Database Review**

The PROPERTY and the properties located within the ASTM-specified radii are not listed in any of the databases searched by EDR.

## 5.2 ADDITIONAL ENVIRONMENTAL RECORD SOURCES

Additional state sources or local (e.g., City or County) sources of environmental records review were conducted for SHEKAR by EDR. This EDR-RMR, presented in Appendix D, provides information from the review of the databases listed in Table 5-2.

**Table 5-2 Additional Databases Reviewed**

Database	Approximate Minimum Search Distance in miles
Local Brownfield Lists	0.5
Local Lists of Landfill / Solid Waste Disposal sites	0.5
Local Lists of Hazardous Waste / Contaminated Sites	
• All Sites	0.5
• Delisted Contaminated Sites Listing	1.0
Other Ascertainable Records	
• RCRA NonGen / NLR	0.25
• DOD (Department of Defense)	1.0
• FUDS (Formerly Used Defense Sites)	1.0
• CONSENT (Superfund Consent Decrees)	1.0
• ROD (Record of Decision)	1.0
• UMTRA (Uranium Mill Tailings Sites)	1.0
US Mines	0.25
Drycleaners	0.25
Indian Reservations	1.0
SCRD (State Coalition for Remediation) Drycleaners	0.5
2020 COR Action (Correction Action Program List)	0.25
Coal Ash	0.5
Coal Ash EPA	0.5
EDR High Risk Historical Records	
• EDR MPG (manufactured gas plants)	1.0
• EDR US Historic Auto Stat (gas stations)	0.25
• EDR US Historic Dry Cleaners	0.25

### 5.2.1 The Results of Additional Environmental Record Sources Review

The PROPERTY and the properties located within the ASTM-specified radii are not listed in any of the databases searched by EDR.

### 5.2.2 Unmapped Sites Review

Due to poor or inadequate address information, EDR could not map the following sites.

**Table 5-2a Unmapped Sites**

Site Names	Database(s)
• Dallas County Engineer	AST
• Dallas County Engineer	AST
• Dallas County Engineer	LUST, UST
• Dallas County Secondary Road Department	FINDS
• Dallas County Engineer	FINDS

To identify the location of unmapped site(s), SHEKAR contacted the Dallas County Secondary Road Department and reviewed the Iowa Department of Natural Resources (IDNR) tank database (<https://programs.iowadnr.gov/tanks/pages/advanced.aspx>). See Appendix E for copies of the IDNR tank database information. The findings of the review are as follows:

1. According to Mr. Bryan DeJong, Dallas County Assistant Engineer; Dallas County Secondary Road Department (DCSRD) had a 550 gallon diesel underground storage tank (UST) at 2787 Hwy 141, Granger, Iowa. The UST was removed and closed. A 2,000 gallon Aboveground Storage Tank (AST) was installed to replace the UST.
2. According to the IDNR database, the DCSRD site in Granger was identified as a Leaking Underground Storage Tanks (LUST) site with a LUST No. 8LTI04. The on-site USTs were removed on 9/23/1991. The IDNR classified the site as 'No Action Required' on 6/1/2001.

The DCSRD AST site is located in the city limits of Granger and is approximately 4 miles NW of the PROPERTY. Therefore, the unmapped site is not a concern.

### 5.3 PHYSICAL SETTING SOURCE(S)

The most recently available USGS 7.5 Minute Topographic Map dated 1976 showing the area on which the property is located was reviewed and is included in Appendix E.

There are no buildings on the PROPERTY or in the immediate vicinity. No additional physical setting sources were sought as no conditions were identified in which hazardous substances or petroleum products are likely to migrate to the property from an off-site source into the soil or groundwater.

## 5.4 HISTORICAL USE INFORMATION ON THE PROPERTY AND ADJOINING PROPERTIES

The objective of consulting historical sources is to develop a history of the previous uses of the PROPERTY and adjoining properties, as well as to identify the likelihood of past uses having led to RECs in connection with the PROPERTY. This section identifies all obvious uses of the PROPERTY from the present, back to the PROPERTY's obvious first developed use, or back to 1940, whichever is earlier. The following standard historical sources were reviewed:

- Aerial photographs
- Fire Insurance Maps
- Recorded Land Title Records
- USGS 7.5 Minute Topographic Maps
- Local Street Directories
- Building Department Records
- Zoning/Land Use Records
- Other Historical Sources

### 5.4.1 Aerial Photographs

Aerial photographs were obtained from EDR for the PROPERTY for the years 1938, 1955, 1963, 1972, 1983, 2000, 2005, 2006, 2007, 2008, 2009, 2010, and 2011. Aerial maps for the years 2012, 2011, 2010, 2009, 2008, 2006, 2004, 2002, 1974, 1960s, 1950s, and 1938 were also downloaded from Polk County GIS website (<http://programs.iowadnr.gov/maps/aerials/>). These maps were reviewed to determine the likelihood of RECs. The results of the review are indicated below:

- 1938 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad nearby.
- 1955 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad nearby.
- 1963 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad nearby.
- 1972 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad nearby.
- 1974 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad nearby.
- 1983 Aerial Map: The PROPERTY and the vicinity are all farm fields. Railroad removed
- 2000 Aerial Map: The PROPERTY and the vicinity are all farm fields.
- 2002 Aerial Map: The PROPERTY and the vicinity are all farm fields. NW Saylorville Rd and borrow area (pond) under construction.
- 2004 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2005 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2006 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2007 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2008 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2009 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2010 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.

- 2011 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.
- 2012 Aerial Map: The PROPERTY and the vicinity are all farm fields. Pond and road seen.

**5.4.2 Fire Insurance and Sanborn Maps**

Fire insurance maps were requested as part of the records search prepared by EDR. No fire insurance or Sanborn maps were available for the PROPERTY area.

**5.4.3 Recorded Land Title Records**

A review of the recorded land title records was performed by SHEKAR at the Polk County Recorder's Office, Des Moines, Iowa on March 26, 2014. Records indicated that the Steddom family has owned the target PROPERTY since October of 1931. The land title records indicate that the transfer of property ownership went from S. J. Steddom to J. Steddom, thence J. Steddom to Gladys B Steddom, thence Gladys Steddom to Marvin Steddom, thence to Steddom trust and Brenton Bank, thence to Todd Steddom, thence to Heidi Steddom the current owner. A summary is presented in Table 5-4 and a Plat Map is included in Appendix E.

**Table 5-4 Land Title Records Review Findings**

	Grantee	Grantor	Date of Filing	Type	Book & Page
1	Steddom, Heidi	Todd & Wife	1/17/2012	Quit Claim Deed	14124 / 477
2	Steddom, Todd Metoyer, Heidi	Brenton Bank	3/28/1996		7367 / 815
3	Steddom, Trust Brenton Bank Trustee	Steddom, Marvin	12/26/1989		6187 / 158
4	Steddom, Marvin	Steddom, Gladys B	2/15/1957		2941 / 28
5	Steddom, Gladys	J. Marion Steddom	2/21/1955		2749 / 253
6**	Steddom, S. J. & Steddom, J. M.	Stowe, Harriet A	10/31/1931		1138 / 42**
7	Stowe, Fred	Waith, Frances	8/18/1905		344 / 631
8	Stowe, Fred	Stowe, Elizabeth	6/11/1891		255 / 196
9	Stowe, Edward	Stowe, Elizabeth	5/21/1888		191 / 419
10	F V Stowe	Franklin & Claire Stowe	7/23/1885	Quit Claim Deed	147 / 182
11	Fredrick V Stowe, Edward Stowe, Francis Stowe	Hamilton & Caroline Daniels	5/7/1885		160 / 264
12***	Inter Urban Railway Co.	Fred V Stowe	6/21/1905		457 / 404

\*\*This deed has an easement conveyance made to Missouri Valley Pipe Line Company to construct, maintain, and operate a pipeline. The deed also indicates the part that is conveyed to Inter-Urban Railway Company (see Appendix E for deed).

\*\*\*This deed indicates sale of a 100' wide strip of land to Inter-Urban Railway Company.

A review of the property deed signed on October 31, 1931 indicates:

- Easement to Missouri Valley Pipeline Company to construct, maintain and operate a pipeline. The length and width of easement and type of pipeline are not indicated on the deed.
- A part of the PROPERTY that was conveyed to Inter-Urban Railway Company.

To identify the location of pipeline, SHEKAR contacted Mr. Don Spursma (see ROC 19, Appendix F) of Iowa Utilities Board. Mr. Spursma recommended that we review the Iowa Department of Transportation (IDOT) County Map for active pipelines and check for pipeline markers on the PROPERTY. According to IDOT County Map, there are no pipelines on the PROPERTY. See Appendix E for a copy of the IDOT County Map. Pipeline markers were not identified on the PROPERTY during site reconnaissance.

SHEKAR contacted Mr. Pete Conrad of the Polk County Auditor's office (see ROC 20, Appendix F) to check whether or not the easement still exists. Mr. Conrad said that the County does not have individual easement records that can be tracked by book and page number. The easements are generally recorded on the property deeds.

A review of the property deed signed on June 21, 1905 indicates:

- Fred V Stowe selling 100' wide strip of land to Inter Urban Railway Company. The deed required construction and maintenance of an underground crossing for stock. The deed also gave permission to build and maintain grade crossing with gates. SHEKAR did not identify underground or grade crossings at the PROPERTY during site reconnaissance.

#### **5.4.4 USGS 7.5 Minute Topographic Maps**

USGS 7.5 Minute Topographic maps dated 1976, 1965, 1918, and 1908 were obtained from EDR and included in Appendix E. These maps were reviewed to determine the likelihood of recognized environmental conditions. The results of the review are indicated below:

- 1976 Topographic Map: The PROPERTY is a vacant land with no buildings. Railroad tracks named Des Moines and Central Iowa are seen to the west of the PROPERTY.
- 1965 Topographic Map: The PROPERTY is a vacant land with no buildings. Railroad tracks named Des Moines and Central Iowa are seen to the west of the PROPERTY.
- 1918 Topographic Map: The PROPERTY is a vacant land with no buildings. Railroad tracks named Electric R.R. are seen to the west of the PROPERTY. This map also indicates a railroad spur running along the eastern boundary of the PROPERTY from south

to north servicing the small settlement of Andrews. This map also indicates that the PROPERTY was located within the military's artillery range. Concerns may include the common practice of railroad companies using used motor oil as a spray for weed control, and any possible contamination of the soil from military ordinance/munitions residue.

- 1908 Topographic Map: The PROPERTY is a vacant land with no buildings. Railroad tracks named Electric R.R. are seen to the west of the PROPERTY.

#### **5.4.5 Local Street Directories**

City Directory for the PROPERTY was obtained from EDR. No directory listing was found for the PROPERTY.

#### **5.4.6 Building Department Records**

According to Bret Vandelune, Planning and Development Manager of the Polk County Public Works Department, there are no records of any building permits relating to the PROPERTY. According to Pete Conrad of the Polk County Auditor's Office, the PROPERTY or immediate vicinity has never been subdivided nor developed.

#### **5.4.7 Zoning/Land Use Records**

According to the Polk County Planning and Development webpage, currently the PROPERTY is zoned ER (Estate Residential District). The surrounding properties except to the one to the west are all zoned ER. The property immediately to the west of the subject PROPERTY is zoned GC (General Commercial District). A Zoning Map is included in Appendix E.

#### **5.4.8 Other Historical Sources**

NA: No other historical sources were discovered.

## 6 SITE RECONNAISSANCE

The purpose of the site reconnaissance component is to obtain information indicating the likelihood of RECs in connection with the PROPERTY. This section includes:

- Methodology and limiting conditions
- General site setting
- Exterior observations, and
- Interior observations

### 6.1 METHODOLOGY AND LIMITING CONDITIONS

Wayne Shannon, project manager, SHEKAR visited the PROPERTY on March 26, 2014. The periphery of the property and all structures on the property were visually observed to the extent not obstructed by bodies of water, adjacent buildings, or other obstacles, and the property was viewed from all adjacent public thoroughfares.

There were no general limitations during the site reconnaissance.

### 6.2 GENERAL SITE SETTING

A general description of the PROPERTY and the surrounding area is described in Section 3.

### 6.3 EXTERIOR OBSERVATIONS

This section describes the utilities, disposal systems, and other improvements on the PROPERTY. Other conditions of concern at the site are also included in this section.

#### 6.3.1 *Potable Water Supply*

NA: The PROPERTY has no buildings or potable water supply.

#### 6.3.2 *Pits, Ponds, or Lagoons*

No pits, ponds, or lagoons were observed on the property.

#### 6.3.3 *Stained Soil or Pavement*

No stained soils were identified during the site visit.

#### 6.3.4 *Stressed Vegetation*

No stressed vegetation was observed during the site visit.

#### 6.3.5 *Solid Waste*

NA: There are no buildings on the PROPERTY, therefore solid waste disposal is not required.

**6.3.6 Wastewater**

NA: The PROPERTY is agricultural cropland with no buildings. The surface runoff from the PROPERTY flows east and southeast towards the unnamed creek/drainage ditch.

**6.3.7 Wells**

Based up on the interviews and/or records reviews and/or site reconnaissance, there are no water wells on the PROPERTY. The EDR-RMP identified several private water wells within one-mile radius of the PROPERTY. No public water supply (PWS) wells are located within one-mile radius of the PROPERTY.

**6.3.8 Septic Systems**

NA: There are no known septic systems at the site.

**6.3.9 Storage Tanks**

NA: There are no known storage tanks on the PROPERTY.

**6.3.10 Odors**

No strong, pungent, or noxious odors were observed during the site visit.

**6.3.11 Pools of Liquid**

No pools of liquid or standing surface water were observed during the site visit.

**6.3.12 Drums**

No drums were observed during the site visit.

**6.3.13 Hazardous Substances and Petroleum Products Containers**

The PROPERTY is currently agricultural cropland. Neither hazardous substance nor petroleum product containers were identified during the site reconnaissance.

**6.3.14 Unidentified Substance Containers**

No unidentified substance containers were identified on the PROPERTY during the site reconnaissance.

**6.3.15 PCBs**

Buried power lines and electrical transformer were identified along the adjoining property to the west of the Steddom PROPERTY, and west of NW 110<sup>th</sup> Ct. A transformer located at the SW corner of the intersection NW Saylorville Drive and NW 110<sup>th</sup> Ct has a sticker indicating no PCBs. See Photo No. 33 (Appendix G) for details. No other transformers were identified in the vicinity of the PROPERTY.

**6.3.16 Railroad and Railroad Crossings**

Physical evidence of a railroad was not identified during the site reconnaissance. Neither the underground nor the grade railroad crossings that were mentioned in the property deed dated June 21, 1905 were identified on the PROPERTY. A foundation was identified at the SE corner of the PROPERTY and is discussed in section 6.4.

## **6.4 INTERIOR OBSERVATIONS**

There are no buildings on the PROPERTY. A small foundation, possibly for a historical building was identified adjacent to the former railroad grade at the SE corner of the PROPERTY. The area of the foundation and wall may have been serviced by the historical railroad spur that ran along the east side of the PROPERTY as identified in the 1918 Topographical map (Appendix E). The area of the foundation may have been related to the artillery range also identified on the 1918 Topographical map.

### **6.4.1 Heating/Cooling System**

NA: There are no buildings on the PROPERTY.

### **6.4.2 Stains or Corrosion**

NA: There are no buildings on the PROPERTY.

### **6.4.3 Drains and Sumps**

NA: There are no buildings on the PROPERTY.

### **6.4.4 Other Utilities**

NA: There are no buildings on the PROPERTY.

## 6.5 SITE GEOLOGY/HYDROGEOLOGY

According to the USGS web page

(<http://www2.nature.nps.gov/geology/usgsnps/province/province.html>) the PROPERTY is located in Interior Plains Province. The Interior Plains is a vast region that spreads across the stable core of North America. This area had formed when several small continents collided and welded together well over a billion years ago, during the Precambrian. Precambrian metamorphic and igneous rocks now form the basement of the Interior Plains and make up the stable nucleus of North America.

According to the U.S. Department of Agriculture's (USDA) Soil Conservation Services (SCS) soil maps, the PROPERTY soil components are identified as Webster and Clarion (Pages A-5 through A-8 of EDR-RMR). Both Clarion and Webster soils predominantly consist of silty clay loam soils of various thicknesses. Clarion soils are well drained and Webster soils are poorly drained.

Based on the general topography of the area, the groundwater is likely to flow towards the east and southeast. The nearest surface water body in the vicinity of the PROPERTY is Saylorville Lake, which is located approximately 1.75 miles to the east. A manmade pond is located to the north of the PROPERTY across from NW Saylorville Drive. This pond area used to be a vacant land until the State of Iowa used this land as a borrow pit for the construction of NW Saylorville Drive and the associated interchange off of Highway 141. A review of the 2000 aerial map shows the pond area as vacant land. However, 2002 aerial map shows construction activity at the pond area. The borrow pit eventually became a pond with the seepage of groundwater and surface water runoff from the surrounding area.

Surface runoff from the PROPERTY flows eastward. An unnamed creek/drainage ditch is located to the east of the PROPERTY. During the site reconnaissance, the creek had a minimal amount of stagnant water with no flow observed. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed on the PROPERTY during this investigation.

According to the EPA webpage

([http://www.epa.gov/safewater/sourcewater/pubs/qrg\\_ssamap\\_req7.pdf](http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_req7.pdf)) the property does not overlay a sole source aquifer.

## 6.6 WETLANDS

During the site visit, no indications of current or past wetlands were observed on the PROPERTY or in the immediate vicinity. A National Wetlands Inventory map from the U.S. Fish and Wildlife Service indicates the nearest wetlands to be to the south and west along Beaver Creek. The Beaver Creek is located about 3,000 feet south from the south edge of the PROPERTY. See attached Wetland Map for details in Appendix E.

## 6.7 FLOODPLAINS

Federal Emergency Management Agency (FEMA) flood insurance map number 19169C, was reviewed for the target PROPERTY. The FEMA map (Appendix E) indicated the target PROPERTY is outside the 100-year or 500-year flood zone. The properties in the immediate vicinity are not in flood plain either.

## 6.8 ARCHAEOLOGICAL, CULTURAL, AND HISTORIC RESOURCES

An archaeological, cultural and historic resources survey was conducted by contacting the Office of the State Archaeologist (OSA) to determine if there were any such resources on or adjacent to the PROPERTY. According to Shirley Schermer, Director, Burials Program of the OSA, no historical burials are recorded on or near the site, however, this does not preclude any possible unknown burials (ROC 15, Appendix F). Ms. Schermer also reported that there are no known archaeological sites on the PROPERTY, but that there are two sites within the township section and that there are two more sites near the eastern border of the Section 16. These sites are of artifact scatters and historical farmstead.

## 6.9 ENDANGERED SPECIES

An endangered species survey was conducted by SHEKAR to determine if there were any such resources on or adjacent to the site. According to Loren Lown of the Polk County Conservation Commission, "chances are slim that any species listed by Federal or State statute would be present." And "very few species of concern will be found in an agricultural row crop field and only as an occasional visitor." See ROC 17 (Appendix F) for email communication with Ms. Lown. The listed endangered species is available at [www.iowadnr.gov/Environment/ThreatenedEndangered.aspx](http://www.iowadnr.gov/Environment/ThreatenedEndangered.aspx). No endangered species were sighted during our site reconnaissance survey.

## 6.10 RADON

The US EPA (webpage: <http://www.epa.gov/radon/zonemap.html#mapcolors>) has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L).

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Review of the EPA Map of Radon Zones (Appendix E) places the PROPERTY in Zone 1, where average predicted radon levels exceed 4.0 pCi/L/. There are no buildings at the PROPERTY. Therefore, radon is not a concern.

## **6.11 NOISE**

Noise studies were not conducted. No loud or disturbing noises were observed during the site reconnaissance. Vehicle noise from adjoining streets and highways is typical at the PROPERTY.

## **6.12 HIGH VOLTAGE POWER LINES**

Buried power lines and transformer are located immediately west of NW 110th Ct. Signage on the transformer indicates that there is no PCB.s contained therein. No high voltage overhead power lines are located on the PROPERTY or in the immediate vicinity.

## **6.13 ANY OTHER CONDITIONS OF CONCERN**

NA: No other condition or concern was identified during the site walkover.

## **7 INTERVIEWS**

The purpose of the interviews is to obtain information indicating the presence of RECs in connection with the property. As part of this Phase I ESA, a questionnaire regarding the site history was sent to Heidi Steddom (owner), and Ray Christiansen (occupant) for completion to the best of their knowledge. The completed questionnaires are included in Appendix F.

### **7.1 INTERVIEW WITH OWNERS**

Ms. Heidi Steddom (Ph: 480- 252-1715): Ms. Steddom (current owner) answered all questions pertaining to the PROPERTY as asked and completed the Property Questionnaire (see Appendix F).

Mr. Shannon, Project Manager of SHEKAR, made several telephone calls and left messages to contact Mr. Todd Steddom (previous owner). Mr. Steddom called back on April 17, 2014 (see ROC 21, Appendix F) and said: "he is unaware of any past industrial activity/use of the PROPERTY; no storage of pesticides, chemicals, or petroleum products on the PROPERTY; and the foundation and wall at the SE corner of the PROPERTY was for the railroad".

### **7.2 INTERVIEW WITH SITE MANAGER**

There is no Site Manager for the PROPERTY. However, Monte Lorenzen (Ph: 515- 453-7221), a real estate agent with Prudential First Realty gave permission for conducting a site walkthrough and to take pictures (see ROC 8, Appendix F).

### **7.3 INTERVIEWS WITH OCCUPANTS**

Mr. Ray Christiansen (Ph: 515-249-3609): Discussed with Mr. Christiansen about overall operation and land usage. He said that the PROPERTY is strictly used as an agricultural cropland.

### **7.4 INTERVIEWS WITH LOCAL GOVERNMENT OFFICIALS**

Mr. Bryan DeJong of the Dallas County Engineering Department – (Ph: 515-371-9842): Mr. DeJong provided information and a copy of the County's AST's located within the corporate limits of Granger, IA. All of the County's UST's were removed and remediated (see ROC 2, Appendix F).

Mr. Pete Conrad, Polk County Auditor's office– (Ph: 515-286-3097): Mr. Conrad provided a recorded list of ownership for the PROPERTY as well as a plat map of the area. Mr. Conrad also provided guidance on locating other records with the county (see ROC 3 & 20, Appendix F).

Ms. Stephanie Hall, Polk County Recorder's office (Ph: 515-286-2274): Ms. Hall provided copies of the deed transfers for the PROPERTY (see ROC 4, Appendix F).

Ms. Rose Huston, Polk County Recorder's office (Ph: 515-286-2274): Ms. Huston reported that there are no liens on the PROPERTY (see ROC 5, Appendix F).

Ms. Rhonda Duncan, Polk County Assessor's office (Ph: 515- 286-3014): Ms. Duncan provided plats of the area including adjoining properties and owners of these properties (see ROC 6, Appendix F).

Mr. Jerry Moore, Polk County Planning Commission (Ph: 515-286-3705): Mr. Moore provided the following maps; aerials, flood, zoning, and topographical (see ROC 7, Appendix F).

Ms. Shirley Schermer, Office of the State Archaeologist Burial Program-(319-384-0740: Ms. Schermer reported that no known historical burials are located on or near the property. She also reported that there are no recorded archaeological sites on the PROPERTY but that there are two sites located within the township section with an additional two on or near the eastern border of the section. All are historic artifact scatters or historic farmstead sites (see ROC 11 & 15, Appendix F)

Mr. Brett Vandelune, Polk County Planning Commission (Ph: 515-286-3705): Mr. Vandelune reported that there were no building permits issued for the PROPERTY (see ROC 16, Appendix F).

Mr. Jarrod Sturtz, Fire Chief of the Granger Fire Department (Ph: 515-999-2210): Mr. Sturtz reported that other than an occasional grass fire on or near the property, no major fires or emergency situations or concerns have occurred or recorded (see ROC 17, Appendix F).

## **7.5 INTERVIEWS WITH OTHERS**

Ms. Khristen Lown, U.S. Fish and Wildlife Commission (Ph: 309-757-5800 ext. 215): Gave us a webpage address to access the Wetlands Map for the area (see ROC 12, Appendix F).

Ms. Christine Schwake, Iowa Dept. of Natural Resources-(Ph: 515- 281-6615): Suggested that we interview the PROPERTY owner to see if she has received a wetlands delineation notification from NRCS (see ROC 9, Appendix F).

Mr. Don Spursma, Iowa Utilities Board (Ph: 515-725-7300): Recommended that we check the Iowa Department of Transportation (IDOT) county maps for the location of active pipelines. Mr. Spursma said, generally there will be pipeline markers on the PROPERTY to indicate the location of pipeline (see ROC 19, Appendix F).

## 8 FINDINGS, OPINION, AND CONCLUSIONS

### 8.1 FINDINGS

This Phase I ESA was conducted by SHEKAR at the target PROPERTY located in Jefferson Township, Polk County, Iowa. The PROPERTY has been a family farm of the Steddom's since 1931. A suspect recognized environmental condition was identified in conjunction with the site and is as follows:

- The 1918 Topographic Map indicates a railroad spur running along the eastern border of the PROPERTY from south to north servicing the small settlement of Andrews, Iowa. This map also indicates that the PROPERTY was located within the military's artillery range.
- A review of the property deed dated June 21, 1905 indicates Inter-Urban Railway Company purchasing a tract of the PROPERTY.
- There are no buildings on the PROPERTY. However, a small historical foundation was identified along with a concrete notched wall at the SE corner of the PROPERTY during the site reconnaissance. This foundation and notched wall may have serviced the historical railroad spur that ran along the eastern border of the PROPERTY (see 1918 Topographical map in Appendix E). The area of the foundation may have been related to the artillery range also identified on the 1918 Topographical map.
- Concerns may include the common practice of railroad companies using used motor oil as a spray for weed control, and any possible contamination of the soil and groundwater from military ordinance/munitions residue.
- Table 8-1 provides the coordinates of the corners of the foundation and concrete wall. An Ashtech ProMark 100, a survey grade GPS unit was used to map the coordinates.
- The property deed dated October 31, 1931 conveyed an easement to Missouri Valley Pipeline Company to construct, maintain and operate a pipeline. SHEKAR's research could not identify the location or type of pipeline or whether the pipeline was ever built.
- No data gaps were identified that affected the ability to identify recognized environmental conditions at the property.

**Table 8-1 Coordinates of RECs**

	<b>Description</b>	<b>Northing</b>	<b>Easting</b>
1	Corner of Foundation	633842.71	1567872.01
2	Corner of Foundation	633852.02	1567871.96
3	Corner of Foundation	633837.43	1567879.09
4	Corner of Foundation	633847.23	1567878.71
5	Edge of Concrete Wall	633858.08	1567867.87
6	Edge of Concrete Wall	633826.70	1567866.82

## 8.2 OPINION

It is the opinion of the preparer(s) of this report that additional investigation be conducted to identify possible contamination of soil and groundwater due to railroad and military artillery operation. Additional investigation should also be conducted to identify the status of the easement conveyed to Missouri Valley Pipeline Company and the existence or non-existence of an active or an abandoned pipeline.

## 8.3 CONCLUSIONS

Chandra Shekar of SHEKAR has performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM E1527-13 on the PROPERTY located in Jefferson Township, Polk County, Iowa. Any exceptions to, or deletions from, this practice are described in Section 2.4 of this report. This assessment has revealed an evidence of recognized environmental condition at the PROPERTY and additional investigation is recommended.

## 9 DEVIATIONS

All deletions and deviations from the ASTM E1527-13 standards, are listed in the applicable report sections.

## **10 ADDITIONAL SERVICES**

No additional services were contracted beyond the scope of this Phase I ESA.

## 11 REFERENCES

- ASTM E1527-13: *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.*
- THE EDR RADIUS MAP REPORT WITH GEOCHECK, Inquiry Number: 3889027.2s, Dated March 24, 2014.

## 12 SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

SHEKAR has performed this Phase I ESA in conformance with ASTM E1527-13. This report was prepared using information obtained through government agencies and interviews at the time of the investigation. Information obtained from outside sources, including federal, state and local government files were assumed complete. If SHEKAR receives additional information that may alter the statements made within this report, SHEKAR reserves the right to revise this report or issue an addendum statement.

This Phase I ESA was performed by Chandra Shekar, who holds a BS & MS in degrees in civil and environmental engineering. Mr. Shekar is employed with SHEKAR, specializing in the hazardous waste/environmental field since 1999 and is a registered Professional Engineer.

"I, declare that, to the best of my professional knowledge and belief, I, meet the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312" and

"I, have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."



---

Chandra Shekar, PE  
President, Shekar Engineering

**APPENDIX A**

**DETAILED SCOPE-OF-SERVICES**

**APPENDIX B**

**SPECIAL CONDITIONS, LIMITATIONS, AND SPECIAL  
CONTRACTUAL CONDITIONS BETWEEN USER AND  
ENVIRONMENTAL PROFESSIONAL**

**Phase I Environmental Site Assessment**  
**Special Conditions and Limitations**

**Third Party Information**

SHEKAR, hereinafter referenced as "Engineer," will evaluate the information which it acquires for this Phase I Environmental Site Assessment Report (Report), but Engineer shall assume no responsibility for the truth or accuracy of any information provided to Engineer by others or for the lack of information that is intentionally or negligently withheld from Engineer by others.

**Additional Information**

In the event Engineer discovers additional information following completion of the Report, Engineer will endeavor to provide such information to Client, but Engineer will not be liable for not providing the information to Client or any other party.

**Scope of Report**

The purpose of this Phase I ESA was to identify and define recognized environmental conditions within the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. As such, this Phase I ESA is intended to permit the Client to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA liability; that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC 9601(35)(B). This Phase I ESA was conducted in accordance with ASTM E 1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental site Assessment Process (ASTM 2005) and consisted of four components including records review, site reconnaissance, interviews, and this Phase I ESA report.

Although the Report may be prepared in accordance with ASTM Standard E-1527-13, Engineer does not represent that this Report, in and of itself, constitutes "all appropriate inquiry" into the previous ownership and uses of the Property, and the Report shall be construed neither as a legal opinion nor as compliance with any environmental law, "innocent landowner defense," or "due diligence inquiry."

**Standard of Care**

Engineer has exercised the same degree of care, skill, and diligence in the performance of professional design services that is part of the Services as is ordinarily possessed and exercised by a professional engineer under similar circumstances. If, during the one year period following completion of the services, it is shown there is an error in the Services caused by Engineer's failure to meet such standards and Client has notified Engineer in writing of any such error within that period, Engineer shall re-perform, at no additional cost to Client, such Services within the original scope of services as may be necessary to remedy such error. No other warranty, express or implied, is included in any drawing, specification, report or opinion produced.

The Report shall not constitute a warranty, guaranty, or representation (1) of the absolute absence of hazardous substances, petroleum products, or otherwise harmful substances or conditions on the Property or (2) if such substances, products, or conditions are found on the Property, that the assessments accurately define the degree and extent of possible contamination of the Property.

The information and conclusions presented in the Report shall be valid only for the circumstance of the Property assessed as described in the Report as the Property existed during the time period of the assessment.

### **Reuse of Documents**

All documents, including, but not limited to, drawings, specifications, and computer software prepared by Engineer are instruments of service in respect to the Project. They are not intended or represented to be suitable for reuse by Client or others on extensions of the Project or on any other project. Any reuse without prior written verification or adaptation by Engineer for the specific purpose intended will be at user's sole risk and without liability or legal exposure to Engineer. User shall defend, indemnify, and hold harmless Engineer against all claims, losses, damages, injuries, and expenses, including attorney's fees, arising out of or resulting from such reuse. Any verification or adaptation of documents will entitle Engineer to additional compensation at rates to be agreed upon by user and Engineer.

### **Third Party Reliance**

Nothing in this document shall be construed to give any rights or benefits to anyone other than Client and Engineer. Except as described in the "Reliance by Lender" section that follows, no third party may rely upon the report or any other documents or information provided by Engineer without the prior written approval of an officer of the Engineer, including the third party's agreement to accept Engineer's standard terms and conditions including limitation of liability, and the disclaimers contained in the Report. Engineer's Report or correspondence will not be used for the purpose of advertising, sales promotion, or endorsement of any Client interests, including raising investment capital or recommending investment decisions, or other publicity purposes or relied upon in any prospectus or offering circular.

### **Reliance by Lender**

Should Client present this report to a Lender in connection with a loan transaction involving the subject site, Lender may rely on this report for the purposes consistent with the loan transaction; provided, however, that (1) the Lender shall be subject to the same terms and conditions agreed to by Client; (2) Engineer's total liability to Lender and all other parties shall not exceed compensation received by Engineer for preparation of this report; (3) any obligation imposed on the Client by the terms and conditions shall only apply to the Lender if the Lender becomes an owner or operator of the subject site; and (4) any indemnification provision which obligates the Client is assumed by the Lender only if the Lender becomes an owner or operator of the subject site and only with respect to the actions of the Lender, not those of the Client or Engineer, it being specifically understood that the Lender has no responsibility under any circumstances for indemnifying Engineer for the actions of the Client.

### **Recognized Environmental Condition**

*Recognized environmental condition* means the presence or likely presence of a hazardous substance or petroleum product on a property under conditions that indicate an existing release, past release, or material threat of release into structures on the property or into the ground, groundwater, or surface water of the property. The term recognized environmental condition is not intended to include any *de minimis* condition that generally does not present a material risk of harm to public health or the environment and that generally would not be the subject of enforcement action if brought to the attention of appropriate governmental agencies.

### **Invasive Investigation**

It should be recognized that this study was not intended to be a definitive investigation of contamination at the subject property and the conclusions provided are not necessarily inclusive of all the possible conditions. Given that the scope of services for this investigation was limited and that exploratory borings, soil and/or groundwater sampling or analytical testing was not undertaken, it is possible that currently unrecognized subsurface contamination may exist at the site. Observation under floors, above ceilings, behind walls, within surface or subsurface soils, within confined spaces, or within any surface or ground waters has not been performed. Engineer

makes no representations regarding the value or marketability of the site or the suitability for any particular use, and none should be inferred based on this report.

**Groundwater Gradient**

No subsurface investigation of groundwater gradients has been performed. While discussion of apparent topographic gradient may be included in this report, this apparent surface gradient may not necessarily correspond with actual groundwater gradients on, or in the vicinity of, the subject property. Site specific groundwater gradients may only be determined through subsurface potentiometric investigation.

**Analyses**

No analyses of site matrices were performed to determine their constituents.

**USTs**

Investigation for underground storage tanks (USTs) consisted of a visual inspection of the site, interviews with site representatives, and a regulatory records review. No techniques were employed to detect the presence of buried tanks.

**Conclusions**

Conclusions in this report are based upon visual observations made at the site and information received prior to the date of this report. Since site conditions may change significantly over a short period of time and additional data may become available, data reported and conclusions drawn in this report are limited to current conditions and may not be relied upon on a significantly later date.

**Regulatory Compliance**

This investigation is not an environmental compliance audit. While some observations and discussion in this report address conditions which may be regulated, the regulatory compliance of those conditions is outside the scope of this investigation.

**Other Transactions**

This document does not address issues raised in other transactions such as purchases of business entities, their assets, or any other interest therein, that may involve environmental liabilities pertaining to properties previously owned or operated or other off-site environmental liabilities.

**Exclusions to Scope of Work**

ASTM E 1527-13 excludes certain hazards due to their exclusion from CERCLA and its amendments. Therefore, this report does not include investigation for asbestos, radionuclides such as radon or for lead in drinking water and lead-based paint.

**Format**

This document may include slight deviations in the exact format specified in E 1527-05 in order to account for site specific conditions and to improve the readability and usefulness of the report.

**Chain-of-Title**

Chain-of-Title information is typically provided by the Client. However, if performed within the scope of E 1527-13, Engineer's chain-of-title review is completed for the sole purpose of characterizing past site usage. Engineer is not a professional title company and makes no guarantee, warranty, or other representation, expressed or implied, that the resulting listing represents a comprehensive delineation of past site ownership or tenancy for title conveyance purposes.

**Uncertainty**

No environmental site assessment can wholly eliminate uncertainty regarding the potential for *recognized environmental conditions* in connection with a property. Similarly, *no environmental professional* can be expected to visually observe every detail within a property or every record concerning a property. Therefore, the completion of this report in conjunction with E 1527-05 and the professional judgment of the contributors to this report is intended to reduce, but not eliminate, uncertainty regarding the potential for *recognized environmental conditions* in connection with the subject property.

**Legal Consultation**

Nothing in this report constitutes a legal opinion or legal advice. For information regarding specific individual or organizational liability, Engineer recommends consultation with independent legal counsel.

## **APPENDIX C**

### **SITE VICINITY MAP AND SITE MAP**

**APPENDIX D**

**REGULATORY RECORDS DOCUMENTATION**

## **APPENDIX E**

### **HISTORICAL RESEARCH DOCUMENTATION**

1. THE EDR-CITY DIRECTORY IMAGE REPORT
2. THE EDR AERIAL PHOTO DECADE PACKAGE & OTHER AERIAL MAPS
3. CERTIFIED SANBORN MAP REPORT
4. EDR HISTORICAL TOPOGRAPHIC MAP REPORT
5. TOPOGRAPHICAL MAPS FROM POLK COUNTY GIS
6. ZONING MAP
7. WETLAND MAP
8. EPA RADON MAP
9. UNMAPPED SITE INFORMATION
10. PLAT MAP
11. 100-YEAR FLOOD PLAIN MAP
12. 500-YEAR FLOOD PLAIN MAP
13. IDOT COUNTY MAP
14. WARRANTY DEEDS



## **APPENDIX F**

# **PROPERTY QUESTIONNAIRES & INTERVIEW DOCUMENTATION**

**APPENDIX G**

**PHOTOGRAPHS**

## **APPENDIX H**

# **QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL(S)**



# **Phase II Environmental Site Assessment Report**

**HEIDI STEDDOM'S PROPERTY  
Part of S  $\frac{1}{2}$  of NW  $\frac{1}{4}$  of Section 16  
Jefferson Township  
Polk County, Iowa**

**DATE**

**April 13, 2015**

**Prepared for:**

**NAVFAC MIDWEST PWD  
Attn: Judith A Honold  
PWD CENTRAL FEAD  
520 Dewey Ave., Building 5  
Great Lakes, IL 60088-2913  
Phone: 847-688-3368 Ext 107**

**Project #: N40083-14-M-1022**

**Prepared by:**

**Shekar Engineering**

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## Acronyms Used in this Report

AST	Above Ground Storage Tank
ASTM	ASTM International
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CORRACTS	Corrective Action Report
CONSENT	Superfund Consent Decrees
DEP	Department of Environmental Protection
EDR	Environmental Data Resources
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GPS	Global Positioning System
GSV	Geophysical System Verification
HAZWOPER	Hazardous Waste Operations and Emergency Response
Hz	Hertz
ISO	industry standard object
IVS	Instrument Verification Strip
LUST	Leaking Underground Storage Tank
MEC	Munitions and Explosives of Concern
MPPEH	Materials Potentially Presenting Explosive Hazard
MQO	Measurement Quality Objectives
mV	Millivolts
NAD83	North American Datum of 1983
NRL	Naval Research Lab
NPL	National Priority List
OHM	Oil and hazardous materials
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
QC	Quality Control
RCRA	Resources Conservation and Recovery Act
RTK	Real-Time Kinematic
REC	Recognized Environmental Condition
ROD	Record of Decision
SHWS	State Hazardous Waste Sites
SUXOS	Senior Unexploded Ordnance Supervisor
UST	Underground Storage Tank
UXO	Unexploded Ordnance

## 1 SUMMARY

This Phase II Environmental Site Assessment (ESA) was conducted on Heidi Steddom's property (hereinafter referred to as PROPERTY or target PROPERTY or SITE) by Shekar Engineering (hereinafter referred to as SHEKAR), Des Moines, Iowa for Naval Facility Engineering Command Midwest (hereinafter referred to as NAVFAC), Great Lakes, Illinois.

The PROPERTY is a tract of farm land in Jefferson Township, Polk County, Iowa, which is approximately 24.42 acres in area. There are no buildings on the PROPERTY and is currently used for agricultural purposes. Access to the PROPERTY is from NW Saylorville Drive. The PROPERTY and the immediate vicinity to the north, east, and south are zoned ER (Estate Residential District); and the property immediately to the west is zoned GC (General Commercial).

A Phase I ESA was completed by SHEKAR in April of 2014. The findings of Phase I ESA are:

- Several private water wells were located within one-mile radius of the PROPERTY.
- A drainage ditch is located on the adjoining property to the east with a minimal amount of water discharged from a field tile.
- Usage of the PROPERTY has been for the agricultural purposes in recent years.
- A site reconnaissance, review of the 1918 Topographic Map, and property deeds revealed possible recognized environmental conditions (RECs) at the PROPERTY. The 1918 Topographic Map indicates a railroad spur running along the eastern border of the PROPERTY from south to north servicing the small settlement of Andrews, Iowa. This map also indicated that the PROPERTY was located within the military's artillery range. A property deed dated October 31, 1931 conveyed an easement to Missouri Valley Pipeline Company. SHEKAR's research could not identify the location or type of pipeline or whether the pipeline was ever built.

The Phase II ESA identified the following:

- Analytical results of soil samples collected from borings B-3, B-5, and B-6 indicated low concentrations of polycyclic aromatic hydrocarbons (PAHs). A rinsate sample (composite sample of the decon water) exhibited low concentrations of Phthalates and metals.
- None of the soil or rinsate samples exhibited contaminant concentrations above the Iowa Statewide Standards for Contaminants in Soil and Groundwater.
- Groundwater samples were not collected during this ESA.
- An EM61-MK2 Survey identified a total of 2208 anomalies.
- An intrusive anomaly excavation of two hundred targets did not identify military materials or munitions of any kind.

Based on the soil sample results, EM61-MK2 survey, and intrusive anomaly excavation, SHEKAR recommends an Un-exploded Ordinance (UXO) team in a construction support role for any proposed excavation that are deeper than 3 feet.

## **2 INTRODUCTION**

This Phase II Environmental Site Assessment (ESA) was performed on Heidi Steddom's property (PROPERTY) by Shekar Engineering (SHEKAR), Des Moines, Iowa for Naval Facility Engineering Command Midwest (NAVFAC), Great Lakes, Illinois. The PROPERTY is a tract of agricultural land in Polk County, Iowa, which is currently owned by Heidi Steddom (OWNER) of Mesa, Arizona. This Phase II ESA was performed in conformance with the NAVFAC provided scope of work and scope and limitations of ASTM Practice E 1903-11.

### **2.1 PURPOSE**

The purpose of this Phase II ESA is to evaluate the recognized environmental conditions (RECs) identified at the PROPERTY in the Phase I ESA completed by SHEKAR on April 10, 2014. To accomplish the goals of this Phase II ESA, the following activities were conducted:

- Soil borings were drilled and soil samples were collected for laboratory analysis to determine if there are any soil contamination associated with the former railroad operation and military ordinance/munitions residue.
- An EM-61 Survey was conducted to determine, (1) if there are any Munitions or Explosives of Concern (MEC) and (2) to identify the existence of any pipeline or underground storage tanks (USTs) on the PROPERTY.
- An intrusive anomaly excavation of two hundred targets was conducted to identify military materials or munitions of any kind.

### **2.2 DETAILED SCOPE-OF-SERVICES**

A detailed scope-of-services, which was provided by NAVFAC for this Phase II ESA is presented in Appendix A.

### **2.3 SIGNIFICANT ASSUMPTIONS**

Any significant assumptions in conducting this Phase II ESA or in preparation of this report have been detailed in relevant sections of this report.

### **2.4 LIMITATIONS AND EXCEPTIONS**

This report is an instrument of service prepared by SHEKAR for the exclusive use of NAVFAC. The findings and opinions conveyed in this Phase II ESA report are based on information obtained from a variety of sources enumerated herein, which SHEKAR considers reliable. Nonetheless, SHEKAR cannot and does not guarantee the reliability of the information obtained from various sources and contained within this report.

This Phase II ESA was conducted per NAVFC provided scope of work. Soil samples were collected for laboratory analysis in the vicinity of former railroad and foundation wall. Groundwater samples for laboratory analysis were not collected during this assessment.

## **2.5 SPECIAL TERMS AND CONDITIONS**

See Section 5.0 of the attachment in Appendix A for Special Terms and Conditions.

## **2.6 USER RELIANCE**

No party other than NAVFAC, and specific parties authorized in the agreement with SHEKAR, may rely on this instrument of SHEKAR's service. With the permission of NAVFAC, SHEKAR will meet a third party to help identify the additional services required, if any, to permit such third party to rely on the information contained in this report. Such third party may rely on the information contained in this report under the same contractual, technological, and other limitations to which NAVFAC has agreed.

### 3 BACKGROUND

#### 3.1 LOCATION AND LEGAL DESCRIPTION

The PROPERTY is located at the SE corner of the intersection Northwest Saylorville Drive and NW 110<sup>th</sup> Ct in Jefferson Township, Polk County, Iowa, and is referenced by the following:

- That part of S ½ of NW ¼ of Section 16, Township 80 N, Range 25 W.

#### 3.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The PROPERTY is an agricultural land approximately 24.42 acres in area. Figure 3-1 and 3-2 are site vicinity maps showing the property location with respect to adjoining roads. Additional site maps are presented in Appendix B.

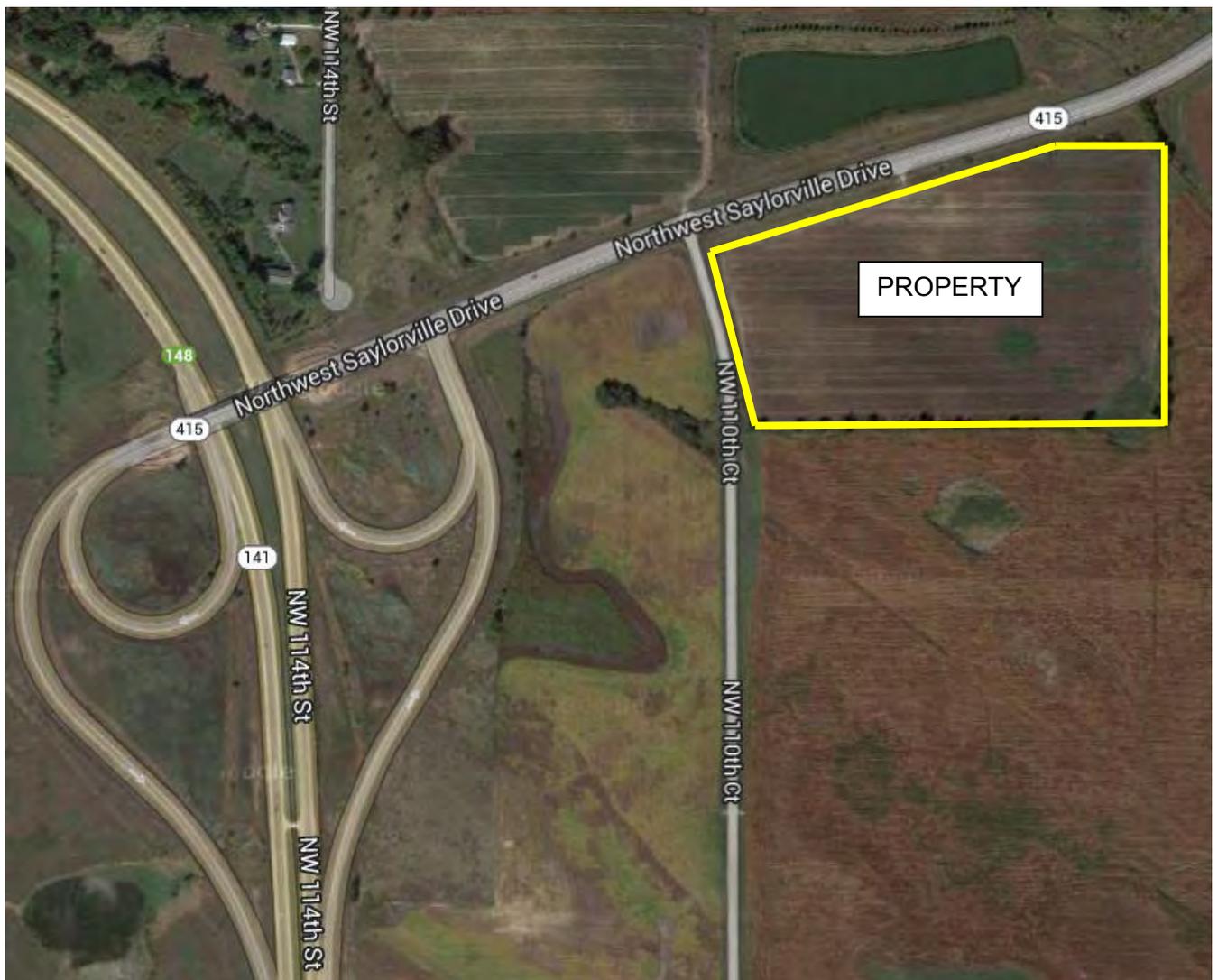


Figure 3-1 Site Vicinity Map

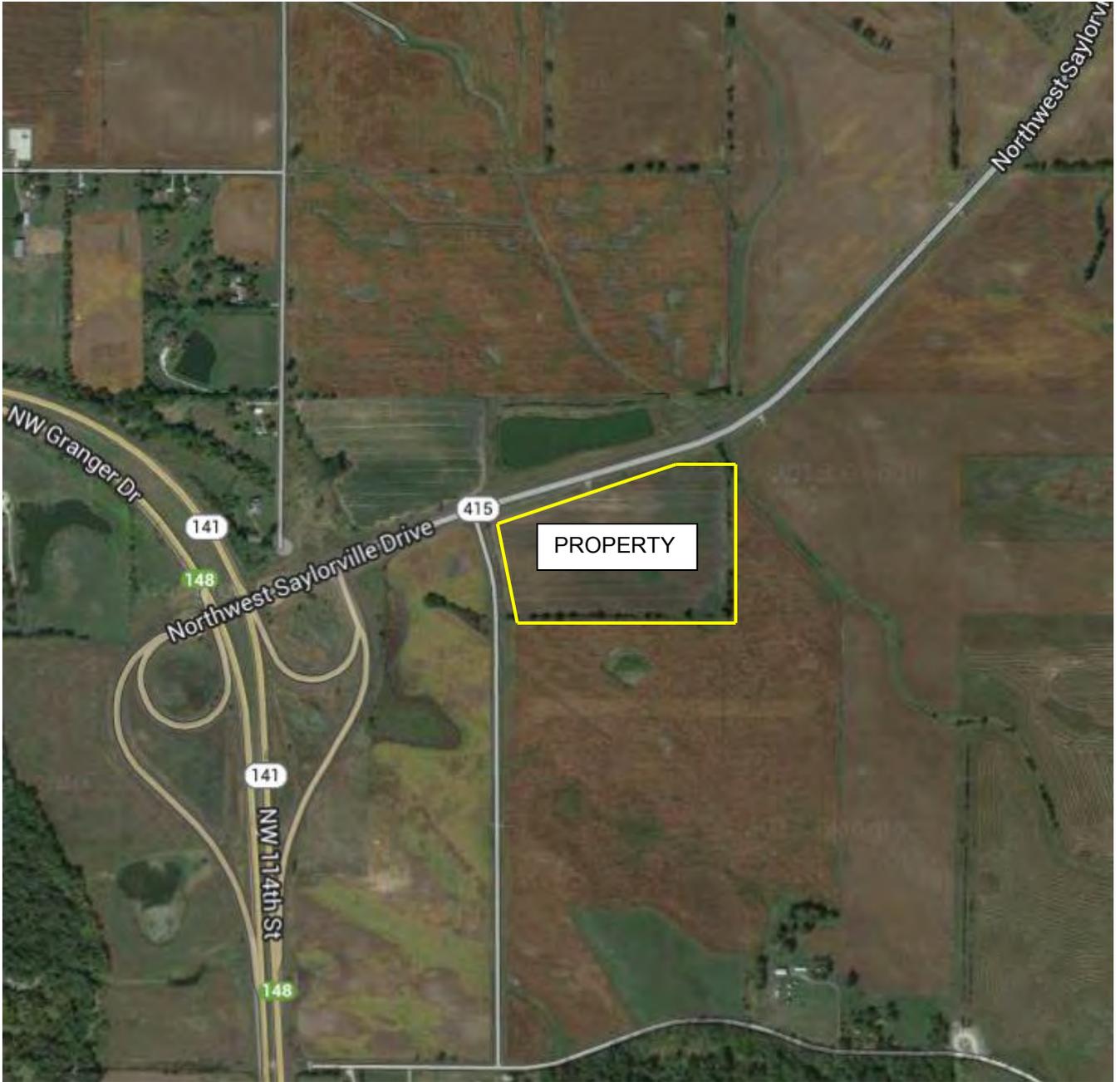


Figure 3-2: Site Vicinity Map

### 3.3 CURRENT AND PAST USES OF THE PROPERTY

The PROPERTY is currently used for agricultural purposes. There are no buildings on the PROPERTY. Based up on the historical records review; (1) the PROPERTY has been used as an agricultural land by the Steddom family since their deed dated October of 1931; (2) the PROPERTY was never leased to or owned by the US government for use as a range; (3) a lease for a pipeline was found but it appears that the pipe line was never built; (4) the 1918 topographical map indicates that a railroad spur ran along the eastern border of the PROPERTY

from south to north, and that the PROPERTY was within the bounds of the military's artillery range. See Figure 3-3 for 1918 Topographical Map.

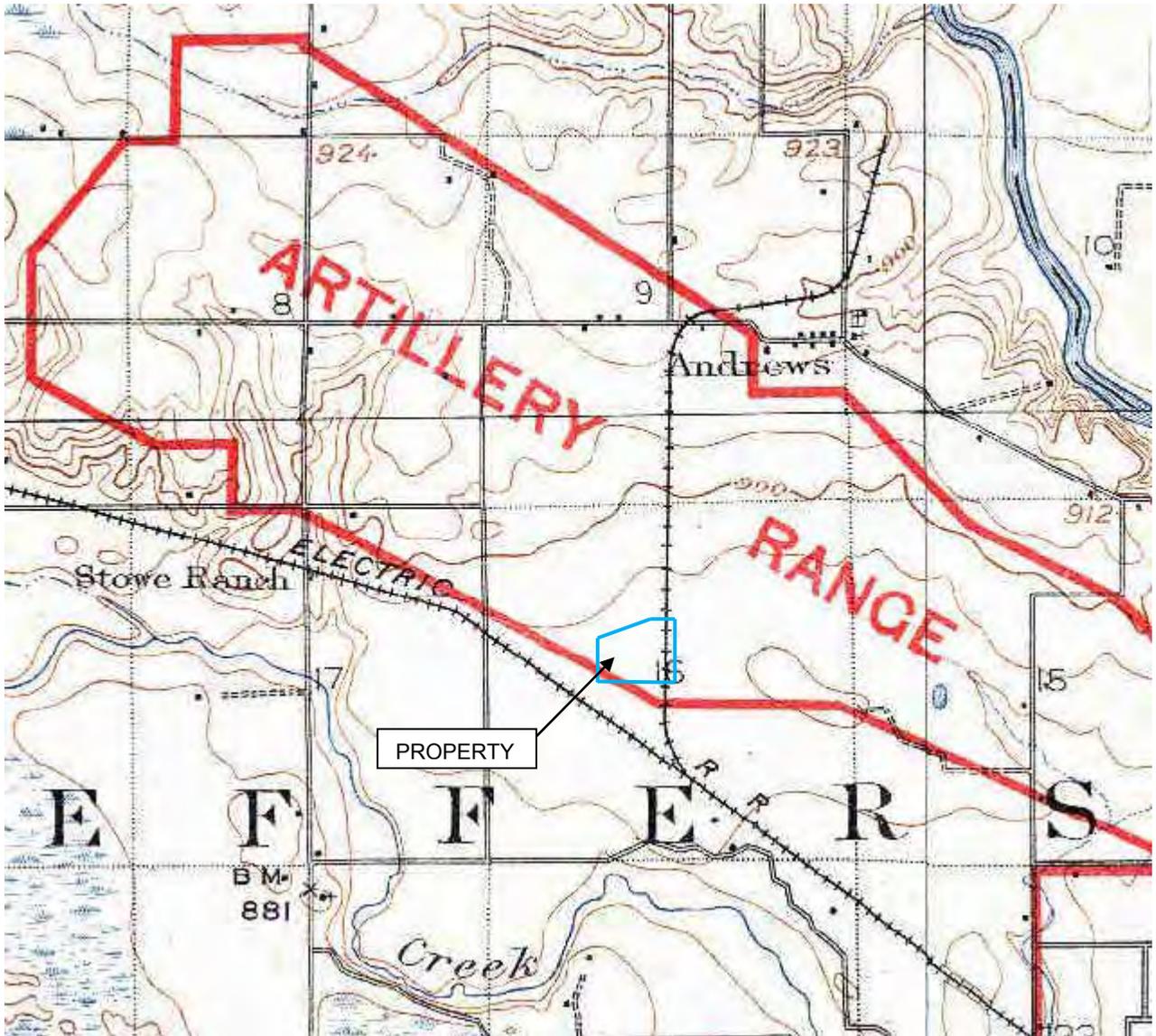


Figure 3-3: 1918 Topographical Map (Not to Scale)

### 3.4 GENERAL DESCRIPTION OF STRUCTURES, ROADS, AND OTHER IMPROVEMENTS ON THE PROPERTY

The PROPERTY is approximately 24.42 acres of agricultural land with no buildings. A gravel driveway off of NW Saylorville Drive provides access to the PROPERTY. The public thoroughfares adjoining the PROPERTY include NW Saylorville Drive to the north and NW 110<sup>th</sup> Ct to the west. Both of these streets are paved.

### 3.5 CURRENT USES OF ADJOINING PROPERTIES

The adjoining properties and their current use are as follows:

Direction	Adjoining Properties and Current Use
North	NW Saylorville Drive, a public street is located immediately to the north of the PROPERTY. Across NW Saylorville Drive, a manmade pond is located.
East	Agricultural crop land
South	Agricultural crop land
West	NW 110 <sup>th</sup> Ct, a public street is located immediately to the west of the PROPERTY. Located west across NW 110 <sup>th</sup> Ct is agricultural land.

### 3.6 SUMMARY OF PREVIOUS ASSESSMENTS

A Phase I ESA was completed by SHEKAR in April of 2014. The assessment revealed evidence of possible RECs at the PROPERTY and they are as follows:

- The 1918 Topographic Map indicates a railroad spur running along the eastern border of the PROPERTY from south to north servicing the small settlement of Andrews, Iowa. This map also indicated that the PROPERTY was located within the military's artillery range. However, review of the historical documents indicated that the PROPERTY was never leased to or owned by the US government for use as a range. Concerns may include the common practice of railroad companies using used motor oil as a spray for weed control, and any possible contamination of the soil from military ordinance/munitions residue.
- A property deed dated October 31, 1931 conveyed an easement to Missouri Valley Pipeline Company. SHEKAR's research could not identify the location or type of pipeline or whether the pipeline was ever built.

## 4 PHASE II ACTIVITIES

### 4.1 SCOPE OF ASSESSMENT

The assessment included soil sampling, EM-61 survey, and an intrusive anomaly excavation. A Work Plan dated October 17, 2014 was developed by SHEKAR using the NAVFAC provided Scope of Work. A copy of the Work Plan is included in Appendix C. SHEKAR retained NAEVA Geophysics (NAEVA), Charlottesville, Virginia for conducting EM-61 survey and The MEC Group (TMEC), St. Louis Park, Minnesota for conducting UXO Safety and Quality Control (QC) during EM-61 survey. TMEC also conducted intrusive anomaly excavation following the completion of EM-61 survey.

Soil sampling was conducted to determine if there are any soil contamination associated with the former railroad operation and military ordinance/munitions residue. An EM-61 Survey and intrusive anomaly excavations were conducted to check if there are any MEC on the PROPERTY.

### 4.2 SOIL SAMPLING

SHEKAR hand augured seven borings (B-1 through B-7) for collecting soil samples. A map indicating the approximate location of these borings is included in Appendix E. The justification of boring location is as follows:

- a. Four soil borings (B-1 through B-4) were drilled along the former rail road spur. This is a deviation from the scope of work, which required 3 samples along the railroad spur. SHEKAR advanced four soil borings because the railroad which used to run along the eastern side of the Property was approximately 830 feet long. An additional boring was justified based on the length of the railroad. Soil samples were collected at different depths from these borings and are as indicted below:
  - B-1: At 2' below ground surface (bgs)
  - B-2: At 2' bgs
  - B-3: At 2 and 4' bgs
  - B-4: At 2.5' bgs (poor recovery at 2' bgs)
- b. SHEKAR tried to advance two soil borings (B-6 & B-7) near the foundation wall. However, augur refusal was encountered due to tree roots, concrete debris and vegetation. Therefore, boring locations were moved farther away from the foundation and soil samples were collected at 2' and 4' bgs from B-6 and B-7 respectively. See attached Site Plan Map (Appendix B) for the location of these borings.
- c. A soil boring (B-5) was advanced near the notched wall and a soil sample was collected at 3' bgs for laboratory analysis. Fill with clay, sand, and gravel was encountered in this boring till 2' bgs.
- d. No soil sampling was conducted along the pipeline easement because, there are no maps or other documents indicating the location of pipeline or the associated easement.

Prior to hand auguring, SHEKAR called Iowa One Call (800-292-8989) for locating the buried utilities (Iowa One Call Ticket #: 143210876). No buried or overhead utilities were identified on the PROPERTY. A copy of the Iowa One Call ticket is included in Appendix D.

Borings B-1 through B-7 were drilled on December 4, 2014. The borings were logged by Wayne Shannon of SHEKAR. A copy of the boring logs can be found in Appendix E. During drilling, the

drill cuttings were collected in a container and were put back in the same borehole after collecting soil sample(s). The augurs, sampling equipment, soil storing containers, and tools were deconned before moving to the next borehole. The decon rinsate was containerized and was taken to an off-site storage. A composite sample of rinsate was submitted for laboratory analysis.

The soil samples were collected using clean, disposable nitrile gloves. The samples were packaged into the laboratory prepared containers. All sample containers were prepared and provided by Keystone Laboratories, Inc. (Keystone) of Newton, Iowa. The samples were immediately placed on ice and kept cool until the samples were received at the laboratory. A completed chain of custody form accompanied the samples to the laboratory. Analysis for asbestos was conducted by Iowa Environmental Services, Inc. (IES) of Urbandale, Iowa.

#### 4.2.1: Chemical Testing Plan

All soil samples were tested for the following parameters:

	<b>Parameter</b>	<b>Analytical Method</b>
a.	PCBs (Polychlorinated biphenyls)	EPA Method 8082
b.	Semi-Volatiles/PAHs (Polycyclic Aromatic Hydrocarbons)	8270C/8310
c.	TAL Metals (Target Analyte List Metals)	6010B, Trace or 6020/7471A/9012
d.	TCLP RCRA Metals (Toxicity Characteristic Leaching Procedure Resource Conservation & Recovery Act Metals)	1311/6010B/7000A or 1311/6020/7470A
e.	Asbestos	EPA Method 600/R-93/116

### 4.3 EM-61 SURVEY

NAEVA provided qualified personnel and necessary equipment for the execution of the Work Plan. Two Field Geophysicists worked on site with support from the Project Geophysicist, Quality Control (QC) Geophysicist, and Geophysical Data Processor at NAEVA's Charlottesville, Virginia office. Shekar Engineering provided a Senior Unexploded Ordnance Supervisor (SUXOS) whom provided onsite logistics, Unexploded Ordnance (UXO) avoidance assistance, and Health and Safety Plan administration. Key work performed included:

- Instrument Verification Strip (IVS) installation;
- Daily instrument calibration and verification;
- Data acquisition of transects/grids;
- Quality control of data at all steps of the project;
- Maintenance of project documentation within the project database;
- Data processing and target anomaly selection;
- Reporting and delivery.

## 4.3.1 Equipment

### 4.3.1.1 Geonics EM61MK2

The geophysical instrument used for this investigation was the Geonics EM61-MK2 metal detector. The EM61-MK2 is a high resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and non-ferrous metallic objects. In comparison with other metal detectors, especially magnetometers, it is much better suited for work in close proximity to man-made structures and in areas of dense subsurface metallic debris (i.e., burial pits).

Data were collected using a towed array sled, which consisted of three, 1 m by 0.5 m air-cored coils secured on a fiberglass and ultra-high-molecular-weight plastic sled, a Trimble 5700 Real-Time Kinematic (RTK) Global Positioning System (GPS) (Figure 4-1), a Panasonic Toughbook which acts as the data recorder, batteries, processing electronics, and an amphibious Argo ATV which towed the sled during DGM collection. The coils are mounted on the sled at 13 centimeter (cm) from the ground to the bottom of the coil. The EM61-MK2's transmitter generates a pulsed primary magnetic field, which then induces eddy currents in nearby metallic objects. The receiver measures the secondary magnetic field generated by the eddy currents at four time intervals in the bottom coil (Geonics, 2005). Earlier time gates provide enhanced detection of smaller metallic objects. Secondary voltages induced in both coils are measured in millivolts (mV).



Figure 4-1: EM61 Towed Array Sled

### 4.3.1.2 Data Logger

A Microsoft Windows-based Panasonic Toughbook laptop computer was used to monitor and record data from the three EM61-MK2 coils. The four time gates, or channels, recorded for this investigation are geometrically spaced in time after the termination of the transmitter pulse. The Toughbook stores raw data in .N61 format.

### 4.3.1.3 Trimble RTK GPS

A Trimble 5700 RTK GPS base station and rovers were used for the acquisition of positional data during the first two mobilizations. The GPS base station was used in conjunction with a roving 5700 unit connected to a Zephyr antenna mounted on a range pole for survey operations, or directly above the EM61-MK2 for geophysical mapping. When mapping with the sled system, the rover was mounted to a threaded-rod secured in the front-center of the sled, in front of the middle coil.

Real-time corrections are broadcast to the roving GPS unit via a radio link using a Trimble TDL450 Ultra High Frequency (UHF) radio modem. This system provides positional corrections at a rate of one Hertz (Hz), with an accuracy of 3 cm horizontal and 5 cm vertical when a minimum of 5 satellites are available (Trimble, 2005). The base station was established at a survey control point (Table 4-1) with known coordinates, and positional accuracy checked against noted survey control point (Table 4-2) daily before performing any surveys. Coordinates are provided in Iowa State Plane, NAD83, South Zone Coordinate System, in U.S. Survey Feet.

**Table 4-1: Base Station Control Point in NAD83 Iowa State Plane South Survey Feet**

Control Point ID	Easting (survey foot)	Northing (survey foot)
shekar_base	1567043	634589.6

### 4.3.1.4 Information Management

Project documentation, including instrument serial numbers and data file names, were recorded on a Droid tablet. Completed field forms consisting of a daily and survey form, when applicable, were submitted directly to the NAEVA Office for review and use during data processing and reporting. Accessory media including relevant site pictures were incorporated with the upload, and a daily log documenting all field team activities was submitted daily.

## 4.3.2 Methodology

### 4.3.2.1 DGM Survey Activities

Prior to commencing DGM a 200-foot by 200-foot site-wide grid system was developed (Figure 4-2). The locations of objects that would cause gaps in the data, such as trees, and cultural objects that would cause instrument response, including fences, culverts, and other man-made structures were recorded with GPS or noted in the grid collection field notes. Measurements in 4-channel mode are taken only from the bottom coil receiver, so the top coils were removed from all instruments. For field collection the towed arrays collected in

automatic mode at 15 readings per second. GPS antennas were mounted just off-center of the three-coil towed array platforms to allow for placement of static item jigs and on top of the tow-vehicles to provide real-time positional tracking capabilities. The position of the center of each of the three coils was calculated in the collection software using the known position and offset of the GPS antenna and a continuously updated velocity vector. System electronics were securely mounted in the vehicle's compartment and the data loggers were located in the driver's compartment to allow monitoring of system function. The tow vehicles were equipped with Trimble's AgGPS FmX Displays which allowed the operators to maintain regularly spaced, straight line profiles with zero on-ground control. The position of each EM61-MK2 reading between GPS updates was interpolated by the editing software.

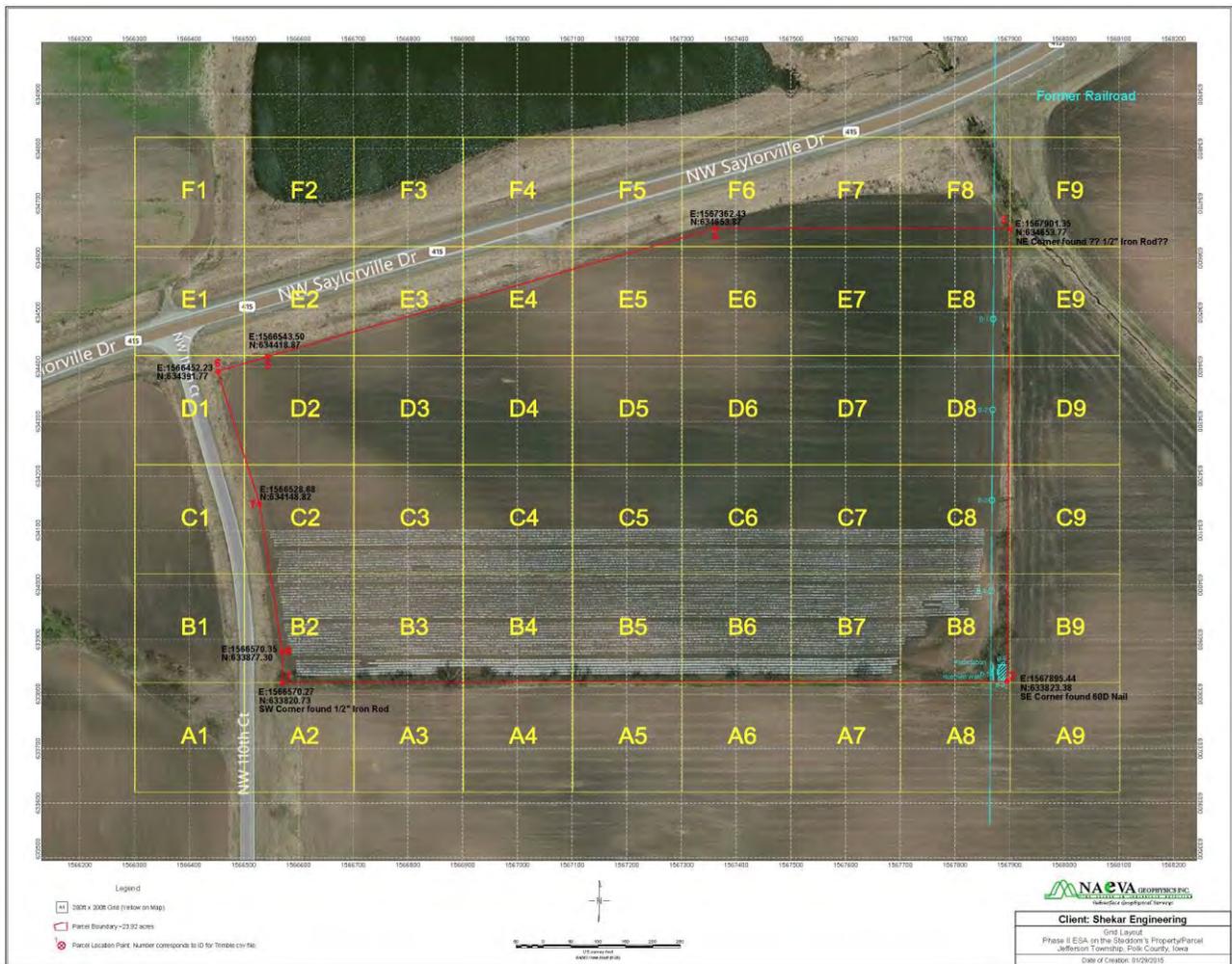


Figure 4-2: Site Map with 200ft x 200ft Grid Overlay

### 4.3.3 Data Processing and Interpretation

During the 3-coil TA data collection, EM61-MK2 data were recorded and stored in a Panasonic ToughBook equipped with ML61MK2 software. The data were later reviewed on a laptop computer and initially processed using Geomar's Multi61MK2 program. Initial data processing was performed

by the field team. This included reviewing data for integrity, repeatability, and completeness. Once the in-field review was completed, the data were transferred to NAEVA's Charlottesville, Virginia office for processing, analysis, target selection and QC using Geosoft's Oasis montaj software and the UX-Detect module.

#### **4.3.3.1 Pre-processing**

Converted raw data files were imported into Geosoft's Oasis Montaj to perform the following:

- Review and finalize all QC tests (IVS, cable shake, vehicle, and static) prior to processing DGM data for that day;
- Evaluation of data density;
- Application of auto leveling and instrument drift corrections for EM61-MK2 data;
- Application of a default lag correction based on the lag determined from the initial collection of the 5-line IVS;
- Generation of preliminary contour map(s) from gridded data;
- Generation of preliminary original versus repeat profiles by dataset;
- Generation of formatted ASCII files containing preprocessed data by dataset.

#### **4.3.3.2 Final Processing**

After completion of preprocessing, the data were further evaluated and processed to generate final processed data files. Final processing steps included:

- Evaluation and refinement of auto leveling and instrument drift corrections for EM61-MK2 data;
- Evaluation and refinement of lag correction;
- Additional digital filtering and enhancement, as necessary;
- Targeting of data, as described in Section 4.3.3.3;
- Generation of formatted ASCII files containing processed data by dataset;
- Generation of final maps for each dataset showing contoured, gridded data, target locations, areas of interest, and cultural features;
- Generation of final original versus repeat profiles by dataset.

#### **4.3.3.3 Analysis and Target Selection**

The anomaly targeting threshold was established just above the noise level at the site and was set at 5 mV in Channel 2 based on the need to detect 75mm and 5" projectiles to the depth of detection of the instrument. At this threshold a horizontal 75mm projectile can be detected down to a depth of approximately 44 inches and a vertical 75mm to a depth of approximately 51 inches below ground surface based on the platform height of approximately 5 inches.

Production and daily static test data were monitored to ensure the threshold level was sufficiently above local background and noise levels, and targets were selected from geophysical data using the UX-Detect module. The UX-Detect module within Oasis Montaj identifies peak amplitude responses associated with, but not limited to, MEC. Single-source anomalies may generate multiple target designations depending on shape and orientation. Initial target selections were auto-selected using the Blakely Test within the UX-Detect module based on the Channel 2 data of the EM61-MK2 bottom coil. Data profiles corresponding to the anomalies selected by Geosoft were then analyzed by trained geophysicists, with the targets evaluated as to their validity and position. Targets found to be invalid or incorrectly located were removed or adjusted. Additionally, anomalies that were not selected by the UX-Detect module, yet deemed to represent potential MEC targets, were manually selected. All selected anomalies that occurred at or above the targeting threshold of 5 mV were identified using a unique ID number. If a target response exhibited adequate decay yet was below the targeting threshold, it was selected as a target and noted as a below threshold pick. The criteria for selecting and locating anomalies for the target list include, but are not limited to, the following items:

- Maximum amplitude of the response with respect to local background conditions;
- Lateral extent (width) of the response;
- Location of the response with respect to the edge of the survey area, inaccessible areas, and features, cultural features, or utilities within or adjacent to the survey area.

#### 4.3.3.4 Deliverables

Final processed XYZ ASCII data corrected for sensor offsets, lag corrections, drift/leveling corrections and instrument bias were created by dataset for the EM61-MK2 data, with individual target lists created for each grid. The Master Target List provides a Target ID, Grid Cell ID, Easting and Northing state plane coordinate location, anomaly type, and the recorded peak amplitude in mV for each target (Appendix F).

Grid maps in Geosoft Oasis Montaj and PDF formats of color-contoured geophysical results were created with anomaly selections shown and labeled at a readable scale. All raw and processed data can be found on the submitted DVD. Also included are processing reports, a copy of the database, and target lists.

#### 4.3.4 Quality Control

A summary of the Measurement Quality Objectives (MQO) and Performance Criteria and System Quality Control is presented in **Section 4.3.4.1** and **4.3.4.2**, below. The results of the QC tests are summarized in **Section 4.3.4.4**.

### **4.3.4.1 Measurement Quality Objectives and Performance Criteria**

#### **4.3.4.1.1 System Munitions detection**

The MQO for system munitions detection was that the system responded consistently from the beginning to the end of an operation within industry standard of detection for an industry standard object (ISO). The measurement performance criterion was that the response to an ISO did not vary more than  $\pm 10$  percent on Channel 2, after background correction. Daily beginning and end of day static spike tests were evaluated to meet this criterion (**Section 4.3.4.2.3**).

#### **4.3.4.1.2 System Data Repeatability**

The MQO for DGM systems data repeatability are that the systems respond consistently from the beginning to the end of daily operation. Detection repeatability was quantitatively evaluated twice daily by validating that the IVS survey data fell within the 1m offset and 30 percent variation in response from the average of the first two 2-line IVS collected (**Section 4.3.4.3.2**)

Data repeatability was also evaluated per block of survey data collected. Upon completion of each dataset, approximately 2 percent of the data were recollected in a separate file to demonstrate instrument consistency and data integrity throughout the course of the survey. Repeat data also serves to evaluate and validate the particular collection and positioning methods. In GPS DGM collection, it is essential for the operator to maintain a centered and straight line path to ensure full coverage. If the instrument passes verification while failing repeatability, one may attribute failure to incorrect line paths. Evaluation of repeat data was conducted qualitatively against original data profiles.

#### **4.3.4.1.3 Down-line Data Density**

The MQO for down-line data density was to have sufficient data collected to detect potential MEC/MPPEH items. The measurement performance criterion for this was that at least 98 percent of possible sensor readings were captured along each transect at a spacing of 0.82 feet or less. In addition, any transect containing an unexplained data gap of 2 feet or greater did not meet this MQO. This was evaluated by verifying that production data point separation met this standard.

#### **4.3.4.1.4 Survey Coverage (Lane Spacing)**

The MQO for lane spacing was to maintain appropriate line spacing to provide coverage of the accessible portions of the survey area. The measurement performance criterion for this is that the lane spacing varied no more than 9.9 feet for EM61-MK2 comprehensive (full-coverage) surveys unless vegetation, terrain or other obstacles

caused the separation. This was evaluated in production data by verifying that all of the data met this standard.

#### 4.3.4.2 System Quality Control

The following QC procedures were performed and documented during the data collection process and reviewed by a qualified geophysicist on a daily basis. Implemented for the secondary mobilization and DGM, additional IVS and QC data were collected following the completion of each grid block to validate system functionality. When deemed logistically incapable of returning to an established IVS following completion of a dataset, a 1-line test strip was substituted. The test strips were implemented to demonstrate response repeatability of each coil over an ISO at a constant depth and orientation.

##### 4.3.4.2.1 Record Sensor Positions Test

The Trimble GPS positioning equipment was checked for system positioning at the beginning of each workday. After starting the GPS base station, the GPS rover and antenna mounted on the EM61-MK2 was used to measure a position at a known control point (Table 4-2). Positions within 10 cm of the known point were acceptable.

**Table 4-2 QC Point in NAD83 Iowa State Plane South Survey Feet**

Control Point ID	Easting (survey foot)	Northing (survey foot)
4	1567362	634653.9

##### 4.3.4.2.2 Instrument Warm Up

At the beginning of each workday before operation and acquisition of data, the EM61-MK2 was assembled, powered on, and warmed up for a minimum of 15 minutes to minimize instrument drift and ensure proper function. These tests were performed with the instrument immobilized over an area of minimal background response in order to document proper instrument function and test for abnormal performance.

##### 4.3.4.2.3 Background and Spike Test

Performed at the beginning and end of each day, as well as midday or upon completion of a dataset, the background/spike test consists of three 1-minute lines of data: background, ISO/spike, and background. Background lines are monitored for data spikes and noise level while the spike line is examined for consistent response. Monitoring background noise enables the Geophysical Data Processor to calibrate data leveling during processing, while the spike test data was monitored for consistent

response of a small ISO, a 2.54 cm x 10.16 cm galvanized steel pipe nipple (McMaster-Carr Part Number 44615K466). For the spike test, a small ISO was oriented vertically (long axes of the ISO and the EM61 are perpendicular) and mounted centrally for each coil at a distance of 51 cm from the top of the bottom coil to the ISO's center of mass for all data. The background test required that the response varied no more than  $\pm 2$  mV from the mean response on Channel 2. Acceptable spike response values were to be within  $\pm 10$  percent of the value for Channel 2 after background corrections. Daily spike response values were plotted against the small ISO response curve at the given depth and evaluated for consistency with Naval Research Lab (NRL) ISO response curves and munitions detection repeatability throughout the duration of investigation.

#### **4.3.4.2.4 Cable Shake Test**

A 30-second cable shake test was performed each time the sensor was assembled, typically at the beginning of the day, and any time that a cable was replaced. For this test, all cables of the system were shaken to simulate vibrations associated with dynamic DGM survey while monitoring data for shake-induced spikes. This test functioned to detect problems associated with damaged or loose connectors, twisted cables, and other defects. After identification and replacement of the malfunctioning component, the geophysical system would again be verified at the IVS and allowed to resume geophysical operations after demonstrating resolution to the problem.

#### **4.3.4.2.5 Vehicle Test**

Prior to collection, a 30-second vehicle test was performed and monitored for changes in response associated with the vehicle in proximity to the instrument coil. This test is designed to confirm that the vehicle used to tow the array sled during logging does not interfere with the data. The engine of the vehicle is brought to an elevated revolutions per minute (rpm) while monitoring data for data spikes or elevated noise levels. The most common sources of interference result from current generators, such as alternators and portable inverters.

#### **4.3.4.2.6 Repeat Data**

Daily AM and PM 2-line IVS data were collected to evaluate system positioning and detection repeatability. IVS seed positions within 1 m of the recorded locations were acceptable, and response amplitudes were evaluated for consistency within 30 percent of expected values. In addition, repeat data was collected for each block of data to total at minimum two percent of the block survey area for qualitative amplitude and positional comparison to the initial profiles.

### 4.3.4.3 Geophysical System Verification

#### 4.3.4.3.1 Overview

The Geophysical System Verification (GSV) plan, outlined in the GIP, is a physics-based modeling of instrument response to ISOs at different orientations and depths. Three small ISOs (1" x 4" steel pipes) were seeded at detectable depths below ground surface to create an IVS (**Section 4.3.4.3.2**), and a small ISO was also used as static spike test item for daily QC and verification. The GSV is an economical alternative to traditional geophysical prove-outs (GPO) as ISOs are easily obtained and economical and the IVS requires minimal time and area to install.

#### 4.3.4.3.2 Instrument Verification Strip

The purpose of surveying the IVS is to demonstrate the effectiveness of all instrumentation, methods, and personnel prior to the initiation of fieldwork and to document the site-specific capabilities of a DGM system. Prior to seed burial, a suitable area with minimal interference and anomalous response were chosen, and thoroughly checked using the EM61-MK2. Background data were submitted to the NAEVA Office's Project Geophysicists for review, and any pre-existing anomalies were marked and avoided during IVS construction.

Once the final IVS location was approved, tape measures were used to locally establish a 38 foot x 6 foot grid seeded with 3 small ISOs approximately 9 ft apart down line and 3.3 ft apart cross line. The ISOs were buried by the field personnel vertically at depths of 4 inches below ground surface (depths were measured from center of mass). IVS endpoints and seed locations were marked with labeled plastic flags and recorded with RTK GPS. Seed item information is summarized in Table 4-3. IVS maps can be found in Appendix G.

**Table 4-3: IVS ISO Locations in NAD83 Iowa State Plane South Survey Feet**

Seed ID	Item Type	Easting (m)	Northing (m)	Orientation
ISO1	Small ISO	1567139	634509.8	Vertical
ISO2	Small ISO	1567149	634506.4	Vertical
ISO3	Small ISO	1567157	634503.4	Vertical

#### 4.3.4.4 Results

Recorded sensor test positions were within the 10 cm offset tolerance (Figure 4-3). Background static tests were within the acceptable range of  $\pm 2$  mV from mean value in Channel 2. Standard response data showed detection of the small ISO was consistent and repeatable within  $\pm 10$  percent throughout the investigation (see Figure 4-4) (Nelson, Bell, Kingdon, Khadr, Steinhurst 2009). The cable shake and vehicle data

exhibited no significant interference as a result of cable motion or proximity of vehicle, respectively.

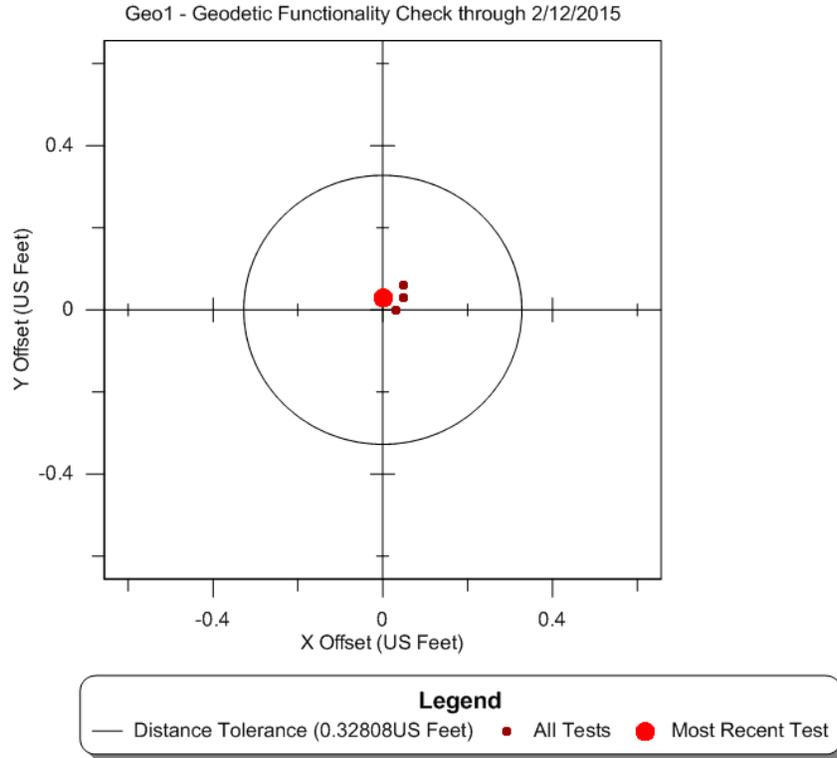


Figure 4-3: GPS QC Results

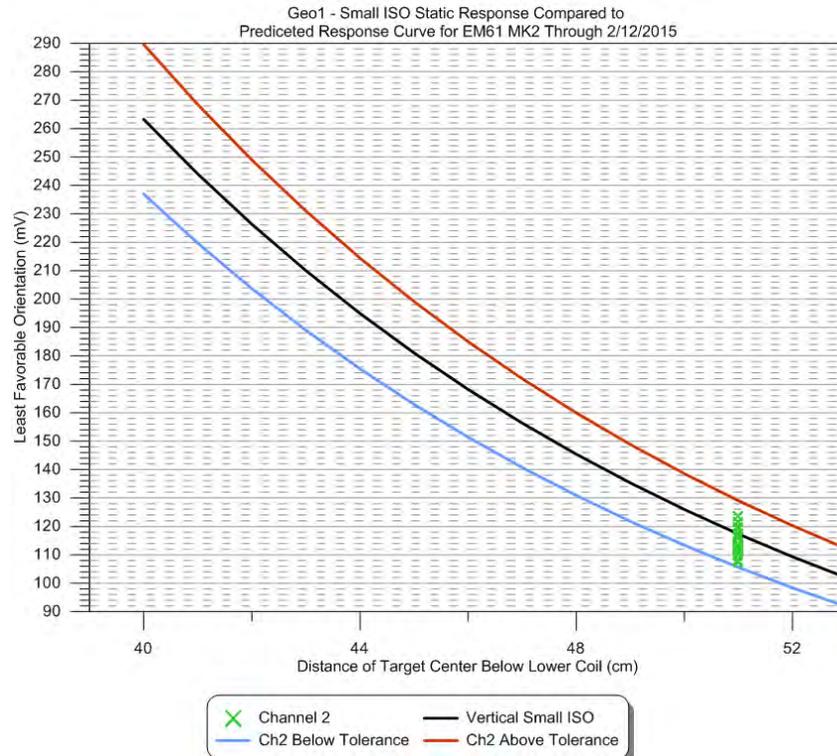


Figure 4-4: Static spike response test plot.

Analysis and contouring of IVS data demonstrated the suitability of the location for seeding and testing. The EM61-MK2 was able to detect the buried seeds items above background levels. Daily beginning and end of day IVS data compared well, with all ISO seed items being detected with consistent amplitude characteristics and locations to within 25 cm of the recorded location (Figure 4-5, 4-6 & 4-7). This satisfied the detection and positioning repeatability criteria.

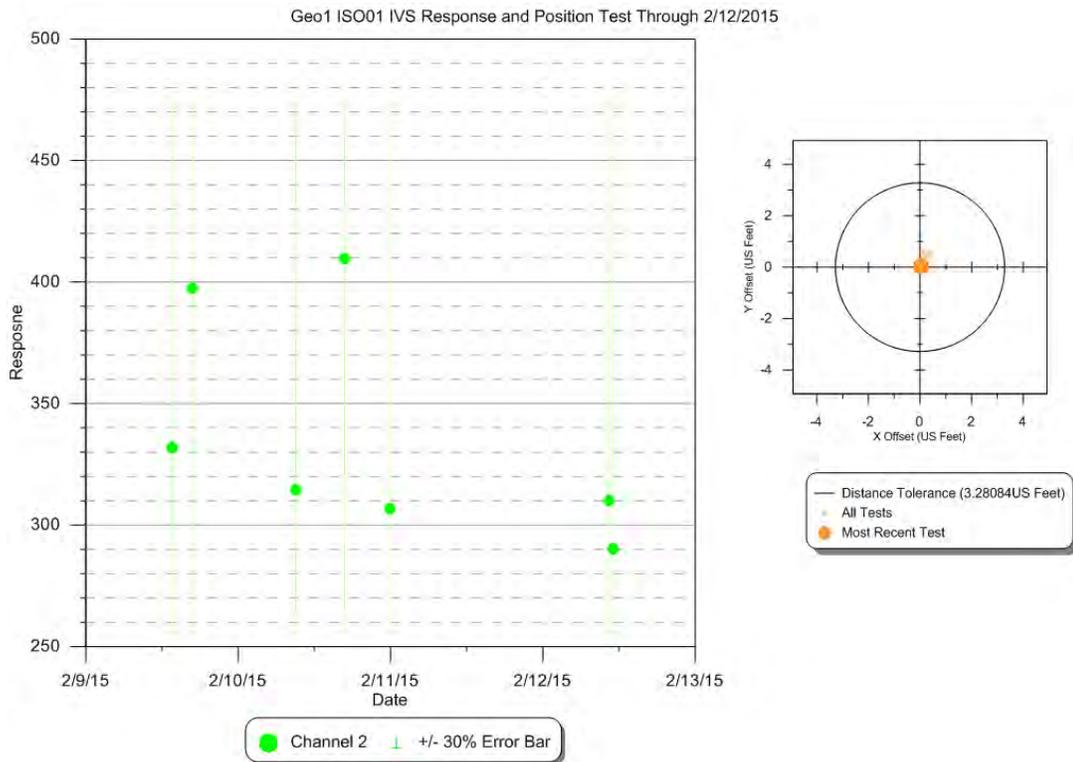


Figure 4-5: IVS ISO01 Results

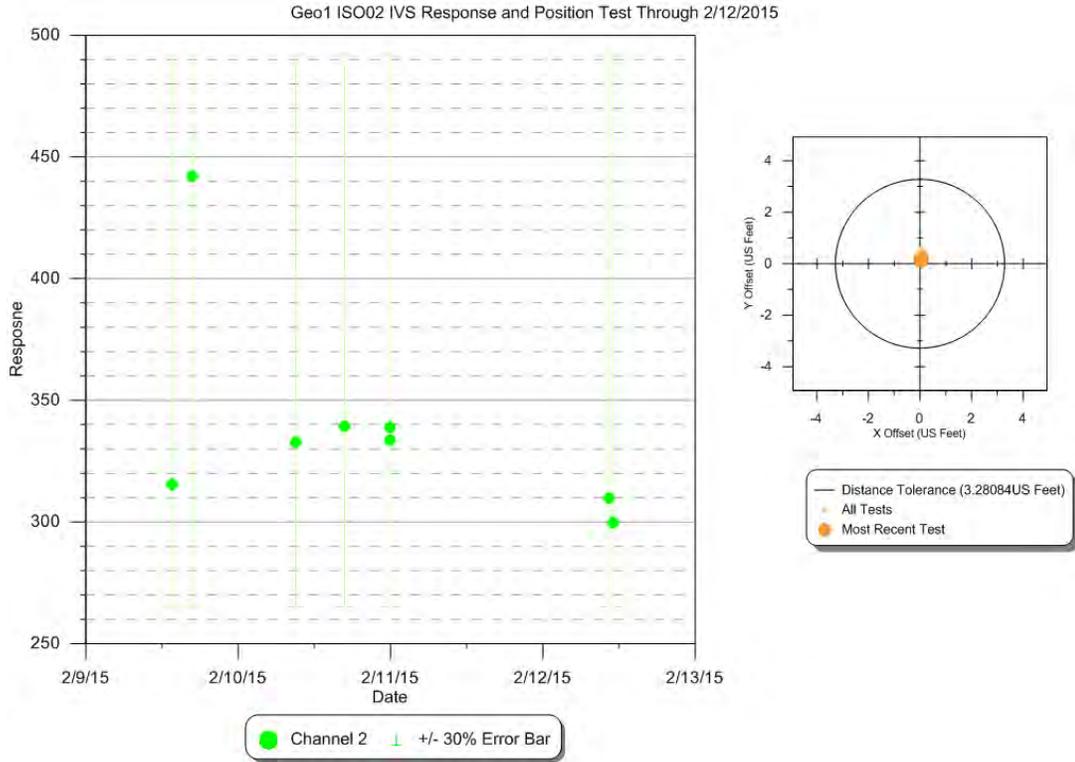


Figure 4-6: IVS ISO02 Results

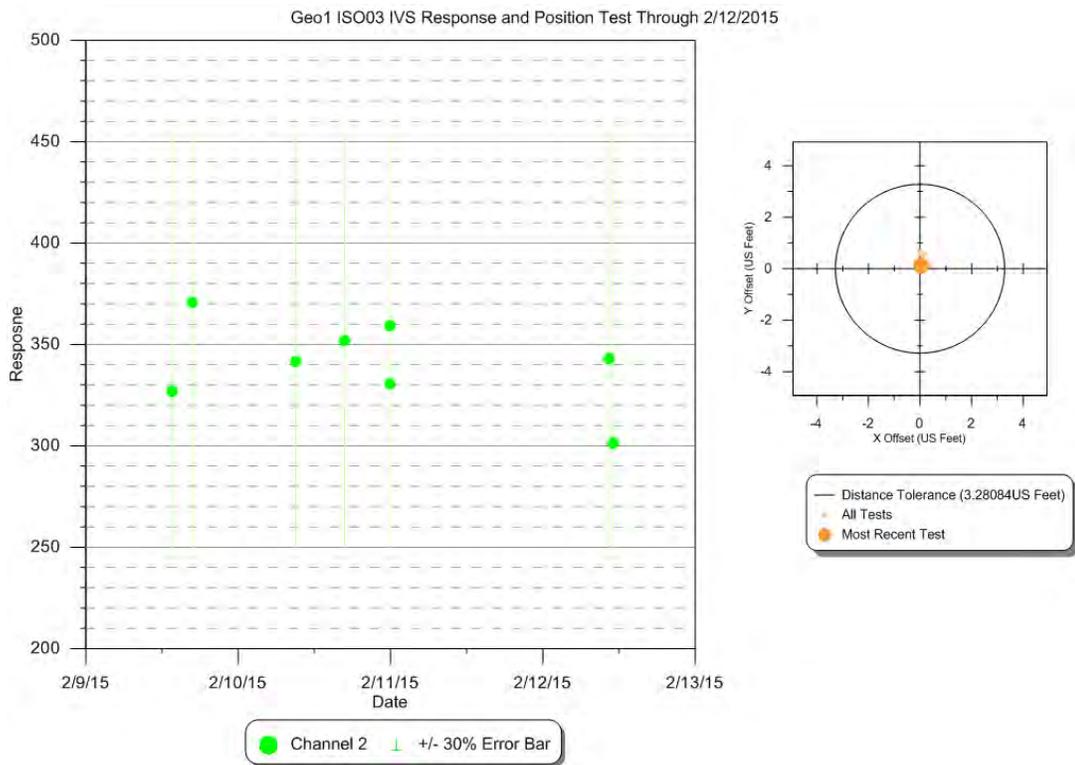


Figure 4-7: IVS ISO03 Results

**Table 4-4** below summarizes the MQOs and results for the investigation. Sample static spike, cable shake, and vehicle test figures can be found in Appendix H

**Table 4-4: MQOs and Results**

MQO	Measurement Performance Criteria	Test Method	Results
<p><b>DGM System Munitions Detection (EM61-MK2).</b> DGM system response is within industry standards for detection.</p>	<p>Response to ISO will consistently not vary more than <math>\pm 10\%</math> from predicted response for specific distance from sensors in static test.</p>	<p>Results of Static Spike Test will be compared to predicted EM61-MK2 response curves for ISOs at different distances from the sensor and orientation.</p>	<p>All responses were within 10% (<b>Figure 4-4</b>).</p>
<p><b>Repeatability.</b> Repeatable and accurate data are being obtained from DGM system.</p>	<p>IVS seed item positions will be consistently within <math>\pm 25</math> cm of known, surveyed locations. Response amplitudes collected along the IVS seeded and background transects will be comparable from one day to the next.</p>	<p>IVS seeded and background transects will be collected at least 2x daily as described in Section 4.3.4.3.2. Positions of the IVS seed items will be quantitatively compared to the surveyed locations recorded during emplacement.</p>	<p>All ISO positions were within 25 cm (<b>Figures 4-5, 4-6 &amp; 4-7</b>)</p>
	<p>Approximately 2% of each survey unit (e.g. group of transects or grids) will be re-surveyed, where responses are comparable to original line data.</p>	<p>IVS response amplitudes and results of repeat line collection in Section 5.2 will be qualitatively compared to results of original survey data.</p>	<p>All IVS amplitudes and repeat data generally repeated (<b>Appendix J</b>).</p>
<p><b>Data Density.</b> Down line data density is sufficient to detect MEC items.</p>	<p>Over 98% of possible sensor readings are captured along a survey transect with a spacing of no greater than 0.84 ft between points. A data gap greater than 2 ft m will not meet the MQO, unless the gap is associated with an obstruction or hazard.</p>	<p>Results of DGM surveys will be quantitatively evaluated for compliance.</p>	<p>Average down line data density was 0.28 ft across all of the datasets with only an average of 0.01% of the readings with spacing greater than 0.84 ft. No readings were greater than 2 ft apart.</p>
<p><b>Survey Coverage (Lane Spacing).</b> Lane spacing intended to provide 100% coverage of accessible portions of the DGM investigation area.</p>	<p>Lane spacing is no greater than 9.9 ft with an intended lane spacing of 8.5 ft for full coverage areas, unless due to vegetation, terrain or other obstructions cause the separation.</p>	<p>Footprint coverage of DGM surveys will be evaluated for missing or improperly positioned survey lines as well as data gaps that are not otherwise explained.</p>	<p>100% coverage with 9.9 ft footprint with TA collection within surveyed area</p>

## **4.4 INTRUSIVE ANOMALY EXCAVATION**

SHEKAR contracted The MEC Group (TMEC) for conducting the intrusive anomaly excavation. The purpose of the excavation was to determine the identification and characteristics of target items captured during EM-61 survey by NAEVA. Prior to excavation, an Explosive Site Plan (ESP) was prepared and submitted to NAVFAC and United States Marine Corps (USMC). See Appendix Q for a copy of the ESP. On March 20, 2015 Mr. Jim Taylor of USMC gave a service approval for the excavation. A copy of the approval letter is included in Appendix R.

### **4.4.1 Summary of Excavation**

The NAVFAC COR provided a list of 200 targets for excavation. An UXO team was mobilized on March 23, 2015 for excavating the chosen targets. An UXO Site Safety Officer monitored the site activities. The excavation was completed on March 27, 2015.

A Trimble GeoXH hand-held GPS/Data-logger (Trimble) was used to navigate to each target. The Trimble was also used for capturing data from each excavation, as well as to take pictures. The UXO team excavated each target area until all metal objects were removed. Each excavated item was thoroughly inspected by the UXO Team Leader and the UXO Quality Control Supervisor to identify military munitions or other explosives of concern.

Excavated items included railroad spikes and debris, pins, bolts, horse/mule shoes, wire, nails, and hot rocks. All items were determined to be Material Documented as Safe (MDAS) and disposed of in accordance with the approved plans.

Thirty-three (33) targets were recorded as 'No Finds'. A no find means the UXO team never found a metallic subsurface object within a reasonable vicinity of the geospatial location recorded by the EM-61 Survey. See Appendix P for a copy of the Anomaly Excavation Report.

## 5 EVALUATION AND PRESENTATION OF RESULTS

### 5.1 SOIL SAMPLING RESULTS

The soil samples were analyzed for PCBs, Semi-Volatiles/PAHs, TAL Metals, TCLP RCRA Metals, and Asbestos. Concentrations of contaminants found in the soils were compared against the Iowa Statewide Standards for Contaminants in Soil and Groundwater (<https://programs.iowadnr.gov/riskcalc/pages/Standards.aspx>). A copy of the Iowa Standards is included in Appendix I. Soil samples exhibiting contaminant concentrations above the laboratory detection limits are summarized in Table 5-1. A complete copy of the analytical results can be located in Appendix M. None of the soil samples exhibited contaminant concentrations above the Iowa Statewide Standards for Contaminants in Soil and Groundwater.

#### 5.1.1 Rinsate Sampling Results

A composite sample of the rinsate was analyzed for PCBs, Semi-Volatiles/PAHs, TAL Metals, TCLP RCRA Metals. Analytical results of the rinsate indicated low concentrations of Phthalates and metals. The contaminant concentrations identified in the rinsate sample was compared against the Iowa Statewide Standards for Contaminants in Soil and Groundwater. None of the contaminants exceeded the Iowa Statewide Standards. Results of the contaminants exhibiting concentrations above the laboratory detection limits are summarized in Table 5-2. A complete copy of the analytical results can be located in Appendix M.

**TABLE 5-1: Analytical Results of Soil Samples**

<b>Sample ID:</b>	<b>B-1</b>	<b>B-2</b>	<b>Duplicate (B-2)</b>	<b>B-3-1</b>	<b>B-3-2</b>	<b>Iowa Statewide Standards</b>
Date Sampled	12/05/14	12/05/14	12/05/14	12/05/14	12/05/14	
Ground Elevation	871.62	871.13	871.13	869.51	869.51	
Soil Sample Elevation	869.62	869.13	869.13	867.51	865.51	
Groundwater Elevation	Dry	Dry	Dry	Dry	Dry	
Fluoranthene (mg/kg)					0.010	2300
Dibenzo(a,h) anthracene (mg/kg)					0.031	0.31
Benzo(b)fluoranthene (mg/kg)						3.1
Indeno(1,2,3-cd)pyrene						3.1
Benzo(g,h,i)perylene						170
Aluminum, total (mg/kg)	12100	7670	8750	11600	12400	NA
Arsenic, total (mg/kg)	4.2	6.6	8.9	6.5	8.3	17
Barium, total (mg/kg)	175	88.8	99	340	270	15000
Beryllium, total (mg/kg)	0.8	0.5	<0.7	0.8	0.8	110
Calcium, total (mg/kg)	5950	37900	33700	6840	5530	NA
Cobalt, total (mg/kg)	5.8	5.6	6.8	13.2	16.1	31
Chromium, total (mg/kg)	16.5	13.6	15.5	21.0	24.7	210
Copper, total (mg/kg)	15.0	11.8	21.4	15.1	16.6	15000
Iron, total (mg/kg)	13600	12000	13700	21300	26200	NA
Potassium, total (mg/kg)	829	955	1070	1180	1170	NA
Magnesium, total (mg/kg)	3560	12300	12400	3730	4080	NA
Manganese, total (mg/kg)	350	476	550	1760	1500	10000
Sodium, total (mg/kg)	67	103	123	53	65	NA
Nickel, total (mg/kg)	12.9	14.5	18.5	23.1	30.1	1500
Lead, total (mg/kg)	9.2	6.3	7.1	10.1	9.0	400
Vanadium, total (mg/kg)	14.6	22.6	25.7	25.5	37.2	350
Zinc, total (mg/kg)	47.4	27.6	31.2	48	49.8	23000
Barium (TCLP) (mg/L)	1.16	1.48	1.51	1.15	1.57	15000

MCL = Maximum Contaminant Level

**TABLE 5-1 Continued: Analytical Results of Soil Samples**

<b>Sample ID:</b>	<b>B-4</b>	<b>B-5</b>	<b>B-6</b>	<b>B-7</b>	<b>Iowa Statewide Standards</b>
Date Sampled	12/05/14	12/05/14	12/05/14	12/05/14	
Ground Elevation	870.59	872.57	872.33	871.80	
Soil Sample Elevation	867.59	869.57	870.33	867.80	
Groundwater Elevation	Dry	Dry	Dry	Dry	
Fluoranthene (mg/kg)			0.013		2300
Dibenzo(a,h)anthracene (mg/kg)					0.31
Benzo(b)fluoranthene (mg/kg)		0.227			3.1
Indeno(1,2,3-cd)pyrene		0.121			3.1
Benzo(g,h,i)perylene		0.302			170
Aluminum, total (mg/kg)	14200	13300	13300	12600	NA
Arsenic, total (mg/kg)	15.9	5.7	5.7	3.3	17
Barium, total (mg/kg)	270	196	186	168	15000
Beryllium, total (mg/kg)	0.9	0.8	0.8	0.9	110
Calcium, total (mg/kg)	10100	8680	6530	6290	NA
Cobalt, total (mg/kg)	20.9	4.6	3.8	3.8	31
Chromium, total (mg/kg)	20.4	18.1	18.4	18.1	210
Copper, total (mg/kg)	19.6	17.3	17.8	16.4	15000
Iron, total (mg/kg)	23200	14900	14200	13100	NA
Potassium, total (mg/kg)	961	1660	1650	1250	NA
Magnesium, total (mg/kg)	5040	3100	2650	3880	NA
Manganese, total (mg/kg)	1360	448	345	218	10000
Sodium, total (mg/kg)	<45	<74	<47	80	NA
Nickel, total (mg/kg)	30.1	15.1	13.2	11.8	1500
Lead, total (mg/kg)	17.2	9.7	8.6	8.8	400
Vanadium, total (mg/kg)	38.5	22.7	21.9	15.6	350
Zinc, total (mg/kg)	45.6	54.9	50.5	52.8	23000
Barium (TCLP) (mg/L)	1.74	1.15	1.21	2.71	15000

MCL = Maximum Contaminant Level

**TABLE 5-2: Analytical Results of Rinsate Sample**

<b>Sample ID:</b>	<b>Rinsate</b>	<b>Iowa Statewide Standards</b>
Date Sampled	12/05/14	
Ground Elevation	NA	
Soil Sample Elevation	NA	
Groundwater Elevation	NA	
Bis(2-ethylhexyl) Phthalate ( $\mu\text{g/L}$ )	29 $\mu\text{g/L}$	0.25 mg/L or 250 $\mu\text{g/L}$
Di-n-octyl Phthalate ( $\mu\text{g/L}$ )	65 $\mu\text{g/L}$	NA
Aluminum, total	8.82 mg/L	NA
Arsenic	0.0059 mg/L	0.05 mg/L
Barium	0.235 mg/L	10 mg/L
Calcium, total	108 mg/L	NA
Cobalt, total	0.0033 mg/L	0.14 mg/L
Chromium, total	0.0151 mg/L	0.5 mg/L
Copper, total	0.0928 mg/L	6.6 mg/L
Iron, total	11.9 mg/L	NA
Potassium, total	3.0 mg/L	NA
Magnesium, total	33.9 mg/L	NA
Manganese, total	0.140 mg/L	4.9 mg/L
Sodium, total	57.8 mg/L	NA
Nickel, total	0.41 mg/L	0.7 mg/L
Lead, total	0.0080 mg/L	0.075 mg/L
Antimony, total	0.0020 mg/L	0.03 mg/L
Vanadium, total	0.0208 mg/L	0.18 mg/L
Zinc, total	0.100 mg/L	10 mg/L

MCL = Maximum Contaminant Level

## **5.2 EM-61 SURVEY RESULTS**

### **5.2.1 Summary of Work**

Prior to mobilization, workplan was provided to SHEKAR. The NAEVA field team had 40-hour Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training, with current annual 8-hour refresher training. The field team mobilized on February 7 and demobilized February 12, 2015 after the completion of data collection and review of the QC tests and data by NAEVA data processors.

### **5.2.2 Mobilization and Site Setup**

An IVS area with the site boundary was established to provide initial validation of the EM61-MK2 and provide on-going QC throughout the production survey for industry standard object (ISO) response repeatability and positioning. DGM began on the northern grids, continuing onto the southern transects. The data were processed and QC checks were performed daily as they were received from the field.

The daily field schedule, based on a 10-hour workday, was as follows, unless otherwise noted in daily work logs:

- Morning safety brief and planning;
- Equipment setup;
- Instrument calibration and verification;
- DGM survey;
- End of day instrument verification;
- Equipment storage;
- Data download and review for completeness;
- Upload to NAEVA's VA office.

### **5.2.3 DGM Survey Activities**

DGM survey covered approximately 23.3 acres within the site boundary. DGM data met the MQOs specified in the workplan. Repeat data for each grid block compared well with original data in anomaly amplitude and location. A sample repeat figure can be found in Appendix J. An example grid color-contoured map is included in Appendix K. Gaps in the data along the eastern and southern boundary occurred due to vegetation.

### **5.2.4 Data Processing and Interpretation**

Data were processed as described in the Methodology section. Appropriate processing details and parameters were generated for each dataset. A total of 2208 anomalies were selected for investigation based on the 5 mV Channel 2 threshold. The selected anomalies are classified into eight types as follows:

- Type 1 anomalies are point source targets that may represent targets of interest.

- Type 2 anomalies are known cultural objects such as signs, pipes, fences, etc.
- Type 3 anomalies are suspected culture such as large anomalies with high response without any surface indication.
- Type 4 anomalies represent a utility.
- Type 5 is a polygon anomaly that represents a suspected utility.
- Type 6 anomalies represent suspected noise resulting from terrain response or ambient electrical noise.
- Type 7 anomalies are those below the established threshold but were selected based on their decay characteristics. Indicative decay characteristics when comparing profiles of all channels together, would typically have Channel 1 at the highest value followed by Channels 2, 3, and 4.
- Lastly Type 8 represent an IVS seed. Processed data can be found organized by dataset in the attached DVD.

Table 5-3 illustrates the total number of anomalies by type. The EM61-MK2 site mosaic with the targets and culture depicted is located in Appendix L.

**Table 5-3: Selected Anomaly Totals by type**

<b>Type</b>	<b>Anomaly Description</b>	<b>Total</b>
Type 1	Point	1642
Type 2	Culture	1
Type 3	Suspected Culture	5
Type 4	Utility	0
Type 5	Suspected Utility Polygon	3
Type 6	Noise (terrain response, ambient noise, poor decay)	554
Type 7	Anomaly selected below established threshold	0
Type 8	IVS Seed	3
<b>Total</b>		<b>2208</b>

## **5.3 INTRUSIVE ANOMALY EXCAVATION RESULTS**

### **5.3.1 Summary of Work**

The MEC Group conducted the intrusive anomaly excavation. Prior to excavation, an ESP was prepared and was submitted to the United States Marine Corps (USMC) and NAVFAC for approval. On March 20, 2015 USMC gave a service approval for excavation.

An UXO team was mobilized on March 23, 2015 for excavating the chosen targets. An UXO Site Safety Officer monitored the site activities. The excavation was completed on March 27, 2015. A copy of the Anomaly Excavation Report is included in Appendix P.

Excavated items included railroad spikes and debris, pins, bolts, horse/mule shoes, wire, nails, and hot rocks. No military material or munitions of any kind were observed on the surface nor were any such items excavated from selected targets. All items were determined to be Material Documented as Safe (MDAS) and disposed of in accordance with the approved plans.

## **6 FINDINGS, OPINIONS, CONCLUSIONS, AND RECOMMENDATIONS**

### **6.1 FINDINGS AND DISCUSSIONS**

SHEKAR completed a Phase I ESA for the PROPERTY in April of 2014. The assessment revealed potential Recognized Environmental Conditions (RECs). A Phase II ESA was conducted to evaluate the RECs identified at the PROPERTY.

Seven borings, B-1 through B-7 were advanced at the eastern side of the PROPERTY for collecting soil samples. Groundwater was not encountered during drilling. Analytical results of soil samples collected from borings B-3, B-5, and B-6 indicated low concentrations of polycyclic aromatic hydrocarbons (PAHs). A rinsate sample (composite sample of the decon water) exhibited low concentrations of Phthalates and metals.

PAHs are hydrocarbons that contain only carbon and hydrogen chains. PAHs are found in fossil fuels (oil and coal) and in asphalt pavements, and are produced, generally, when insufficient oxygen or other factors result in incomplete combustion of organic matter.

None of the soil or rinsate samples exhibited contaminant concentrations above the Iowa Statewide Standards for Contaminants in Soil and Groundwater (Appendix I). Groundwater samples were not collected during this ESA as it was beyond the NAVFAC provided Scope of Work.

NAEVA surveyed approximately 23.3 acres and detected 2208 targets, of which 1642 are Type 1 targets. Vegetation along the eastern and southern boundary impeded complete coverage of the site. Highest density of targets is along the eastern boundary where the former railroad line was located. A suspected utility runs through grids D4, E3, and E4. There are numerous terrain noise targets throughout the site, however the highest densities fall within Grids E3 – E5 and B2.

TMEC conducted intrusive anomaly excavations to determine the identification and characteristics of targets captured during the EM-61 survey. No indications of military material or munitions of any kind were observed on the surface nor were any such items excavated from selected targets.

### **6.2 OPINION**

It is the opinion of the preparer(s) of this report that no additional investigation is required.

### **6.3 CONCLUSIONS**

SHEKAR in association with NAEVA and TMEC has performed this Phase II Environmental Site Assessment in conformance with the scope and limitations of ASTM E1903-11 on the PROPERTY located in Jefferson Township, Polk County, Iowa. Any exceptions to, or deletions from, this practice are described in Section 2.4 of this report.

This assessment did not reveal impacted soils above the Iowa Statewide Standards for Contaminants in Soil and Groundwater. Groundwater samples were not collected during this investigation.

NAEVA detected 2208 targets, of which 1642 were Type 1 targets. Highest density of targets was along the eastern boundary where the former railroad line was located. TMEC, which conducted the intrusive anomaly excavation of 200 targets did not find military materials or munitions of any kind. All the items excavated were classified as Material Documented as Safe (MDAS).

## **6.4 RECOMMENDATIONS**

To the best of our knowledge there is no reason to prohibit construction at this PROPERTY. However, as our investigation only went down 2-3 feet below ground surface, it is recommended that any future construction at the PROPERTY have a UXO team in a Construction Support role for any proposed excavation that are below 3 feet.

## 7 DEVIATIONS

All deletions and deviations from the ASTM E1903-11 standards, are listed in the applicable report sections.

## **8 ADDITIONAL SERVICES**

No additional services were contracted beyond the scope of this Phase II ESA.

## 9 REFERENCES

- ASTM E1903-11: Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process.
- Phase I Environmental Site Assessment Report completed by Shekar Engineering in April of 2014.

## 10 SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

SHEKAR has performed this Phase II ESA in conformance with ASTM E1903-11. This report was prepared using information obtained through previous investigations and analytical results of samples collected. Information obtained from outside sources, including federal, state and local government files were assumed complete. If SHEKAR receives additional information that may alter the statements made within this report, SHEKAR reserves the right to revise this report or issue an addendum statement.

This Phase II ESA was performed by Chandra Shekar, who holds a BS & MS in degrees in civil and environmental engineering. Mr. Shekar is employed with SHEKAR, specializing in the hazardous waste/environmental field since 1999 and is a registered Professional Engineer.

"I, declare that, to the best of my professional knowledge and belief, I, meet the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312" and

"I, have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."



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Chandra Shekar, PE

President, Shekar Engineering