ENVIRONMENTAL ASSESSMENT FOR BRAC 05 RECOMMENDATIONS FOR CLOSURE, DISPOSAL AND REUSE OF THE MIDDLETOWN UNITED STATES ARMY RESERVE CENTER (USARC), MIDDLETOWN, CONNECTICUT

Prepared for:

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April 2012

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DRAFT
FINDING OF NO SIGNFICANT IMPACT (FNSI) FOR BRAC 05 RECOMMENDATIONS FOR CLOSURE, DISPOSAL AND REUSE OF MIDDLETOWN UNITED STATES ARMY RESERVE CENTER MIDDLETOWN, CONNECTICUT

Pursuant to the Council on Environmental Quality (CEQ) regulations (40 *Code of Federal Regulations* [CFR] Parts 1500-1508) for implementing the procedural provisions of the *National Environmental Policy Act* of 1969 (NEPA) (42 United States [U.S.C.] § 4321 et seq.) and the U.S. Department of Army Regulation 32 CRF Part 651 (*Environmental Analysis of Army Actions*), as well as policy and guidance provided by the *Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act*, the U.S. Army conducted an environmental assessment (EA) of potential environmental effects from the closure, disposal and reuse associated with implementation of Base Closure and Realignment (BRAC) actions.

Purpose and Need. On September 8, 2005, the BRAC Commission recommended closure of the 23.7-acre Middletown U.S. Army Reserve Center (USARC) and realignment of essential missions to a new USARC to be constructed at a new location. This recommendation was made in conformance with the provisions of the BRAC Act of 1990 (Public Law [PL] 101-510), as amended. The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy.

Proposed Action. The proposed action is the disposal of surplus property made available by the realignment of Middletown USARC. Redevelopment and reuse of the surplus USARC property (the "Property") would occur as a secondary action under disposal. Under BRAC law, the Army was required to close the Middletown USARC not later than September 15, 2011. The Middletown USARC was closed on September 15, 2006 and the Army will dispose of the Property.

Alternatives Considered. Two alternatives are evaluated in this EA.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown. Under Preferred Alternative, the Army would make a public benefit conveyance of the entire parcel to the City of Middletown for an emergency operations center, as recommended by the Middletown Base Realignment and Closure Local Redevelopment Authority (the "LRA") in their reuse plan. This alternative includes a fire training school and an additional fire station to serve the City's west side, along with a new Emergency Operations Center. The existing building would serve as the central training/administrative facility for the regional fire training center. A new maintenance garage/shop, specialized training facilities, a new City firehouse, and a new emergency operations center would be constructed on the Property. The City would acquire the Property through a public benefit conveyance with FEMA serving as the sponsoring federal agency.

No Action Alternative: Caretaker Status. The Middletown USARC is currently closed and vacant. The Army secured the USARC after the military mission ended in 2006 to ensure public safety and the security of remaining government Property and to complete any required environmental remediation actions. Accordingly, the Middletown USARC site is in caretaker status. Until conveyance of the Property, the Army will continue to provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. The Army has reduced maintenance levels to the minimum level for surplus government property as specified in 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Buildings and Structures).

Factors Considered in Determining that an Environmental Impact Statement is not Required. No significant environmental impacts were identified in the EA (attached). Impacts were analyzed for land use; aesthetics and visual resources; noise; air quality; geology and soils; water resources; socioeconomics; transportation; hazardous and toxic substances; biological resources; cultural resources; and utilities.

Implementation of the Preferred Alternative would not have any significant adverse impacts to any of the resource areas at the Middletown USARC or on areas surrounding the Property. The U.S. Fish and Wildlife Service, the State of Connecticut Department of Environmental Protection (CTDEP) the Vermont Fish & Wildlife Department, and the Connecticut State Historic Preservation Office concur with this conclusion. Mitigative measures would be incorporated into the Preferred Alternative, in accordance with the requirements of the CTDEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and Stormwater Pollution Control Plan. Otherwise, no mitigation is needed.

Residual soil and groundwater contamination would not have a significant impact on the proposed reuse of this Property as an emergency operations center. The former use of the Property was as an Army Reserve Center. Both uses have similar operational and environmental characteristics: restricted-access facilities, operated by trained professionals, with little or no ground disturbing activity, excepting construction. The March 2010 Environmental Condition Report (ECP) recommended the Property should be classified as an ECP Category Type 3 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action (USACE, 2010).

In 2007, the Army conducted a human health risk assessment (HHRA) to quantify risks to human and ecological receptors from exposure to constituents of potential concern (COPCs) in soil and groundwater on the Property. The HHRA identified arsenic as the only COPC in soil and carbon tetrachloride, chloroform, TCE, arsenic, and barium as COPCs in groundwater. The HHRA concluded that there is no unacceptable risk to human health or ecological receptors from exposure to COPCs based on current or reasonably foreseeable future land use.

In 2008, the US Army Environmental Command (USAEC) determined that no remedial action is required to protect human health and the environment, because there is no unacceptable risk to

receptors based on current and reasonably foreseeable future land use (see the No Action Decision Document, USAEC, July 2008). The reasonably foreseeable future land uses considered by the Decision Document included military, industrial, and commercial land uses, i.e., non-residential uses.

Since the proposed reuse of the Property as an emergency operation center is a non-residential use and groundwater would not be used as drinking water, implementing the Preferred Alternative would not have a significant impact on human health. The Decision Document determined that ecological risks from exposure to COPCs are negligible due to the limited habitat on the Property and the absence of exposure pathways to subsurface contamination. The Preferred Alternative would not have a significant impact on the environment.

Conclusion. Based on the environmental impact analyses described in the EA, which is hereby incorporated into this FNSI, it has been determined that implementation of the Proposed Action would not have a significant impact on the quality of the natural or the human environment. Because no significant environmental impacts would result from implementation of the Proposed Action, an environmental impact statement is not required and will not be prepared.

Public Comment. Public comment is invited for a period of 30 days after publication of the Notice of Availability (NOA) in a local newspaper, *The Middletown Press*, and a regional newspaper, *The Hartford Courant*, announcing the beginning of a 30-day pubic review period. Comments or requests for information should be submitted electronically to Ms. Amanda Murphy at amanda.w.murphy.ctr@us.army.mil within 30 days of the publication of the NOA. A copy of the EA is also available for public review at the Russell Library, 123 Broad Street, Middletown, CT 06457 and on the BRAC website at:
http://www.hqda.army.mil/acsim/brac/env_ea_review.htm

Date: _____ _____

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ENVIRONMENTAL ASSESSMENT

FOR BRAC 05 RECOMMENDATIONS FOR CLOSURE, DISPOSAL AND REUSE OF THE MIDDLETOWN UNITED STATES ARMY RESERVE CENTER (USARC) MIDDLETOWN, CONNECTICUT

Approved by:

99th REGIONAL SUPPORT COMMAND

For Jeffrey M. Haase
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DPW Regional Engineer

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY: U.S. Army Reserve 99th Regional Support Command

TITLE OF PROPOSED ACTION: Environmental Assessment for BRAC 05 Closure, Disposal and Reuse of the Middletown United States Army Reserve Center (USARC), Middletown, Connecticut

AFFECTED JURISDICTIONS: Middlesex County, Connecticut

PREPARED BY: U.S. Army Corps of Engineers, Mobile District, Commanding

APPROVED BY: Jose E. Cepeda, COL EN, DPW Regional Engineer

ABSTRACT: On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended closure of the Middletown USARC and realignment of essential missions to a new USARC to be constructed at a new location. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

The deactivated USARC property is excess to Army military need and will be disposed of according to applicable laws, regulations, and national policy. Pursuant to the Council on Environmental Quality (CEQ) regulations (40 *Code of Federal Regulations* [CFR] Parts 1500-1508) for implementing the procedural provisions of the *National Environmental Policy Act* of 1969 (NEPA) (42 United States [U.S.C.] § 4321 et seq.) and the U.S. Department of Army Regulation 32 CRF Part 651 (*Environmental Analysis of Army Actions*), the Army has prepared this Environmental Assessment to assess the environmental and socioeconomic impacts of disposing of the property and reasonable, foreseeable reuse alternatives.

None of the predicted effects of the proposed action would result in significant impacts to the quality of the human or biological environment in Middletown, Connecticut. Moreover, mitigation would not be necessary to offset impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with NEPA.

REVIEW PERIOD: The 30-day public-review period begins by publishing a Notice of Availability of the final EA and a draft Finding of No Significant Impact (FNSI) in a local newspaper, *The Middletown Press*, and a regional newspaper, *The Hartford Courant*. The EA and draft FNSI are made available during the public-review period at Russell Library, 123 Broad Street, Middletown, CT 06457 and on the BRAC website at:

http://www.hqda.army.mil/acsim/brac/env_ea_review.htm. The Army invites the public and all interested and affected parties to review and comment on this EA and the draft FNSI. Comments on the EA and draft FNSI should be submitted during the public comment period by electronic mail to:

Ms. Amanda Murphy
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99th RSC DPW
5231 South Scott Plaza
Fort Dix, NJ 08640
amanda.w.murphy.ctr@us.army.mil

EXECUTIVE SUMMARY

ES.1 Introduction

This Environmental Assessment (EA) analyzes the potential environmental impacts associated with the U.S. Army's proposed action for closure, disposal, and reuse of the Middletown United States Army Reserve Center (USARC), Middletown, Connecticut as directed by the Defense Base Closure and Realignment (BRAC) Commission's recommendations.

Pursuant to the Council on Environmental Quality (CEQ) regulations (40 *Code of Federal Regulations* [CFR] Parts 1500-1508) for implementing the procedural provisions of the *National Environmental Policy Act* of 1969 (NEPA) (42 United States [U.S.C.] § 4321 et seq.) and the U.S. Department of Army Regulation 32 CRF Part 651 (*Environmental Analysis of Army Actions*), the Army has prepared this EA to assess the environmental and socioeconomic impacts of disposing of the property and reasonable, foreseeable reuse alternatives.

ES.2 Purpose and Need

On September 8, 2005, the BRAC Commission recommended closure of the 23.7-acre Middletown USARC and realignment of essential missions to a new USARC to be constructed at a new location. This recommendation was made in conformance with the provisions of the BRAC Act of 1990 (Public Law [PL] 101-510), as amended. The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy.

ES.3 Background and Setting

The Middletown USARC is located in Middlesex County in the Connecticut River Valley, 20 miles south of Hartford, Connecticut and 40 miles northwest of Bridgeport, Connecticut. Adjacent counties include Hartford to the north, New Haven to the west, and New London County to the east. Middlesex County is comprised of 439 square miles and includes one city, 14 towns, one borough, and 11 villages.

ES.4 Proposed Action

The proposed action is the disposal of surplus property made available by the realignment of Middletown USARC. Redevelopment and reuse of the surplus USARC property (the "Property") would occur as a secondary action under disposal.

ES.5 Disposal Process

The Army screened the Property for reuse with the Department of Defense and other federal agencies. No federal agency expressed an interest in reusing the Property. The Middletown Common Council established the Middletown Base Realignment and Closure Local Redevelopment Authority (the "LRA") to formulate a recommendation for the reuse of this Property. After being recognized formally by the Office of Economic Adjustment (the "OEA"), the LRA screened this Property with state and local governments, representatives of the homeless, and other interested parties. After reviewing 3 reuse proposals and recommendations

and all public comments, the LRA recommended the Property be reused for an emergency operations center (this EA's Preferred Alternative). The Federal Emergency Management Agency (FEMA) approved the LRA reuse plan on March 12, 2012, and will sponsor a public benefit conveyance of this property by the Army to Middletown for this purpose

ES.6 Alternatives

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

Under Preferred Alternative, the Army would make a public benefit conveyance of the entire parcel to the City of Middletown for an emergency operations center, as recommended by the LRA in their reuse plan. This alternative includes a fire training school and an additional fire station to serve the City's west side, along with a new emergency operations center. The existing building would serve as the central training/administrative facility for the regional fire training center. A new maintenance garage/shop would be constructed as well as the specialized training facilities. A new City firehouse would be constructed on the north side of the Property, adjacent to Mile Road. A new emergency operations center would be constructed in an area adjacent to the new City fire station (City of Middletown Local Redevelopment Agency, 2008).

The City would acquire the Property through a public benefit conveyance with FEMA serving as the sponsoring federal agency.

No Action Alternative: Caretaker Status

The Army in consultation with the LRA determines the initial maintenance levels for the closed Middletown USARC and their duration on a facility-by-facility basis. At a minimum these levels ensure weather tightness for buildings, limit undue facility deterioration, and provide physical security. At the end of the initial maintenance period the Army normally reduces its maintenance to the minimum level for surplus government property as required by 41 CFR Parts 102-75.945 and 102-75.965 and Army Regulation 420-1 (Army Facilities Management).

Alternatives Considered and Eliminated from Further Analysis

Early Transfer and Reuse Before Cleanup is Completed

Under this alternative, the Army would take advantage of various property transfer and disposal methods that allow the reuse of contaminated property to occur before all remedial actions have been completed. One method is to transfer the property to a new owner who agrees to perform or to allow the Army to perform all remedial actions required under applicable Federal and state requirements. Allowing the property to be transferred before cleanup is complete requires concurrence of environmental authorities and the governor of the affected state. The property must be suitable for the new owner's intended use, and the intended use must be consistent with protection of human health and the environment. This alternative was not carried forward for further analysis because environmental investigation at the Property indicated that all remedial actions have been completed and no further action is required.

Other Disposal Options

In addition to the Preferred Alternative (Emergency Operations Center), the LRA considered the following proposed reuses: (1) a consolidated preschool/kindergarten facility and (2) active and passive recreational purposes. Since these alternatives were not selected by the LRA as their proposed reuse plan, they were not carried forward for further analysis in this EA.

Continue Operating the USAR Center

Under this alternative, the Army would continue operations at the Middletown USARC at levels similar to those that occurred prior to the BRAC 2005 Commission's recommendations for closure becoming final. The Reserve mission at the USARC has ended and it is unlikely that it would ever resume, given the recommendation of the BRAC Commission. Additionally, the environmental impacts of continued operations are very similar to the environmental impacts of the Traditional Army Disposal and Reuse as Emergency Operations Center Alternative and are within the scope of the environmental impact analysis for the Emergency Operations Center Alternative. Consequently, this alternative was not carried forward for further analysis in this EA.

ES.5 Environmental Consequences

Under the Preferred Alternative, the proposed action would not have any significant adverse effects on the resource areas at the Middletown USARC or to areas surrounding the Property. For all resource areas analyzed in detail – land use, aesthetics and visual resources, geology and soils, noise, air quality, water resources, socioeconomics, transportation, hazardous and toxic substances, cumulative effects, and utilities – the impacts were evaluated to be at the No Significant Effect level. In addition, the effects of the Preferred Alternative on cultural resources and biological resources were determined to be at the No Effect level.

Under the No Action or Caretaker Status Alternative, the proposed action would not take place and the potential environmental effects were determined to be at the No Effect level for all analyzed resource areas.

ES.6 Mitigation Responsibility and Permit Requirements

None of the predicted effects of the Preferred Alternative would result in significant impacts; therefore, mitigation is not needed.

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) analyzes the environmental impacts of the proposed closure, disposal, and reuse of the Middletown United States Army Reserve Center (USARC), Middletown, Connecticut (Figure 1-1). This EA was developed in accordance with the *National Environmental Policy Act of 1969* (NEPA) (42 United States Code [U.S.C.] § 4321 et seq.); NEPA implementing regulations issued by the President's Council on Environmental Quality (CEQ), 40 *Code of Federal Regulations* (CFR) Parts 1500-1508; and *Environmental Analysis of Army Actions*, 32 CFR Part 651. The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives. Pursuant to NEPA and its implementing regulations, the Army has prepared this environmental assessment to disclose the likely environmental and socioeconomic impacts of disposing of the property and reasonable, foreseeable reuse alternatives.

1.2 PURPOSE AND NEED

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended closure of the 23.7-acre Middletown USARC (Figure 1-2) and realignment of essential missions to a new USARC to be constructed at a new location. This recommendation was made in conformance with the provisions of the BRAC Act of 1990 (Public Law [PL] 101-510), as amended. The deactivated USARC property is excess to Army military needs and will be disposed of according to applicable laws, regulations, and national policy.

1.3 PUBLIC INVOLVEMENT

The Army is committed to open decision-making. The collaborative involvement of other agencies, organizations, and individuals in the NEPA process enhances issue identification and problem solving. In preparing this EA, the Army consulted or coordinated with the State Historic Preservation Officer (SHPO), US Fish and Wildlife Service (USFWS), Native American Tribes, federal, state and local regulatory agencies, state and local governments, non-government organizations, individuals and others as appropriate.

The 30-day, public-review period begins by publishing a Notice of Availability of the final EA and a draft Finding of No Significant Impact (FNSI) in a local newspaper, *The Middletown Press*, and a regional newspaper, *The Hartford Courant*. The EA and draft FNSI are made available during the public-review period at Russell Library, 123 Broad Street, Middletown, CT 06457 and on the BRAC website at http://www.hqda.army.mil/acsim/brac/env_ea_review.htm. The Army invites the public and all interested and affected parties to review and comment on this EA and the draft FNSI. Comments and requests for information should be submitted to the Environmental Coordinator of the United States Army Reserve (USAR) 99th Regional Support Command (RSC): Amanda Murphy, NEPA Program Coordinator at amanda.w.murphy.ctr@us.army.mil or 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640.

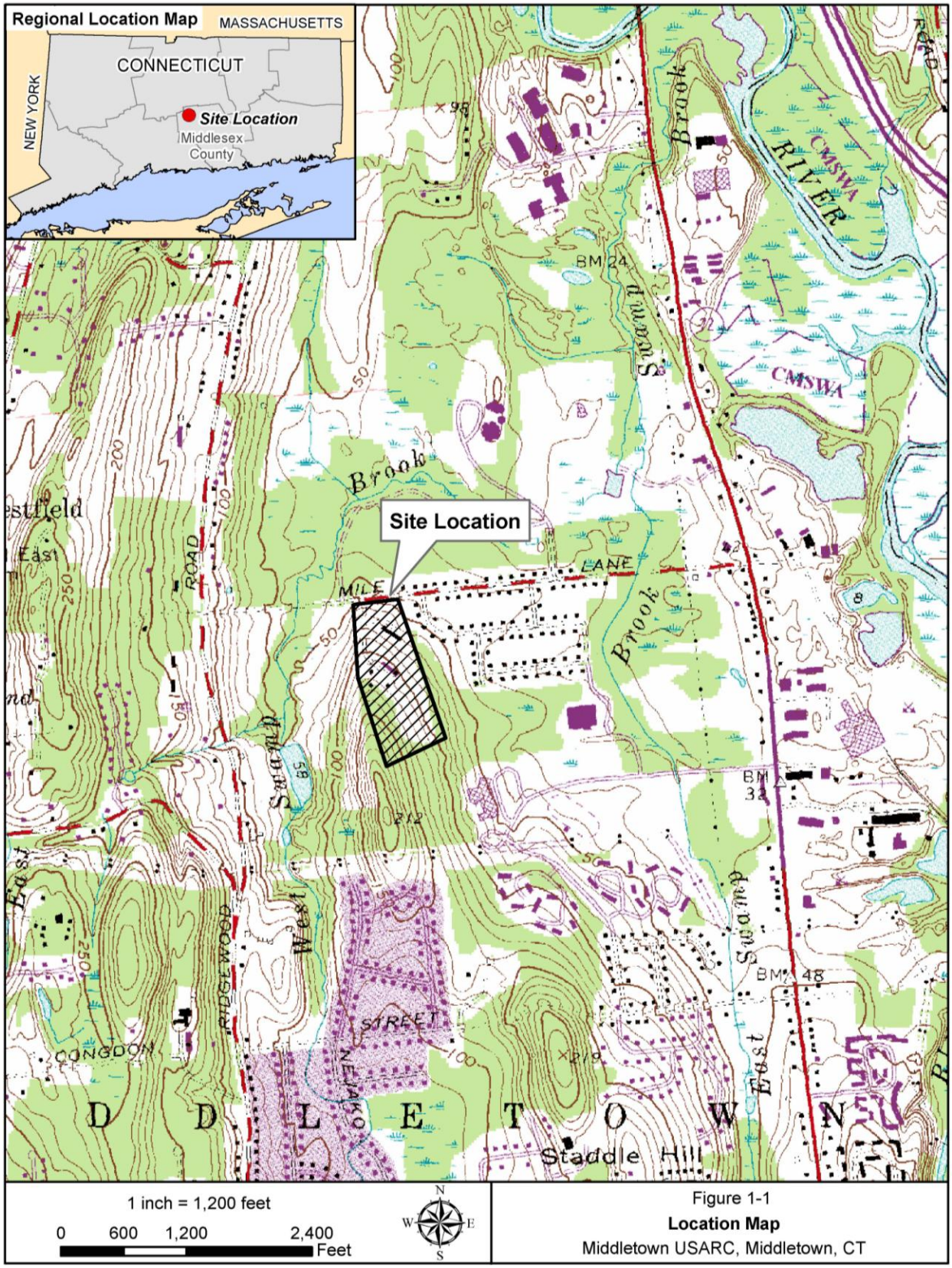


Figure 1-1
Location Map
Middletown USARC, Middletown, CT

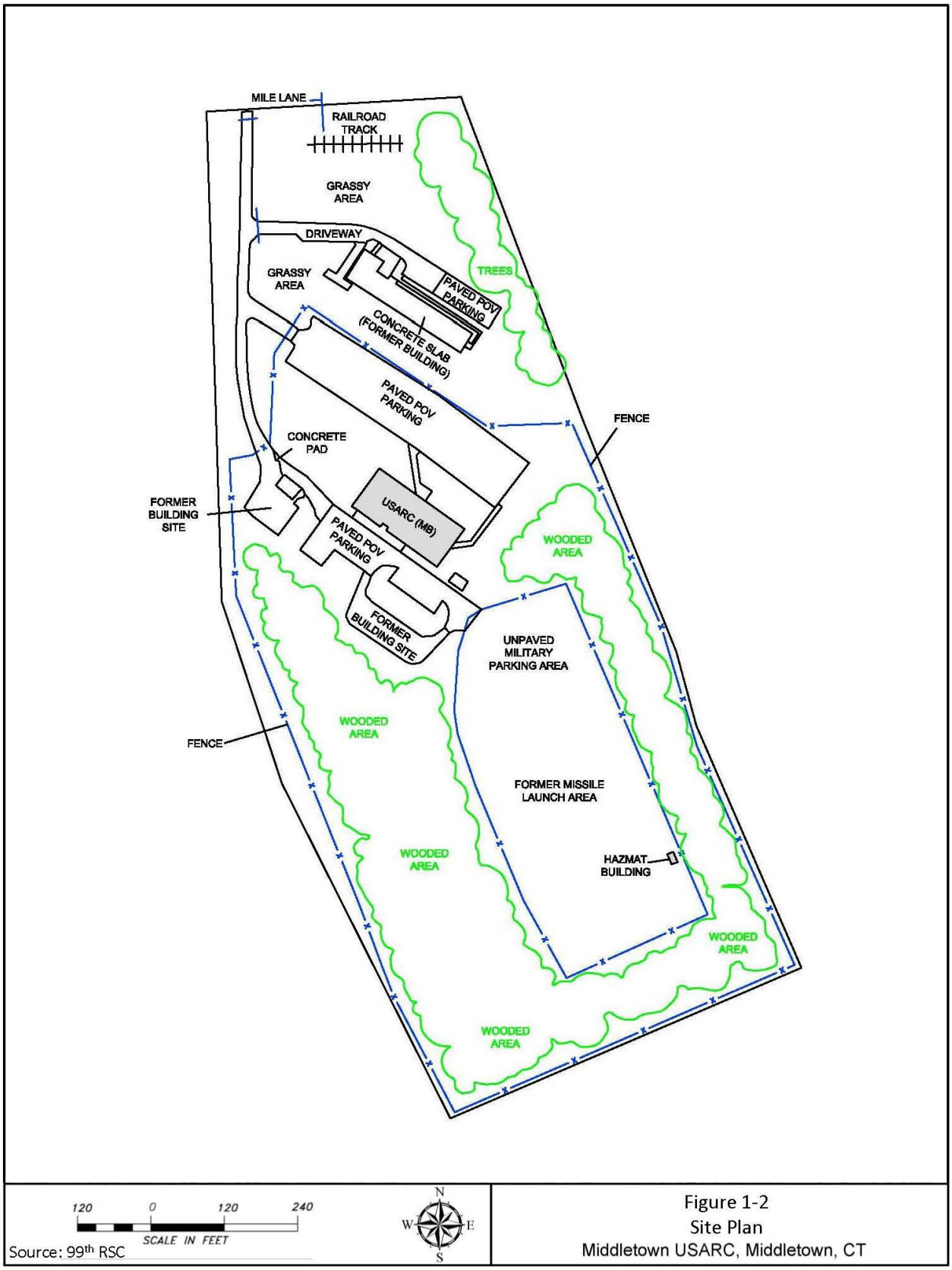


Figure 1-2
Site Plan
Middletown USARC, Middletown, CT

At the end of the 30-day public-review period, the Army reviews all comments received; compares environmental impacts associated with reasonable alternatives; revises the FNSI or the EA, if necessary; supplements the EA, if needed; and makes a decision. If the impacts of the proposed action are not significant, the Army may execute the FNSI and the action may proceed immediately. If potential impacts are found to be significant, the Army may decide to (1) not proceed with the proposed action, (2) proceed with the proposed action after committing to mitigation reducing the anticipated impact to a less than significant impact in the revised Final FNSI, or (3) publish a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the Federal Register.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the disposal of surplus property made available by the realignment of Middletown USARC. Redevelopment and reuse of the surplus USARC property (the "Property") would occur as a secondary action under disposal.

Under BRAC law, the Army was required to close the Middletown USARC not later than September 15, 2011. The Middletown USARC was closed on September 15, 2006 and the Army will dispose of the Property. As a part of the disposal process, the Army screened the Property for reuse with the Department of Defense and other federal agencies. No federal agency expressed an interest in reusing this Property for another purpose.

2.1 BRAC COMMISSION'S RECOMMENDATION

The BRAC Commission's recommendation is to:

"**Close the US Army Reserve Center, Middletown, CT;** the Organizational Maintenance Shop, Middletown, CT; the SGT Libby US Army Reserve Center, New Haven, CT; the Organizational Maintenance Shop, New Haven, CT; the Army Reserve Area Maintenance Support Activity #69, Milford, CT and relocate units to a new Armed Forces Reserve Center, Organizational Maintenance Shop and Army Maintenance Support Activity in Middletown, Connecticut, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC, OMS and AMSA shall have the capability to accommodate units from the following facilities: Connecticut Army National Guard Armories in Putnam, Manchester, New Britain and the CTARNG facility in Newington, CT if the state decides to relocate those National Guard units."

The environmental impacts resulting from the construction and operation of the new Armed Forces Reserve Center at Middletown, Connecticut were analyzed in the *Environmental Assessment for the Construction of an Armed Forces Reserve Center and Implementation of BRAC 05 Realignment Actions at Middletown, Connecticut,* April 2009. The disposal of the SGT Libby USARC and the Army Reserve Area Maintenance Support Activity #69 are subject to separate NEPA analyses.

2.2 LOCAL REDEVELOPMENT AUTHORITY'S REUSE PLAN

At a public meeting on April 3, 2006, the Middletown Common Council, Connecticut, passed a resolution establishing the Middletown Base Realignment and Closure Local Redevelopment Authority (the "LRA") for the purpose of formulating a recommendation for the reuse of the Middletown USARC. According to the Federal Property Administrative Services Act of 1949 and the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, the LRA screened this Federal Government surplus property by soliciting notices of interest from state and local governments, representatives of the homeless, and other interested parties. On August 18, 2008, after reviewing three reuse proposals and recommendations and all public

comments, the LRA recommended that the Property be reused for an emergency operations center (City of Middletown Local Redevelopment Agency, 2008). The LRA reuse plan was approved by the U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA) on March 12, 2012. As described in the Mile Lane Army Reserve Center Redevelopment Plan (see Appendix A), under the LRA reuse plan The Army would transfer the Property to the City of Middletown by a public benefit conveyance for reuse, with the U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA) serving as the sponsoring federal agency.

2.3 DESCRIPTION OF THE MIDDLETOWN USARC (THE "PROPERTY")

In September 1955, the U.S. Government purchased 23.7 acres of undeveloped land, located at 499 Mile Lane, Middletown, Connecticut, to construct a Nike Missile Launch facility (Nike surface-to-air missile battery HA-48). This Nike mission ended in 1968 and the site was closed. In 1970, the US Army Reserve acquired the Property for use as the Middletown USARC. The Army used the existing Nike barracks and Administration Building on the Property from 1970 until 1987, when the new USARC building was completed. Until the Middletown USARC was closed in 2006, it was the administrative base for the 1205th Transportation Railway Operating Battalion and Hospital unit. Currently, the Property has one permanent structure:

- 15,800-square-foot USARC building (Figures 2-1 and 2-2).



Figure 2-1: Middletown USARC Building, facing south, southwest.



Figure 2-2: Middletown USARC Building, facing north, northwest.

The Middletown USARC is currently closed and unoccupied. The Army secured the USARC after the military mission ended in 2006 to ensure public safety and the security of remaining government Property and to complete any required environmental remediation actions. Accordingly, the Middletown USARC is in caretaker status.

Figure 1-2 shows the Middletown USARC site plan. The USARC building consists of a one- to two-story, ribbed-block concrete construction building. An approximately 3.1-acre military-equipment parking (MEP) area (unpaved), 0.8-acre privately-owned vehicle parking area (paved), 0.2-acre privately-owned vehicle (POV) parking area (paved), and 0.4-acre privately-owned vehicle parking area (paved) are also on the site. Approximately 3.0 acres of the site are covered by impervious surface features such as asphalt parking areas, driveways, concrete walkways, and current/former building footprints; and an additional 3.1 acres are covered by gravel (MEP parking area/ former missile launch area). The remaining 17.5 acres of land are undeveloped. Undeveloped land on the southern portion of the Property primarily consists of wooded areas that have been left undisturbed; undeveloped land of the northern portion of the site consists of grassy areas with trees. The northernmost part of the Property closest to Mile Lane also contains approximately 300 feet of railroad track that was built for the 1205th Transportation Railway Operating Battalion. Topographically, the Property has an elevation difference of approximately 100 feet. A chain-link security fence topped with barbed wire encloses portions of the Property, as illustrated in Figure 1-2.

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3.0 ALTERNATIVES

An integral aspect of the NEPA process is that agencies are to give full consideration to all reasonable alternatives to a proposed action. Considering alternatives helps to avoid unnecessary impacts and enables analysis of practical ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be deemed reasonable; i.e., it must be capable of implementation, sufficiently meet the purpose of and need for the action, and affordable. The following discussion identifies the feasible alternatives that have been considered by the U.S. Army and evaluated in this EA.

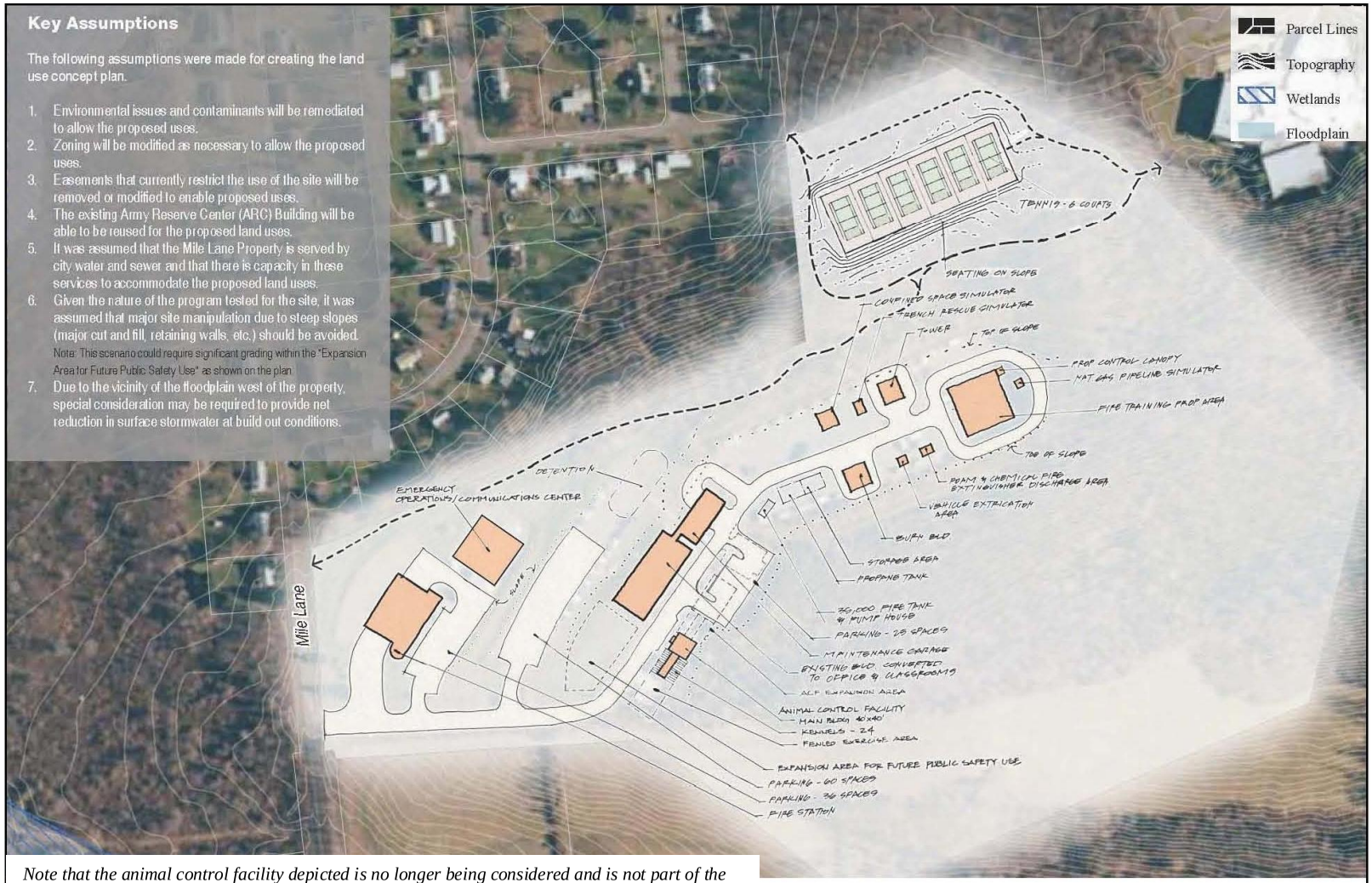
3.1 PREFERRED ALTERNATIVE: TRADITIONAL ARMY DISPOSAL AND REUSE AS EMERGENCY OPERATIONS CENTER BY THE CITY OF MIDDLETOWN

Under this alternative, the Army would make a public benefit conveyance of the entire parcel to the City of Middletown for an emergency operations center, as recommended by the LRA in their reuse plan. (See Appendix A for a copy of the Mile Lane Army Reserve Center Redevelopment Plan).

The proposed reuse of the Property is depicted in Figure 3-1. This emergency operations center alternative includes a fire training school and an additional fire station to serve the City's west side, along with a new emergency operations center. The existing building would serve as the central training/administrative facility for the regional fire training center. A new maintenance garage/shop would be constructed as well as the specialized training facilities. There is ample room on Property for all of these functions, as well as for a new City firehouse to be constructed just off Mile Lane on the north side of the Property. Included in the conceptual design is a new emergency operations center to be located near the new City firehouse, and room for potential future public safety uses. The existing fencing around the Property could be used "as-is" for the fire training center (City of Middletown Local Redevelopment Agency, 2008). Note that the animal control facility depicted in the LRA Site Reuse Plan (Figure 3-1) is no longer being considered and is not part of the Preferred Alternative.

The average daily user population generated by the Preferred Alternative is estimated to be approximately 46 people (50 during the week and 35 on weekends). This estimate is based on the LRA reuse plan and the following information provided during conversations with Middlesex County Fire School and the Middletown Fire Department staff.[1] The new City fire station would require up to four firefighters; these would be existing personnel currently located at other fire stations in the City. The existing Middlesex County Fire School would relocate to the Property and approximately 31 people (including instructors) would be at the facility for training activities during weekday evenings and on weekends. The City of Middletown Fire Department also would use the training facility; approximately 19 personnel would be onsite up to four days a week for training activities. The operation of the fire training center would not generate new employees.

[1] Personal Communication, D. Braitman, Planner, Louis Berger Group, Inc. and John Woron, Director of Middlesex County Fire School and Assistant Chief, City of Middletown Fire Department, 5/25/2011.



Note that the animal control facility depicted is no longer being considered and is not part of the Preferred Alternative.

Source: Mile Lane Army Reserve Center Redevelopment Plan, RKG Associates, Inc. 2008

Figure 3-1
Middletown Base Realignment and Closure LRA Site Reuse Plan
Middletown USARC, Middletown CT

Under this alternative, the City would acquire the Property through a public benefit conveyance with FEMA serving as the sponsoring federal agency. This use would qualify for a 100 percent discount of the fair market value.

3.2 NO ACTION ALTERNATIVE: CARETAKER STATUS

The Middletown USARC is currently closed and vacant. The Army secured the USARC after the military mission ended in 2006 to ensure public safety and the security of remaining government Property and to complete any required environmental remediation actions. Accordingly, the Middletown USARC site is in caretaker status. Until conveyance of the Property, the Army will continue to provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. The Army has reduced maintenance levels to the minimum level for surplus government property as specified in 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Buildings and Structures). The inclusion of the No Action alternative is prescribed by the CEQ regulations implementing NEPA and serves as a benchmark against which the environmental impacts of the action alternatives may be evaluated. Therefore, the No Action alternative is evaluated in the EA.

3.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER ANALYSIS

3.3.1 Early Transfer and Reuse Before Cleanup is Completed

Under this alternative, the Army would take advantage of various property transfer and disposal methods that allow the reuse of contaminated property to occur before all remedial actions have been completed. One method is to transfer the property to a new owner who agrees to perform or to allow the Army to perform all remedial actions required under applicable Federal and state requirements. Allowing the property to be transferred before cleanup is complete requires concurrence of environmental authorities and the governor of the affected state. The property must be suitable for the new owner's intended use, and the intended use must be consistent with protection of human health and the environment. This alternative was not carried forward for further analysis because environmental investigation at the Property indicated that all remedial actions have been completed and no further action is required.

3.3.2 Other Disposal Options

The Middletown Base Realignment and Closure LRA screened this Federal Government surplus property by soliciting notices of interest from state and local governments, representatives of the homeless, and other interested parties, as required by the Federal Property Administrative Services Act of 1949, the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, and Redevelopment and Homeless Assistance Act of 1994. None of these entities submitted a notice of interest for reusing the Property. In addition to the LRA reuse plan for an emergency operations center as described above in Section 3.2, the LRA considered adoption of the following reuses of the Property:

- consolidated preschool/kindergarten facility, and
- active and passive recreational purposes.

Since these alternatives were not selected by the Middletown Base Realignment and Closure LRA as their official reuse plan, they were not carried forward for further analysis in this EA.

3.3.3 Continue Operating the USAR Center

Under this alternative, the Army would continue operations at the Middletown USARC at levels similar to those that occurred prior to the BRAC 2005 Commission's recommendations for closure becoming final. The Reserve mission at the USARC has ended and it is unlikely that it would ever resume, given the recommendation of the BRAC Commission. Additionally, the environmental impacts of continued operations are very similar to the environmental impacts of the Preferred Alternative and these impacts are within the scope of the environmental impact analysis for the Preferred Alternative. Consequently, this alternative was not carried forward for further analysis in this EA.

4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

This chapter describes the existing environmental and human resources that may be affected by the proposed action and alternatives. The affected environment is the baseline to understand the potential effects of the alternatives under consideration (40 CFR 1502.15). The geographic region of influence (ROI), or study area for each resource category is the Middletown USARC, unless stated otherwise in the individual resource category discussion. Most of the baseline information was taken from existing documentation. This chapter also describes the potential impacts of the proposed action and alternatives.

An impact is defined as a consequence from modification to the existing environmental conditions due to a proposed action or alternative. An impact can be beneficial or adverse, a primary result of an action (direct) or a secondary result (indirect), and can be permanent (long term) or temporary and of short duration (short term). Cumulative effects are those environmental impacts that result from the incremental effects of other past, present, or reasonably foreseeable future actions when combined with the proposed action.

Impacts are classified as significant or not significant based on significance criteria developed for the affected resource categories analyzed. For many resource categories, significance criteria are qualitative in nature. Quantitative criteria can be established when there are specific numerical thresholds established by regulation or industry standard. Significance criteria are based on existing regulatory standards, scientific and environmental documentation, and/or professional judgment. Significant impacts are those which would exceed the quantitative or qualitative limits of the established criteria (i.e., exceed federal, state or local law or requirements imposed for the protection of the environment), or that would have adverse effects upon public health or safety. Impacts are not necessarily adverse changes, and any detectable change is not, in and of itself, considered to be negative. To highlight adverse impacts for the decision maker, in the following discussions the impacts are considered adverse unless identified as beneficial.

Twelve resource areas were initially considered for potential impacts from the proposed action and alternatives: land use; aesthetics and visual resources; noise; air quality; geology and soils; water resources; socioeconomics; transportation; hazardous and toxic substances; biological resources; cultural resources; and utilities. As discussed below, some resources were eliminated from detailed analysis.

4.1 ENVIRONMENTAL RESOURCES AND CONDITIONS ELIMINATED FROM FURTHER CONSIDERATION

Army NEPA Regulations (32 CFR § 651.14) states the NEPA analysis should reduce or eliminate discussion of minor issues to help focus analyses. This approach minimizes unnecessary analysis and discussion during the NEPA process and in analysis documents. The Council on Environmental Quality Regulations for implementing NEPA (40 CFR § 1500.4(g)) emphasizes the use of the scoping process, not only to identify significant environmental issues

deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental assessment/environmental impact statement process.

4.1.1 Environmental resources and conditions that are not present

Neither alternative would have direct, indirect, or cumulative impacts on these environmental resources, because these environmental resources do not exist on or near the Property:

Floodplains—The Property is not located within a 100- or 500-year floodplain (FEMA Flood Insurance Rate Map, Flood Plain Panel Numbers 09007C0104G and 09007C0108G; FEMA, 2008).

Coastal Barriers and Zones—The Office of Long Island Sound Program, the lead agency for the Connecticut Coastal Management Program, defines coastal zone as area within 1,000 feet from a tidal river or the shore. This Property is not in a coastal zone nor is it included in the coastal zone management plan (Kemron, 2007).

National and State Parks—The nearest national historic site is Springfield Armory National Historic Site, which is located approximately 37 miles from the Property in Springfield, Massachusetts. The nearest state parks are Wadsworth Falls State Park and Blow Hole State Park, which are located approximately 3 to 4 miles from the Property. .

Wilderness Areas and Wildlife Refuges—The nearest national wilderness area is Otis Pike Fire Island High Dune Wilderness, which is located approximately 61 miles from the Property. The nearest national wildlife refuge is Stewart B. McKinney National Wildlife Refuge, which is located 23 miles from the Property.

National Wild and Scenic Rivers—The nearest National Wild and Scenic River is the Eightmile River, which is located over 20 miles southeast of the Property.

Federal- and State-Listed Threatened, Endangered, or Candidate Species—The USFWS concurred in informal coordination that threatened and endangered species will not be affected. The Connecticut Department of Environmental Protection (CTDEP) concurred that no effect to state sensitive species is expected as a result of the proposed action on June 27, 2011. (See Appendix B.)

Prime or Unique Wildlife Habitat—The USFWS has not designated critical habitat on or in the vicinity of the Property. (See Appendix B.)

Prime and Unique Farmlands—The Property is not prime or unique farmland as defined by 7 CFR 658.2(a), because the definition of farmland does not include land already in or committed to urban development.

Cultural, Historic, and Archeological Properties—On May 5, 2010 the Connecticut State Historic Preservation Officer (CT SHPO) concurred with the Army's determination that the proposed disposal and reuse of the Middletown USARC would have no adverse effect on cultural, historic, or archeological properties. The following four Tribal Historic Preservation Officers (THPOs) were invited to participate in the Section 106 consultation process for proposed action: Delaware Nation, Delaware Tribe, Mashantucket Pequot Tribe, and the Mohegan Indian Tribe. The Mashantucket Pequot and Mohegan Indian Tribes concurred with

the SHPO findings and did not request further efforts of reconnaissance survey. The Delaware Nation did not express an interest in the Property and the no response was received from the Delaware Tribe. (See Appendix B.)

4.1.2 Environmental resources and conditions that are present, but not impacted

None of the planned or reasonably foreseeable demolition, renovation, construction, or landscaping activities associated with the alternatives would alter or affect radon gas. Thus neither alternative would have direct, indirect, or cumulative impacts on this environmental resource.

***Radon Gas*—**Middlesex County is EPA Zone 1, with a predicted average indoor radon screening level greater than 4 picocuries per liter (pCi/L) (EPA 2010b). However, Middlesex County records indicate that, based on test results, the average indoor radon level in Middlesex County is 2.4 pCi/L. No site-specific radon survey has been conducted at the Property. The USEPA recommended action level for radon abatement is 4 pCi/L. The average county radon level is below 4 pCi/L and no mitigation measures are required.

4.1.3 Environmental resources and conditions are present, but the proposed action will have little or no measurable environmental effect on these resources

***Utilities*—**Local municipal entities provide all major utilities (electricity, water, natural gas, sewer) in the area. The site is located in a developed residential area with adequate services and the uses proposed under the Preferred Alternative would be able to tie into the existing, local municipality utility systems. The Proposed Action would not have a significant direct, indirect, or cumulative impact on utilities. Originally, the site consisted of military silos, barrack facilities for 90 men and other buildings. Later, it was converted to administration, classroom, and storage buildings (Department of Planning, Conservation and Development, City of Middletown, 2007). Under the Preferred Alternative, the increase in demand for and usage of utilities at the Property would be would be relatively minor compared to overall utility usage levels of utility provider service areas. Thus it is anticipated that capacity exists to serve the Preferred Alternative, and significant adverse direct, indirect or cumulative effects would not be expected to occur.

Utility services are provided to the Property as follows:

- Electrical Service and Distribution—Electrical power is currently available on the Property, provided by Connecticut Light & Power (CL&P). An electrical power line runs along the entrance road to the Property. The proposed uses associated with the Preferred Alternative would be able to tie into existing electrical lines. Coordination with the CP&L would be conducted regarding specific size and location of services to the Property during the design phase of the project.
- Yankee Gas—An 8-inch stainless steel gas main is located along Mile Lane in the vicinity of the Property. Natural gas is currently provided to the Property by Yankee Gas Services Company. The Property is located in a developed residential area and natural gas capacity is adequate for the residential area.

- Potable Water Supply—Potable water services are provided by Middletown Water and Sewer Department. An 8- and a 12-inch Ductile Iron Pipe water line runs along Mile Lane. Potable water is currently available on the Property; potable water is currently provided to the existing Administration building and a line to the previously demolished buildings has been capped. A fire hydrant currently exists near the Property on Mile Lane. Fire hydrant flow testing and coordination with the Middletown Water and Sewer Department would be required to verify the pressure and capacity for the Property.
- Sanitary Sewer Service—Sanitary sewer service is currently available on site, provided by the Middletown Water and Sewer Department. An 8-inch Transite line has been installed on the Property, running from a manhole in Mile Lane to the northeast corner of the Property.

Executive Order (EO) 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," was signed by President Obama on 5 October 2009. The goal of EO 13514 is "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions (GHG) a priority for Federal agencies."

Towards meeting that goal, Federal agencies are required to meet a series of deadlines critical to achieving the GHG reduction goals of the EO. The property disposal and reuse is unlikely to have a significant effect on greenhouse gas emissions, thus it is expected that the proposed action would generally comply with EO13514.

CL&P, with support from the Connecticut Energy Efficiency Fund, provides customers with innovative, energy-conscious options in accordance with EO 13514. For example, Connecticut Light and Power offers customers the opportunity to participate in the Energy Conscious Blueprint, where they will work with the client and design team to determine energy needs and make decisions based on advanced efficiencies in technology and high-performance design.

4.2 ENVIRONMENTAL RESOURCES ANALYZED IN DETAIL

4.2.1 Land Use

4.2.1.1 Affected Environment

This section describes existing land use conditions on and surrounding the Middletown USARC. It considers natural land uses and land uses that reflect human modification. Natural land use classifications include wildlife areas, forests, and other open or undeveloped areas. Human land uses include residential, commercial, industrial, utilities, agricultural, recreational, and other developed uses. Management plans, policies, ordinances, and regulations determine the types of uses that are allowable, or protect specially designated or environmentally sensitive uses. The following sections discuss the regional geographic setting, location, and climate; site land use; surrounding land use; and current and future development.

Regional Geographic Setting and Location

The Middletown USARC is located in Middlesex County in the Connecticut River Valley, 20 miles south of Hartford, Connecticut and 40 miles northwest of Bridgeport, Connecticut.

Adjacent counties include Hartford to the north, New Haven to the west, and New London County to the east. Middlesex County is comprised of 439 square miles and includes one city, 14 towns, one borough, and 11 villages. The County has a population of more than 160,000 residents and consists of developed areas with residential, commercial, and industrial facilities, as well as agricultural areas (http://factfinder.census.gov/). Like all Connecticut counties, there is no county seat.

Site Land Use

The U.S. Government purchased the Property in September 1955. From 1956 to 1958, the 23.7-acre site served as a Nike Ajax missile launch facility. The Middletown Nike facility was decommissioned in 1968, and the property was transferred to the USAR in 1970. The 1205th transportation railway operating battalion occupied the Property until 2006, using it primarily for administrative purposes. The Property currently has one permanent structure, a 15,800-square-foot USARC building that was constructed in 1987; the original Nike Missile facility structures on the Property were demolished in the late 1990s. The Property is located in a semi-rural area of farms and residences. The Property is currently vacant and has not been occupied since 2006.

The Property is located within the City of Middletown's R-15 zone, which is a predominately residential land use zone. Allowed uses by right include single family dwellings and farming (agriculture). Minimum lot size is 15,000 square feet with 100 feet of frontage on an approved street. Uses allowed under special exception include childcare facilities, outdoor recreation, educational facilities and active adult housing. The City's zoning codes (and subdivision regulations) also impose limitations on development based on soil types, wetlands and slopes.

Surrounding Land Use

The City of Middletown's Planning Department states that there are about 27,800 acres of land within the City of Middletown. Approximately 57 percent of the City's land area remains undeveloped, while residential development accounts for roughly 22 percent of the land area. Commercial development occupies approximately one percent of the City's land area, industrial development accounts for roughly four percent of the land area, public institutions consume approximately three percent of the land area, and roads and water bodies occupy the remaining (roughly 13 percent) land area. The City has 28 different zoning classifications, the majority of which are residential, followed by industrial and then business. Approximately 75 percent of the land is zoned for residential use, 15 percent for industrial use, and less than three percent for commercial use. The remaining seven percent of the City's land is zoned for "other" use, such as institutional, etc. (Department of Planning, Conservation and Development, City of Middletown, 2010).

Zoning districts in the surrounding area include R-15, R-1 (Restricted Residence) and PRD (Planned Residential Development) III. Consistent with the zoning, surrounding land uses include single family residential, farmland, institutional (public school), and open space or parkland. The Property is bordered to the north and east by a relatively new residential subdivision, with land located to the north across Mile Lane is generally undeveloped except for a few single family homes. To the west is active agricultural land (hay fields).

Current and Future Development in the Region of Influence

The ROI includes Middlesex County, located in the Connecticut River Valley. Between 2000 and 2009, Middlesex County grew from a population of 155,000 in 2000 to over 164,000 in 2009 (Census, 2011). The Town of Middletown also continues to expand, and includes the addition of over one million square feet of commercial space in the last decade (City of Middletown, 2010). The City of Middletown plans to improve parking and transportation facilities, redevelop sections of the city, and provide additional recreation opportunities in the future. The ROI is described in further detail in Section 4.2.7, Socioeconomics.

4.2.1.2 Environmental Consequences

Considerations for impacts to land use include the land on and adjacent to the proposed action project area, the physical features that influence current or proposed uses, pertinent land use plans and regulations, and land availability. Potentially significant impacts to land use could occur if the proposed action would:

- Conflict with applicable ordinances and/or permit requirements;
- Cause nonconformance with the current general plans and land use plans;
- Preclude adjacent or nearby properties from being used for existing activities; or
- Conflict with established uses of an area requiring mitigation.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

The Preferred Alternative would have a minimal impact on land use because it would be consistent with the former use of the Property as a USARC. In addition, the proposed reuse would not preclude adjacent properties from being used for existing activities. The City of Middletown is the proponent for this alternative and has the regulatory authority to modify zoning to allow the proposed uses (as necessary).

The Preferred Alternative would make use of the existing USARC building and lands and result in the construction of new facilities. The facilities proposed for construction include an approximate 5,000-square-foot maintenance garage/shop, specialized fire training facilities, an approximate 10,000-square-foot emergency operations center, and an approximate 12,000-square-foot firehouse with 2 to 3 bays. The existing USARC building would be retrofitted to enable its reuse as a new fire training center (City of Middletown Local Redevelopment Agency, 2008). Land use of the USARC would change from a vacat**e**d military site in caretaker status to a multi-use public safety facility containing a fire training school, a new fire station for the City of Middletown, and a new emergency operations center. This reuse alternative would be similar to the former use of the property as a USARC and would have similar environmental impacts. Consequently, this alternative would not result in a significant change in land use and would not have a significant effect on land use.

No Action Alternative: Caretaker Status

Under the No Action Alternative, the Army would continue to use the Middletown USARC under Caretaker Status and no change in land use would occur. Any maintenance activities to

preserve and protect the facilities would not conflict with local ordinances, land use plans, or existing land uses. The No Action Alternative would have no effect on land use.

4.2.2 Aesthetics and Visual Resources

4.2.2.1 Affected Environment

The Middletown USARC is located in the City of Middletown, Connecticut within Middlesex County in an area of residential and agricultural uses. At an elevation of approximately 50 to 180 feet above sea level, the topography of the site slopes downwards from the apex on the southwest corner to the north. The landscape in the vicinity of the USARC is characterized by residential areas, undeveloped forested areas, and agricultural areas. To the north of the site is a stand of mixed hardwoods and conifers as well as several single-family homes. To the east, beyond the Property's tree line, is a residential area comprised of single-family homes and a large stand of mixed hardwoods and conifers. To the south of the site is a densely forested area with a large high school complex beyond. To the west of the site are two large field areas with a sparse tree line separating them from the Property.

The eastern border of the Property is lined with tree line of mixed hardwoods and conifers that provides a strong visual buffer between much of the Property and the residential communities. However, from the USARC building looking east, several of the homes in the residential area are visible (Figure 4-1). The land slopes upward to the southwest side of the site to a large forested area that provides a screen between the site and any of the surrounding land uses (Figure 4-2). The western border of the site has a sparse tree line of mixed hardwoods and shrubs. However, due to the topography and scarce tree line, the neighboring fields are visible as is the distant forested area beyond the fields (Figure 4-3). There are no designated protected view sheds or historic resources in the vicinity of the Property.



Figure 4-1: Facing east from USARC building towards residential areas



Figure 4-2: Facing south from gravel area on southern portion of Property towards large forested area



Figure 4-3: Facing west from USARC towards agricultural fields

4.2.2.2 Environmental Consequences

Aesthetics and visual resource quality is affected by visible elements including the size and height of key objects, similarity to surroundings, and visual "fit." In addition, the value of a

viewshed is affected by the number and type of viewers and viewer expectations. These visual elements help to determine the potential effects of the proposed action on aesthetics and existing visual resources. Potentially significant impacts to aesthetic and visual resources could occur if the proposed action would:

- Result in a substantial effect on the existing aesthetic quality of the site and its surroundings;
- Substantially alter scenic resources, including but not limited to, trees and historic buildings;
- Substantially degrade the visual character or quality of the site as viewed from off-site vantage points;
- Significantly diminish overall integrity of the site; or
- Significantly alter character defining features of the site.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

Under this alternative, the Army would make a public benefit conveyance of the entire parcel to the City of Middletown for an emergency operations center, as recommended by the LRA in their reuse plan. This alternative would include a fire training school, an additional fire station, and a new emergency operations center. The existing USARC building would remain and serve as the central training/ administrative facility for the regional fire training center. The new facilities that would be constructed as part of the Preferred Alternative include an approximate 5,000-square-foot maintenance garage/shop, specialized fire training facilities, an approximate 10,000-square-foot emergency operations center, and an approximate 12,000-square-foot firehouse with 2 to 3 bays. Note that information about the appearance of these proposed new facilities (i.e., construction materials, building heights, etc.) is currently unavailable.

It is anticipated that the Preferred Alternative would have no significant effect on visual resources. A portion of the wooded area from around what is now the graveled open space on the southern portion of the Property would likely need to be removed to accommodate some of the proposed new facilities. However, the surrounding forested areas would remain intact and continue to act as a buffer between the Property and surrounding uses.

Although the proposed new facilities that would be developed under the Preferred Alternative may be visible from the adjacent properties, it is assumed that the visual appearance of the new facilities would be consistent with the USARC building that would remain intact on the Property. In addition, plant and tree buffers may be used to diminish any visual impacts.

During construction, there may be some visual impact due to the presence of construction equipment and vehicles, however, these impacts would be temporary and cease when construction finishes. The Preferred Alternative would not have a significant effect on aesthetics or visual resources.

No Action Alternative: Caretaker Status

Under the Caretaker Status Alternative, the Army will continue to provide sufficient maintenance to preserve and protect the site for reuse in an economical manner that facilitates redevelopment. The No Action Alternative would not affect the character-defining features of the site or the overall integrity of the Property, thus it would have no effect on aesthetics or visual resources.

4.2.3 Noise

Noise is generally defined as unwanted sound. Sound is all around us; it becomes noise when it interferes with normal activities such as speech, concentration, or sleep. Noise associated with military installations is a factor in land use planning both on- and off-site. Noise emanates from vehicular traffic associated with new facilities and from project sites during construction. Ambient noise (the existing background noise environment) can be generated by a number of noise sources, including mobile sources, such as automobiles and trucks; and stationary sources such as construction sites, machinery, or industrial operations. In addition, there is an existing and variable level of natural ambient noise from sources such as wind, streams and rivers, wildlife and other sources.

The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Figure 4-4 provides some examples of sound levels of typical noise sources and noise environments.

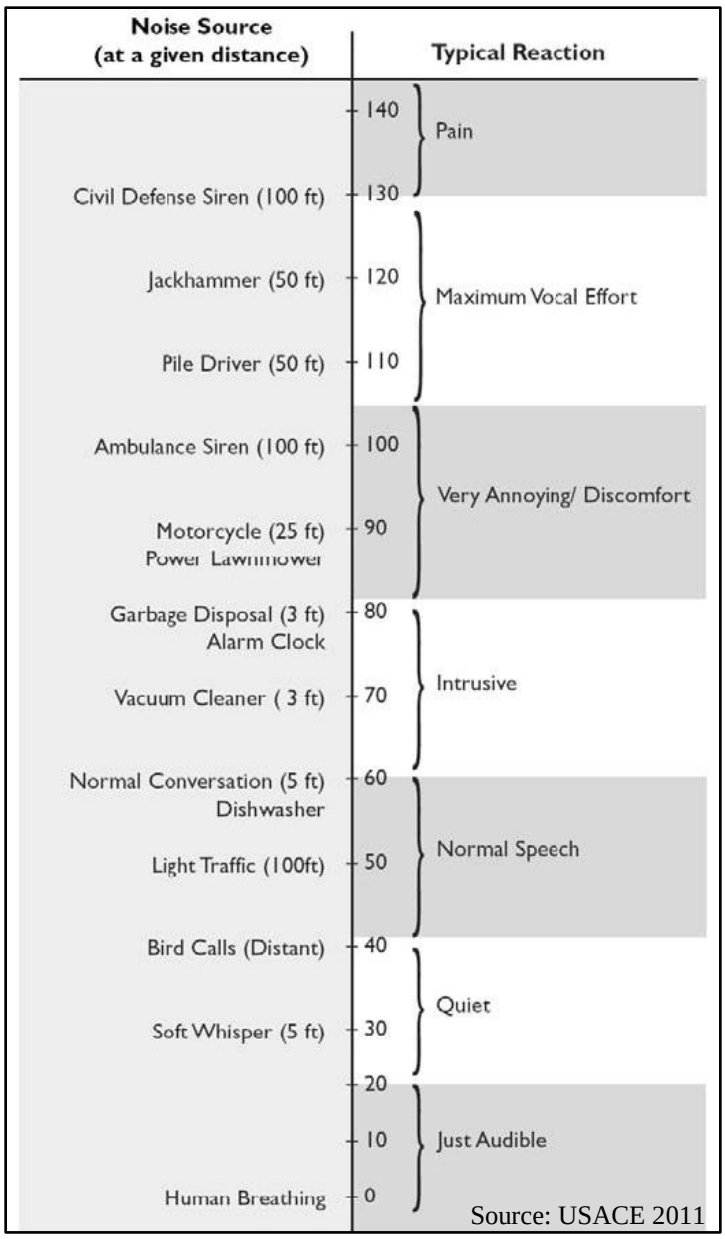


Figure 4-4: Typical Noise Levels

4.2.3.1 Affected Environment

Existing Noise Regulations

The State of Connecticut defines construction activities in Section 22a-69-1 of the Connecticut regulations for the Control of Noise as any and all physical activity at a site necessary or incidental to the erection, placement, demolition, assembling, altering, blasting, cleaning repairing, installing or equipping of building or other structures. Per C.G.S Article 206-3, exceptions, the City of Middletown exempts noise generated from construction activity from adhering to the noise district restrictions between the hours of 7.00 a.m. and one hour after sundown, Monday through Saturday.

The City of Middletown noise control regulations set forth Industrial Noise District standards for noise emitted. An industrial emitter may emit 70 dBA to an industrial receptor, 66 dBA to a business receptor, and 61 dBA (day) or 51 dBA (night) to a residential receptor (City of Middletown, nd).

As a general rule for estimating noise emission, sound from a stationary source will diminish approximately 5 dBA with each doubling of distance (FTA, 2006). For example, if a noise from a source reaches 75 dBA at 50 feet, it will be 70 dBA at 100 feet and 65 dBA at 200 feet, and so on.

Existing Noise on Site

The Middletown USARC, currently unoccupied, is in caretaker status. Existing noise conditions at this site are very low, primarily consisting of general maintenance of the Property, such as lawn care. The site is located within the City of Middletown's R-15 zone, a residential zoning district. Zoning districts in the immediately surrounding area include R-15, R-1 (Restricted Residence) and PRD (Planned Residential Development) III. Consistent with the zoning, surrounding land uses include single family residential, farmland, institutional (public school), and open space or parkland.

4.2.3.2 Environmental Consequences

The noise assessment considers existing noise levels, noises that would be generated by the proposed action, and proximity of sensitive receptors (i.e., residential land uses, hospitals, libraries, etc.). For the purposes of this noise impact assessment, a potentially significant noise impact could occur if the proposed action would:

- Result in increased noise levels that would exceed applicable noise standards (i.e., City of Middletown noise control regulations) and interfere with the quite enjoyment of nearby residential properties.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

General Noise from Construction

Increased noise would be expected during the construction and demolition phases associated with the proposed action. Measures that serve to limit noise during construction and demolition include limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; requiring that work crews seek pre-approval for any weekend activities or activities outside of daytime hours; and employing noise-controlled construction equipment to the maximum extent possible.

Temporary noise effects related to construction activities would be expected to occur. Site preparation for the Preferred Alternative would involve the use of heavy machinery, including earth moving, materials handling and impact equipment. Site-clearing activities typically

generate noise levels of 85 dBA at 50 feet from the source. At these levels, impacts would not be significant and could be further reduced by employing noise-controlled construction equipment to the extent possible and confining construction activities to allowable times under the Middletown noise regulations (between 7:00 a.m. and one hour past sundown Monday through Saturday), when existing ambient noise levels in the vicinity of the site are at their highest.

The arrival and staging of heavy equipment and materials would be scheduled to occur during normal work hours to the greatest extent possible to avoid noise disturbances to adjacent properties. Contractors would be expected to comply with any applicable noise regulations and local ordinances regarding construction noise, as described above. Compliance with the Occupational Safety and Health Administration (OSHA) standards for occupational noise exposure associated with construction (29 CFR 1926.52) would address the construction workers hearing protection. As a result, noise effects from construction activities are not expected to be significant. Typical construction equipment and operation noise levels are presented in Table 4-1.

Table 4-1: Typical Noise Levels (dBA) of Typical Construction Equipment

Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Scraper	89
Shovel	82
Truck	88

Source: FTA, 2006

Noise from Construction and Demolition. Temporary noise effects related to construction and demolition activities would be expected to occur as described above. Site preparation for constructing the new public safety facilities (fire training school, fire station and emergency operations center) would involve the use of heavy machinery, including earth-moving, materials-handling and impact equipment. The Property is situated adjacent to residences and a school, which are considered sensitive noise receptors. However, construction activities would obey local noise ordinance regulations, which would ensure that any effect on the surrounding land uses, including residences and the school, would not be significant. As a result of current construction and demolition regulations and noise-minimization measures, noise effects from construction are not expected to be significant.

Noise from Operations. Once the public safety facilities are constructed, noise would be generated from the day-to-day use of the facilities. Sources of noise would include commuter vehicles, emergency vehicles and equipment, sirens, and training activities. Aside from negligible HVAC-related noise, most noise would be created by vehicles associated with the public safety facilities including fire equipment used for training and operations, government and private delivery vehicles, and personal vehicles used for commuting purposes. Noise from these activities would generally be during the daylight hours, with the exception of the firehouse and call center, and would not be expected to have a significant effect on the surrounding properties.

The average daily user population generated by this alternative is estimated to be approximately 46 people (50 during the week and 35 on weekends). The average daily population on site would contribute negligible amounts of noise to the current environment. In addition to commuter traffic, vehicle operations associated with the public safety operations (fire trucks, sirens, etc.) would contribute to the noise environment.

Training activities at the fire training school would be expected to contribute impacts from noise, but it is expected that major noise-generating training activities, such as practicing throwing ladders and racking fire hose, would primarily be conducted during the day, while nighttime training activities generally would be classroom-based. While classroom-based training would not contribute to the noise environment, outside training activities would include the use of a fire truck, and would be expected to be similar to construction equipment at 88 dBA 50 feet from the source. The reuse plan for this alternative indicates that the training facilities would located at least 600 feet from the closest residence to the east; thus fire training-related noise effects would be minimized by the Property's existing land contours and forested areas that separate the site from neighboring residences to the east.

As demonstrated in Figure 4-4, an ambulance, or general emergency vehicle, has a dBA of 100 from 100 feet away, which is listed as very annoying/discomfort. This noise could occur at any time of the day with a duration of a few minutes. However, noise created as a result of or relating to an emergency (including sound signals such as sirens) is exempt to noise regulations (City of Middletown, nd). Again, the topography of the site would help shield neighboring residences from being disturbed by emergency vehicles, reducing the adverse impact of sirens. Thus the Preferred Alternative would have no significant effect on noise.

No Action Alternative – Caretaker Status

Implementation of the No Action Alternative would not alter the existing noise levels at the Middletown USARC. No noise impacts would occur as a result of the No Action Alternative.

4.2.4 Air Quality

The U.S. Environmental Protection Agency (USEPA) defines ambient air in 40 CFR Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments, the USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS include primary standards which set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. To date, the USEPA has issued NAAQS for seven criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particles with a diameter less than or equal to a nominal 10 micrometers (PM_{10}), particles with a diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb). These federal primary ambient air quality standards for criteria air pollutants are presented in Table 4-2 below. Connecticut has adopted the NAAQS. Visit http://www.epa/gov/ebtpages/air.html for more information about national programs, technical policies, and regulations protecting the quality of air resources.

Table 4-2: Federal Ambient Standards for Criteria Air Pollutants

Pollutant	Averaging Period	Federal Primary Standard
Ozone	8-hour 1-hour (daily max.)	0.075 ppm 0.12 ppm
$PM_{2.5}$	Annual (arithmetic mean) 24-hour	 15.0 µg/m^3 35 µg/m^3
PM_{10}	24-hour	150 µg/m^3
Carbon Monoxide	8-hour 1-hour	9 ppm 35 ppm
Nitrogen Dioxide	Annual (arithmetic mean) 1-hour	 0.053 ppm 0.100 ppm
Sulfur Dioxide	Annual (arithmetic mean) 24-hour	 0.03 ppm 0.14 ppm
Lead	Rolling 3-month average Quarterly average	 0.15 µg/m^3 1.5 µg/m^3

Source: USEPA, 2011a

4.2.4.1 Affected Environment

Attainment

Areas where ambient concentrations of a pollutant comply with NAAQS are designated as attainment areas for that pollutant. Areas that do not comply with the NAAQS for a given pollutant are classified as in nonattainment. Middletown is located in Middlesex County,

Connecticut. The USEPA classifies the New York – New Jersey – Long Island, NY-NJ-CT area, which includes Middlesex County, a moderate non-attainment area for ozone. The state of Connecticut is also part of the Ozone Transport Region (OTR). The OTR is a collection of East coast states from Virginia to Maine that experience higher levels of ground-level ozone. Ground-level ozone is a pervasive regional problem in the northeastern United States, with frequent exceedences of the 8-hour ozone standard. In order to address the regional problem, the OTR imposes stricter regulations on ozone precursors, explained below.

State Implementation Plans

The USEPA requires each state to prepare a State Implementation Plan (SIP) for nonattainment areas. A SIP includes emission limitations and control requirements, schedules, and enforcement actions designed to bring the area into attainment. Former nonattainment areas may be designated as maintenance areas to maintain air quality.

General Conformity

To regulate the emission levels resulting from a project, federal actions located in non-attainment areas are required to demonstrate compliance with the general conformity guidelines established in 40 CFR Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans (the Rule). Section 93.153 of the Rule sets the applicability requirements for projects subject to the Rule through the establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant non-attainment area designations. Projects below the *de minimis* levels are not subject to the Rule. Those at or above the levels are required to perform a conformity analysis as established in the Rule. The *de minimis* levels apply to direct and indirect sources of emissions that can occur during the construction and operational phases of the action.

Ozone

Emissions for the ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOC) were taken into consideration. Annual emissions for these compounds were considered for each of the project actions (renovation and operation) to determine if they would be below or above the *de minimis* levels established in the Rule. The *de minimis* for moderate ozone non-attainment areas in the OTR is 100 tons per year (TPY) for NO_x and 50 TPY for VOC.

Ambient Air Quality Conditions

Ambient air quality is currently monitored in CT by stations meeting the USEPA's design criteria for State and Local Air Monitoring Stations and National Air Monitoring Stations. There is one ozone monitoring station within the county. The highest and second highest values recorded at these stations from 2006 through 2010 are presented in Table 4-3. The Middletown USARC has been closed since 2006 and is therefore not currently contributing stationary or mobile air emissions.

Table 4-3: Existing Ozone Monitoring Data for Middlesex, CT

Monitoring Station (AQS Site ID# / Location)	Year*				
	2006	2007	2008	2009	2010
#090070007 – CT Valley Hospital	0.102/0.084	0.110/0.106	0.110/0.098	0.111/0.101	0.091/0.083

1st/2nd highest data
*Ozone values are in ppm
NAAQS: O3: 8-hour average = 0.075 ppm (0.085 is an exceedance)
Source: USEPA, 2011b

Meteorology/Climate

Temperature is a parameter used in calculations of emissions for air quality applicability. The climate in Middlesex County, CT varies seasonally. The average temperature in Middlesex County, which includes the project site, is 52 degrees F. The average summer high is 84 degrees F while the average winter low is 20 degrees F (TWC, nd).

Regional Air Pollutant Emissions Summary

The USEPA calculates the Air Quality Index (AQI) for five major air pollutants regulated by the CAA: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The USEPA collects data daily to determine air quality for the region, and releases it in the form of the AQI, which runs from zero to 500, with zero being no air pollution and 500 representing hazardous air pollution levels. An AQI value between 101 and 150 indicates that air quality is unhealthy for sensitive groups who may be subject to negative health effects. Sensitive groups may include those with lung or heart disease who will be negatively affected by lower levels of ground level ozone and particulate matter than the rest of the general public. An AQI value between 151 and 200 is considered to be unhealthy and may result in negative health effects for the general public, with more severe effects possible for those in sensitive groups. AQI values from 201 to 300 are considered to be very unhealthy. AQI values above 300 are considered hazardous (Clean Air Partners, nd).

Table 4-4 displays the AQI data for Middlesex County, Connecticut.

Table 4-4: AQI Data for Ozone Values in Middlesex County, CT

Year	Unhealthy for Sensitive Groups (Days)	Unhealthy for General Public (Days)
2006	9	2
2007	12	3
2008	8	0
2009	1	0
2010	6	0

Source: USEPA, 2011c.

Greenhouse Gases

There is broad scientific consensus that humans are changing the chemical composition of Earth's atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in

land use are resulting in the accumulation of trace greenhouse gases (GHGs), such as CO_2, in our atmosphere. An increase in GHG emissions is said to result in an increase in the Earth's average surface temperature, which is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., which is commonly referred to as climate change. The Intergovernmental Panel on Climate Change best estimates are that the average global temperature rise between 2000 and 2100 could range from 0.6 degrees Celsius (°C) (with no increase in GHG emissions above year 2000 levels) to 4.0°C (with substantial increase in GHG emissions). Even small increases in global temperatures could have considerable detrimental impacts on natural and human environments.

GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and several hydrocarbons (HCs) and chlorofluorocarbons (CFCs). Each GHG has an estimated Global Warming Potential (GWP), which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. A gas's GWP provides a relative basis for calculating its Carbon Dioxide Equivalent (CO_2e), which is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). CO_2 has a GWP of 1, and is therefore the standard to which all other GHGs are measured. The GWP of methane is 23, nitrous oxide 296, and sulfur hexafluoride 23,900. For additional information on greenhouse gases visit:

- http://www.epa.gov/climatechange/emissions/index.html
- http://www.epa.gov/cleanenergy/energy-resources/calculator.html

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* sets as a goal for all federal agencies the improvement of energy efficiency and the "reduc[tion] of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003" (Federal Register, 2007). The U.S. Army Energy Strategy for Installations also contains strategies to reduce energy waste and improve efficiency. As a result, the impact the proposed action may have on GHG emissions has been analyzed in this EA.

4.2.4.2 Environmental Consequences

For the purpose of assessing the magnitude of impacts to air quality in the area of the project site, a potentially significant air quality impact could occur if implementation of the proposed action:

- Would result in emissions that significantly contribute to the deterioration of air quality in an attainment area, where regulatory approval and implementation of mitigation measures would be required to offset adverse impacts; or
- Would not conform to the State Implementation Plan for non-attainment areas.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

A General Conformity Applicability Analysis was performed for the Preferred Alternative. The General Conformity Applicability Analysis estimated the level of potential air emissions (NO_x and VOC) for the proposed actions under this alternative. In addition to this general conformity determination, emissions were estimated for all criteria pollutants, including those in attainment for Middlesex County. Appendix C contains a detailed description of the assumptions and methodology used to estimate the potential emissions for the construction and operational phases of the proposed BRAC-related actions at the Middletown USARC.

Table 4-5 summarizes the total emissions associated with the construction and operational phases of this alternative. Sources of NO_x and VOC associated with the proposed action would include emissions from construction equipment, construction crew commuting vehicles, fugitive dust ($PM_{2.5}$), painting of interior building surfaces (VOC only), emissions from increased vehicle traffic, and emissions from stationary units (e.g., boilers).

Construction-related emissions would only occur during the construction period for all buildings; however, a conservative approach was employed in the applicability analysis to ensure that construction scheduling would not result in more severe results than predicted. The analysis first assumed that the construction emissions for all of the facilities would be constructed within a one year timeframe. These results were further added to one year of operations, bounding the potential emissions that might result for any overlap between construction and operations emissions. An analysis was also conducted to estimate the contribution that an increase in daily commuters would have on the region.

Table 4-5: Summary of Total Emissions

Activity	Total Annual Emissions (TPY)					
	NO_x	**VOC**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**CO**
***de minimis* levels**	**100**	**50**	**100**	**100**	**100**	**100**
Construction	3.623	0.668	0.213	0.171	0.088	4.541
Full Operation	0.544	0.068	0.021	N/A	0.154	0.101
Total Combined	**4.167**	**0.736**	**0.234**	**0.171**	**0.242**	**4.642**

The results in Table 4-5 show that the emissions associated with constructing and operating the proposed facilities, when compared to the *de minimis* values for this moderate ozone non-attainment area, fall well below the *de minimis* levels of 100 TPY for NO_x and 50 TPY for VOC, even under the initial conservative assumptions that were employed. As a result, the Preferred Alternative is not subject to the General Conformity Rule requirements. A RONA is available in Appendix C. No significant air quality effects would be expected to result from implementation of this alternative.

Greenhouse Gases

Temporary emissions would occur during the demolition and construction phase of the project; however these emissions would be one-time emissions and were not included in the analysis. There would be no increase in daily commuters within the airshed, as no new employees are expected.

The current USARC site is inactive and therefore no existing activities would be transferred within the air quality control region. Emissions from the construction of a new USARC at nearby Cucia Park were analyzed in 2008 and are therefore not included in this analysis. Emissions from the Preferred Alternative facilities are assumed to be similar or less than emissions occurring at the existing facility locations. Therefore, there would be no increase in GHG emissions.

As a result, the Preferred Alternative would not produce a significant amount of GHG emissions. This alternative is not expected to cause an increase in emissions of CO_2e annually.

This action would not represent a net incremental addition to the global climate change phenomenon.

No Action Alternative - Caretaker Status

The Caretaker Status Alternative would not change current conditions and would not affect air quality conditions in the region. Therefore, there would be no effect on air quality.

4.2.5 Geology and Soils

4.2.5.1 Affected Environment

Geological resources consist of all bedrock and soil materials within an area. Geologic factors such as soil stability and seismic properties influence the stability of structures. Soil, in general, refers to unconsolidated earthen materials overlying bedrock and other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodability all determine the ability for the ground to support structures and facilities. Soils typically are described in terms of their type, slope, physical characteristics, and relative compatibility or limitations with regard to particular construction activities and types of land use. Topography consists of the physiographic, or surface, features of an area and is usually described with respect to elevation, slope, aspect, and landforms. Long-term geological, erosional, and depositional processes typically influence topographic relief of an area.

Soils and Topography

Topographic maps indicate that the Property is situated on an elevation that slopes from 150 feet to the south and about 50 feet mean sea level in the north. The Property lies between approximately 50 and 150 feet above mean sea level. See Figure 1-1 for a U.S. Geological Survey topographic map of the Property and the surrounding area. The Property lies within the Connecticut Valley Lowland region of the New England physiographic province, and within the South Central Lowlands Ecoregion. The present topography observed in the vicinity of the

Property is the direct result of glacial deposition and erosion related to the distribution of underlying bedrock masses and changing water levels of glacial Lake Hitchcock. There are no prominent, unique, or hazardous geographic features on the Property.

Soils in the area of the Property that will be disturbed by construction include:

- Berlin silt loam (0-3 percent slopes) covers 2.2 acres in the northeast and southeast corners of the Property. These soils are moderately well drained soils with moderate surface permeability.
- Ludlow silt loam (2-15 percent slopes, extremely stony) covers 0.3 acres. These soils are moderately well drained with moderate surface permeability.
- Udorthents-Urban land complex covers 8.5 acres in the southern central portion of the Property. These soils are moderately to excessively well drained (covered with impervious surfaces).
- Wethersfield loam (8-15 percent slopes) covers 8.7 acres in the northern central portion of the Property. These soils are well drained.
- Wethersfield loam (15-25 percent slopes) covers 4.0 acres in the southwest and east portions of the Property. These soils are well drained.

These soils are not classified as hydric, the type needed to support wetlands. See http://soils.usda.gov/use/hydric/ for information about hydric soils. For more information about local soils, visit http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx and navigate to the address of the Property.

Geology

The bedrock formation underlying the Property has been described as belonging to the Portland Arkose Formation of Triassic age. This formation has been described to consist of gray-red to red-brown and pale brown, coarse to fine, arkose with interbedded arkose conglomerate, red and gray shale, mudstone, and gray-green feldspathic sandstone underlying the Portland Arkose dense gray to gray-green Hampden basalt. The surficial geology is composed of thin till in the southern portion of the Property and fine deposits at the north-northeastern portion of the Property. The till deposits are generally less than 10 to 15 feet thick and are loose to moderately compact, generally sandy and commonly stony. The fine deposits are composed of well-sorted, thin layers of alternating silt and clay, or thicker layers of very fine sand and silt (USACE, 2007).

Earthquakes do not typically occur near Middletown. The last significant earthquake within 100 miles of Middletown occurred on October 19, 1985 and measured 4.0 on the Richter scale (Homefacts, 2011). There are no prominent geologic features and no known geologic hazards on the Property.

4.2.5.2 Environmental Consequences

Normal activities associated with an emergency operations center or caretaking operations do not involve significant ground disturbing activities and would not have a significant impact on geology or soil. Potentially significant effects are primarily associated with construction

activities. Potentially significant impacts to geology and soils could occur if construction of the proposed action would:

- Result in substantial soil erosion or siltation;
- Cause risk of harm from geologic hazards such as earthquake faults and sink holes or alteration of unique or prominent geologic features and viewsheds.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

This alternative would not have significant direct, indirect, or cumulative impacts on geology and soils. Impacts to geology and soils would be limited to the areas affected by construction activities. The new facilities proposed for construction include an approximate 5,000-square-foot maintenance garage/shop, specialized fire training facilities, an approximate 10,000-square-foot emergency operations center, and an approximate 12,000-square-foot, 2- to 3-bay firehouse. Although the final design of the Preferred Alternative is not yet available, a conceptual site plan is presented in Figure 3-1 (included in Chapter 3, Alternatives). This figure depicts the locations of the proposed new facilities and the general extent of the portions of the Property that would be affected by construction activities.

Soils and topography. No significant effect to soils would be expected. Due to the slight slope of the site, some cut and fill of soils would likely be required during construction of new buildings, resulting in the soil layer structure being disturbed and modified. However, these impacts would not be considered significant since the soils have already been previously disturbed and modified. The primary effects from construction would include disturbance to several acres of the natural topography due to cut and fill of soil and grading activities.

In general, the following types of soil effects can occur due construction activity associated with the reuse of a USARC property: erosion, soil compaction, and contamination from unexpected leaking equipment. Several construction procedures, including vegetation clearing and grading, destabilize the soils surface and increase erosion potential. A soil's susceptibility to erosion is a function of characteristics such as soil texture and structure, topography, surface roughness, vegetative cover, and climate. Erosion may also be influenced by the length of time the soils are bare and by disruption of drainage and erosion constructures. The potential for soil erosion would be limited, lasting only the initial stages of construction until the impervious surfaces are complete, site drainage systems installed, and the remaining areas of the Property landscaped and revegetated.

Soil compaction can occur with the movement of heavy construction vehicles within the project area. Compaction damages soil structure and ultimately affects revegetation rates. In preparing the site for construction, heavy machinery would be used to remove vegetative cover to prepare the site for construction (i.e., grading and leveling), construction of the access road and parking facility. As a result, soils would be compacted, soil layer structure would be disturbed and modified, and soils would be exposed, increasing the overall potential for erosion. Soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), would decline in

disturbed areas and be completely eliminated for those areas within the footprint of building structures, access road, and parking facilities.

A slight potential exists for soil contamination as a result of spills or equipment failure leaking fuel or lubricants onto soils during construction. This effect is minor due to the low frequency and volume of these occasions. Spilling of fuels and lubricants during construction would be cleaned up immediately by removing and properly disposing of any soil contaminated.

Changes in elevation caused by grading would cause no significant effect. Impacts would be detectable; however grading would not be readily apparent. Mitigation to help offset potential erosion or soils compaction would be implemented. Stormwater discharges from construction activities (i.e., clearing, grading, excavating, and stockpiling) that disturb one or more acres are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program, which, in the State of Connecticut, is administered by the CTDEP. Thus it is expected that construction of the Preferred Alternative would require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from CTDEP. The general permit includes provisions to follow the Connecticut Guidelines for Soil Erosion and Sediment Control. As the Preferred Alternative would entail construction activities disturbing a total of more than five acres, a Stormwater Pollution Control Plan (Plan) that addresses the erosion and sediment control and post-construction measures also would be required as part of the General Permit. The Plan would minimize potential impacts associated with stormwater runoff and would likely require the following:

- Certification by a licensed Professional Engineer for compliance with the General Permit;
- All contractors active on the site must also sign a certification that they are familiar with and will follow the General Permit and the Plan for the site;
- Weekly site inspections; and
- Submittal of a Notice of Termination to terminate their general permit coverage once construction is complete and the site fully stabilized (Connecticut Department of Environmental Protection, nd).

The General Permit and Plan would require control measures such as silt fencing and covering exposed soils to protect against erosion by wind and rain during construction and landscaping and stormwater management plans to protect against erosion after construction. Compliance with General Permit requirements will prevent significant direct, indirect, and cumulative impacts to soils during and after construction.

The impact of construction on soils can be effectively reduced through the use of appropriate and applicable erosion control methods. Potential adverse effects to soils from the proposed construction activities would be minimized by proper construction management and planning, and the development and implementation of a sediment and erosion control plan. As discussed above, erosion and sediment control measures would be specified in the Stormwater Pollution Control Plan (Plan), which would require approval from CTDEP as part of the pollution discharge permitting process, as well as the Corps of Engineers Contracting Officers

Representative prior to construction. The Plan would make use of appropriate site-specific Best Management Practices (BMPs) for controlling runoff, erosion, and sedimentation during construction activities.

Site-specific BMPs would be based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. These BMPs integrate the use and upkeep of sedimentation and erosion control devices and implementing practices sufficient to retain sediment generated by land-disturbing activity within the boundaries of construction area. BMPs include, but are not limited to, erosion control matting, silt fencing, brush barriers, storm drain outlet protection, stone check dams, rock filter dams, construction exits, temporary and permanent seeding, and the application of mulch. The application of any or all of these erosion methods or other BMPs depends on specific ground conditions in the areas disturbed by construction. Gravel exits, or similar measures, could be used at construction exits to reduce transport of mud from construction vehicles traveling from the site to existing paved roads. Because the area impacted by the proposed action would be relatively small, and appropriate BMPs would be implemented as part of the proposed action, effects to soils resulting from implementation of the proposed action would not be considered significant.

Geology. There would be no significant impacts to geology, because there are no prominent, unique, or hazardous geologic features or processes that occur on or near the Property. Seismic activity in the area would not expose people or any newly constructed facilities to significant risk because significant seismic events do not occur in this area. Construction and operation of the Preferred Alternative would not alter the geologic conditions of the project area.

No Action Alternative: Caretaker Status

This alternative would have no impact on topography, geology, or soils, because no ground disturbing activities would take place.

4.2.6 Water Resources

4.2.6.1 Affected Environment

Groundwater

Groundwater beneath and downgradient of the USARC is classified as a potable groundwater resource by the State of Connecticut (Class GA water). However the facility and down gradient properties within one half-mile of the Property are connected to public water supply. The only properties within one-half mile of the Site that are not on public water supply are located upgradient of the Property (U.S. Army, 2008). Depth to groundwater ranges between four and 30 feet below ground surface (bgs). The direction of groundwater flow on the Property can vary but is generally to the north and east. Groundwater in the area of the former Nike missile silos is east-northeast, discharging to West Swamp Brook, while groundwater flow on the southern side of the Property is predominantly to the north-northeast (USACE, 2007).

Historical Nike Missile system reports indicate that hazardous substances were used at Nike missile sites including PCBs, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), POL (petroleum, oils and lubricants), and fuels. While site specific

information regarding the types and quantities of these hazardous substances was not reasonably available for the Property, several site investigations identified hazardous substance and petroleum releases to soil and groundwater, likely as a result of the historical Nike Missile battery operations.

The Property has a history of groundwater contamination. During a limited subsurface investigation conducted of a 2,000-gallon Underground Storage Tank (UST) by Clean Harbors in 1990, 1,1,1-trichloroethane (TCA), 1,1-dichloroethene (1,1-DCE), and 1,1- dichloroethane (1,1-DCA) were detected in the groundwater. However, it was subsequently determined that this contamination was not associated with the UST. Further investigation, performed during a Geohydrologic Study by the U.S. Army Environmental Hygiene Agency in 1992, detected carbon tetrachloride, trichloroethylene (TCE), and associated degradation products at levels exceeding the Primary Drinking Water Standards in three monitoring wells (M8, MW-16 and BR-4) located near the center of the Property. Carbon tetrachloride was detected in monitoring well M1 in 2006 at a concentration just above the Federal maximum contaminant level (MCL) and historically about or slightly below the MCL in the overburden groundwater. Figure 4-5 shows the locations of the monitoring wells. During the Geohydrologic Study, total petroleum hydrocarbons (TPH) were detected in several of the surface soil samples, but only one exceeded the regulatory limits. The study concludes that petroleum products likely were used to control dust at the Property, and that the TPH detected in surface soil samples did not appear to present a threat to the groundwater (USACE, 2007).

Additional investigations conducted in August 2005 and February 2006 reported that metals were detected in groundwater, but at levels below the applicable Remediation Standard Regulations (RSR) criteria. Cis-1,2-dichloroethene (cis-1,2-DCE) and toluene were detected in groundwater at concentrations below the applicable RSR criteria. Carbon tetrachloride, chloroform, and TCE were detected, but only TCE exceeded the applicable RSR criteria. No site-related SVOCs were detected in any of the groundwater samples. Total petroleum hydrocarbon was detected in one well, but at a concentration below the applicable RSR criteria USACE, 2007).

Trichloroethylene (TCE) has historically been detected at well location M8 at the facility (US Army Environmental Command, 2008). Subsurface investigations in 2008 further analyzed the amount and extent of the contamination on the Property; however Remedial Investigation (RI) could not determine a source area for the TCE. According to the investigation, a small plume of TCE impacted groundwater is located within the overburden aquifer and appears to extend generally from the large central parking area to the northeast towards the large concrete slab/ former building site (from the M8/MW-16 area to the northeast just beyond MW-18 and potentially to BR-4 and just beyond it). The report concluded that the horizontal extent of groundwater contamination is limited and the downgradient extent has been determined. The 2008 report concluded that based on the results of the RI, the TCE plume has not, and is not, expected to migrate to or beyond the site boundary, and as a result of data interpretation, the nature and extent of groundwater contamination has been appropriately delineated.

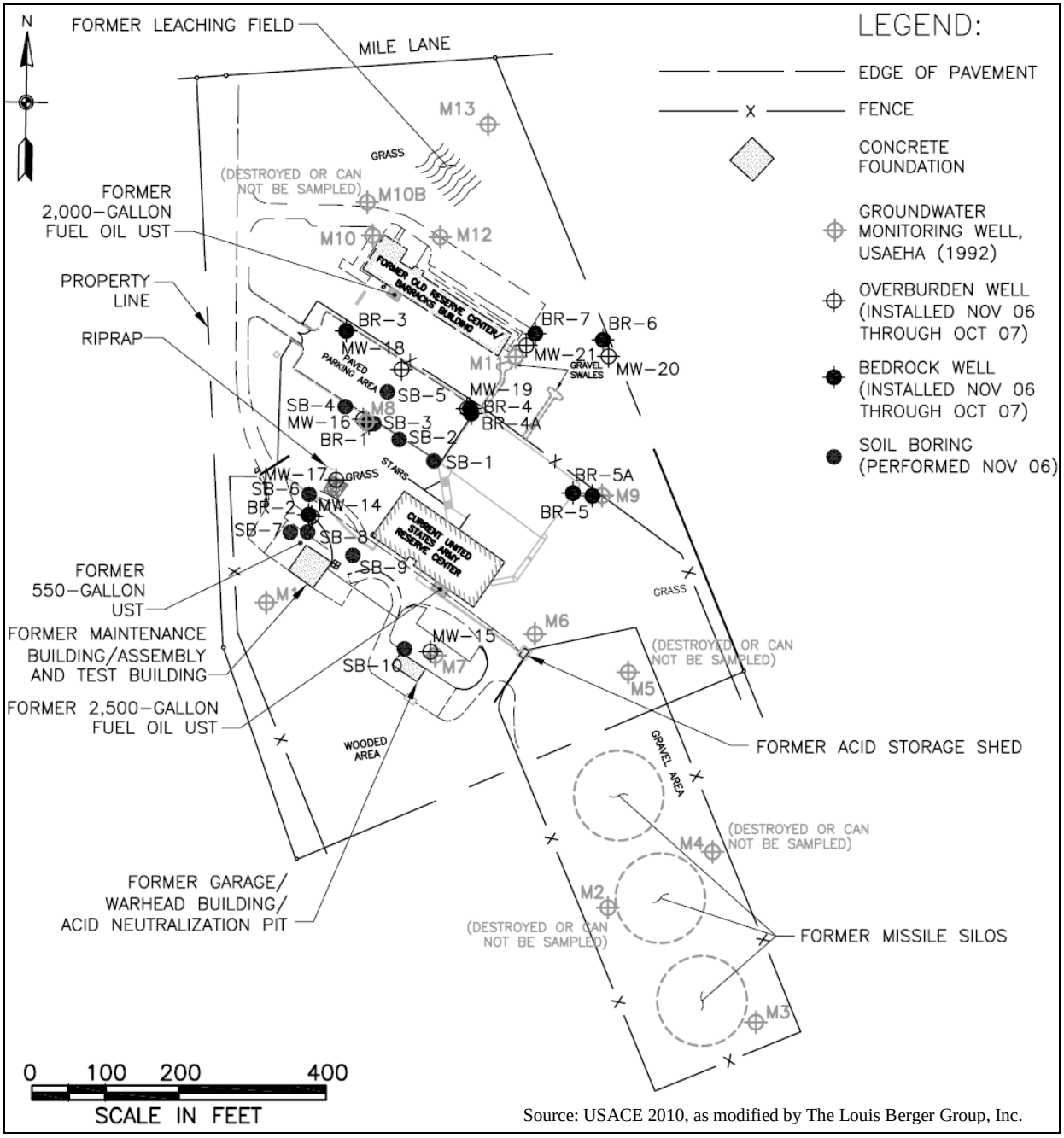


Figure 4-5: Groundwater and Soil Sample Exploration Locations

A Human Health Risk Assessment (HHRA) was performed as part of the RI to evaluate potential risk to receptors. Constituents of Potential Concern (COPC) identified for groundwater were carbon tetrachloride, chloroform, TCE, arsenic and barium. The HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use. Further discussion can be found in the August 1, 2008 Decision Document (DD) Recommending No Action for Site-08 Groundwater at Middletown, Connecticut, 94th RRC (US Army Environmental Command, 2008).

Based on those findings, the March 2010 Environmental Condition Report (ECP) recommended the Property should be classified as an ECP Category Type 3 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action (USACE, 2010).

Wetlands

National Wetlands Inventory Maps show no wetlands on the Property or on adjacent properties. However, this Property may contain wetlands protected under state and Federal laws and regulations. A 1988 report on the Nike launcher sites suggests the presence of a wetland on the southern end of the facility. During the August 2006 site reconnaissance, a dry creek bed was recorded on the southern end of the Property (USACE, 2007), presumably in the same area. In neither case were wetlands delineated or assessed by professional wetland scientists.

Surface Water

There are no known, permanent surface waters on the Property. The nearest off-site surface water feature is an unnamed water body (associated with West Swamp Brook) located approximately 600 feet west of the Property on an adjoining parcel.

4.2.6.2 Environmental Consequences

For the purposes of this analysis, potentially significant impacts to water resources could occur if the proposed action would:

- Irreversibly diminish water resource availability, quality, and beneficial uses;
- Reduce water availability or interfere with a potable supply or water habitat;
- Create or contribute to overdraft of groundwater or exceed a safe annual yield of water supply sources;
- Result in an adverse effect on water quality or an endangerment to public health by creating or worsening adverse health hazard conditions;
- Result in a threat or damage to unique hydrological characteristics; or
- Violate an established law or regulation that has been adopted to protect or manage water resources of an area.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center Facility by the City of Middletown

Groundwater. Implementation of the Preferred Alternative would result in no significant adverse effects on groundwater resources. Water to the site would be supplied from municipal sources and would be returned via sewer system. Excess water from training operations would likely be diverted into catch basins or a storm water management system. It is expected that the proposed reuse as an emergency operations center would be considered a similar use to what

previously occurred on the site and consistent with the no action findings in the 2008 Remedial Investigation report.

Volatile constituents in groundwater that is located within one-hundred feet (horizontally and vertically) of an occupied building are considered a potential source of vapors to indoor air (USEPA, 2002). Specifically, it is possible that volatiles in groundwater may partition to soil gas, migrate within the soil column to the convective influence of a building, and then be drawn into the building where exposures to the VOCs in indoor air could occur. Aside from a very preliminary reuse site plan (see Figure 3-1), the exact location of new buildings is not yet known. However, based on the preliminary reuse site plan it does not appear that any proposed new construction would occur in the immediate vicinity of the TCE plume. Groundwater pollution has not been detected in the wells upgradient of the existing USARC building. The Remedial Investigation (2008) concluded that no action under CERCLA is recommended for the Property from previously impacted groundwater (USACE, 2010). In addition, the 2008 No Decision Document states that no risks for soil or groundwater exposure were identified for commercial/industrial type uses (U.S. Army, 2008). However, if deemed necessary during the site plan approval process (and based on final design), restrictions on new buildings within 100 feet of the TCE plume could be incorporated into the Preferred Alternative as a measure to protect against the potential for vapor intrusion in the new facilities. Furthermore, if excavation activity for any proposed new facilities would occur in the vicinity of the TCE plume, construction of the Preferred Alternative would likely require additional coordination with CTDEP regarding soil and groundwater sampling, worker protection (e.g., development of a construction worker health and safety plan), soils management, and the dewatering and disposal of wastewater.

As discussed above in Section 4.2.5.2, it is expected that construction of the Preferred Alternative would require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from CTDEP. To obtain approval for this General Permit, the construction activity must be consistent with all applicable goals and policies established by the Coastal Management Acts (as per Section 22a-93(15) of the Connecticut General Statutes); must not threaten the existence of endangered or threatened species (pursuant to Section 26-306 of the Connecticut General Statutes); must be in compliance with State and Federal Historic Preservation statues, regulations and policies; must not result in the discharge of wastewater to a Publicly Owned Treatment Works or to groundwater; and must not result in a discharge that would cause pollution to aquatic and marine life, impair the biological integrity of aquatic or marine ecosystems, or result in an unacceptable risk to human health. A registration form also needs to be completed, describing the construction activity (including number of acres disturbed) and the stormwater discharge (including the name of the immediate surface water body or wetland to which the stormwater runoff would discharge) (Connecticut Department of Environmental Protection, 2010).

Additionally, as the proposed construction activities are expected to disturb more than a total of 5 acres, a Stormwater Pollution Control Plan (Plan) would also be required as part of the General Permit. The Plan would address the erosion and sediment control and post-construction

measures required as part of the General Permit. The Plan would minimize potential impacts associated with stormwater runoff and is expected to entail the following requirements:

- Certification by a licensed Professional Engineer for compliance with the General Permit;
- All contractors active on the site must also sign a certification that they are familiar with and will follow the General Permit and the Plan for the site;
- Weekly site inspections.
- Submittal of a Notice of Termination to terminate their general permit coverage once construction is complete and the site fully stabilized (Connecticut Department of Environmental Protection, nd).

Compliance with the provisions of the General Permit and the Plan would minimize the potential for groundwater impacts related to dewatering, wastewater, and increased stomwater runoff.

Under this alternative, the Property would continue to use potable water provided by the City of Middletown; groundwater would not be utilized. The groundwater recharge rate would be expected to decrease slightly due to the increase in the amount of impervious surfaces that would result from the proposed new development. However, as discussed below in the Surface Waters section, stormwater runoff would be conveyed to stormwater detention facilities that would provide rate control and water quality management. In addition, the Preferred Alternative is expected to incorporate stormwater management strategies (i.e., Low Impact Development) that would reduce runoff, reduce runoff, reduce pollution from runoff, and increase infiltration. Therefore, the Preferred Alternative would not be expected to result in a significant effect on groundwater resources.

Wetlands. There is a potential wetland area in the southern portion of the property. Wetlands and other surface water features, which may include intermittent and perennial streams, are generally considered "waters of the United States" by the U.S. Army Corps of Engineers, and under its definition of "jurisdictional waters/features," are protected under Section 404 of the *Clean Water Act*. This law and implementing regulations restrict activities that involve draining wetlands or the discharge of fill materials into wetlands, including the placement of fill materials; the building of any structure; the placement of site-development fills for recreational, industrial, commercial, residential, and other uses; the placement of causeways or road fills; and the construction of dams and dikes. The transferee would be notified that, if wetlands exist on the Property, measures to avoid impacts to wetlands protected under Section 404 would be required as part of any redevelopment. Compliance with these laws and regulations during any future development will prevent significant impacts to wetlands. Thus significant adverse effects to wetlands would not be expected to result from implementation of the Preferred Alternative. The transferee would be notified that, if wetlands exist on the Property, measures to avoid impacts to wetlands protected under Section 404 would be required as part of any redevelopment. Compliance with these laws and regulations during any future development will prevent significant impacts to wetlands.

Surface Waters. The Preferred Alternative would include the construction of new buildings. Impacts to surface waters from construction of new facilities could include erosion and increased amounts of sediment to surface waters. Final site layout would be designed to minimize impacts and allow adequate space for erosion control measures to protect existing resources.

As previously discussed, it is expected that the Preferred Alternative would require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from CTDEP. Given that the area of disturbance is expected to exceed 5 acres, a Stormwater Pollution Control Plan (Plan) would also be required as part of the General Permit application process. The Plan would address erosion and sediment control and post-construction measures and would require approval by CTDEP as part of the permitting process. The Plan would be certified by a licensed Professional Engineer to ensure compliance with the General Permit and is expected to incorporate weekly site investigations (Connecticut Department of Environmental Protection, nd).

An increase in impervious surfaces over existing conditions would occur under the Preferred Alternative due to the construction of new facilities. Stormwater runoff would be conveyed either by surface flow or catch basins and piped to either underground detention areas or surface detention basins. Detention areas would provide rate control and water quality management. The final location of any stormwater facility would be determined during the site plan review process.

Low Impact Development (LID) is an example of a stormwater management strategy that could be utilized to mitigate the effects of increased runoff and stormwater pollution. LID encompasses a range of site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID techniques can effectively remove nutrients, pathogens, and metals from stormwater, and also reduce the volume and intensity of stormwater flows (USEPA, nd). When possible, the Preferred Alternative should incorporate and implement LID strategies to the greatest extent possible to reduce runoff, reduce pollution from runoff, and increase infiltration. Accordingly, this alternative would not be expected to result in significant adverse direct or indirect effects to surface waters.

No Action Alternative: Caretaker Status

Groundwater, wetlands or surface waters would not be directly or indirectly affected by the No Action or Care Taker Status Alternative. This alternative would have no effect on water resources.

4.2.7 Socioeconomics

4.2.7.1 Affected Environment

The Region of Influence (ROI) for this resource area is defined as Middlesex County, Connecticut. The county comprises the area in which the predominant socioeconomic effects of the federal action would take place. The geographic extent of the ROI is used because Middlesex County is the smallest area for which the included economic indicators are available, and this is

the level at which the predominant socioeconomic effects of the proposed action would take place. Information specific to Middletown is presented, where available. Social and economic indicators presented in this analysis include racial and ethnic characteristics, employment by industry, unemployment rates, community services, housing characteristics, environmental justice, and protection of children. Additional economic benefits and social impacts from the operation of the proposed action would be experienced across the larger region. Information presented below has been retrieved from the U.S. Census Bureau, among other sources. The baseline year for the socioeconomic analysis is 2011, although some of the available data may not be that recent.

Population Characteristics

Between 2000 and 2009, the population of Middlesex County grew at a pace more than twice as fast as Connecticut. Where Middlesex County increased its population by approximately 6.9 percent between 2000 and 2009, Connecticut increased its population by approximately 3.3 percent during the same period. However, both geographies grew at a notably slower pace than the United States overall (see Table 4-6). The City of Middletown grew at a pace faster than the other three areas of geographic comparison.

Table 4-6: 2000 to 2009 Population Growth in the Region of Influence and Areas of Comparison

Geographic Area	2000 Population	2009 Population	% Change (2000-2009)
Middletown	43,167	47,702	10.5%
Middlesex County (ROI)	155,071	165,702	6.9%
Connecticut	3,405,565	3,518,288	3.3%
United States	281,421,906	307,006,556	9.1%

Source: U.S. Census Bureau, 2011.

Note: The 2009 population is an estimate from the American Community Survey (ACS), a division of the U.S. Census Bureau. The ACS prepares 1-year estimates for geographic areas with populations of 65,000 or more. This includes all geographies except Middletown. The ACS also prepares 5-year estimates for small geographic areas. Information from this data set has been retrieved for Middletown.

Middlesex County has a greater percentage of those who identify themselves as White than either Connecticut or the United States overall, as indicated in Table 4-7. Less than five percent of Middlesex County residents identify themselves as Black or African American. This is notably lower than the Connecticut or national average. The county also has a smaller percentage of those who identify themselves as Asian or Other than either Connecticut or the United States. Population characteristics for the City of Middletown are similar to those of the nation as a whole. Population breakdown by race is shown in Table 4-7.

Table 4-7: 2009 Population Characteristics

Geographic Area	Total Population	Racial and Ethnic Composition (%)								Individuals Below the Poverty Line (%)	Population under 18 (%)
		White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other*	Hispanic Origin	Minority**		
Middletown	47,702	77.5	12.6	0.5	4.4	0.0	5.2	5.1	25.1	11.8	19.6
Middlesex County (ROI)	164,004	90.1	4.5	0.2	2.1	0.0	3.1	4.0	12.3	5.3	21.2
Connecticut	3,518,288	79.1	9.6	0.3	3.5	0.0	7.5	12.4	27.8	9.4	23.0
United States	307,006,556	74.8	12.4	0.8	4.5	0.2	7.3	15.8	35.1	14.3	24.3

*The "Other" category includes those who identify themselves as "Some Other Race" or "Two or More Races".
**A minority is defined as any person who identifies as being of a race other than Non-Hispanic White Alone.
Source: U.S. Census Bureau, 2011.

The percentage of county residents who identify themselves as being of Hispanic origin (approximately 4.0 percent) is notably lower than that of either the Connecticut or nation. The share of Middletown residents who identify themselves as being of Hispanic origin is slightly higher than that of Middlesex County, but also notably lower than the state or national average. Slightly more than 12 percent of the Middlesex County population identifies themselves as being of a minority descent. The percentage of Middletown residents who identify themselves as being of a minority is less than that of the county, state, and nation.

The county has a lower percentage of county residents living below the poverty line than in Connecticut and the United States overall. At 21.2 percent, there are fewer county residents under the age of 18 than the state or national average (U.S. Census, 2011). However, the percentage of Middletown residents living below the poverty line is more than double the county average. This percentage is also higher than the Connecticut average but less than that of the nation.

Economic Characteristics

Employment by Industry. Data were obtained from the one-year estimates from the American Community Survey, a division of the U.S. Census Bureau. In 2009, there were 86,912 people employed in Middlesex County. At 28.4 percent, the educational services, and health care and social assistance sector comprises the largest share of Middlesex County employment. This is slightly higher than the Connecticut average (26.0 percent). The manufacturing sector represents approximately 14.4 percent of Middlesex County employment, notably higher than the Connecticut average of 11.4 percent. The professional, scientific, and management and administrative and waste management services; and retail trade sectors both represent slightly more than ten percent of total county employment. Both percentages are comparable to the state

average for the same sectors. In the county, public administration represents a greater share of total employment than Connecticut overall. The arts, entertainment, and recreation and accommodation and food services sector, which includes jobs associated with lodging, represents approximately 6.2 percent of county employment. This is approximately 1.7 percent less than the Connecticut average.

Unemployment. Annual unemployment rates from 2000 to 2010 for Middlesex County, Connecticut, and the United States were obtained from the Bureau of Labor Statistics. As shown in Figure 4-6, unemployment in the county and state was generally lower in 2000 and higher in 2009, following national trends. Unemployment in Middlesex County has been and continues to be lower than either Connecticut or the United States overall.

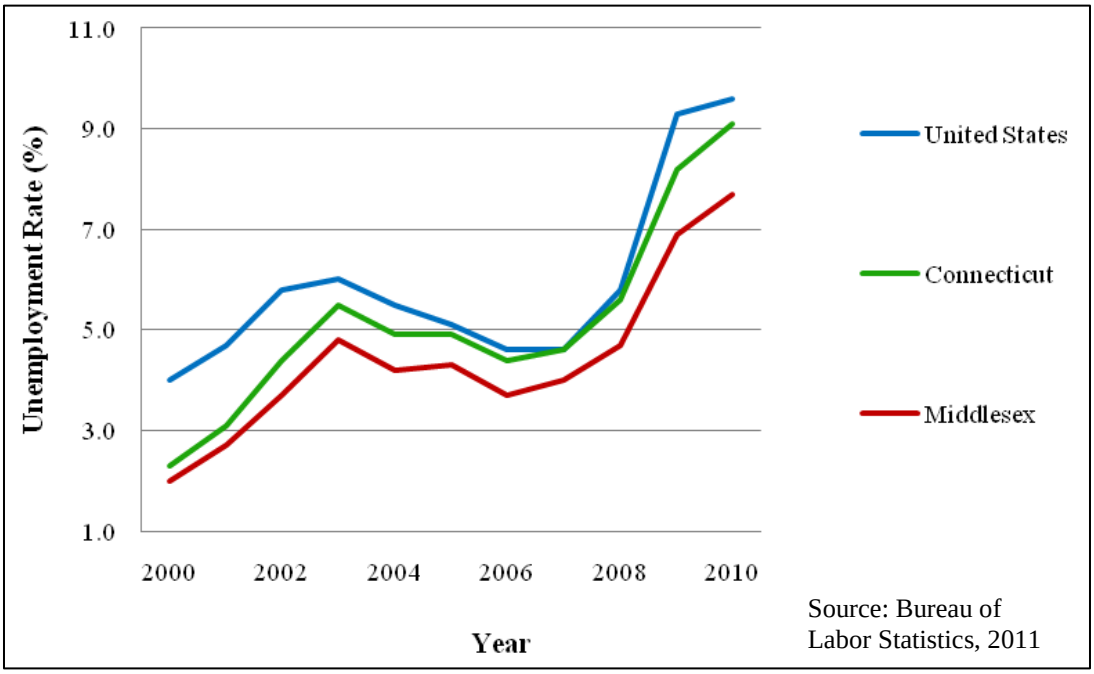


Figure 4-6: 2000-2010 Unemployment Rates for Middlesex County and Areas of Comparison

Housing. In 2009, there were an estimated 72,817 housing units in Middlesex County, approximately 88.7 percent of which were occupied. Of the occupied housing units, approximately 77.6 percent were owner occupied (see Table 4-8). Middlesex County, the ROI, has a higher share of owner-occupied units than either Connecticut or the United States overall. As shown in Table 4-8, the 2009 median home value of owner-occupied units in the ROI was $299,800, slightly higher than the Connecticut average yet notably higher than the national average.

Table 4-8: 2009 Housing Characteristics

Indicator	Middletown	Middlesex County (ROI)	Connecticut	United States
Occupied Housing Units	20,060	64,611	1,326,329	113,616,229
Owner-occupied	57.4%	77.6%	68.8%	65.9
Renter-occupied	42.6%	22.4%	31.2%	34.1%
Vacant Housing Units	1,273	8,206	119,511	16,333,731
Total Housing Units	**21,333**	**72,817**	**1,445,840**	**129,949,960**
Median Owner-occupied Home Value	$230,700	$299,800	$291,200	$185,200

Note: The 2009 housing characteristics are estimates from the American Community Survey (ACS), a division of the U.S. Census Bureau. The ACS prepares 1-year estimates for geographic areas with populations of 65,000 or more. This includes all geographies except Middletown. The ACS also prepares 5-year estimates for small geographic areas. Information from this data set has been retrieved for Middletown.
Source: U.S. Census Bureau, 2011.

Community Services and Facilities

An increase or change in the physical location of residents and visitors in the area has the potential to place additional demand on the delivery of existing police protection and emergency services across the county. This section provides an overview of existing services in Middlesex County.

Fire and Rescue Services. There are 17 fire departments in Middlesex County. These departments have a total of 29 stations with 1,078 career, volunteer, and mostly volunteer staff. Five of the 17 fire departments are located in the City of Middletown. The two largest departments are both staffed by professional firefighting personnel. In Middletown, there are a total of 226 career, volunteer, and mostly volunteer firefighting personnel (U.S. Fire Administration, 2011). The Middletown Fire Department, located at 535 Main Street, provides service to the Property.

Police Protection. There are five police departments in Middlesex County providing police protection and law enforcement services, one of which is the Middletown Police Department (USACOPS, 2011). The Middletown Police Department patrols approximately 42 square miles. The department is staffed by 102 sworn officers and 41 civilian full- and part-time personnel (Middletown Police Department, 2011). The police department, located at 222 Main Street, services the Property. Additional services are provided by the Connecticut State Police.

Medical Facilities. Middlesex County is served by two hospitals, both of which are located in Middletown. The primary hospital in the area is Middlesex County Hospital, which is a short-term facility with 275 beds. The other hospital, Connecticut Valley Hospital, is a psychiatric facility with 572 beds (U.S. Department of Health and Human Services, 2011).

Schools. There are 15 independent school districts in Middlesex County. During the 2009-2010 academic year, approximately 33,939 students were enrolled in Middlesex County's 72 schools (NCES, 2011). The Connecticut Technical High School, a state school district, is comprised of

17 schools and located in Middletown. The Middletown School District, a regional school district, is also located in Middletown and is comprised of 12 schools with approximately 5,181 students. Table 4-9 demonstrates those schools located within the jurisdictional bounds of the USARC site.

Table 4-9: Public Schools in Middletown, 2009-2010

Name	Location	Student Enrollment	Grades
Lawrence School	Kaplan Drive	346	K – 5
Keigwin Annex	99 Spruce Street	369	6
Woodrow Wilson Middle School	1 Wilderman's Way	744	7 – 8
Middletown High School	370 Hunting Hill Avenue	1,324	9 – 12

Environmental Justice and Protection of Children

Environmental Justice. On 11 February 1994, President Clinton issued EO 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. EO 12898 directs agencies to address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

As defined by the "Environmental Justice Guidance Under NEPA" (CEQ, 1997), "minority populations" include persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, Black (not of Hispanic origin), or Hispanic. Race refers to census respondents' self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, and Central or South American. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population (CEQ, 1997). Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The U.S. Census Bureau defines a "poverty area" as a census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level.

While the remaining portions of the Socioeconomics section use Middlesex County as the ROI and present information for Middletown, where available, an environmental justice assessment is generally conducted on a smaller geographic scale to reveal the full extent of direct project-induced impacts and benefits on low-income and/or minority populations. The project site is located entirely in one census tract (census tract 5412). This tract has a higher percentage of minority residents than Middlesex County; however, the difference is not significant enough for this to be considered a high minority area. The percentage of census tract residents living below the poverty line is lower than the county average. Therefore, the project area is not considered to be a high minority and/or low-income area.

Protection of Children. EO 13045, *Protection of Children from Environmental Health and Safety Risk*, requires federal agencies, to the extent permitted by law and mission, to identify and

assess environmental health and safety risks that might disproportionately affect children. This EO, dated 21 April 1997, further requires federal agencies to ensure that their policies, programs, activities, and standards address these disproportionate risks. EO 13045 defines environmental health and safety risks 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 (such as the air we breathe, food we eat, the water we drink and use for recreation, the soil we live on and the products we use or are exposed to)."

4.2.7.2 Environmental Consequences

In order to analyze the effects of the proposed action on socioeconomic resources in the ROI, the Economic Impact Forecast System (EIFS) model developed for the U.S. Army Corps of Engineers was used. This model allows for the evaluation of the significance of the impact to the ROI. The result of construction spending in the ROI was examined for both direct effects, such as employment and the salaries that employment provides to construction workers, and indirect effects, or the effect of those salaries and associated spending on the larger economy in the ROI. Subsequent changes in local economic activity are computed as the product of initial changes in sales volume, either increases or decreases, and a local impact multiplier. In total, the model examines changes in sales volume, income, employment, and population in the ROI, accounting for the direct and indirect effects of the action. Appendix D discusses this methodology in more detail and presents the model input and output tables developed for this analysis.

To determine the historical range of economic variation, the model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The historical annual extremes for the ROI become the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant.

The model was run using total construction dollars, even though expenditures are likely to take place over an approximate five period. Therefore, the model presents the "worst case scenario", in that it looks at the ROI's ability to absorb the maximum impact of spending associated with the proposed action. In reality, effects are likely to be less significant on a year-to-year basis.

For the purposes of this socioeconomics analysis, a potentially significant socioeconomic impact could occur if:

- The estimated effect of the proposed action falls above the positive RTV or below the negative RTV.

A potentially significant environmental justice impact could occur if the proposed action would:

- Result in disproportionate effects on low-income and/or minority populations.

A potentially significant protection of children impact could occur if the proposed action would:

- Cause disproportionate effects on children.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

Population Characteristics. This alternative is not anticipated to induce residential development therefore the effects on demographics are expected to be negligible.

Economic Characteristics

Employment by Industry – Construction costs have been estimated at approximately $10,115,230. The Preferred Alternative could generate an increase in local sales volume of approximately $16,386,660, of which approximately 38.2 percent could result directly from the proposed action. Direct and induced income at the place of work is estimated to be $2,565,166. Furthermore, an increase in local employment of approximately 64 could be expected to result from the construction of this alternative, 37.5 percent of which could be the direct result of the proposed action in the form of retail and personal services-related as well as construction jobs.

These prospective increases in local employment and sales volume would be beneficial to the ROI and would not constitute a significant effect on economic development. As shown in model inputs and outputs that are available in Appendix D, the $16,386,660 estimated sales volume from the construction is a fluctuation of 0.22 percent in the year of occurrence compared to the historical extreme (RTV) of 15.64 percent.

The increase in total income of $2,565,166 is an annual fluctuation for Middlesex County of 0.05 percent compared to the RTV of 13.66 percent. The increase of 64 employees is a 0.08 percent fluctuation compared to an RTV of 6.0 percent. All of these fluctuations are far below historical extremes, the exceedance of which would be considered significant.

Unemployment - As mentioned above, the reuse of the USARC site would introduce 64 jobs into the ROI. Therefore, the Preferred Alternative would result in a minor beneficial impact on the existing unemployment rate.

Housing - No new housing would be constructed as part of this alternative. Additionally, this alternative is not anticipated to induce new residential development. Therefore, no effect on the existing housing stock is anticipated as a result of this alternative.

Community Services and Facilities

It is not anticipated that this alternative would place additional demand on other public services. As discussed below, the Preferred Alternative would have no significant adverse effects on public services.

Fire - Under this alternative, additional fire protection services would be located on the USARC site, resulting in a benefit to area residents, institutions and businesses. In particular, the proposed new City firehouse would result in improved Middletown Fire Department response times for residents and businesses on the west side of the City.

Police - The proposed emergency operations center that would be constructed under the Preferred Alternative is expected to enhance the ability of the Middletown Police Department to

respond to emergency situations, benefiting area residents and businesses. It is not anticipated that additional demand would be placed on police protection services as a result of this alternative.

Medical Facilities - Only in the event of an onsite emergency would there be an increased demand for existing medical facilities. It is anticipated that any increase in demand would be minimal and on rare occasion, and would not adversely affect the facilities ability to adequately deliver services to other ROI residents during periods of increased demand. Rather, the proposed emergency operations center would be expected to have a beneficial effect on area residents and businesses as it would enhance the ability of medical facilities, including the Middlesex County Hospital, to respond to emergency situations.

Schools - No new residential population would be generated as a result of this alternative. Therefore, no additional demand on schools would result from this alternative.

Environmental Justice and Protection of Children. There would be no disproportionate adverse effects on environmental justice populations or children as a result of the Preferred Alternative. Construction activities would be primarily isolated to the project area. During such activities, there would be a slight increase in noise, air particulates, and transport of construction equipment and materials. It is anticipated that such effects would be minimal, generally isolated to areas where construction activities are ongoing, and would not result in adverse effects to populations living within close proximity to the project area. Additionally, the census block group where the project site is located has not been identified as an environmental justice population.

As discussed in the other sections of this EA, this alternative would be implemented in a manner that protects the general population, including minority and low-income populations and children, from adverse effects resulting from exposure to hazardous substances. See the sections on Air Quality, Water Resources, and Hazardous Substances for additional information. The Property would continue to use potable water provided by the City of Middletown and it is expected that most of the Property would not be accessible to children. Therefore, minority and low-income populations and children would not be exposed to disproportionately high and adverse health, safety, or environmental effects as a result of the construction or operation of the Preferred Alternative

The presence of the new City fire station and emergency operations center would result in beneficial effects (i.e., improved response times for the Middletown Fire Department, the Middletown Police Department, and medical facilities) to both environmental justice and non-environmental justice populations alike, as well as children. Similarly, the presence of the new fire training school would ensure that County and City firefighters receive proper training at a modern facility, benefiting both environmental justice and non-environmental justice populations alike, as well as children.

No Action Alternative: Caretaker Status

The No Action Alternative would not be expected to create impacts or changes to socioeconomic characteristics at or surrounding the Property. USARC expenditures would remain unchanged

from baseline levels and no new construction would take place. There would be no effect on economic development or other socioeconomic elements in the ROI, no change in any impacts to any demographic group residing or working in the economic ROI, nor any effect on protection of children in the ROI.

4.2.8 Transportation

4.2.8.1 Affected Environment

Roadways and Traffic

The Property is accessed via Mile Lane and is located approximately 0.71 miles west of Newfield Street (Connecticut Route 3) and approximately 0.29 miles east of Ridgewood Road. Mile lane is an east-west urban collector road with approximately 12-foot wide lane in each direction separated by a solid double yellow line. The site driveway and Mile Lane forms a three-legged unsignalized intersection. Stop signs are not posted on the driveway, but vehicles exiting from the driveway need to stop for eastbound and westbound traffic on Mile Lane.

Mile Lane terminates at Newfield Street to the east and at Ridgewood Road to the west. Stop signs are provided on Mile Lane at these two three-legged, unsignalized intersections.

Newfield Street is classified as an Urban Main Arterial and Ridgewood Road is classified as an Urban Minor Arterial by the Connecticut Department of Transportation (ConnDOT). Both roadways are north-south roadways with one travel lane in each direction separated by a solid double yellow line. Site-generated traffic could use Newfield Street to connect to cross town roadways on Route 372 to the north and Washington Street/Meriden Road to the south. These cross-town roadways provide connections to regional highways I-93 to the west and Route 9 to the east.

The 2010 Average Daily Traffic (ADT) volumes are available from the Connecticut Department of Transportation. The ADT volumes on key roadways in the study area are: 2,100 vehicles on Mile Lane west of Newfield Street, 2,200 vehicles on Ridgewood Road south of Mile Lane, 16,300 vehicles on Newfield Street north of Mile Lane.

Public Transportation

Railways. The closest rail stations to the Property are the Berlin Station in Kensington and the Meriden Station in Meriden, Connecticut. Berlin Station is approximately nine miles from the Property while Meriden Station is approximately 11 miles from the Property. These two stations are served by Amtrak's Northeast Regional Line which operates between Boston and Washington D.C. In New Haven, Connecticut, the line splits; one route continues to Boston and the other goes north towards Springfield, Massachusetts.

Buses. Middletown Area Transit provides bus service throughout the area. Two bus lines run within close proximity to the Property: Route D and Route E. Route D primarily runs north south on Newfield Street. There is a designated bus stop at Mile Lane. The route runs north to shopping centers such as Stop & Shop and Kmart, and south to Middletown's designated downtown district. One to two buses run per hour between the hours of 6:05 a.m. and 6:50 p.m.,

Monday through Friday. Route E operates in a circular route along Industrial Park Road, Smith Street, Westlake Drive, East Street, Ridgewood Road, and Camp Street. The route connects residential and commercial neighborhoods west of the Property. One to two buses run per hour between the hours of 6:05 a.m. to 6:40 p.m., Monday through Friday. These routes are combined on Saturdays.

Pedestrians and Bicycles

There are no pedestrian sidewalks provided along Mile Lane, Newfield Street or Ridgewood Road in the study area.

There are no designated bike lanes or bikeways within a one-mile radius of the site. There is a bikeway and a multi-use trail located more than a mile north of the site.

- Westlake Area Bikeway – This paved 8-foot-wide bikeway is separated from the roadways and begins on Middle Street at the intersection of Bradley Street and Aetna Drive. It proceeds south along Middle Street to Smith Street, then east on Smith Street, north on Westlake Drive, and terminus near Grandview Drive.
- Mattabesett Trolley Trail – A 2.5 mile multi-use trail is provided along the Mattabesett River via an abandoned trolley bed. The western terminus of this trail connects to the Westlake Area Bikeway.

4.2.8.2 Environmental Consequences

Impact criteria were developed to determine the significance of the potential transportation impacts of the proposed action. Traffic congestion is usually characterized by the "Level of Service" (LOS), which ranges from A (least congested) to F (most congested) (Transportation Research Board, 2003). A potentially significant transportation impact could occur if the proposed action would:

- Create a safety hazard for motorists, bicyclists, or pedestrians;
- Generate a considerable net increase in traffic, which would result in a substantial effect on the existing traffic facilities (i.e., highways and traffic intersections); or
- Permanently alter traffic patterns and facilities would reach capacity and extensive delays would develop (i.e., LOS of E or worse).

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

Roadways and Traffic. Under this Alternative, the Property and facilities would be transferred to the City of Middletown for reuse as an emergency operations center. The Preferred Alternative would include a fire training school and a new fire station, as well as a new emergency operations center.

Overall, impacts to transportation from closure, renovation, and reuse would not be significant. The renovation of the existing building and the construction of new maintenance garage/shop

and the specialized training facilities would not entail a substantial amount of construction. Therefore, construction-related traffic is not expected to be significant.

Based on the LRA reuse plan, the average daily user population generated by this alternative is estimated to be approximately 46 people (50 during the week and 35 on weekends). As presented in Table 4-10, the LRA reuse plan under this alternative would have four full-time personnel. The new fire station would require up to four firefighters; these would be existing personnel currently located at other fire stations in the City.

The training activities would generate 50 people during the week and 35 people on weekends. The existing Middlesex County Fire School would relocate to the Property and it is estimated that an average of roughly 31 people (including instructors) would be at the facility for training activities during weekday evenings and on weekends. Since these training activities would be conducted during the evening and weekends, these trips would have no affect on traffic during the peak hours. The City of Middletown Fire Department also would use the training facility; approximately 19 personnel would be onsite from 8:00 a.m. to 4:00 p.m., up to four days a week for training activities. For a conservative analysis, it is assumed that all of the 19 personnel trips would occur during the a.m. and p.m. peak hours.

Table 4-10: Peak Daily Population
Preferred Alternative

	Weekday	**Weekend**
Full Time Personnel		
Firefighters	**4**	**4**
Training Activity Population		
Middlesex County Fire School (Evening and Weekend)	31	31
City of Middletown Fire Department (Weekday 8 A.M. - 4 P.M.)	19	0
Total Training Population	**50**	**31**
Total Daily Population	**54**	**35**

In summary and as presented in Table 4-11, a total of 23 personnel (four full time and 19 training) would travel to the site during the a.m. peak hour and leave the site during the p.m. peak hour. It is assumed that all the personnel would drive to the site due to limited access to other modes (i.e., public transportation, etc.). Since the net increase in peak-hour vehicle trips on local and regional roadways would be small, reuse of the Property as an emergency operations center is not expected to have a significant effect on roadways or traffic.

Table 4-11: Net Increase in Vehicle Trips
Preferred Alternative

Type of Personnel	Amount	A.M. Peak Hour			P.M. Peak Hour		
		IN	OUT	Total	IN	OUT	Total
Full Time Personnel	4	4	0	**4**	0	4	**4**
Training Personnel	50	19	0	**19**	0	19	**19**
Total	**54**	**23**	**0**	**23**	**0**	**23**	**23**

Public Transportation. There are no pedestrian sidewalks along Mile Lane to provide a safe walking environment from the Property to the closest bus stop at Newfield Street, and the nearest rail station is located more than nine miles away. It is expected that future users would primarily utilize vehicles to access the site. Therefore, it is expected that the full-time personnel and training school attendees introduced by this alternative would not have a significant effect on public transportation.

Pedestrians and Bicycles. Given the lack of existing pedestrian sidewalks and designated bikeways or bike paths, it is expected the number of pedestrian and bicycle trips generated by the Preferred Alternative would be minor. Similar to the Preferred Alternative, the majority of new peak hour trips would be vehicular trips. Therefore, no significant pedestrian or bicycle effects would occur as a result of the Preferred Alternative.

No Action Alternative: Caretaker Status

Under the No Action Alternative, there would be no change in the amount of trips generated by the Property. No transportation effects would be expected to result from the No Action Alternative.

4.2.9 Hazardous and Toxic Substances

4.2.9.1 Affected Environment

Environmental Baseline Surveys were conducted on the Property in 2007 and 2010. It was determined that lead based paint (LBP), asbestos containing materials (ACM), and polychlorinated biphenyls (PCBs) are not present on the Property. Further discussion is provided below.

Hazardous Substances that Have Been Removed

The 2007 Environmental Condition of Property Report (ECP) indicated that no transformers or other DoD-owned polychlorinated biphenyls (PCB)-containing equipment was identified during the site reconnaissance and personal interview with site personnel indicated that any PCB containing equipment was most likely removed during the demolition of the Nike missile buildings (USACE, 2007).

The building at the Middletown USARC was constructed in 1987. Because of the recent date of construction, asbestos was not likely used in construction materials for the building (USACE, 2010). ACM, previously located in a former building on the Property, was removed when that building was demolished in 1998 (USACE, 2007).

The building at the USARC was constructed after 1978 and lead-based paint (LBP) is unlikely to be present. LBP was previously identified on buildings formerly located on the Property, however, those buildings were subsequently demolished (USACE, 2007).

Hazardous substances pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 101(14) (42 USC 9601(14)) have been previously used and stored at the Property. Hazardous substances commonly associated with the former Nike missile operations included VOCs, SVOCs, solvents, hydraulic fluids, paints, and petroleum, oil, and lubricants (POLs). Historical reports indicate the presence of 55-gallon drums (contents unknown), hydraulic fluids, lubricants, and fuels historically at the Property. The 2007 ECP found no indication of the presence of munitions and explosives of concern (MEC) on the Property (USACE, 2007). All hazardous substances (with the exception of trichloroethylene or TCE), radioactive materials, and petroleum products used to support operations when the Property was used as a former Nike missile launch facility, were removed when operations were terminated and the facility closed.

Prior to its closure in September 2006, janitorial chemicals and building maintenance-related products were stored in the designated storage area within the janitorial closet located in the former Army Reserve Center. According to Army Reserve personnel and site records, onsite disposal of hazardous materials or wastes has not occurred at the Property during its use as a USARC (USACE, 2007). All hazardous substances (with the exception of trichloroethylene or TCE), radioactive materials, and petroleum products used to support operations when the Property was used (more recently) as a former Army Reserve Center, were removed when operations were terminated and the facility closed.

The 2007 ECP indicated that a review of available records, site reconnaissance, and interviews with USARC personnel provided no indication that radioactive materials have been released at the USARC. Nike Hercules missiles were likely armed with nuclear warheads. The radioactive materials (electron tubes) in these missiles were shipped, stored, handled and disposed of in accordance with technical manuals. Periodic wipe tests were performed to identify radioactive leaks. The wipes were to be disposed of in lead-lined drums as radioactive waste but frequently were disposed of as regular solid waste. However, no accounts of radioactive leakage have been identified at Nike missile sites (USACE, 2007).

The Army conducted a Radiological Survey at the Property on December 13, 2011. The Radiological Survey Report concluded that no further action is required with respect to the radioactive devices or materials identified and that the Property is free of radiological concerns.

A subsurface investigation was conducted at the leach field and former building foundation in 2009 to evaluate potential for environmental releases. The report concluded that no release exceeding the applicable standards had occurred and no further investigation was recommended (AECOM/Stell, 2009).

According to the 2007 ECP, no aboveground storage tanks (ASTs) were ever located on the Property. Four fuel oil underground storage tanks (USTs) were previously located on the Property, but were removed in the 1990s.

- A 2,000-gallon steel fuel oil UST was removed in December 1990;
- A 550-gallon steel fuel oil UST was also removed in 1990 and replaced with a 550-gallon double-wall fiberglass UST;
- A 2,500-gallon fuel oil UST was removed in March 1994; and
- A 550-gallon fiberglass fuel oil tank was removed in December 1997.

Any residual contamination is at or below Connecticut's Remediation Standard Regulations (RSR) criteria and no further action is required (USACE, 2007).

Hazardous Substances that Are Still Present

As reported in the 2007 ECP, historical releases identified on the Property included TCA, 1,1-DCE, 1,1-DCA, carbon tetrachloride, trichloroethylene (TCE), chloroform, total petroleum hydrocarbons (TPH), cis-1,2-DCE and toluene in the groundwater. TCE is the only constituent that was consistently detected at concentrations exceeding the applicable RSR criteria. The source of this contamination was not identified and was suspected to be in the areas around the Garage, Maintenance Building, and/or the Nike missile silo area. The ECP Report determined that the historical releases were likely related to the former Nike missile facility operations (USACE, 2007).

Trichloroethylene (TCE) has historically been detected at well location M8 at the facility (US Army Environmental Command, 2008). A Remedial Investigation (RI) was performed in 2008 to determine the source and extent of TCE in groundwater, and the potential impacts to human health and the environment. The investigation included soil borings at various areas of concern. The investigation determined that a small plume of TCE located within the overburden aquifer had impacted groundwater and appears to extend generally from the large central parking area to the northeast towards the large concrete slab/ former building site (from the M8/MW-16 area to the northeast just beyond MW-18 and potentially to BR-4 and just beyond it). The horizontal and downgradient extent of groundwater contamination was determined to be limited, although a source area for the TCE was not identified. The report concluded that based on the results of the RI, the TCE plume had not and was not expected to migrate to or beyond the site boundary Kemron/Mactec, 2008).

An investigation was conducted in 2009 to evaluate the potential for a release to the environment from the former concrete vehicle wash rack, catch basin, oil/water separator, and sanitary sewer manhole. The investigation consisted of seven soil borings, of which two were completed as temporary monitoring wells. Soil samples were analyzed for total metals, VOCs, PAHs, PCBs, organochlorine pesticides, and ETPH. Groundwater samples were analyzed for dissolved metals, VOCs, PAHs, organochlorine pesticides, and ETPH. No compounds of concern were detected above the applicable standards in soil and sediment samples except at one location where total

arsenic detected in soil exceeded the Residential and Industrial Direct Exposure Criteria standard of 10 mg/kg. No compounds of concern were detected above the applicable standards in were detected in groundwater in excess of the applicable standards except chloroform which exceeded the Groundwater Protection Criteria (GWPC) of 6 µg/L, but was below the Residential Volatile Criteria of 26 µg/L. The report concluded that a release exceeding the applicable standards associated with the sanitary sewer manhole and the grassy area adjacent to the wash rack had occurred and recommended additional investigation (AECOM, Inc. and Stell Environmental Enterprises, Inc., 2009). However, the 2010 ECP Update Report refutes this recommendation, arguing that the arsenic concentration identified at the one location should be considered anomalous and not representative of concentrations identified at the subject property. The 2010 ECP investigation found that the arsenic concentrations do not pose an unacceptable risk to human health or the environment and recommended no further action (USACE, 2010).

A Human Health Risk Assessment (HHRA) was performed as part of the RI to evaluate potential risk to receptors. Constituents of Potential Concern (COPC) identified for groundwater were carbon tetrachloride, chloroform, TCE, arsenic and barium. The HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use. Further discussion can be found in the August 1, 2008 Decision Document (DD) Recommending No Action for Site-08 Groundwater at Middletown, Connecticut, 94th RRC (US Army Environmental Command, 2008).

Based on those findings, the 2010 ECP recommended the Property should be classified as an ECP Category Type 3 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action (USACE, 2010).

4.2.9.2 Environmental Consequences

Impact thresholds were developed for the purposes of assessing the significance of impacts related to hazardous and toxic substances. A potentially significant impact could occur if:

- Hazardous substances are not stored, managed, used, and disposed of in accordance with all applicable federal, state, and local requirements;
- Required actions to remediate environmental releases and to protect the public from any hazardous substances remaining on the property are not complete;
- The property is not suitable for the use intended by the transferee; or
- The intended use of the property is not consistent with the protection of human health and the environment.

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center the City of Middletown

Hazardous substances used in construction, maintenance, and operation of the new emergency operations center would be stored, managed, and disposed in accordance with all applicable federal, state and local requirements. As discussed below, the Preferred Alternative is not expected to have a significant adverse effect with respect to hazardous substances.

Hazardous Substances that Have Been Removed. Hazardous substances, petroleum products, and radioactive materials formerly used to support the operation of the Nike missile launch site and the Army Reserve Center have been removed and are no longer present on the Property. There is no evidence of a release of radioactive materials and the Army Safety Office has released the property for unrestricted use. There are no known underground storage tanks, above ground storage tanks, 55-gallon drums, lead-based paint, asbestos, polychlorinated biphenals, or munitions and explosive constituents of concern on the Property.

Hazardous Substances that Are Still Present. Residual soil and groundwater contamination would not have a significant impact on the proposed reuse of this Property as an emergency operations center. The former use of the Property was as an Army Reserve Center. Both uses have similar operational and environmental characteristics: restricted-access facilities, operated by trained professionals, with little or no ground disturbing activity, excepting construction. The March 2010 Environmental Condition Report (ECP) recommended the Property should be classified as an ECP Category Type 3 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action (USACE, 2010).

In 2007, the Army conducted a human health risk assessment (HHRA) to quantify risks to human and ecological receptors from exposure to constituents of potential concern (COPCs) in soil and groundwater on the Property. The HHRA identified arsenic as the only COPC in soil and carbon tetrachloride, chloroform, TCE, arsenic, and barium as COPCs in groundwater. The HHRA concluded that there is no unacceptable risk to human health or ecological receptors from exposure to COPCs based on current or reasonably foreseeable future land use.

In 2008, the US Army Environmental Command (USAEC) determined that no remedial action is required to protect human health and the environment, because there is no unacceptable risk to receptors based on current and reasonably foreseeable future land use (see the No Action Decision Document, USAEC, July 2008). The reasonably foreseeable future land uses considered by the Decision Document included military, industrial, and commercial land uses, i.e., non-residential uses.

Since the proposed reuse of the Property as an emergency operation center is a non-residential use and groundwater would not be used as drinking water, implementing the Preferred Alternative would not have a significant impact on human health. The Decision Document determined that ecological risks from exposure to COPCs are negligible due to the limited habitat on the Property and the absence of exposure pathways to subsurface contamination. The Preferred Alternative would not have a significant impact on the environment."

No Action Alternative: Caretaker Status

Implementation of the No Action Alternative would result in no effects to hazardous materials or hazardous wastes management. Under this alternative, the Property would continue to be maintained by the Army but there would be no storage of hazardous materials on site.

4.2.10 Cumulative Effects

Cumulative effects are defined as "the impacts on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertake such other actions" (40 CFR 1508.7). The section goes on to note: "such impacts can result from individually minor but collectively significant actions taking place over a period of time." Cumulative impacts associated with implementation of the proposed action would include any impacts from other on-going actions that would be incremental to the impacts of the proposed action alternatives.

The ROI for the cumulative effects assessment is generally defined as the City of Middletown, Connecticut. Based on discussion with the City of Middletown Department of Planning, Conservation staff, one on-going development project of substantial size was identified in the vicinity of the Property (Wackers, 2011b). This project, Centerpoint Connecticut Office Condominiums, is located roughly 1.75 miles northwest of the Property at 306 Industrial Park Road. The project entails the development of approximately 60 to 70 business condos or units in up to six new buildings, and is expected to be completed in 2011.

In addition, a new Armed Forces Reserve Center (AFRC) is under construction on the Cucia Park parcel located south of Smith Street immediately west of I-91. Construction of this new AFRC is needed to implement the BRAC Commission's recommendations pertaining to Middletown, Connecticut. The new ARFC and associated support facilities will support five U.S. Army Reserve units and six CT Army National Guard (CTARNG) units relocating from the SGT Libby USARC in New Haven, Connecticut; the Army Reserve Army Maintenance Support Activity (AMSA) #69 in Milford, Connecticut; and CTARNG facilities in Manchester, Newington, and New Britain, Connecticut. The proposed AFRC will include an approximate 164,000-square-foot training facility, an approximate 35,000-square-foot Organizational Maintenance Shop (OMS) and a small, unheated storage building. The new ARFC will introduce 100 full-time personnel; a total of 895 personnel would be assigned to the new AFRC and the typical maximum number of personnel using the facilities on a drill weekend will be around 450. The Cucia Park AFRC is about 1.5 miles west of the Property, on the other side of I-91.

The cumulative effects analysis considers these two on-going projects. In general, the Preferred Alternative and other projects involve existing or expanding built sites. In addition, individual project construction is limited in duration and occurs over several years. Thus when combined with other ongoing projects, including as-of-right or background development projects, the cumulative impacts of the proposed action would not have the potential to result in long-term significant cumulative impacts. Further, some impacts would be considered beneficial, such as socioeconomic effects. Note that the Property is separated from the AFRC and Centerpoint project sites by an interstate highway (I-91).

4.2.10.1 Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

Land Use

The Preferred Alternative would be consistent with the site's former use as a USARC, and would not preclude adjacent properties from being used for existing activities. Similarly, the Centerpoint Connecticut Office Condominiums project and new Cucia Park AFRC are uses that are compatible with current zoning and nearby land uses. Thus the Preferred Alternative would not result in significant cumulative impacts to land use.

Aesthetics and Visual Resources

The Preferred Alternative would not significantly impact the aesthetic quality of the surrounding area. The cumulative projects would not interfere with any existing viewsheds because they are located more than one mile away from the Property. No cumulative impact to aesthetics or visual resources would occur under this alternative.

Geology and Soils

Impacts to geology and soils are site-specific and generally are not impacted by regional cumulative development. As the Property is more than one mile from the on-going development sites, there would be no significant cumulative effects on the geology or soils within or immediately adjacent to the project area.

Noise

When combined with the on-going projects, potential cumulative impacts associated the Preferred Alternative may include short-term noise during the construction period. An increase in construction noise could occur, but given the physical distance between the projects and the individual project construction periods, significant cumulative impacts with respect to noise would not occur. In addition, potential increases in construction noise with would be temporary and limited to the construction period. As significant operational noise impacts were not identified for this alternative, cumulative noise impacts would not be expected once operational.

Air Quality

The Preferred Alternative, when combined with the other projects in the ROI, would not have significant short- or long-term cumulative air quality effects. Since total NAAQS pollutant emissions from construction and operation of the emergency operations center would not exceed the *de minimis* levels established by the Conformity Rule and greenhouse gas emissions would not exceed *de minimis* levels established by the Counsel of Environmental Quality for NEPA analysis, any cumulative impacts to air quality from the Preferred Alternative would be *de minimis*.

Water Resources

Significant impacts to groundwater, wetlands or surface waters would not occur as a result of the Preferred Alternative, and the cumulative development sites are generally too distant from the Property to impact relevant water resources. The historic subsurface TCE plume is confined to

the Property and would not be affected by the cumulative development projects. Therefore, cumulative effects to water resources are not expected under the Preferred Alternative.

Socioeconomics

The Preferred Alternative, when combined with the other projects in the ROI, would not result in significant short- or long-term cumulative socioeconomic impacts. Since the construction of the Preferred Alternative's emergency operations center (and related facilities), the Centerpoint Office Connecticut Office Condominium project and the new Cucia Park AFRC would not occur simultaneously, the minor positive short-term effects of these separate construction projects on the local economy would not be cumulative. In the long-term, the Centerpoint project would be expected to generate employment and would contribute to Middletown's tax base. However, the relocation of reserve personnel from the closed Middletown USARC to the Cucia Park AFRC would have little or no effect on the local economy, because both Centers are within the same ROI. Similarly, the relocation of current employees to the new emergency operations center would have little or no effect on the local economy. Consequently, all three of these projects when combined would not have a significant cumulative effect on socioeconomics.

Transportation

The Preferred Alternative, combined with the other two projects in the ROI, would not result in significant short- or long-term cumulative impacts on traffic. Construction activities would increase traffic, however these three construction projects would not occur simultaneously. Any cumulative impacts would not be significant, because the minor traffic impacts of each project would be separated by distance and time from the impacts of the other two projects. Given the distances between the project sites, the low volume of traffic generated by all three projects combined, and the fact that two of the projects are relocating existing employees and would not increase overall traffic volumes within the ROI, any long-term cumulative impacts to transportation would be minor.

Hazardous and Toxic Substances

Hazardous substances would be managed and disposed of in accordance with federal, state, and local requirements by the new residential community, the Centerpoint Office and Condominium Project, and the Cucia Park AFRC. The historic TCE plume has not and is not expected to migrate to or beyond the Property boundary. There are no groundwater plumes or releases associated with the other two project sites. Therefore hazardous and toxic substance impacts of a cumulative nature would not be expected to occur.

4.2.10.3 No Action Alternative: Caretaker Status

Implementation of the No Action or Caretaker Status Alternative would avoid new impacts that could interact with the impacts of other projects in the vicinity of the Property. Therefore, there would be no cumulative impacts associated with the No Action Alternative.

4.2.11 Mitigation Summary

None of the anticipated effects of the proposed action would result in significant impacts; therefore, mitigation is not needed.

As discussed below, mitigative measures would be incorporated into the Preferred Alternative, in compliance with the requirements of the CTDEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and Stormwater Pollution Control Plan. Such measures would minimize the potential for significant impacts with respect to geology and soils and water resources.

The CTDEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities application process would require completion of a registration form that describes the construction activity (including number of acres disturbed) and the stormwater discharge (including the name of the immediate surface water body or wetland to which the stormwater runoff would discharge) (Connecticut Department of Environmental Protection, 2010). A Stormwater Pollution Control Plan (Plan) would be required as part of the General Permit due to the size of area that would be disturbed during construction (greater than5 acres). The Plan would address the erosion and sediment control and post-construction measures that would be necessary to minimize potential impacts associated with stormwater runoff. It is expected that the Plan would require the following:

- Certification by a licensed Professional Engineer for compliance with the General Permit;
- All contractors active on the site must also sign a certification that they are familiar with and will follow the General Permit and the Plan for the site;
- Weekly site inspections; and
- Submittal of a Notice of Termination to terminate their general permit coverage once construction is complete and the site fully stabilized (Connecticut Department of Environmental Protection, nd).

The General Permit and Plan would require control measures such as silt fencing and covering exposed soils to protect against erosion by wind and rain during construction and landscaping and stormwater management plans to protect against erosion after construction. The Plan would incorporate appropriate site-specific Best Management Practices (BMPs) for controlling runoff, erosion, and sedimentation during construction activities. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. Erosion and sediment control measures would be specified in the Plan, which would require approval from CTDEP as part of the pollution discharge permitting process, as well as the Corps of Engineers Contracting Officers Representative prior to construction.

Low Impact Development (LID) is a potential stormwater management strategy that could be utilized to mitigate the effects of increased stormwater runoff and pollution. LID encompasses a range of site design approaches and small-scale stormwater management practices that promote

the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID techniques can effectively remove nutrients, pathogens, and metals from stormwater, and also reduce the volume and intensity of stormwater flows (USEPA, nd). It is expected that the Preferred Alternative would incorporate and implement LID strategies to the greatest extent possible to reduce runoff, reduce pollution from runoff, and increase infiltration.

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5.0 FINDINGS AND CONCLUSIONS

5.1 FINDINGS

5.1.1 Consequences of the Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center by the City of Middletown

The Preferred Alternative would not have any significant adverse effects on any of the environmental or related resource areas at the Middletown USARC facility or to areas surrounding the Property. Based on the analyses presented in this EA, the Preferred Alternative would have no significant effect on: land use, aesthetics and visual resources, geology and soils, noise, air quality, water resources, socioeconomics; transportation, hazardous and toxic substances, cumulative effects, or utilities; and no effect on cultural resources or biological resources.

5.1.3 Consequences of the No Action Alternative: Caretaker Status

Under the No Action or Caretaker Status Alternative, the proposed action would not take place and no environmental impacts would occur.

5.2 Conclusions

As discussed in Section 4.2.11, Mitigation Summary, mitigative measures would be incorporated into the Preferred Alternative, in accordance with the requirements of the CTDEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and Stormwater Pollution Control Plan. Based on the analysis performed in this EA, implementation of the Preferred Alternative or No Action Alternative would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required and issuance of a FNSI would be appropriate.

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6.0 LIST OF PREPARERS

Name	Title	Education/ Responsibility	Experience
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7.0 DISTRIBUTION LIST

This section identifies local, state and federal agencies that have received a copy of the EA and FNSI or a letter indicating that they are available for review.

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The EA and Draft FNSI were available for review at the following library during the public comment period:

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9.0 ACRONYMS

AMSA	Area Maintenance and Support Activity
ARC	Army Reserve Center
BGS	Below Ground Surface
BRAC	Base Realignment and Closure
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (also known as Superfund)
CFR	Code of Federal Regulations
COPC	Constituents of Potential Concern
DoD	Department of Defense
EA	Environmental Assessment
ECP	Environmental Condition of Property
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EO	Executive Order
FNSI	Finding of No Significant Impact
GHG	Greenhouse Gases
HHRA	Human Health Risk Assessment
HUD	U.S. Department of Housing and Urban Development
LRA	Local Redevelopment Authority
NEPA	National Environmental Policy Act
NOI	Notice of Interest
NPDES	National Pollutant Discharge Elimination System
OMS	Organizational maintenance shop
OWS	Oil/water separator
POL	Petroleum, oils and lubricants
POV	Privately-Owned Vehicle
RI	Remedial Investigation
RSC	Regional Support Command

RSR	Remediation Standard Regulations
SHPO	State Historic Preservation Officer
SF	Square Feet
SVOCs	Semivolatile organic compounds
TCE	Trichloroethylene
USACE	U.S. Army Corps of Engineers
USARC	U.S. Army Reserve Center
U.S.C.	United States Code
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOCs	Volatile organic compounds

APPENDICES

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APPENDIX A
CITY OF MIDDLETOWN
LOCAL REDEVELOPMENT AUTHORITY
MILE LANE ARMY RESERVE CENTER
REDEVELOPMENT PLAN

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RKG ASSOCIATES INC

Redevelopment Plan – Feasibility Study
Mile Lane Army Reserve Center
Middletown, CT

SEPTEMBER 2, 2008

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I. EXECUTIVE SUMMARY

On August 25, 2005, the Base Realignment and Closure Commission (BRAC) voted to close three U.S. Army Reserve centers in Connecticut, including the Mile Lane Army Reserve Center in Middletown. This announcement set in motion a series of events and procedures whereby the facility was declared surplus by the federal government, operations were shut down and moved elsewhere, and the property transfer process was begun. Under BRAC law, the City of Middletown formed a local redevelopment authority (LRA) to plan the reuse of the property. This report presents the results of the LRA's planning effort, culminating in a Preferred Reuse Plan for the property.

The Mile Lane property contains 23.7 acres owned in fee by the federal government and 21.5 acres of easements on surrounding parcels. The site contains a 15,800 square foot building constructed in 1987 that is in fair to good condition, and which was used by the Army Reserve for training, meeting and administration. The remainder of the hillside site, which was originally built as a Nike missile facility by the Army in the late 1950s, includes a mix of open fields, parking areas and woodlands. It is located on the western side of the City of Middletown in a rural, residential neighborhood.

Under federal BRAC law, the Army must cleanup any environmental contamination on the property before it can be transferred. A report issued earlier this year identified some potential for contamination which the Army is studying further to determine how and when to remediate the property. The BRAC law also specifies several methods by which surplus property can transfer, including the use of a Public Benefit Conveyance (PBC) for a variety of purposes. The LRA is required to develop a feasible reuse plan though a public outreach process, including the need to promote the availability of the property to homeless providers in the region. The Middletown LRA carried out all of the required steps and evaluated a series of alternative uses for the property including public recreational use and the development of a public safety campus.

The Preferred Reuse Plan calls for the construction of a state-sponsored and funded Fire Training School, along with a new City fire station and emergency operations center. Building a fire station at the Mile Lane site provides increased public safety to residents of this section of the City who currently experience an unacceptably long response time. This location also allows for the creation of a regional animal shelter to provide needed kennels and dog runs in a City that currently has no space to shelter lost or abandoned animals. The Mile Lane site also provides a new home for the 9-1-1 Dispatch and Operations Center that has outgrown its cramped location at the Cross Street Fire Department.

The City will utilize state and local funding to develop these uses over a 2-5 year period following acquisition of the property from the Army. Transfer of the property at no cost to the City will be accomplished by a Public Benefit Conveyance with the Department of Homeland Security, Federal Emergency Management Agency (FEMA) serving as the sponsoring federal agency.

The Redevelopment Plan, once approved by the Middletown Common Council, will be forwarded to the Department of Housing and Urban Development (HUD) which must approve the Homeless Submission portion of the Reuse Plan, then onto FEMA and the Army. A decision is expected to take at least 60 days. The Army must then either accept the Reuse Plan and actively begin the process to clean and convey the property, or reject it and work with the LRA on an alternative disposition strategy for the property.

II. INTRODUCTION

A. BRAC Action

On August 25, 2005, the Base Realignment and Closure Commission (BRAC) voted to close three U.S. Army Reserve centers in Connecticut, including the Maintenance Support Facility located on Mile Lane in Middletown. This announcement set in motion a series of events and procedures whereby the facility was declared surplus by the federal government, operations were shut down and moved elsewhere, and the property transfer process was begun. Under BRAC law, the Department of Defense (DoD) first notified other federal agencies of the availability of the property with none showing an interest. It then contacted the local jurisdiction in which the facility is located to begin a localized redevelopment planning effort. The City of Middletown, as the sole municipal jurisdiction impacted by the BRAC action, responded by forming a local redevelopment authority (LRA), which was subsequently approved by DoD's Office of Economic Adjustment (OEA) as the officially recognized planning agent for the property.

This report presents the results of the LRA's planning effort, culminating in a Preferred Reuse Plan for the property.

B. Local Redevelopment Authority

In response to the BRAC decision, the City of Middletown formed a Local Redevelopment Authority (LRA) to oversee the reuse planning efforts. On April 3, 2006, the Middletown Common Council passed Resolution 47-06 establishing the Middletown Base Realignment and Closure Local Redevelopment Authority whose purpose is "to create a comprehensive redevelopment plan for the acceptance through land transfer from the U.S. Army of this base to the City of Middletown."

Appointed to the LRA were the following individuals:

- Sebastian Giuliano, Mayor of the City of Middletown
- Joseph Bibisi, Deputy Mayor City of Middletown Common Council
- Thomas J. Serra, City of Middletown Common Council Majority Leader
- Dr. Michael J. Frechette, Superintendent of Schools
- Geen Thazhampallath, Aide to the Mayor
- William Warner, Director of Planning, Conservation, and Development

Michiel Wackers, Deputy Director of Planning, Conservation and Development was appointed as staff to the LRA. The LRA was officially recognized by the Department of Defense by letter dated May 1, 2006 from Patrick J. O'Brien, Director of the Office of Economic Adjustment, DASA.

The LRA has met in public session on a regular basis since its formation, and has reached out to the community seeking input on the redevelopment of the facility.

III. EXISTING CONDITIONS

A. Property Description

1. Location

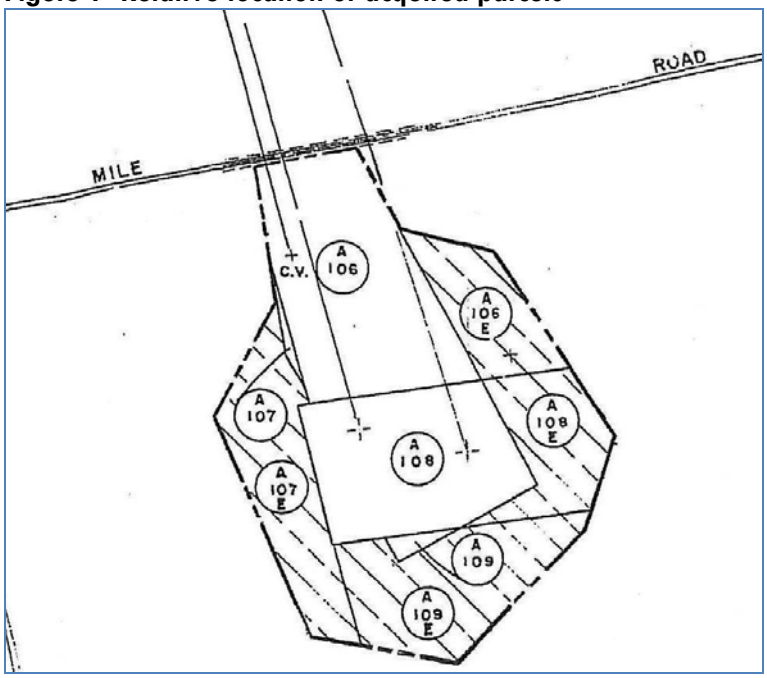
The Mile Lane Army Reserve Center (the "Property") is located in central Connecticut, approximately 15 miles south of Hartford and 2 miles west of downtown Middletown. The surrounding area is lightly to moderately developed with residential, commercial and agricultural land uses. The Property fronts on Mile Lane, an east-west street off of Route 3 (Newfield Street).

2. Size

U.S. Army deed records indicate that the Property contains 23.72 acres of land that is owned in fee, along with surrounding easements on 21.45 acres, for a total site of 45.17 acres. The parcel was acquired by eminent domain in 1955 from four landowners. Figure 1 shows the relative location of the deed and easement parcels, taken from a 1955 Army map.

The City's assessment records show a single parcel of 47.2 acres that may include the fee land and one or more easement parcels. Copies of the deeds and assessors records are included in Appendix A. The fee parcel is roughly rectangular in shape, with approximately 400 feet of frontage on Mile Lane and extending southward approximately 1,500 feet. Figure 2 on the following page is taken from the City's GIS and shows the approximate tax map boundaries. It is assumed that the Army will dispose of it fee interest as well as extinguish any remaining easements on the underlying parcels.

Figure 1- Relative location of acquired parcels



3. Topography

The Property is located on a small hill or ridge, rising more than 100 feet from Mile Lane towards the southwestern corner of the site. The site has been terraced to accommodate buildings and parking areas on the front portion and includes a large (approximately 150 feet by 600 feet) level area in the rear. Figure 3 provides an aerial view of the entire site with topography, as well as the estimated location of the Army's property lines for the fee simple parcel.

Figure 2 – City GIS Parcel Map

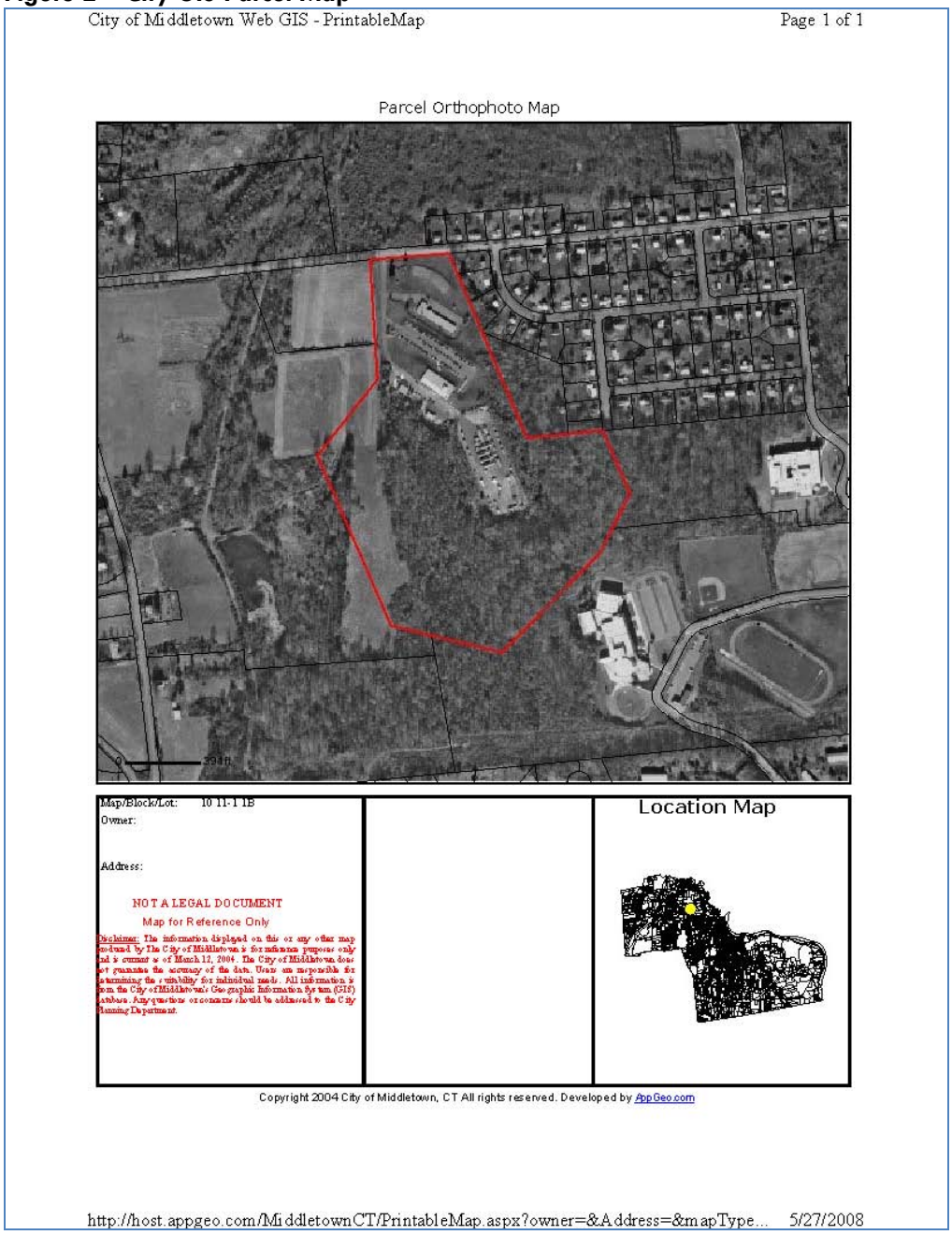


Figure 3 – Baseline Conditions



4. Surrounding Land Uses

The site is bordered to the north and east by a residential subdivision of moderately priced single family homes. Directly north across Mile Lane the land is generally undeveloped with the exception of a few single family homes. To the west is active agricultural land (hay fields). The property abuts two City school properties to the south, including the new High School that is set for completion in 2008.

B. History

The site, originally used as farmland, was acquired by the U.S. Army in September 1955 through eminent domain for the construction of a Nike missile launch site, along with property approximately 2 miles north in Cromwell which served as the missile control center. The Middletown site was developed with three underground missile silos, various support buildings and a barracks for approximately 90 personnel stationed at the base. Construction of the base was completed and operation commenced in 1958. The base was operated by the Army until 1964, then by the Connecticut National Guard until it was decommissioned in 1968. The property was transferred to the Army Reserve in 1970. In 1987, the barracks building was removed and a new Army reserve center was constructed. The remaining original structures were removed during the early 1990s. The three missile silos were reportedly demolished and filled.[1]

After the Army decommissioned the site, the property was believed to have been declared surplus and available for transfer under the federal regulations at that time. The City of Middletown approached the Army in 1969 regarding acquisition of the property for public use, possible as a site for schools. However, the Army removed the property from surplus and transferred it to the Army Reserve.

The Army Reserve operated the facility, generally for administrative purposes, until 2006. The building was used for offices, meetings of reservists, training and storage. The portion of the site previously used for the missile silos was used occasionally for mobile equipment storage. The site has been vacant and "mothballed" since.

C. Zoning

The Property is located within the City of Middletown's R-15 zone, which is a predominately residential land use zone. Allowed sues by right include single family dwellings and farming. Minimum lot size it 15,000 square feet with 100 feet of frontage on an approved street. Uses allowed under special exception include childcare facilities, outdoor recreation, educational facilities and active adult housing. The City's zoning code (and subdivision regulations) also impose limitations on development based on soil types, wetlands and slopes.

[1] Sources: Final Environmental Condition of Property (ECP) report, dated March 2007, Army Corps of Engineers; and Preliminary Feasibility Study of Various Concepts (internal document), City of Middletown Planning Department.

The City's Plan of Conservation & Development (master plan) includes provisions for a "greenway" between East Street and Newfield Street which includes portions of the property. This would encourage habitat preservation, open space development and possible recreational trails through the property.

D. Facilities Assessment

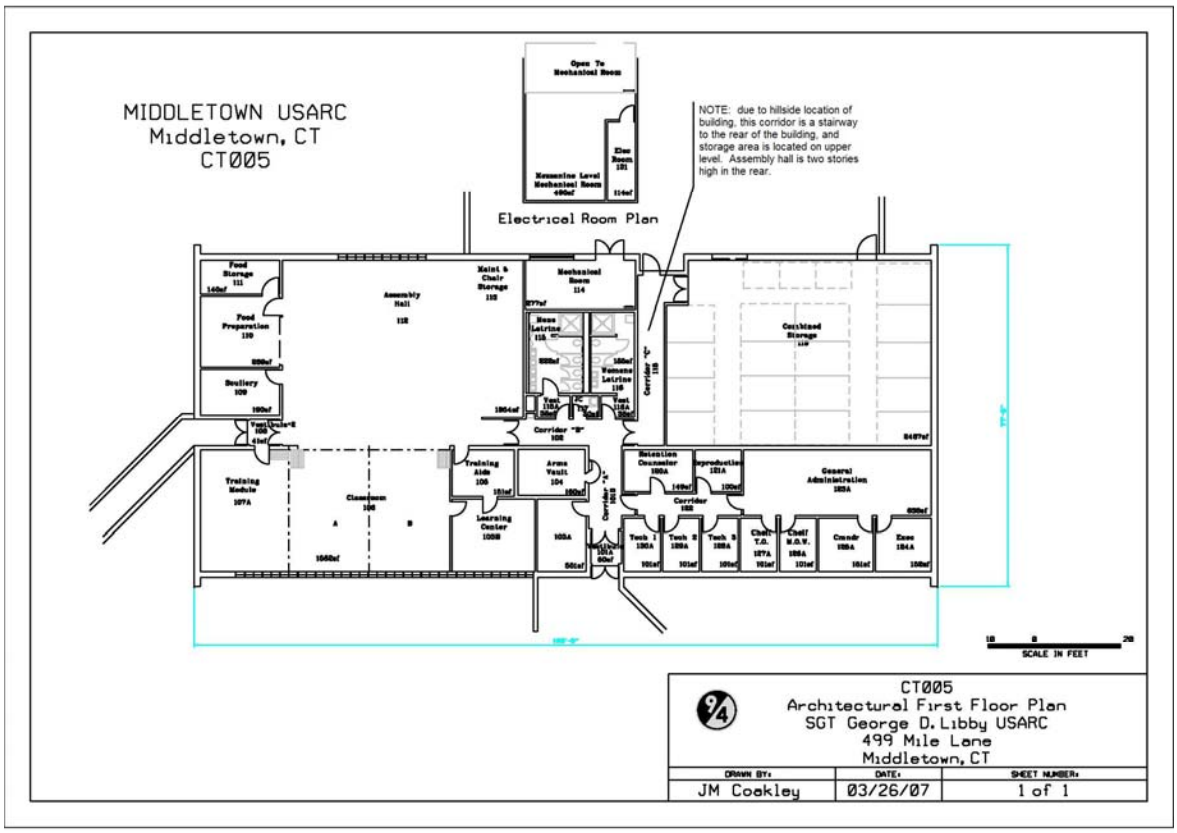
In order to better understand the condition of the 1987 building on the property, a detailed facility assessment of the building's mechanical, electrical and plumbing systems was conducted by as part of the reuse planning by Consulting Engineering Services, Inc. (CES) of Middletown. A copy of the report is attached as Appendix B.

The building is built of concrete block and is built into the slope. It is single story in the front (north side, facing Mile Lane) and rises to two stories in the rear. The building includes offices, a large high-ceiling muster hall, classrooms, a commercial kitchen, male and female bathrooms, along with mechanical and storage areas. Heat is provided by two propane-fired boilers which feed both hot water baseboard-style and air-handling units throughout the building. The building is also air conditioned.

The building and site are served with City water and sewer services, as well as electric and telephone.

In summary, the analysis found that the 15,800 square foot building is in generally good condition and suitable for reuse for a variety purposes. However, many of the building's mechanical systems are at or past the end of their rated 'lives' and may need to be refurbished or replaced. CES estimated the cost for these improvements at approximately $489,000 or about $31 per square foot. Figure 4 provides a floor plan of the building as provided by the Army Reserves.

Figure 4 – Floor Plan of Mile Lane Army Reserve Building



E. Environmental Conditions

Consistent with DoD and Army policy, the environmental program at the facility is being conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under the CERCLA process, the Army incorporates other applicable or relevant and appropriate federal and state regulations. Under current federal law, the Army cannot transfer the property until all contamination has been remediated (cleaned up or otherwise rendered harmless). The exception to this is referred to as "Early Transfer" and is described in Section IV.D.

In March 2006 the Army published an Environmental Condition of Property (ECP) report for the facilities, as required under Department of Defense regulations. This document, which analyzed previous data regarding the property, concludes with the findings that "potentially polluting materials" had been present on the site, that there was evidence of possible spills and releases of these materials into the environment and that there was the reported 'presence of volatile organic compounds (VOC's) and petroleum hydrocarbons in the groundwater' under the site.

The ECP reports that some remediation of petroleum spills, primarily from underground storage tanks that had previously been used on the facility, had taken place. It further noted that there was no evidence of PCB's, asbestos containing materials, lead-based paint,

radiological materials or munitions at the site. The more toxic materials that had been used when the missiles were present were believed to have been carefully handled and managed, with no evidence of any release.

The ECP categorizes the property as "Type 7", requiring further evaluation to determine the extent of the environmental conditions. Additional active investigation of the site has been on-going, including the installation of test wells and other means to quantify the extent of the pollution. The Army has continued to monitor the site and additional information is anticipated to be forthcoming over the next few months.

Although it is not possible to know the extent of the potential hazardous materials at the site or the requirements for remediation before the property can be disposed of by the Army for reuse, the information contained within the ECP is useful in considering reuse alternatives for the property. The clean-up standards that the government must meet is partly dependent on the reuse of the property – for example, residential and educational uses have a higher standard of cleanup than industrial or commercial. The findings of the Army's further analysis of the environmental conditions at the facility will be important input into the redevelopment strategy.

Excerpts from the ECP, including the Executive Summary, Table of Contents, Introduction and Conclusions are reproduced in Appendix C. A copy of the full ECP is available from the LRA.

Once the Army receives the Redevelopment Plan, it will then begin work on an Environmental Assessment (EA), or an Environmental Impact Statement(EIS), if necessary, for the transfer based on the uses proscribed in the plan. The EA serves as the basis for the clean-up of the property.

F. Personal Property

LRA's and qualified public benefit conveyance recipients can also receive any personal property items that have been declared excess. In the case of the Mile Lane facility, the personal property inventory (PPI) includes various office furniture and fixtures as well as the fixtures in the small commercial kitchen. A list of these items is contained in Appendix D. Acquisition of the PPI can be included in a PBC or can be separately conveyed through a different mechanism. If the City does not want the PPI, then notice should be given to the Army so that they may remove and transfer these items for disposal by other means (typically through the Defense Reutilization and Marketing Office (DRMO).

IV. PROPERTY TRANSFER PROCESS

A. Introduction

This chapter of the Mile Lane Redevelopment Plan describes the various methods of transfer available to the Army Reserve under the Base Realignment and Closure (BRAC) legislation and regulations[2]. BRAC is *the process that the Department of Defense (DoD) uses to reorganize its installation infrastructure to more efficiently and effectively support its forces, increase operational readiness, and facilitate new ways of doing business*.[3]

Information provided in previous chapters of this redevelopment plan has illustrated that the Mile Lane Army Reserve Base has a variety of site conditions, environmental issues and economic characteristics that may warrant multiple approaches for transferring the facility from military control and its reuse for civilian purposes. This chapter provides an overview of the key types of transfer processes and conveyance mechanisms that are likely to be most applicable for redeveloping the property.

Generally, these conveyance methods fall into two major categories that involve options for transferring the property, or portions of the property, at no cost or reduced cost, as well as others that involve acquisition at fair market value. Other options discussed in this chapter involve the potential for early transfer of the facility for civilian use prior to full closure and environmental cleanup by the military.

All of the options noted above are reflective of the military's criteria for disposal of surplus property emanating from the 2005 BRAC evaluation process. These criteria emphasize, among other factors, DoD's intent to expedite the transfer process and to maximize a return on investment for the federal government as part of that process. This indicated desire to accelerate the closure process and transfer the facility to community use means that the military may be more flexible in applying a variety of approaches to hasten this conveyance. However, it is also an indication that the military will "rely on and leverage market forces" to the greatest extent possible, as noted in the Base Realignment and Closure Manual (BRRM). All of these factors have ramifications for the LRA's preparation of a final reuse plan, which will be discussed in this and subsequent chapters of the redevelopment plan.

B. Property Transfer Alternatives

Once the decision has been made through the BRAC process to close a military installation, federal law provides for a number of alternative transfer methods that can be employed by the Department of Defense (DoD) to dispose of the property. The primary methods of transfer most likely to be considered by the Army for the facility are outlined in Table 1 and discussed in more detail in the subsequent portions of this chapter. These methods are based

[2] The Federal law governing the BRAC process is contained in provisions of Title II of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526, 102 Stat. 2623, 10 U.S.C. 2687 note), and the Defense Base Closure and Realignment Acct of 1990 (Public Law 101-510, Part A of Title XXIX of 104 Stat. 1808 U.S.C. 2687 note)(reference (c)).

[3] Source: OSD web site as reported in the Base Redevelopment and Realignment Manual (BRRM), March 1, 2006.

on information presented in the BRRM, which contains the DoD's primary guidelines for reuse of BRAC facilities.

Table 1– Property Transfer Alternatives

Conveyance Method	Conditions	Community Planning Considerations
Public Benefit Conveyance (PBC)	• The property is conveyed at market value unless a sponsoring agency determines a discount is warranted. • PBC's for public airports (via FAA) are conveyed at no cost, but all subsequent proceeds must be used for approved airport purposes. • The property must be used for public purposes (schools, airports, healthcare, recreation, etc.) • Sponsoring agencies may impose additional land use controls	• Market value is an objective of the sponsoring agency – an appraisal will most likely be needed • Consideration should be given to how the reuse plan will affect market value and ultimately the price paid to the sponsoring agency
Economic Development Conveyance (EDC)	• Conveyance can only be made to the approved LRA. • The military department is required to seek market value. However, the military can grant an EDC without consideration if proceeds support economic development for 7 years • Proceeds not used for economic development can be recouped by the military	• Market value will need to be determined – an appraisal must be completed • If LRA develops property it must determine there are enough qualified investments (e.g. new infrastructure) to warrant a discount
Negotiated Sale to Public Entities	• Property can only be conveyed to public entity for a public benefit • Same benefit cannot be obtained from sale or PBC conveyance • Congress must approve transaction • If property is sold within 3 years all profits revert to the military	• Market value will determine final sale price for LRA or other public body – an appraisal must be completed
Advertised Public Sale	• Property is conveyed by the military through a public bidding process • Military must consult with LRA before taking this approach • The military's objective will be to seek sale to highest responsible bidder	• Because this process requires a bid process, market value is assumed to be part of this process • The establishment of minimal land use controls in the reuse plan may encourage more rapid, market-driven redevelopment, if so desired by the LRA
Environmental Responsibilities Transfer/Sale (Early Transfer)	• Property is conveyed through a two-step bid process, typically to a third party developer or to the LRA • The military then requests a covenant deferral from state governor • After deferral is approved, military can enter into a binding purchase agreement	• Because this process requires a bid process, market value is assumed to be part of this process • State will assume responsibility for oversight of remedial actions for contaminated sites • The establishment of minimal land use controls in the reuse plan may encourage more rapid, market-driven redevelopment, if so desired by the LRA • Consideration should be given to acquiring additional environmental insurance to protect involved parties from future liability
Source: *Understanding Key Issues in DoD's Base Redevelopment & Realignment Manual,* An Infobrief from the Association of Defense Communities, May 2006		

One of the first steps in the disposal process is the "screening" of the property to determine if other federal agencies have use for any or all of the facility. In the case of Mile Lane, no other federal users identified an interest in the facility within the allotted timeframe, which resulted in its designation by the DoD as "surplus" property. In light of this fact, disposal of

the property can potentially occur under one or more alternative methods of transfer that will be dependent upon the type of end user (i.e. public or private) and the intended use.

1. Public Benefit Conveyance

One of the more useful methods of property transfer for a variety of public uses is the Public Benefit Conveyance (PBC). A PBC can be used to convey real or personal property to state and local governments, and certain non-profit organizations, for public purposes at no cost or reduced cost. These purposes include schools, parks, public health facilities, law enforcement, emergency management response, correctional facilities, historic monuments, self-help housing, and wildlife conservation. If this method is selected by the LRA, and approved by the DoD, a federal sponsoring agency may request assignment of the property for purposes of conveying the property to a designated eligible recipient. The sponsoring agencies are responsible for selecting qualified applicants and determining the amount of the discount (if any) from the fair market value of the property. It should be noted that some uses, such as law enforcement, emergency management response, correctional facilities, historic monuments, and wildlife conservation, do not require a sponsoring agency and can be directly transferred from the DoD to an approved recipient. The primary PBC approaches that are potentially useful in redeveloping the property are summarized below.

Public Safety – Water and sewer systems, as well as medical facilities, can be transferred without cost as a PBC through the endorsement of the U.S. Department of Health and Human Services. Property for use by law enforcement or fire protection may be transferred through the Department of Justice or the Department of Homeland Security (through the Federal Emergency Management Agency).

Education – The U.S. Department of Education can convey land and facilities to public and private non-profit educational institutions on a discounted basis over thirty years. The educational entity actually fulfills the obligation to the Federal Government for the property at the rate of three and one-third percent annually through constructive educational use. Title to the property is conveyed up front, subject to educational use restrictions, and reverter or buy-out provisions.

Open Space/Parkland – The U.S. Department of the Interior is the sponsoring agency for PBCs of open space and outdoor recreational facilities including state and national parks, historic sites and other similar properties.

Airports – The Federal Aviation Administration is the sponsoring agency for airport and aviation-related property transfers from the military to public airport operators. These PBC's are done *at no cost* as long as the property is used for approved purposes and all revenues generated from the facilities are used to support the airport.

2. Disposal of Property for Use by Homeless

As part of the initial screening process for reuse and disposal of a BRAC property, consideration must be given to potential use of the property to provide housing and/or service for the homeless. Property that has been identified for potential use to the

homeless can then be conveyed to either an organization that is a representative homeless provider, as approved by the U.S. Department of Housing and Urban Development (HUD), or the LRA. If the property is conveyed to the LRA, it must then make it available to the homeless provider for no cost. The LRA would be responsible for monitoring the use of the property and ensuring that the homeless provider complies with the legally binding agreement that must accompany all such conveyances.

In accordance with base closure law, the LRA must solicit Notices of Interest (NOI) from state and local governments, representatives of the homeless, and other interested parties in the vicinity of the installation that may be eligible for a Public Benefit Conveyance related to the property. The LRA must give notice as to the timeframe in which NOIs will be accepted for submittal and hold hearings to allow interested parties to provide input into the reuse planning process.

The interests of homeless providers in surplus military property plays an important role in the BRAC process. The federal Department of Housing and Urban Development must approve the LRA's Reuse Plan, which must demonstrate that these interests were taken into account throughout the planning process.

3. Economic Development Conveyance

Transfer of all or portions of the property could potentially occur by means of an Economic Development Conveyance (EDC) from the Army. Only the LRA is eligible to acquire property under an EDC. The LRA must demonstrate that the proposed uses for the property will generate sufficient jobs to justify an EDC conveyance, and that the proposed land uses are realistically achievable given current and projected market conditions. In most cases, the Army will be required to seek fair market value consideration for the EDC conveyance, although it is authorized on a case-by-case basis to grant an EDC for no consideration (typically only used in economically distressed and/or rural areas).

4. Negotiated Sale

A negotiated sale can only be transacted with a public body if a public benefit, which would not be realized from a competitive advertised sale or authorized public benefit conveyance, will result from the negotiated sale. The grantee may not pay less than fair market value based upon a highest and best use appraisal of the property. In addition, final approval of the sale must be authorized by Congress. If the property is sold within three years following a negotiated sale, the grantee may be required to remit all proceeds in excess of its initial acquisition costs.

5. Public Sale

If the LRA, after preparing a reuse plan, determines it is in the best interest of the community not to be directly involved in redeveloping the site, it can recommend that the Army dispose of the property through a public sale. The actual method of sale could include sealed bid, Internet auction, or on-site auction to the highest bidder. Under such an approach, the DoD would make a determination whether to sell the entire site or as

subdivided parcels. Property acquired by a private organization or individual is subject to local land use and zoning controls.

6. MILCON Exchange

This relative recent transfer authority allows the military department to convey a BRAC property to a third party in exchange for the construction of equally valued facilities at some other location(s). The acquiring entity can either do the construction itself (or through agreement with other firms) or may be able to simple put the money up for the military to go out to bid for the new project, without having to go through the MILCON budget process. The value of the exchange is at the property's fair market value (based on an appraisal). The reuse of the property will be guided by market forces and by the land use regulations (zoning) that come out of the reuse plan or that are already in place.

7. Interim Use Leases

The ultimate goal of the military, with regard to BRAC facilities, is to dispose of any surplus property as promptly as possible. One means of facilitating an early or expedited transfer is through execution of an interim lease. Prior to deed transfer there may be opportunities for the LRA to obtain access to certain land parcels or facilities on an interim use basis that could allow redevelopment to proceed prior to actual installation closure and transfer. There are many examples from previous BRAC rounds where the LRA assumed responsibility for operation of the base's infrastructure in order to facilitate establishment of a master lease agreement that allowed for subleases of specific structures or sites, for civilian uses. This, in turn, created short-term revenue-generating activities and/or helped to minimize the operating and maintenance costs of the properties.

If the Army determines that the interim use of the property would facilitate state and local economic efforts, and not interfere or delay the final property disposal, it may be inclined to grant such a lease. Further, the Army may accept less than fair market value if it determines that such acceptance would be in the public interest and fair market rent is unobtainable or not compatible with such public benefit. Before entering into a lease, the military must consult with the Environmental Protection Agency (EPA) and the State of Connecticut Department of Environmental Protection to determine whether environmental conditions on the property are acceptable, as discussed subsequently under the section related to early transfer authority, for execution of such an agreement.

C. Appraisals and Fair Market Value

It should be noted that the Army, or in the case of a Public Benefit Conveyance (PBC) the sponsoring agency, is required to obtain one or more fair market value appraisals of the property prior to conveyance. Therefore, any transfer of property by means of an EDC, negotiated sale, or public sale, as well as certain PBCs, will necessitate preparation of an appraisal. Appraisals must be based on the highest and best use of the property, taking account of all property conditions that are relevant to fair market value. The final determination of fair market value is made by the Secretary of Defense, or a designee such as the Secretary of the Army, and cannot be negotiated by the LRA. Appraisals obtained by the DoD are typically not shared with the LRA, sometimes leading to the need for the LRA to

obtain its own independent appraisal as a basis for conveyance negotiations if there is disagreement as to value.

Determining market value can often appear to be a rather subjective judgment since arriving at a highest and best use for a property is dependent upon a number of assumptions that reflect *potential* future conditions that may exist at the property. Market value is heavily dependent upon assumptions related to market conditions, availability of resources, tenants, environmental contamination, capital costs, building code violations and zoning regulations. An analysis of highest and best use is required to determine the highest economic return that is typically based on the four following tests.

- What uses are *physically possible* for the site in that they could function adequately for their intended purpose?
- What uses are *legally possible* based on compliance with all applicable land use regulations and laws?
- Which uses are *financially feasible* in terms of their ability to provide an adequate return on investment?
- What is the *maximum productivity* of the physically, legally, and financially feasible uses, in terms of generating the highest return?

Based on these criteria, it is evident that the local reuse planning process can have a significant impact on determining highest and best use and ultimately market value. Detailed plans that provide proposals for high-density development, for example, may result in higher market value than less detailed or lower density redevelopment plans. While this possibility should not necessarily preclude planning for more intensive land use, it is important that any plan accurately reflect redevelopment potential from an economic perspective, since this planning is likely to affect the purchase price that will have to be recovered by either the community or a private developer.

D. Early Transfer of Property

Under certain circumstances, the military may have unfinished responsibilities regarding a BRAC installation that could preclude immediate transfer of property or otherwise affect the clear-title status of the facility. In the case of Mile Lane, such a situation will exist with regard to remediation of contaminated sites at the facility where final cleanup and long-term monitoring by the Army is expected to continue into the future.[4] Provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) require federal agencies to complete all environmental remediation actions for contaminated sites before transferring property by deed to a nonfederal entity. Baseline environmental conditions at the property are described in the Environmental Condition of Property report which was summarized in Chapter III.

An amendment to CERCLA in 1996, however, provided an alternative approach that allows for early transfer of contaminated sites prior to full remediation. Furthermore, through the

[4] The Army's clean-up schedule will be based on the results of the Environmental Assessment (EA) that will completed, once the Reuse Plan is done, such that future land uses are identified.

course of the last several BRAC rounds, the DoD has made significant efforts to expedite the transfer of such sites, including approaches that involve privatization of all or portions of the environmental cleanup process. An early transfer of a military base with privatized environmental remediation typically requires the following interrelated agreements, which are described in more detail below.

- An environmental services cooperative agreement ("ESCA")
- A guaranteed fixed-price ("GFP") contract
- Environmental insurance
- Enforceable agreement(s) with the state environmental regulatory agency and/or U.S. EPA

As part of the transfer agreement, the DoD can oversee the entire cleanup process or enact a subsidiary agreement with either a local, county or state government agency, as well as a private entity that represents the interest of a BRAC installation, to oversee cleanup and restoration activities. The governor (or EPA at a Non-Priority List (NPL) site) typically expects that such an agreement be negotiated prior to approving an early transfer through a Covenant Deferral Request.

1. Environmental Services Cooperative Agreement ("ESCA")

The Defense Environmental Restoration Program (DERP) authorizes DoD to enter into agreements with any state or local agency to carry out aspects of DoD's responsibilities under DERP, including the identification, investigation and cleanup of contamination. Military departments have begun entering into "environmental services cooperative agreements" with LRAs to provide LRAs funds to complete DoD's remaining environmental cleanup responsibilities at property being considered for early-transfer. The ESCA describes exactly what responsibility is being transferred to the LRA and what responsibility is being retained by the military department. The military department retains its underlying liability for environmental cleanup under CERCLA.

2. Guaranteed Fixed-Price Contract

Theoretically, an LRA could decide to engage an environmental contractor under a traditional time and materials contract to perform the environmental cleanup transferred under the ESCA. However, few if any LRAs are willing to take the risk that the ESCA grant will be sufficient. Consequently, the LRA typically engages an environmental contractor to remediate the site for a fixed price, under a Guaranteed Fixed Price Contract (GFPC), backed by a "cost-cap" or "stop-loss" insurance policy. The GFPC for remediation is a performance-based scope of work to be delivered for the guaranteed price regardless of the cost.

3. Environmental Insurance

As part of any real estate transfer process involving a site that has been subjected to environmental contamination, strong consideration should be given to obtaining environmental insurance. As noted previously, under the provisions of CERCLA, the federal government is responsible for cleaning up any contamination that can be

attributed to DoD activities. In addition, BRAC properties are afforded a second level of protection under the National Defense Authorization Act through which, the DoD indemnifies transferees and lessees of base closure property from legal action for releases or threatened releases of hazardous substances resulting from DoD activities. Although these measures do provide a considerable level of protection for reuse of contaminated sites, the acquisition of environmental insurance may also be warranted to offer further assurance to future owners against potential liability.

Early transfer transactions typically involve the purchase of two interrelated environmental insurance policies. As noted above, the first is a "cost-cap" or "stop loss" policy. These types of policies protect the environmental contractor against cost overruns for the scope of work the contractor is obligated to perform. These policies can also be structured to protect the LRA by allowing a substitution of contractors if the first contractor has defaulted on its obligations. The second type of environmental insurance is a liability policy, referred to as "a pollution legal liability" policy or "environmental impairment liability" policy. These policies generally combine a number of different types of coverage, but two of the most important are first party claims for cleanup of "unknown" contamination and third party claims for damages arising from the contamination. Other coverage can be included for issues such as tenant interruption or loss of rental value.

The application of an environmental insurance policy to a BRAC site such as Mile Lane is a complex transaction, since there can be a number of parties involved in the remediation and redevelopment who are subject to various inherent environmental risks as part of the property transfer process. These parties can include the LRA, local and county governments, contractor, consultant, project manager, as well as the financial company, developer, or purchaser. In light of this fact, insurance carriers have developed appropriate policies that help to manage these risks in an effort to protect all participants from known and unknown exposures at a given site. The selected policy should be in place as soon as the LRA or other insured entity incurs any liability as a result of any transfer or conveyance mechanism, including the execution of a lease. Prior to selecting the appropriate policy, a risk management program should be developed that recognizes and balances the proposed transfer structure, reflects acceptable levels of risk for the parties involved and is flexible enough to adapt to unanticipated future changes. In addition, selection of a qualified insurer is an important part of this process.

4. The Enforceable Agreement(s) with the State and/or EPA

The military departments and the governor, who must approve the early transfer request, expect the parties assuming responsibility for the remediation to enter into a consent agreement (or similar enforceable agreement) with the state agency that acts as the lead regulator at the base (Connecticut Department of Environmental Protection). A consent agreement sets forth the processes that must be followed to receive a determination from the state agency that all necessary remedial action has been completed. The consent agreement also sets forth a schedule for cleanup. It may also require the parties to enter into a separate land use covenant imposing interim land use restrictions on the property during the cleanup. The consent agreement also stipulates penalties for noncompliance.

V. PUBLIC OUTREACH

A. Property Screening

On May 25, 2006 the LRA published an official notice soliciting interest from public and non-profit organizations eligible to receive surplus military property through a Public Benefit Conveyance. A copy of the notice, as run in the Hartford Courant newspaper[5], is included in Appendix E. The deadline for receipt of these notices was September 1, 2006 (92 days). The notice also indicated that a public workshop would be held on June 21, 2006.

Copies of the notice were sent by mail to 11 local homeless provider organizations and e-mail copies were sent to these and other potentially interested organizations, including adjacent communities. A copy of the list of those contacted is included in Appendix E.

No homeless providers responded to the solicitation. The only formal (written) interest was from a private real estate development company which inquired about the possibility of constructing housing (possibly low income), retail or other uses on the site. They were informed by the LRA of the BRAC process and invited to submit a more formal request, but no follow-up was received.

At the public workshop, only three members of the public attended, representing Habitat for Humanity, a not-for-profit affordable housing organization. They were provided with an overview of the BRAC process and inquired if the City would be interested in receiving a proposal. However, no proposal was subsequently submitted.

In September 2007, the LRA requested from HUD an extension of the date for completion of the Redevelopment Plan to December 2008 and inquired whether a new public notice would be required. In a letter dated October 3, 2007, the LRA was informed by the HUD Regional Office in Hartford that it was not necessary to re-advertise the notice.

B. Evaluation of Notices of Interest

In order for a state/local agency to acquire property via a Public Benefit Conveyance (PBC), the LRA must carefully evaluate the intended use and weigh the proposed benefits against the broader goals and objectives of the redevelopment. Due to the special focus placed on applications from homeless service providers under the BRAC laws, these "Notices of Interest" (NOI) require a somewhat different approach than other potential users.

Based on the experience of other LRA's around the country, the following criteria were suggested for evaluating all NOI's for a PBC transfer:

- Each submittal should contain all the required information requested in the published Notice of Interest Application.

[5] The Hartford Courant is the largest daily newspaper in the state of Connecticut, with average daily circulation of approximately 176,000.

- Degree to which the proposed use is compatible with and supports the overall civilian reuse plan for the property, as expressed in the LRA's goals and objectives statement.
- Extent to which the proposed use(s) involve a cooperative regional and/or multi-agency approach.
- Organizational and financial capacity of the applicant(s) to carry out the proposed proposal.

Additional criteria identified for evaluating NOI applications submitted by housing-the-homeless providers concerning potential reuse of the property include:

- Extent to which the proposal includes the necessary "legally binding agreement" commitments that will ensure the property will benefit the homeless in the future on a permanent basis.
- Degree to which the proposed housing-the-homeless use is compatible with and supports the overall reuse plan for the property.
- Degree to which the application achieves the local needs-objectives identified in the Middletown and Middlesex County "Continuum of Care" and Consolidated Plan.
- Degree to which the proposed housing-the-homeless application can be "co- located" with other related uses on the site.
- Extent to which the proposed program serves to "ensures a balance between economic redevelopment, other development, and homeless assistance."
- Things that must be kept in mind during this discussion include:
- Site location and neighborhood
- Interim and Long-term uses
- Other possible methods of conveyance
- Special requirements of certain uses (i.e. security).

C. Continuum of Care

Services to the homeless in the City of Middletown and Middlesex County are undertaken by various agencies and organizations under the umbrella of the Continuum of Care (CoC), a HUD sponsored process for coordinating services and allocating funding. There are more than 40 organizations that are included in the CoC which provide a wide variety of services to the homeless population, including 11 homeless providers. The lead agency for the Middletown/Middlesex County CoC is the River Valley Services (Yvette Harris 860-262-5352). Most homeless services are provided in the City of Middletown, as the major population center for the County.

There were approximately 82 year-round emergency shelter beds in three shelters in Middletown, 122 transitional housing beds and 183 permanent supportive housing beds (an increase of 16% over 2006). As of the latest CoC annual report (2006) a total of approximately 311 homeless persons (231 households) were counted in the coverage area, of

which 22 were unsheltered. The primary unmet need reported in the CoC's 2007 HUD Application was for additional permanent supportive housing for families.

A copy of the 2006 Continuum of Care HUD population inventory, excerpts from the CoC's 2007 HUD Application and other relevant data for Middletown/Middlesex County is included in Appendix F.

D. Housing the Homeless NOI

All appropriate housing the homeless service providers in the Middletown/Middlesex County area were proactively contacted by the LRA regarding the availability of the Mile Lane Army Reserve Center. None submitted follow-up inquiries or a Notice of Interest. Therefore, no Legally Binding Agreements (LBS's) were received or considered.

The site itself is distant from all essential supportive services required by this population and does not have access to public transportation. The Army Reserve facility, although it has a small commercial kitchen, is not readily adaptable to housing uses without major renovation. The cost of renovating this structure or constructing new facilities is typically beyond the reach of service providers, who instead have been successful in acquiring existing housing units in or near downtown Middletown (where services are located) and converting them to long-term supportive and transitional housing to meet local needs. Use of the Mile Lane facility for other homeless support activities, such as a food bank, medical clinic, etc., would require extensive capital outlays for renovations, as well as substantive on-going funding for transporting clients from downtown Middletown and other areas of Middlesex County to this location. Providers indicated during the outreach effort that this would not be considered an appropriate use of existing funding.

Since no Housing the Homeless NOI's or subsequent LBA's were received, the redevelopment plan for the site does not include a housing the homeless element.

E. Other NOIs

In response to the LRA's proactive outreach to state and local governments and non-profit organizations, it received two initial inquiries from other city agencies for use of the Mile Lane property. One was from the Middletown Fire Department for a regional fire training center and new firehouse to serve the west side of the City. The other was from members of the City of Middletown's Board of Education to consider the site as a location for a consolidated preschool/kindergarten facility. This latter concept was subsequently dropped from consideration after internal discussions by City and school administrators analyzed the long-term costs and feasibility of such a facility, and the uncertainty resulting from the environmental condition of the property.

Another use for the site that was mentioned by the public was for recreational purposes, including construction of playing fields and tennis courts that could be used by the new High School and nearby elementary school, as well as walking/jogging trails to connect the schools, neighborhoods and the city's green space network. The public safety and recreational concepts serve as the basis for the Redevelopment Alternatives which follow.

Follow-on requests for information were received from the City's Office Emergency Management for the location of an Emergency Operations Center, and from the Police Department regarding the potential use of a portion of the site for a regional animal control facility. Although this latter use might not directly qualify for a public benefit conveyance, it is a use that may be compatible with one or more of the alternatives that have been developed.

VI. REDEVELOPMENT ALTERNATIVES

The Middletown LRA requested that three alternatives be evaluated in the Redevelopment Plan for the Mile Lane ARC. These included acquisition of the property for educational, public safety and open space/recreational uses. The educational use concept was eliminated from consideration by the City due to the potential costs and the impact on the City's taxpayers. Each of the remaining alternatives are discussed and analyzed in the following sections. The financial feasibility of each is also discussed, based on the estimated cost to construct the facilities and the potential sources of funding for them.

An analysis of the economic and fiscal feasibility of each alternative follows.

A. Open Space & Recreation

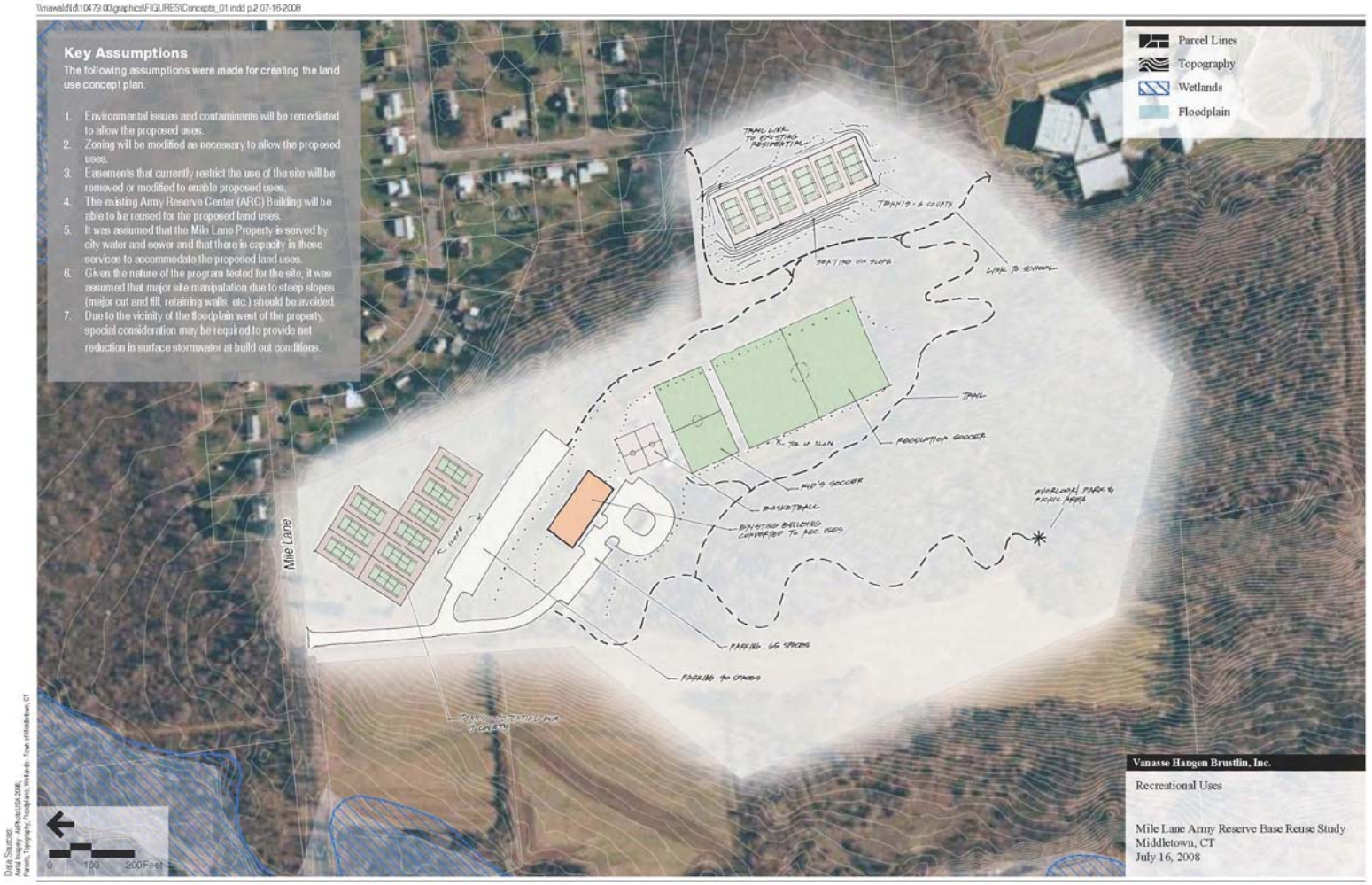
One alternative the City requested was to use the entire site for recreational purposes, both active and passive. This could range from preservation of the site for conservation purposes to maximizing the active recreational potential for city residents.

The Alternative envisioned here utilizes the existing Army Reserve building as a community recreation center and includes a variety of tennis courts and playing fields. The upper level terrace (former missile silo field) could support a regulation soccer field as well as a half, or junior league, field along with perhaps a couple of basketball courts. A total of 15 tennis courts can be fit onto the more level portions of the property. The plan also incorporates walking trails and connections to the schools and the adjacent neighborhood. An overlook park could also be developed at the highest elevation point on the property. These uses would utilize the Army fee property as well as some of the surrounding easement parcels. Figure 5 provides a plan view of this alternative.

Acquiring the property through a Public Benefit Conveyance under this alternative can be achieved through the federal Department of the Interior, National Park Service acting as the sponsoring agency for the transfer of recreational facilities under the "Federal Lands to Parks" program. Such acquisitions, which are only available to local or state governments, are typically done at no cost. It may be developed for one or more recreational activities. The facility may serve a variety of local recreational needs or, if appropriate, the land may remain undeveloped for passive recreational use, as long as it is open to the public.

Land acquired through the Federal Lands to Parks Program must be used for public park and recreational use in perpetuity. The City would be responsible for the costs of preparing the application which may include, for example, the preparation of land surveys, title searches and site development plans, as well as all improvements costs to the property. By acquiring property through the Federal Lands to Parks Program, the City must commit the funds necessary to properly develop, operate, and maintain the property for public park and recreational use, and to protect natural and cultural resources protected under related established federal laws in perpetuity.

Figure 5 – Open Space & Recreation Alternative



It is assumed that the City would acquire only the Army's 23.7 acre fee simple land and that the easements on the surrounding parcels would be dropped. Some of the development shown in Figure 5 – Open Space & Recreation Alternative, such as the tennis courts on the easterly (top) edge of the property, would occur on land currently owned by the City (see Figure 3). Some of the development (walking trails on west side of parcel) may require negotiations with private abutters and/or underlying land owners.

B. Public Safety Use

The City of Middletown is considering use of the Mile Plan property for a multi-use facility serving the existing and emerging public safety needs of the City and region.

1. Fire Training School/Fire Station/Emergency Operations Center

Early on in the BAC planning process, the City's Fire Department indicated an interest in the Mile Lane facility for a regional fire training center. The State of Connecticut currently has seven regional fire training facilities and a State Fire Academy in Windsor Locks. Bond funding has been proposed to renovate or replace several of these regional schools, including the one in Middletown. State funding for the planning and construction of these schools is available. The development of a new fire training school would also include a new fire station for Middletown which would provide for enhanced response times for residents and businesses on the west side of the City. The state has issued programmatic concept plans for a prototypical regional fire training school which were used as the basis for this alternative. This includes a building for conducting classroom training and administrative purposes, a garage for housing equipment and a variety of specialized fire training areas and facilities.

The existing building can serve as the central training/administrative facility for the regional fire training center. The upgrades to the mechanical systems recommended in the Facilities Assessment report (Appendix B) will be the only cost associated with this part of the facility, except for some additional furniture and fixtures. A new maintenance garage/shop will need to be constructed as well as the specialized training facilities.[6] There is ample room on the Mile Lane site for all of these functions, as well as for a new City firehouse to be located just off Mile Lane on the north side of the property. Included in the public safety conceptual design is a new Emergency Operations Center and room for potential future public safety uses. Figure 6 indicates a preliminary layout sketch of the regional fire training center and Middletown public safety center on the property.

Under this Alternative, the City would acquire the property through a Public Benefit Conveyance with the Department of Homeland Security, Federal Emergency Management Agency (FEMA) serving as the sponsoring federal agency. This use would qualify for a 100% discount of the fair market value. The City must formally submit a completed Excess Federal Real Property Program Application for Public Benefit Conveyances including supporting documentation to FEMA (see Appendix G). After receiving this information, FEMA will then determine if the requested excess Federal real property is required for emergency management response use. The application process designed to ensure that the

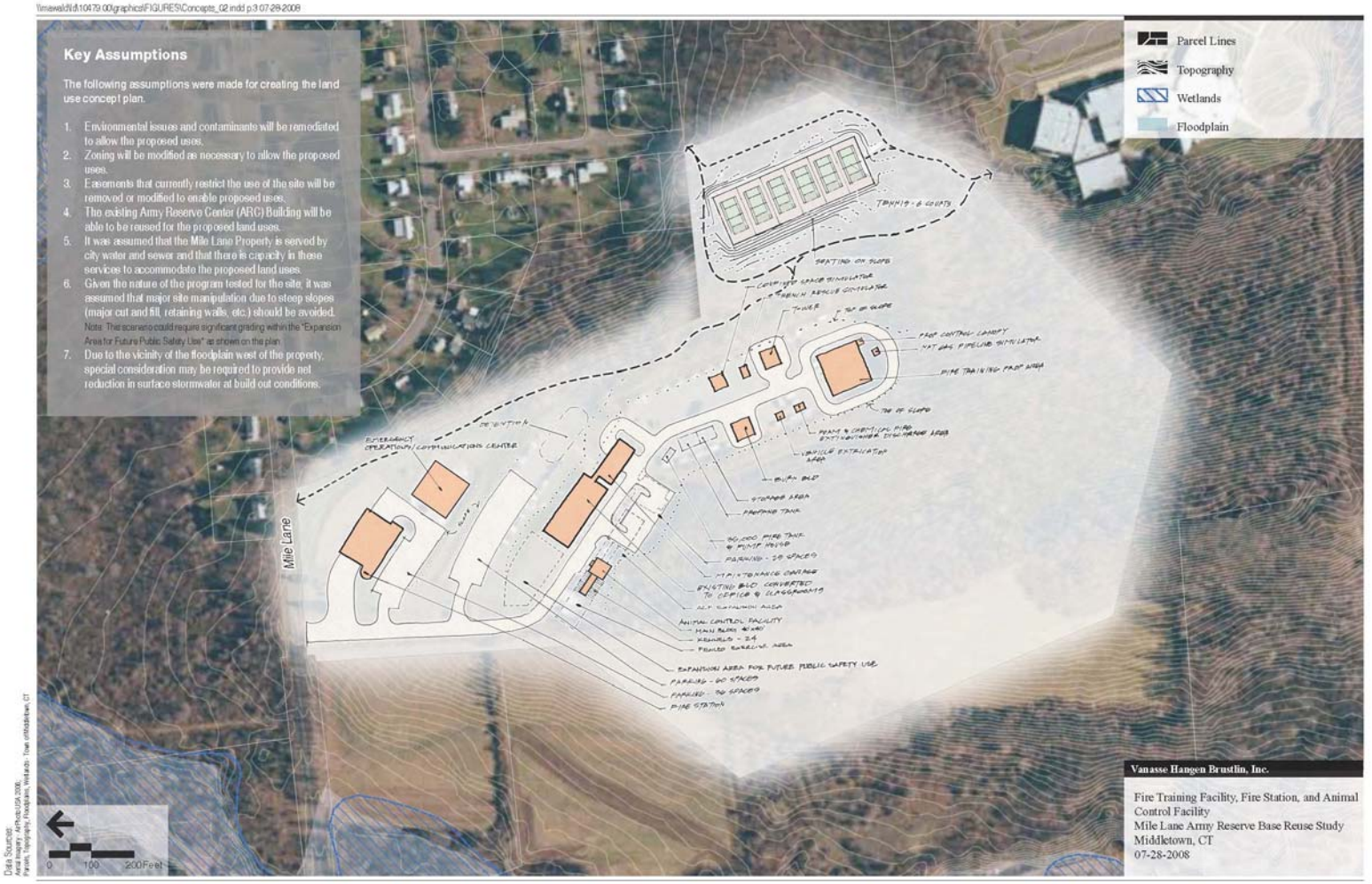
[6] In the conceptual design plans from the State, the maintenance facility could be incorporated into the fire station.

applicant's proposed use of the Federal real property is for emergency management use as an integral part of applicable State, local and Tribal government plans.

Although the Army would still be responsible for cleaning up any environmental contamination found on the property, use as a Public Safety Facility would likely be considered a similar use to what previously occurred on the site. This would likely reduce the cost (and time) for the Army and the clean-up process (such as pumping and stripping of groundwater) would not be detrimental to the new use by the City.

The tennis courts on the easterly (top) side of the property shown on the Public Safety alternative are located on City-owned land encumbered with an easement owned by the Army. These are located adjacent to the City's new High School that is under construction and nearing completion, and the courts would be included in the school's adjacent athletic field complex.

Figure 6 – Regional Fire Training Center and Public Safety Alternative



2. Animal Control Facility

The Middletown Police Department requested that the need for a new animal control facility be considered as a possible use for the Mile Lane site. The City currently utilizes the Town Pound in neighboring Portland, an undersized facilities (only five fenced kennels) that does not meet current Department of Agriculture minimum requirements for kennels. With a population of nearly 50,000 residents, the City needs an updated Animal Care and Control Facility. The City's police officers have had as many as thirteen dogs impounded at once and are bound by state statutes to hold animals for at least eight days.

A regional facility would serve Middletown, Cromwell, Portland, Haddam/Higganum and possibly other towns interested in participating. There are no such public facilities in the region that meet state and federal requirements.

A typical design to meet the City's needs would include 24-30 kennel runs (approximately 4 feet wide by 20 feet long that have both inside and outside access) along with associated office area, kitchen/food prep and storage space. It would also include a cattery (room for cat and small animal cages) and a common room for meetings, educational purposes, adoption, clinics and other such uses. A fenced outdoor dog play area and parking for staff and visitors would also be included. General estimates of the space requirements for this type of facility would be:

- Office, public areas 1,600 square feet
- Kennels 2,400 square feet
- Outdoor play area 4,000 square feet
- Parking 12 spaces

This program could be accomplished in a total site of approximately 30,000 square feet (roughly 200 feet by 150 feet). The Mile Lane site is large enough to accommodate an Animal Control Center either by itself or in concert with the other public use alternatives discussed in this report.

An Animal Care and Control Facility as envisioned by the City, may not qualify by itself for a Public Benefit Conveyance (PBC) under the existing BRAC mechanisms. As detailed in the Property Transfer Alternatives section, PBC's are typically used for public safety uses consistent with the missions of the Department of Homeland Security, or for existing facilities that uniquely meet a local public need (such as jails or fire stations). However, since the facility is operated by the Middletown Police Department, it is included in the FEMA-sponsored Public Safety PBC along with the Fire Training Center and Emergency Operations Center. The facility, which utilizes only a small fraction of the available area of the Mile Lane parcel, would also be used in the case of a large scale emergency such as flooding of the Connecticut River, to house animals on an emergency shelter basis.

A facility as envisioned could easily be accommodated as part of the Public Safety alternative described above and shown in Figure 6 – Regional Fire Training Center and Public Safety Alternative. In fact, there would also be room for future expansion of the facilities by rearranging the parking needs for the fire training center. The location shown is away from the adjacent neighborhood to reduce any noise issues and can share parking and other requirements with the fire training facilities.

C. Feasibility of the Alternatives

Each of the alternatives shown and discussed in the previous sections differ in terms of the potential costs, and possible funding for the City to acquire, construct and operate the particular scenario. This section discusses the economic impacts of each. Estimated construction costs were obtained from Marshall Valuation Services (Marshall & Swift) which publishes regionalized cost data by building type[7] and from estimates provided by the State of Connecticut. The costs shown are approximations only and should be considered "ball-park estimates" for comparison purposes. Actual costs for building construction, site preparation and other associated expenses may vary. None of these estimates account for any environmental clean-up or mitigation costs to be incurred by the City, although this may be required.

1. Alternative A – Open Space & Recreation

The costs to redevelopment of the Mile Lane property for recreational purposes could range from relatively low to substantial, depending on the facilities provided. The plan shown in Figure 5 includes conversion of the existing building into a formal recreation center, which in addition to the estimated building systems costs would require some level of refurbishment to accommodate the needs of the City's recreation department. The site plan includes approximately 120,000 square feet of playing fields, 15 tennis courts, 2 basketball courts along with walking trails and an overlook on the property's high point. Table 2 provides a general estimate of costs to acquire and develop the Mile Lane property for the recreational purposes shown on in Figure 5.

If retrofitting the existing building into a recreation center is not considered feasible, the cost to demolish the structure is estimated at approximately $80,000 to $100,000. In addition, the tennis courts located near the existing High School (5-6 courts) would potentially be funded from the school department's athletics budget.

This alternative would also entail City expenditures to operate and maintain these facilities. The City's recreation department or others would need appropriate staff resources and budget to support this concept. These costs should be researched and included in the study.

[7] *Marshall Valuation Service*, 1st Quarter 2008. Costs include hard and soft costs (limited) and are based on representative samples of actual cost contracts nationwide, adjusted for time and locale. Additional assumptions have been made by RKG Associates regarding the costs for each alternative.

Table 2

Alternative A - Open Space/Recreation			Note
Playing Fields	$	720,000	a.
Basketball Courts	$	162,000	b.
Tennis Courts	$	750,000	c.
Parking	$	310,000	d.
Walking Trails	$	50,000	e.
Recreation Center			
System Upgrades	$	489,000	f.
Retrofit	$	396,000	g.
Soft Costs	$	432,000	h.
Total	$	3,309,000	

Notes & Assumptions:

a. 120,000 SF @ $6/sf
b. 20 courts @ $8,100 each
c. 15 courts @ $50,000 each
d. 155 spaces @ $2,000 per space
e. 10,000 linear feet @ $5/ft
f. Per CES report
g. 15,800 SF @ $25
h. @ 15%, includes contingency

Source: Marshall Valuation Services, RKG Associates.

This alternative assumes that the property can be obtained by the City at no cost under the Federal Land to Parks program. The City will need to fund costs associated with the public benefit conveyance such as title, survey, legal, planning and design costs which could add several hundred thousand dollars to the overall budget.

The existence of environmental contamination on the site may add additional costs to the City to develop this Alternative. Transfer of the property under a Public Benefit Conveyance assumes that the environmental condition of the property is fully remediated prior to transfer and/or construction. As detailed in Chapter III-E, the site is believed to be contaminated and additional testing and clean up will be required. The Army is required to clean the site prior to transfer under federal law. Uses that have the potential to expose the public to contamination would require that the environmental clean be done to the highest standards (those typically applied to residential uses). Historically, the Department of Defense has been reluctant to pay for clean up beyond the standard under which the facility had been used, which in this case would most likely be considered an industrial use. The difference in clean up costs (and time) between industrial and residential standards can be very large, and potentially the City would be required to fund this cost differential. This would be subject to negotiation between the Army and the City.

2. Alternative B – Multi-Use Public Safety Facility

This alternative includes a Fire Training School and an additional fire station to serve the City's west side, along with a new Emergency Operations Center and an Animal Control Facility. Under this scenario the existing building would be retrofitted to accommodate the Fire Training Center program's training needs, a new maintenance facility would be built along with the specialized training buildings and related facilities. In addition, a new 12,000 square foot, 2-3 bay firehouse would be constructed along Mile Lane which would also be te general location for a new emergency operations and communications center. This center can use the site's height to mount emergency antennae. The plan also provides an area for possible future public safety needs, such as a police station or additional training facilities.

Because they would be located on the easement land that belongs to the City, 5-6 tennis courts could also be built near the new High School (probably with school funds), and walking trails could be established along the perimeter of the site to connect the schools with the surrounding neighborhoods.

One advantage of the existing property to accommodate this Alternative is the existing fencing around much of the Army property, which could be used very much "as-is" for the Fire Training Center.

One possible source of funding for the Public Safety alternative is the State of Connecticut. In 2004, the legislature passed a bond issue to replace the existing fire training facilities with seven regional fire schools in the state. These funds were to be drawn down as needed by the host communities as sites were acquired and programs developed, and were originally estimated to make approximately $9 million available for each school. These funds have reportedly not been used except for a recent issuance to support the redevelopment of the New Haven facility. The funds can be used for construction and equipping of a fire training facility as well as for augmenting local fire response capabilities.

This alternative assumes that the property would be acquired by the City from the Army under a Public Benefit Conveyance through the Department of Homeland Security, Federal Emergency Management Agency. The City and/or Fire Department will need to submit a separate application to initiate this process.

The estimated cost of this facility is shown in Table 3.

Table 3

Alternative B - Public Safety Concept			Note
Retrofit Existing Building	$	189,600	a.
System Upgrades	$	489,000	b.
Maintenance Garage	$	366,000	c.
Training Area	$	2,945,000	d.
Equipment	$	750,000	e.
New Firehouse	$	1,431,000	f.
Emergency Operations Center	$	1,708,000	g.
Parking	$	48,000	h.
Recreational Area	$	60,000	i.
Soft Costs (15%)	$	1,198,000	j.
Contingencies (10%)	$	799,000	k.
Total	$	9,983,600	
Non-Program Costs			
Tennis Courts	$	250,000	l.
Walking Trails	$	25,000	m.
Other Costs	$	275,000	

Notes & Assumptions:

a. 115,800 SF @ $12/sf
b. Per CES report
c. 5,000 SF @ 121/sf
d. per State Study, inflated to 2008$
e. per State Study, inflated to 2008$
f. 12,000 SF @ $119/sf
g. 10,000 SF @ $171/sf
h. 2,000 SF @ $24/sf
i. 10,000 SF @ $6/sf
j. Engineering, permits, etc. @ 15%
k. @ 10%
l. 5 courts @ $50,000
m. 5,000 linear feet @ $5/ft

Source: Marshall Valuation Services, State Fire School, RKG Associates.

3. Animal Control Facility

As requested by the Middletown Police Department, the site could easily accommodate an animal control facility that would meet the needs of the City or could be expanded into a regional facility. A facility as discussed in the earlier section is estimated to cost approximately $510,000, as shown in Table 4, and can be accommodated in an area adjacent to the Fire Training School, as shown in Figure 6 – Regional Fire Training Center and Public Safety Alternative This cost does not include any specialized equipment, furnishings or staffing but does include office and exam space, a public area and good quality indoor/outdoor kennel runs for approximately 24 animals. There is also space available for

expanding the facility if needed. This use is compatible with the other Public Safety uses planned for the site under Alternative B.

Table 4

Animal Control Facility			Note
Office/Kennel	$	359,000	a.
Fenced play area	$	24,000	b.
Parking	$	24,000	c.
Soft Costs (20%)	$	81,000	d.
	$	488,000	

Notes & Assumptions:

a. 4,000 SF @ $118
b. 4,000 SF @ $6
c. 12 spaces $2,000
d. Includes contingency

Source: Marshall Valuation Services, RKG Associates.

VII. PREFERRED REUSE

A. LRA Decision

Preliminary alternatives were presented to the LRA on June 23, with the refinements discussed in the previous chapter presented on July 29, 2008. Discussion with the LRA members present (a quorum was not available) indicated a strong preference for Alternative B – Public Safety. On August 18, 2008 the LRA met again and, after hearing input from several members of the public and discussion among LRA members, a quorum of the members voted unanimously to support Alternative B as the preferred Redevelopment Option for the Mile Lane property. A resolution to adopt the Preferred Reuse Plan and to submit the Plan to the various Federal agencies will be presented for a vote of the Middletown Common Council on September 2, 2008.

B. Implementation

Following approval of the Reuse Plan, the LRA will undertake the following steps to implement the conveyance of the Mile Lane property and redevelop the site:

- Complete and submit the Homeless Submission to HUD
- Complete and submit the Excess Federal Real Property Application for Public Benefit Conveyance (OMB Form 60-25/OMB No. 1660-0080) to the Department of Homeland Security, Federal Emergency Management Agency
- Forward copies of the Reuse Plan to the Army, via the Base Transition Coordinator
- Open discussions with the Army regarding the status of the environmental analysis and clean-up schedule
- Open discussions with the State of Connecticut's Fire Marshall Office, legislators and the Governor's office regarding funding for the Fire Training School.

Once HUD approval is obtained, the Army can then process the PBC request and schedule the deed transfer for the 23.7 acre fee parcel and initiate releases for the remaining easements on surrounding parcels.[8] Negotiations regarding the terms and conditions of transfer can then begin between the City of Middletown and the Army.

C. Environmental Cleanup

Under federal law, the Department of Defense is responsible for the cleanup of any contamination found on the site (resulting from the government's occupancy and use of the property). The Final Environmental Condition of Property Report released in March 2008 identifies the extent of known contamination (see Chapter III-E above). Additional environmental analysis is being performed by the Army that will provide the necessary

[8] A separate request to extinguish the easement on Parcel 108E was submitted to the Assistant Secretary of the Army (Installations & Housing) on August 15, 2008 in order to facilitate construction of tennis courts on City land as part of the new High School athletic complex under construction on the abutting property.

information for developing a plan and time table for cleaning the site. The City of Middletown needs to be party to all discussions between the Army, the Army Corps of Engineers and their consultants regarding the clean-up plan, in order to facilitate the rapid conveyance and redevelopment of the property.

An Environmental Responsibilities Transfer (Early Transfer for Environmental Cleanup), where the City (or a third party) takes responsibility to complete the clean up for a fixed cost provided by the government, should be considered by both the Army and the City. Although a complex process, this approach may allow for a very quick transfer that will allow the Public Safety uses described in the Preferred Plan to begin construction immediately, saving time and costs to both parties. The extent of contamination on the site (primarily the possibility of ground water contamination) may be easily remediated. The City of Middletown has the knowledge and capability to manage such a cleanup in a cost effective and timely manner. The City should obtain legal counsel on this issue.

VIII. APPENDICES

A. Property Deeds

B. Facilities Assessment Report

C. Excerpts from Environmental Condition of Property Report

D. Personal Property Inventory

E. Public Outreach Notice and Distribution List

F. Middletown/Middlesex County Continuum of Care Reports & Data

G. HUD Homeless Submission

H. FEMA Excess Federal Property Application Form

Appendix E

Public Outreach Notice and Distribution List

The Hartford Courant.

A TRIBUNE PUBLISHING COMPANY

Affidavit of Publication

State of Connecticut

Friday, May 26, 2006

County of Hartford

I, Joy Shroyer, do solemnly swear that I am Financial Operations Assistant of the Hartford Courant, printed and published daily, in the state of Connecticut and that from my own personal knowledge and reference to the files of said publication the advertisement of Public Notice was inserted in the regular edition.

On dates as follows: 05/25/2006

In the amount of $116.50
CITY OF MIDDLETOWN US ARMY RES .
067399
ZONE 1

Financial Operations Assistant
Joy Shroyer

Subscribed and sworn to before me on May 26, 2006

Notary Public

LISA CARDINI
NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 30, 2011

PUBLIC NOTICE
OF TIME FRAME FOR EXPRESSION OF INTEREST FOR HOMELESS PROVIDERS AND NON- FEDERAL PUBLIC AGENCIES RE US ARMY RESERVE CENTER AREA MAINTENANCE SUPPORT FACILITY, MIDDLETOWN, MIDDLESEX COUNTY, CT

This public notice provides information and establishes a time frame for the submission of expression of interest regarding the reuse of the property declared surplus at the US Army Reserve Center Area Maintenance Support Facility, which is located at 499 Mile Lane in Middletown, Middlesex County, Connecticut.

Under the Base Closure Community Redevelopment and Homeless Assistance Act of 1994 (Redevelopment Act), as amended, the City of Middletown Local Redevelopment Authority is seeking notices of interest from State and local interests, including representatives of the homeless, for a building and real property that have been declared surplus to the Federal Government. The US Army Reserve Center Area Maintenance Support Facility was selected for closure and declared surplus by the 2005 Defense Base Closure and Realignment Commission.

As required by the Redevelopment Act, the property and buildings that have been declared surplus must be made available for use to address some of the economic redevelopment, ...less assistance, and other development ... of the City of Middletown. Notices of ...st for homeless assistance or recognized ...ic benefit purposes (such as recreation, health and education) may be submitted by and State or local government agency or private nonprofit organization that provides or propose to provide services to homeless persons and families in the City of Middletown, or that proposes to acquire property for public benefit use. Although the building or property to serve homeless individuals or families are available at no cost, representatives of the homeless are responsible for improvements and operating costs.

All notices of interest must include all of the requirements outlined in the Federal Property and Administration Service Act of 1949 and the Base Closure Community Redevelopment Act and Homeless Assistance Act of 1994.

The property declared surplus is a parcel of real property that totals approximately 23.7 acres and contains 1 building, totaling approximately 14,352 square feet. All utilities are available on site including City water and City sewer. The property address is 499 Mile Lane and is located in the City of Middletown, Middlesex County, south side of Mile Lane in the Westfield ...ection of the City.

The Middletown Local Redevelopment Authority has been recognized by the Office of Economic Adjustment as the agency responsible for planning the reuse of this parcel.

The Middletown Local Redevelopment Authority has established a three month screening process. The three-month screening process will extend from June 1, 2006 to September 1, 2006.

The Middletown Local Redevelopment Authority will hold a public workshop on Wednesday June 21, 2006, starting at 7:00pm at the City of Middletown Municipal Building, 245 DeKoven Drive, Middletown, CT 06457.

The workshop is designed to provide information about the closure/realignment and disposal process and to answer questions about the LRA's process. Information on submission requirements can also be obtained from the point of contacts listed below and will also be provided as handouts at the public workshop ...ted above.

The Middletown Local Redevelopment Authority is located at the Mayor's Offices of the ...Middletown which address is 245 De... Drive, Middletown, CT 06457. For information contact William Warner, Director of ...d, Conservation and Development at ...0-344-3425.

V. Local Homeless Providers

Homeless Local Homeless Providers that received a hardcopy of the public notice

Middletown/Middlesex County Continuum of Care
United Way
100 Riverview Center
Middletown, CT 06457

The Connection Inc.
955 South Main Street
Middletown, CT 06457

Nehemiah Housing Corporation
33 Ferry Street
Middletown, CT 06457

Northern Middlesex Habitat for Humanity
9 Pleasant Street
Middletown, CT 06457

Middletown Housing Authority
40 Broad Street
Middletown, CT 06457

Mercy Housing And Shelter Corporation
112 Bow Lane
Middletown, CT 06457

Veterans Affairs, Conn. State Dept. Of
287 West St.
Rocky Hill, CT 06067

Community Health Center
635 Main Street
Middletown, CT 06457

St. Vincent De Paul Place
617 Main Street
Middletown, CT 06457

River Valley Services
351 Silver St.
Middletown, CT 06457

Gilead Community Services
222 Main Street Extension
Middletown, CT 06457

Homeless Local Homeless Providers that received an emailed copy of the public notice

Community Health Center
Agi Erickson; ericksa@chc1.com
Colin Byrnes; byrnesc@chc1.com
Denise Morin; morind@chc1.com
lasagae@chc1.com; lasagae@chc1.com

Towns
Allen Kaplan; akaplan@cromwellct.com
Joanne Messner; JMessner@town.old-saybrook.ct.us

State of Connecticut
Howard Reid; howard.reid@po.state.ct.us
Timothy Griffin; Timothy.Griffin@po.state.ct.us
Yvette Harris; Yvette.Harris@po.state.ct.us

Red Cross
Becky Johnson; rjohnson@midctredcross.org

Kuhn Employment Opportunities
Beth Fisher; bfisher@kuhnemployment.com

The Connection Inc.
crodenhizer@theconnectioninc.org;
crodenhizer@theconnectioninc.org

Mercy Housing
David Martineau; dmartineau@mercyhousingct.org
Joan Gallagher; jgallagher@mercyhousingct.org
Lisa Palazzo; lpalazzo@mercyhousingct.org
Rich Marsh; rmarsh@mercyhousingct.org
Richard Brass (E-mail); rbrass@mercyhousingct.org

North End Action Team
Izzi Greenberg; agreenbe22@hotmail.com
Lwbrewster@aol.com; Lwbrewster@aol.com

Middletown Housing Authority
Bill Vasiliou; BillV40@hotmail.com

Community Renewal Team
George Brusznicki; brusznickig@crtct.org

Gilead
Lucy McMillan; Lmcmillan@gileadcs.org

St. Vincent DePaul
Peter Harding; peter_st_vincent@sbcglobal.net

Connecticut Legal Services
Neil Brockwehl; NBrockwehl@connlegalservices.org

Connecticut Legal Rights Project
Lauren MacPhail; LMacPhail@clrp.org

Connecticut United Labor Agency
Lew Slotnick; lews@ctula.org

Liberty Bank
Sara Guild; sguild@liberty-bank.com

Nehemiah Housing Corporation
Michael Taylor; nehemiah.housing@snet.net

Value Options
Cheryl Jackson; cheryl.jackson@valueoptions.com

Cross Street A.M.E. Zion Church
Moses Harvill; mharvill@snet.net

Carella Law Offices
Rich Carella; carellalaw@aol.com

Amercian Red Cross- Middlesex
David Shumway; shumdave@hotmail.com

St. Vincent DePaul
Valarie Smith; valarie_smith01@SBCglobal.net

Nancy Meyers; nbmeyers@earthlink.net

PUBLIC NOTICE OF TIME FRAME FOR EXPRESSION OF INTEREST FOR HOMELESS PROVIDERS AND NON- FEDERAL PUBLIC AGENCIES RE US ARMY RESERVE CENTER AREA MAINTENANCE SUPPORT FACILITY, MIDDLETOWN, MIDDLESEX COUNTY, CT

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As required by the Redevelopment Act, the property and buildings that have been declared surplus must be made available for use to address some of the economic redevelopment, homeless assistance, and other development needs of the City of Middletown. Notices of interest for homeless assistance or recognized public benefit purposes (such as recreation, health and education) may be submitted by and State or local government agency or private nonprofit organization that provides or propose to provide services to homeless persons and families in the City of Middletown, or that proposes to acquire property for public benefit use. Although the building or property to serve homeless individuals or families are available at no cost, representatives of the homeless are responsible for improvements and operating costs.

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The property declared surplus is a parcel of real property that totals approximately 23.7 acres and contains 1 building, totaling approximately 14,352 square feet. All utilities are available on site including City water and City sewer. The property address is 499 Mile Lane and is located in the City of Middletown, Middlesex County, south side of Mile Lane in the Westfield section of the City.

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The Middletown Local Redevelopment Authority is located at the Mayor's Offices of the City of Middletown which address is 245 DeKoven Drive, Middletown, CT 06457. For information contact William Warner, Director of Planning, Conservation and Development at 860-344-3425.

IV. Notice of Interest Requirements

Homeless Assistance Providers

The Notice of Interest requirements are as follows:

- A description of the homeless assistance program proposed, including the purposes to which the property or facility will be put, including uses such as supportive services, job and skills training, employment programs, shelters, transitional housing or housing with no established limitation on the amount of time residence, food and clothing banks, treatment facilities, or any other activity which clearly meets and identified need of the homeless and fills a gap in the continuum of care;
- A description of the need for the program;
- A description of the extent to which the program is or will be coordinated with other homeless assistance programs in the communities in the vicinity of the installations;
- Information about the physical requirements necessary to carry out the program, including a description of the buildings and property at the installation that are necessary to carry out the program;
- A description of the representatives of the homeless which is submitting the notice, its capacity to carry out the program and its financial plan for implementing the program; and,
- An assessment of the time required in order to commence carrying out the program.

Other Interested Entities

The notices of interest from entities other than representatives of the homeless should specify the name of the entity and specific interest in property or facilities, along with a description of the planned use.

Inspection of Property

Any interested party may arrange to inspect the site by making a written request to the Middletown Local Redevelopment Authority, Attention: William Warner, 245 DeKoven Drive, Middletown, CT 06457. The request must be made within the next 45 days (approximately June 30, 2006). Since the site is under the control of the Army and entry is subject to the rules and regulation of the Army, you will then be notified of the date and time of the inspection tour and any special requirements of the tour.

Deadline for Receipt of Notice of Interest

Any Notice of Interest must be received at the office of the Mayor of the City of Middletown, Middletown Local Redevelopment Authority, 245 DeKoven Drive, Middletown, CT 06457 on or before 4:30pm, August 9, 2006. The City of Middletown Local Redevelopment Authority will not be able to consider any submission received after that date and time.

CITY OF MIDDLETOWN
Department of Planning, Conservation, and Development

Karen Davis
Office of CPD
Hartford Field Office
One Corporate Center 19th Floor
Hartford, CT 06103-3220

April 2, 2008

RE: USARC Base Closure, Middletown, Connecticut

Dear Karen Davis,

Enclosed is a copy of the public notice requesting letters of interest that you requested.

Also enclosed is information about what groups and individuals were contacted, a copy of the materials that were handed out at the public workshop, a list of those that attended the public workshop, a copy of the one letter of interest that we received, and a copy of the webpage that has been created for public outreach during the close process.

Please review the information about and let us known if the City is in compliance with the outreach requirement for the BRAC redevelopment process.

Let me know if you have any questions or need any other information.

Thanks,

Michiel Wackers
Deputy Director of Planning, Conservation and Development
City of Middletown

245 deKoven Drive Middletown, CT 06457
(P)860.344.3425 (F)860.344.3593
michiel.wackers@cityofmiddletown.com

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

RECEIVED
06 MAY -5 AM 8:54
CITY OF MIDDLETOWN
MAYOR'S OFFICE

MAY 1 2006

Honorable Sebastian M. Giuliano
Mayor of Middletown
Middletown, CT 06457

Dear Mayor Giuliano:

This is in response to your letter requesting that the Middletown Base Realignment and Closure Local Redevelopment Authority be recognized as the Local Redevelopment Authority for planning the redevelopment of Middletown USARC, Middletown, CT, including outreach to homeless providers and other interested parties. On behalf of the Secretary of Defense, the request is approved. The following information will be published in the Federal Register and a newspaper of general circulation in the local area.

Point of Contact:	Geen Thazhampallath Aide to the Mayor City of Middletown
Address:	245 DeKoven Drive Middletown, CT 06457
Phone:	(860) 344-3401

Questions pertaining to this recognition or requests for assistance to guide your organizational and planning activity may be directed to Paul Oskvarek, your Office of Economic Adjustment Project Manager, at (703) 604-5152.

Sincerely,

Patrick J. O'Brien
Director
Office of Economic Adjustment

cc:
DASA (I&H)
DAS HUD (Special Needs Programs)

Appendix G

HUD Homeless Submission

MIDDLETOWN BRAC LOCAL REDEVELOPMENT AUTHORITY
Mayor Sebastian Giulliano, Chairman
435 DeKoven Drive
Middletown, CT 06457

September 3, 2008

Ms. Linda R. Charest
Base Realignment and Closure Coordinator
Office of Special Needs Assistance Programs, Room #7266
U.S. Department of Housing and Urban Development
451 7th Street, SW
Washington, DC 20410

Homeless Submission for the Mile Lane Army Reserve Center in Middletown, Connecticut

Dear Ms. Charest:

The Middletown BRAC Local Redevelopment Authority ("LRA"), representing the City of Middletown, Connecticut, is the federally recognized local redevelopment authority for the Mile Lane Army Reserve Center (ARC) located on the west side of the City. Pursuant to section 2905(b) of the Defense Base Closure and Realignment Act of 1990, as amended, and the implementing regulations, the LRA is pleased to submit for your review and approval the redevelopment plan and homeless submission ("Reuse Plan"). The Reuse Plan, developed over the past months with substantial public input, presents a balanced approach to meet the economic development needs of the region while supporting to the greatest practical extent, the goals of the current Middletown/Middlesex Coyunty Continuum of Care Strategic Plan.

The property that is the subject of the Reuse Plan consists of a 23.72 acre parcel of land that is developed with a 15,800 square foot building. The property also includes 21.5 acres of easements on surrounding parcels owned by the City and private individuals. Originally developed in the 1950's as a Nike missile site, the Mile Lane ARC was re-developed by the Army Reserve in 1987 to provide transportation and administrative support services. The property has been closed and vacated since 2006.

As an Army Reserve facility, the building includes areas for training, storage and administrative support purposes. There are no residential facilities at the facility, which employed upwards of 50 full-time civilian and military personnel while in full operation. The hillside property is located in a rural, low density residential neighborhood, approximately 3 miles from the city center.

The LRA retained the services of RKG Associates, Inc. to assist in the development of the Reuse Plan and homeless assistance submission.

The LRA undertook a proactive public outreach program from the beginning, publishing the official Notice of Availability of Surplus Property on June 1, 2006 immediately following the formation of the LRA, holding an informational meeting, maintaining a website with up-to-date information and links, and holding several public input sessions on the Reuse Plan. In addition, all LRA meetings were actively publicized and open to the public. The LRA reached out to the homeless service provider community in the greater Middletown region through the Middletown/Middlesex County Continuum of Care (CoC). No organizations responded with a Notice of Interest for use of the property. In fact, only one response was receive, from a private developer seeking information regarding the possibility for residential or mixed-use development. The only attendees at the initial informational meeting were representatives from Habitat for Humanity, who subsequently did not submit a Notice of Interest.

The Reuse Plan for the Mile Lane ARC recommends conveyance of the entire 23.7 acre property to the City of Middletown by way of a Public Benefit Conveyance sponsored by the Department of Homeland Security, Federal Emergency Management Agency ("FEMA"). This will allow for for the creation of a Public Safety campus that will include a state-sponsored Fire Training School, a new City firehouse, an Emergency Operations and 911 Communications Center, as well as a regional animal control facility.

As a result of the lack of interest in the property by homeless providers, as indicated by no Notices of Interest being submitted to the LRA, no Legally Binding Agreements were developed or included in the Reuse Plan. Information on the homeless population in Middletown as well as on the various service providers making up the CoC can be found in the Reuse Plan (see in particular Section V and Appendix F). In summary, the site's location distant from the City center where homeless services are focused, the resulting need for additional logistical support, the need for costly new construction, and concerns regarding the environmental contamination of the site led the CoC members and the LRA to conclude that the property was not suited for acquisition by a homeless provider. Although there is some unmet demand for housing for the region's homeless population, it is being met by acquisition of existing in-town units by several of the member agencies.

Regarding the question of balance, the redevelopment of the property into a Public Safety campus will provide a significant increase in the overall level of safety for all of Middletown's residents, as well as those throughout the region.

The Reuse Plan is concurrently being submitted to the Army and FEMA for their review and approval pending HUD's final action.

If you have any questions about the Reuse Plan or this submission, please feel call Michiel Wackers, LRA Coordinator at 860-344-3425, or Craig Seymour (RKG) at 603-868-5513.

Sincerely,

Sebatian Giuliano, Mayor and LRA Chairman
Middletown BRAC Local Redevelopment Authority

Enclosures: as stated.

cc.w/enclosures: Mr. Paul Oskvarek, OEA
Mr. Gary Puryear, USAR 94th RRC

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APPENDIX B
FEDERAL AND STATE COORDINATION LETTERS

This appendix contains the following consultation and coordination documents:

- Letter sent to the Delaware Nation
- Letter sent to the Delaware Tribe of Indians
- Letter sent to the Mohegan Indian Tribe
- Letter sent to the Mashantucket Pequot Tribe
- Connecticut State Historic Preservation Office Consultation Letter
- U.S. Fish and Wildlife Service Consultation Letter
- State of Connecticut Department of Environmental Protection Bureau of Natural Resources/Wildlife Division Consultation Letter
- Email response from the Mohegan Indian Tribe
- Email response from the Delaware Nation
- Email response from the Mashantucket Pequot Tribe

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JAN 2 1 2011

Tamara Francis
Cultural Preservation Director
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Ms. Francis,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Middletown United States Army Reserve Center (USARC) in Middletown, Connecticut. To implement this recommendation, the United States Army Reserve 99th Regional Support Command (99th RSC) proposes the transfer of this property from federal government ownership. The purpose of this letter is to inform you of the proposed action, and determine your interest in participating in consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

The Middletown USARC property is a 23.7-acre located at 499 Mile Lane in Middletown, Connecticut (enclosed). The Middletown USARC was constructed in 1987. The USARC replaced a Nike Missile Launch facility which was constructed between 1956 and 1958. The Nike facility was decommissioned in 1968, and the property was transferred to the United States Army Reserve (USAR) in 1970. The Army used the existing Nike barracks and the Administration Building on the property until 1987, when the new USARC building was completed. The original Nike-era structures on the property were used for storage and office space until they were demolished in the late 1990s. The property contains one permanent structure (the USARC building), one paved parking lot, and the foundations of three demolished former Nike buildings. The Middletown USARC has been unoccupied since September 2006.

The Army has applied the criteria of effect found at 36 CFR 800.5 and has determined that the proposed closure and subsequent transfer of the facility will have no effect on historic properties as there are none present. The State Historic Preservation Office (SHPO) has reviewed the historical significance of the USARC and property and, in a letter dated May 5, 2010 (enclosed), indicated that it has no objections to the proposed property transfer and recommends no further archaeological or architectural conservation efforts. The SHPO stated the opinion that the building does not meet the criteria for listing in the National Register of Historic Places, and that it concurs with the Army's determination that the probability for the presence of intact and potentially National Register-eligible archaeological resources on the property is a very low due to prior ground disturbance.

At this time, the 99th respectfully requests a response regarding your interest in participating in the Section 106 consultation process for this project. Additionally, we welcome any information

you can share concerning traditional cultural properties or sacred sites located within the project area to assist us in our decision-making process.

I would like to thank you in advance for your efforts and would greatly appreciate a response within thirty (30) days. Correspondence and other communication regarding this matter should be directed to: Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy.ctr@us.army.mil , 609-521-8047.

Respectfully,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JAN 2 1 2011

Jerry Douglas
Delaware Tribe of Indians
220 NW Virginia Avenue
Bartlesville, OK 74003

Mr. Douglas,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Middletown United States Army Reserve Center (USARC) in Middletown, Connecticut. To implement this recommendation, the United States Army Reserve 99th Regional Support Command (99th RSC) proposes the transfer of this property from federal government ownership. The purpose of this letter is to inform you of the proposed action, and determine your interest in participating in consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

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At this time, the 99th RSC respectfully requests a response regarding your interest in participating in the Section 106 consultation process for this project. Additionally, we welcome any information you can share concerning traditional cultural properties or sacred sites located within the project area to assist us in our decision-making process.

I would like to thank you in advance for your efforts and would greatly appreciate a response within thirty (30) days. Correspondence and other communication regarding this matter should be directed to: Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy.ctr@us.army.mil , 609-521-8047.

Respectfully,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JAN 2 1 2011

NAGPRA Contact
Mohegan Indian Tribe
P.O. Box 488
Uncasville, CT 06382

Dear Interested Party:

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Middletown United States Army Reserve Center (USARC) in Middletown, Connecticut. To implement this recommendation, the United States Army Reserve 99th Regional Support Command proposes the transfer of this property from federal government ownership. The purpose of this letter is to inform you of the proposed action, and determine your interest in participating in consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

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At this time, the 99th RSC respectfully requests a response regarding your interest in participating in the Section 106 consultation process for this project. Additionally, we welcome any information you can share concerning traditional cultural properties or sacred sites located within the project area to assist us in our decision-making process.

I would like to thank you in advance for your efforts and would greatly appreciate a response within thirty (30) days. Correspondence and other communication regarding this matter should be directed to: Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy.ctr@us.army.mil , 609-521-8047.

Respectfully,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures

DEPARTMENT OF THE ARMY
HEADQUARTERS, 99TH REGIONAL SUPPORT COMMAND
5231 SOUTH SCOTT PLAZA
FORT DIX, NJ 08640-5000

JAN 2 1 2011

Ms. Kathleen Knowles
Tribal Historic Preservation Officer
Mashantucket Pequot Museum and Research Center
Mashantucket Pequot Tribe
P.O. Box 3180
Mashantucket, CT 06339-3180

Ms. Knowles,

The Defense Base Realignment and Closure (BRAC) Commission has recommended the closure of the Middletown United States Army Reserve Center (USARC) in Middletown, Connecticut. To implement this recommendation, the United States Army Reserve 99th Regional Support Command proposes the transfer of this property from federal government ownership. The purpose of this letter is to inform you of the proposed action, and determine your interest in participating in consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

The Middletown USARC property is a 23.7-acre located at 499 Mile Lane in Middletown, Connecticut (enclosed). The Middletown USARC was constructed in 1987. The USARC replaced a Nike Missile Launch facility which was constructed between 1956 and 1958. The Nike facility was decommissioned in 1968, and the property was transferred to the United States Army Reserve (USAR) in 1970. The Army used the existing Nike barracks and the Administration Building on the property until 1987, when the new USARC building was completed. The original Nike-era structures on the property were used for storage and office space until they were demolished in the late 1990s. The property contains one permanent structure (the USARC building), one paved parking lot, and the foundations of three demolished former Nike buildings. The Middletown USARC has been unoccupied since September 2006.

The Army has applied the criteria of effect found at 36 CFR 800.5 and has determined that the proposed closure and subsequent transfer of the facility will have no effect on historic properties as there are none present. The State Historic Preservation Office (SHPO) has reviewed the historical significance of the USARC and property and, in a letter dated May 5, 2010 (enclosed), indicated that it has no objections to the proposed property transfer and recommends no further archaeological or architectural conservation efforts. The SHPO stated the opinion that the building does not meet the criteria for listing in the National Register of Historic Places, and that it concurs with the Army's determination that the probability for the presence of intact and potentially National Register-eligible archaeological resources on the property is a very low due to prior ground disturbance.

At this time, the 99th respectfully requests a response regarding your interest in participating in the Section 106 consultation process for this project. Additionally, we welcome any information you can share concerning traditional cultural properties or sacred sites located within the project area to assist us in our decision-making process.

I would like to thank you in advance for your efforts and would greatly appreciate a response within thirty (30) days. Correspondence and other communication regarding this matter should be directed to: Amanda Murphy, Cultural Resources Specialist, 99th RSC DPW, 5231 South Scott Plaza, Fort Dix, New Jersey 08640, amanda.w.murphy.ctr@us.army.mil , 609-521-8047.

Respectfully,

Jeffrey M. Hrzic
Chief, Environmental Division

Enclosures

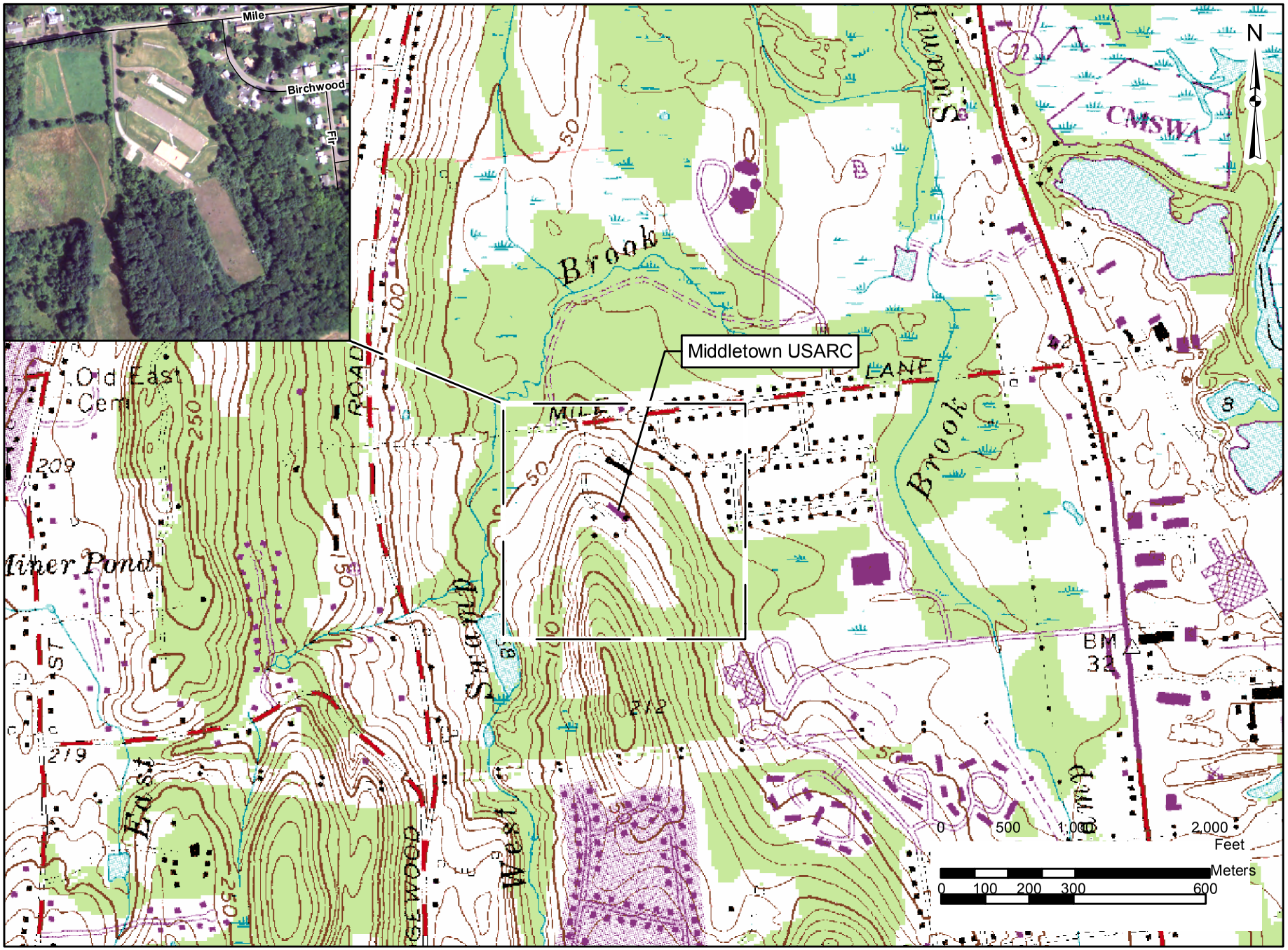


FIGURE 1: Location Map, Middletown U.S. Army Reserve Center

SOURCE: Geospatial Data Gateway 2010; USGS 1965

Connecticut Commission on Culture & Tourism

Historic Preservation
and Museum Division

One Constitution Plaza
Second Floor
Hartford, Connecticut
06103

860.256.2800
860.256.2763 (f)

May 5, 2010

Ms. Robyn Mock
Environmental Conservation Specialist
Contractor,Innovar Environmental, Inc.
99th RSC DPW, Environmental Division
5231 South Scott Plaza,
Fort Dix, NJ 08640-5000

Subject: Property Transfer, US Army Reserve Center, 499 Mile Lane, Middletown, CT.

Dear Ms. Mock:

The 99th Regional Support Command of the US Army Reserves proposes to transfer ownership of a 23.7 acre property located at 499 Mile Lane in Middletown, Connecticut. The property is the former site of a Nike Surface-to-Air Missile Battery, subsequently demolished, and now contains a single permanent building, the US Army Reserve Center (USARC), built in 1987.

The State Historic Preservation Office notes that we have previously reviewed the historic resources of this property and concurred with the US Army Reserve's proposed demolition of the Nike Missile operations. We have also previously evaluated the historical significance of the USARC, and it is our opinion that the building does not meet the criteria for listing in the National Register of Historic Places. The US Army National Guard has assessed the archaeological sensitivity of the property and determined that there is a very low probability for the presence of intact and potentially National Register-eligible archaeological resources due to prior ground disturbance. SHPO has reviewed historical mapping and aerial photographs, as well as the history of construction and demolition activities within the project area and concurs with the US Army Reserve's assessment. SHPO has no objections to the proposed property transfer and recommends no further archaeological or architectural conservation efforts relating to this undertaking

The State Historic Preservation Office appreciates the cooperation of all interested parties concerning the professional management of Connecticut's heritage resources.

This comment updates and supersedes all previous correspondence regarding the proposed undertaking.

For further information please contact Daniel Forrest, Staff Archaeologist, at (860) 256-2761 or daniel.forrest@ct.gov.

Sincerely,

David Bahlman
Deputy State Historic Preservation Officer

cc: Nicholas Bellantoni/OSA

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 3, 2011

To Whom It May Concern:

This project was reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

(http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm)

Based on the information currently available, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required.

This concludes the review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Mr. Anthony Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN CONNECTICUT

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Fairfield	Piping Plover	Threatened	Coastal Beaches	Westport, Bridgeport and Stratford
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	Westport and Stratford
	Bog Turtle	Threatened	Wetlands	Ridgefield and Danbury.
Hartford	Dwarf wedgemussel	Endangered	Farmington and Podunk Rivers	South Windsor, East Granby, Simsbury, Avon and Bloomfield.
Litchfield	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Sharon.
	Bog Turtle	Threatened	Wetlands	Sharon and Salisbury.
Middlesex	Roseate Tern	Endangered	Coastal beaches, islands and the Atlantic Ocean	Westbrook and New London.
	Piping Plover	Threatened	Coastal Beaches	Clinton, Westbrook, Old Saybrook.
	Puritan Tiger Beetle	Threatened	Sandy beaches along the Connecticut River	Cromwell, Portland
New Haven	Bog Turtle	Threatened	Wetlands	Southbury
	Piping Plover	Threatened	Coastal Beaches	Milford, Madison and West Haven
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	Branford, Guilford and Madison
	Indiana Bat	Endangered	Mines, Caves	
New London	Piping Plover	Threatened	Coastal Beaches	Old Lyme, Waterford, Groton and Stonington.
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	East Lyme and Waterford.
	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Waterford
Tolland	None			

-Eastern cougar, gray wolf, Indiana bat, Seabeach amaranth and American burying beetle are considered extirpated in Connecticut.
-There is no federally-designated Critical Habitat in Connecticut.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources/Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106
Natural Diversity Data Base

June 27, 2011

Stacey Barron
The Louis Berger Group, Inc
199 Water St, 23rd Floor
New York, NY 10038

Project: Closure of USARC and Disposition of Property for Middletown U.S. Army Reserve Center, 499 Mile Lane, Middletown
Request No.: 201105058

Dear Stacey Barron,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Closure of USARC and Disposition of Property for Middletown U.S. Army Reserve Center, 499 Mile Lane, Middletown, Connecticut. I have determined that the proposed activities will not impact any extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur in the vicinity of this property.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Environmental Protection's Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3

Barron, Stacey

From: Murphy, Amanda W Ms CTR 99TH RSC ARIM [amanda.w.murphy@usar.army.mil]
Sent: Friday, February 18, 2011 12:02 PM
To: Barron, Stacey
Subject: FW: Property Transfer, Middletown USARC located at 499 Mile Lane in Middletown, CT. (UNCLASSIFIED)
Attachments: image001.jpg

Classification: UNCLASSIFIED
Caveats: NONE

Amanda Murphy
NEPA and Cultural Resources Specialist
99th RSC DPW Contractor
Fort Dix, NJ
Phone: 609-521-8047 (new)

-----Original Message-----
From: Elaine Thomas [mailto:ethomas@moheganmail.com]
Sent: Friday, February 18, 2011 11:17 AM
To: amanda.w.murphy.ctr@us.army.mil
Cc: Forrest, Daniel
Subject: Property Transfer, Middletown USARC located at 499 Mile Lane in Middletown, CT.

Dear Ms Murphy:

This letter is in response to the proposed transfer of the Middletown USARC property that contains 23.7 acres located at 499 Mile Lane in Middletown, Connecticut. The Mohegan Tribe concurs with the findings of the Connecticut State Historic Preservation Office (SHPO), that no further archaeological study needs to be conducted of this property for cultural/historic resources based on the amount of prior ground disturbance.

Upon our review and consideration, we concur with the SHPO that nothing of cultural/historic significance should be impacted by future activity at this site. We therefore do not request further archaeological efforts of reconnaissance survey of this property.

Respectfully,

Elaine Thomas

Elaine Thomas

Archaeology Program Coordinator

Cultural and Community Programs Dept.

The Mohegan Tribe

5 Crow Hill Rd. Uncasville, Ct. 06382

Office: (860) 862-6393

Fax: (860) 862-6395

ethomas@moheganmail.com

Classification: UNCLASSIFIED
Caveats: NONE

Barron, Stacey

From: Murphy, Amanda W Ms CTR 99TH RSC ARIM [amanda.w.murphy@usar.army.mil]
Sent: Tuesday, February 22, 2011 4:50 PM
To: Barron, Stacey
Subject: FW: Closure of the Middletown USARC in Middletown, Connecticut (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYI...

Amanda Murphy
NEPA and Cultural Resources Specialist
99th RSC DPW Contractor
Fort Dix, NJ
Phone: 609-521-8047 (new)

-----Original Message-----
From: Jason Ross [mailto:JRoss@delawarenation.com]
Sent: Tuesday, February 22, 2011 4:46 PM
To: amanda.w.murphy.ctr@us.army.mil
Subject: Closure of the Middletown USARC in Middletown, Connecticut

Hello Ms. Murphy,

The Delaware Nation recently received information regarding the closure of the Middletown United States Army Reserve Center (USARC) in Middletown, Connecticut.

The Delaware Nation Cultural Preservation Director, Ms. Tamara Francis has reviewed the project information you provided along with our database and has determined that the projects are not in the Delaware Nation's Area of Interest. Please continue with your project and if you have any questions do not hesitate in contacting our office anytime.

Thank you again for taking the time and effort to properly consult with the Delaware Nation,

Tamara Francis

Cultural Preservation Director

The Delaware Nation

31064 State Highway 281

Anadarko, OK 73005

Phone: 405/247-8901

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Jason Ross

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www.delawarenation.com <blockedhttp://www.delawarenation.com>

Classification: UNCLASSIFIED
Caveats: NONE

Barron, Stacey

From: Murphy, Amanda W Ms CTR 99TH RSC ARIM [amanda.w.murphy@usar.army.mil]
Sent: Thursday, March 03, 2011 9:23 AM
To: Barron, Stacey
Cc: Morgan, Julie A S SAS
Subject: FW: MPTN THPO COMMENTS RE: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Mashantucket Pequot Tribe consultation comment below...

Amanda Murphy
NEPA and Cultural Resources Specialist
99th RSC DPW Contractor
Fort Dix, NJ
Phone: 609-521-8047 (new)

-----Original Message-----
From: Knowles, Kathleen [mailto:KKnowles@mptn-nsn.gov]
Sent: Wednesday, March 02, 2011 5:36 PM
To: Murphy, Amanda W Ms CTR 99TH RSC ARIM
Subject: MPTN THPO COMMENTS RE: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT (UNCLASSIFIED)

Dear Ms Murphy,

Re: FINAL ARCHAEOLOGICAL INVENTORY SURVEY MAY 1997
RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER
MIDDLETOWN, CT

I have reviewed the above named Final Archaeological Inventory Survey submitted by The Public Archaeology Laboratory, Inc.
The research design and testing strategy meets acceptable professional standards, and I agree with the recommendations and conclusions.
Please keep me informed of any further developments with respect to this project.

Sincerely,

Kathleen Knowles,
Tribal Historic Preservation Officer
Mashantucket Pequot Tribe

-----Original Message-----
From: Murphy, Amanda W Ms CTR 99TH RSC ARIM

[mailto:amanda.w.murphy@usar.army.mil]
Sent: Tuesday, March 01, 2011 10:30 AM
To: Knowles, Kathleen
Subject: RE: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Dear Ms. Knowles,
Attached is the report you requested. Sorry it took so long to track this down. The report was sent to the CT SHPO last spring and their response letter is also attached. They state that there is low probability for the presence of intact or NRHP eligible archeological resources due to prior disturbance and no further action is required. Please let me know if you have any comments or questions or if the Mashantucket Pequot Tribe has interest in this site. Thank you.

Amanda Murphy
NEPA and Cultural Resources Specialist
99th RSC DPW Contractor
Fort Dix, NJ
Phone: 609-521-8047 (new)

-----Original Message-----
From: Knowles, Kathleen [mailto:KKnowles@mptn-nsn.gov]
Sent: Thursday, February 17, 2011 11:45 AM
To: Murphy, Amanda W Ms CTR 99TH RSC ARIM
Subject: RE: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT (UNCLASSIFIED)

Thank you Ms Murphy.

-----Original Message-----
From: Murphy, Amanda W Ms CTR 99TH RSC ARIM
[mailto:amanda.w.murphy@usar.army.mil]
Sent: Wednesday, February 16, 2011 2:36 PM
To: Knowles, Kathleen
Subject: RE: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Dear Ms. Knowles,
I am tracking down a copy of this report and will email it to you as soon as I have it. Thank you.

Amanda Murphy
NEPA and Cultural Resources Specialist
99th RSC DPW Contractor
Fort Dix, NJ
Phone: 609-521-8047 (new)

-----Original Message-----
From: Knowles, Kathleen [mailto:KKnowles@mptn-nsn.gov]

Sent: Thursday, February 03, 2011 11:34 AM
To: Murphy, Amanda W Ms CTR 99TH RSC ARIM
Subject: RECOMMENDED CLOSURE OF MIDDLETOWN U.S. ARMY RESERVE CENTER, MIDDLETOWN, CT

Dear Ms Murphy,

Please send me a copy of the Archaeological Reconnaissance Survey conducted for this project.

Thank you,

Kathleen Knowles,

Tribal Historic Preservation Officer

Mashantucket Pequot Tribe

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

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APPENDIX C
AIR QUALITY APPLICABILITY ANALYSIS

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An analysis was conducted to identify potential increases or decreases in criteria air pollutant emissions associated with the proposed Base Realignment and Closure activities at the Middletown U.S. Army Reserve Center (USARC) in Middletown, Connecticut. The project would occur within Middlesex County, Connecticut. The U.S. Environmental Protection Agency (USEPA) has classified the area of the Proposed Action, the New York – New Jersey – Long Island, NY-NJ-CT area, which includes Middlesex County, a moderate non-attainment area for ozone.

The federal conformity rules were established to ensure that federal activities do not hamper local efforts to control air pollution. In particular, Section 176(c) of the Clean Air Act (CAA) prohibits federal agencies, departments, or instrumentalities from engaging in, supporting, licensing, or approving any action in an area that is in nonattainment or maintenance of the National Ambient Air Quality Standards (NAAQS), which does not conform to an approved state or federal implementation plan.

1.0 Project Description

The proposed action includes one action alternative, traditional army disposal and reuse as an emergency operations center by the City of Middletown (the Preferred Alternative). The Preferred Alternative entails the reuse of the Property to serve existing and emerging public safety needs of the City and region. This alternative includes reusing the existing USARC building as a central training/administrative facility for the regional fire center as well as a maintenance/garage facility, construction of a 12,000 square foot (SF) firehouse and other specialized training facilities and additional parking for a total of 36,300 SF of construction. For a conservative analysis, it was assumed that all construction would occur within a one year-time frame.

2.0 Meteorology/Climate

Temperature is a parameter used in calculations of emissions for air quality applicability. Climate at Middletown in Middlesex County, CT varies seasonally. The average temperature is 52°F with an average summer high of 84°F and an average winter low of 20°F. (TWC, nd).

3.0 Current Ambient Air Quality Conditions

The USEPA defines ambient air in 40 CFR Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the USEPA has issued NAAQS for the following criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (particles with a diameter less than or equal to a nominal 10 micrometers (PM_{10}) and particles with a diameter less than or equal to nominal 2.5 micrometers ($PM_{2.5}$)), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb).

Federal regulations designate Air Quality Control Regions (AQCRs) in violation of the NAAQS as nonattainment areas. According to the severity of the pollution problem, nonattainment areas can be categorized as marginal, moderate, serious, severe, or extreme. Severity categories have not been applied to $PM_{2.5}$ nonattainment areas. The USEPA has classified Middlesex County, which includes the Middletown USARC, as in moderate non-attainment for ozone.

The NAAQS for all criteria pollutants are shown in Table C-1.

TABLE C-1: FEDERAL AMBIENT STANDARDS FOR CRITERIA AIR POLLUTANTS

Pollutant	Averaging Period	Federal Primary Standard
Ozone	8-hour	0.075 ppm
	1-hour (daily max.)	0.12 ppm
$PM_{2.5}$	Annual (arithmetic mean)	15.0 µg/m^3
	24-hour	35 µg/m^3
PM_{10}	Annual (arithmetic mean)	NA
	24-hour	150 µg/m^3
Carbon Monoxide	8-hour	9 ppm
	1-hour	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm
	1-hour	0.100 ppm
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm
	24-hour	0.14 ppm
	1-hour (per annum)	NA
	1-hour (per 7 days)	NA
	5-minute	NA
Lead	Rolling 3-month average	0.15 µg/m^3
	Quarterly average	1.5 µg/m^3

Source: USEPA, 2011
ppm = parts per million
µg/m^3 = micrograms per cubic meter

4.0 Air Quality Regulatory Requirements: General Conformity Applicability Analysis

To regulate the emission levels resulting from a project, federal actions located in nonattainment or maintenance areas are required to demonstrate compliance with the general conformity rule established in 40 CFR Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans (the Rule). As the Middletown USARC is in Middlesex County, a nonattainment area for ozone, a General Conformity Rule applicability analysis is warranted.

Section 93.153 of the Rule sets applicability requirements for projects subject to the Rule through establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant nonattainment area designations. For projects below the *de minimis* levels, a conformity determination is not required. Those at or above the levels are required to perform a conformity analysis as established in the Rule. The *de minimis* levels apply to emissions that can occur during the construction and operation phases of the action.

The U.S. Army Corps of Engineers, Mobile District has completed a General Conformity Rule applicability analysis in order to analyze any impact to air quality. Emissions have been estimated for the ozone precursor pollutants NO_x and volatile organic compounds (VOC). Annual emissions for these compounds were estimated for each of the project actions (construction and operation) to determine if they would be below or above the *de minimis* levels established in the Rule. The *de minimis* for moderate

ozone nonattainment and maintenance areas is 100 tons per year (TPY) for NO_x and 50 TPY for VOC in an ozone transport region. Sources of NO_x and VOC, associated with the proposed projects would include emissions from construction and demolition equipment, painting of interior building surfaces, and parking spaces (VOC only).

Sources of $PM_{2.5}$, PM_{10}, CO, and SO_2 associated with the proposed project would include emissions from construction equipment and painting of building surfaces (VOCs only), and emissions from stationary units (boilers).

5.0 Air Quality Impact Analysis

A project construction- and operations-related impact analysis was performed for the proposed reuse.

5.1 Construction Emissions

Construction emissions would result from the operation of heavy equipment and delivery trucks and the painting of the building structures. The project would utilize a mix of heavy equipment for construction.

5.1.1 Emission Factors For Heavy Equipment

Annual emissions were calculated for various types of diesel construction vehicles using model emission rate input for fleet conditions in 2008 in EPA's *Nonroad2008 Emission Inventory Model: Diesel Construction Equipment, Middlesex County, Connecticut*. Truck emission levels were calculated using EPA's *MOBILE6* model for fleet conditions in summer 2012. The total annual emissions in tons per year (TPY) were determined for each vehicle based on the estimated number of vehicles used and the number of operating hours per year. A conservative approach was employed in the applicability analysis to assure that construction scheduling would not result in higher levels of emissions than predicted. Therefore, the analysis assumed that the construction emissions for all construction would occur concurrently over a one-year period combined with a year of operational emissions.

Calculations for Construction Emissions

Emissions factors used for construction vehicles are shown in Table C-2. Using the emissions factors in Table C-2, construction emissions were calculated for the proposed construction and demolition at the Middletown USARC. Using the assumptions described above, the emissions in tons for all pollutants for construction equipment emissions were calculated for each vehicle type using the appropriate equations displayed in Tables C-3.

TABLE C-2: EMISSIONS FACTORS FOR CONSTRUCTION VEHICLES

Construction Vehicle Type	Emissions Factors (lbs/hr per vehicle)					
	NO_x	VOC	$PM_{2.5}$	PM_{10}	SO_2	CO
Front End Loader	1.271	0.099	0.092	0.094	0.043	0.416
Excavator	1.073	0.086	0.087	0.089	0.043	0.379
Dozer	1.346	0.107	0.103	0.106	0.050	0.456
Vibratory Roller	0.993	0.081	0.090	0.093	0.032	0.389
Grader	1.119	0.093	0.112	0.115	0.040	0.046
Concrete Pumper Truck	2.993	0.238	0.160	0.165	0.061	0.850
Concrete Truck (mixing)	5.080	0.350	0.239	0.246	0.103	1.552
Concrete Truck (travel)*	3.867	0.340	0.126	N/A	0.013	1.261
Crane	1.856	0.137	0.097	0.100	0.059	0.391
Backhoe	1.264	0.279	0.230	0.237	0.032	1.549
Asphalt Paver	1.464	0.109	0.120	0.124	0.041	0.511
Steel Wheel Roller	0.516	0.034	0.040	0.041	0.014	0.186
Pneumatic Wheel Roller	0.817	0.070	0.102	0.105	0.024	0.792
Dump Truck*	3.867	0.340	0.126	N/A	0.013	1.261
Delivery Truck (Medium)*	1.393	1.663	0.011	N/A	0.009	9.050
Delivery Truck (Heavy)*	3.867	0.340	0.126	N/A	0.013	1.261
Water Tanker	1.139	0.082	0.099	0.102	0.048	1.261

* Units are in grams/mile.
N/A – MOBILE 6.2 provides PM emissions as "Total PM" and does not break out by $PM_{2.5}$ and PM_{10}. For the purposes of this analysis, emissions are expressed at $PM_{2.5}$

5.1.1.1 Sample Calculations for Construction Emissions

Using the assumptions described above, the emissions in tons of NO_x, VOC, $PM_{2.5}$, PM_{10} (where applicable), CO, and SO_2 for construction equipment and vehicle emissions were calculated for each vehicle type using the appropriate emission rates from Table C-2 and equations displayed in Table C-3.

TABLE C-3: EQUATIONS FOR CONSTRUCTION EMISSIONS CALCULATIONS

Emission Source	Equation	Sample Calculation
Heavy Equipment Emissions, Hourly On-Site Activities	(Equipment Type) (Emission Factor) (Total # of days in operation) (hours/day) (1 ton/2000 lbs) = tons of air emissions	(1 grader) (1.119 lbs/hr) (2.4 days in operation) (8 hours/day) (1 ton/2000 lbs) = **0.011 tons of NO_x of equipment emissions**
Construction Truck Emissions with Vehicle-miles	(# vehicle type) (Emission Factor) (Total # of miles traveled during a specific construction activity) (1 lb/453.59 grams) (1 ton/2000 lbs) = tons of air emissions	(1 dump truck) (4.472 grams/mile) (200 miles total during construction)(1 lb/453.59 grams) (1 ton/2000 lb) = **0.002 tons NO_x of vehicle emissions**

5.1.1.2 Resultant Heavy Equipment Emissions for the Preferred Alternative

Equipment requirements were estimated for the construction activities associated with site preparation for buildings and trenching for utilities. Table C-4 provides the equipment assumptions and resultant total equipment emissions for the preferred alternative.

TABLE C-4: TOTAL EQUIPMENT EMISSIONS FOR CONSTRUCTION

Construction Vehicle Type	Equip / Vehicle Days	Annual Emissions (TPY)					
		NO_x	VOC	$PM_{2.5}$	PM_{10}	SO_2	CO
Front End Loader	9	0.045	0.003	0.003	0.002	0.001	0.014
Excavator	4	0.019	0.001	0.001	0.001	0.001	0.006
Dozer	17	0.101	0.007	0.007	0.002	0.004	0.032
Vibratory Roller	18	0.077	0.006	0.007	0.001	0.002	0.028
Grader	7.7	0.037	0.003	0.004	0.001	0.001	0.001
Concrete Pumper Truck	60	0.718	0.057	0.038	0.040	0.015	0.204
Concrete Truck (mixing)	60	1.219	0.084	0.057	0.059	0.025	0.372
Concrete Truck* (travel)	60	0.035	0.003	0.001	0.000	0.000	0.000
Crane	150	1.114	0.082	0.058	0.060	0.036	0.234
Backhoe	2	0.010	0.002	0.002	0.002	0.000	0.012
Asphalt Paver	2	0.009	0.001	0.001	0.001	0.000	0.003
Steel Wheel Roller	3	0.007	0.000	0.001	0.001	0.000	0.002
Pneumatic Wheel Roller	2	0.005	0.000	0.001	0.001	0.000	0.005
Dump Truck*	112	0.019	0.002	0.001	0.000	0.000	0.000
Delivery Truck (Med)*	240	0.009	0.007	0.000	0.000	0.000	0.000
Delivery Truck (Heavy)*	240	0.024	0.002	0.001	0.000	0.000	0.000
Water Tanker	1	0.006	0.000	0.001	0.001	0.000	0.007
Total Emissions		**3.454**	**0.261**	**0.183**	**0.171**	**0.086**	**0.922**

* Units are in total miles.

5.1.2 Emissions from Construction Crew Workers

Emissions from construction personnel commuting to and from the work site were calculated using the USEPA's *MOBILE6*. For the Preferred Alternative, it was assumed that the construction crew would consist of approximately 40 workers during the 12-month construction period. For a conservative analysis, it was assumed that each person would commute to the site and that each would drive approximately 40 miles each day. Based on *MOBILE6*, the emission factors are for the average fleet in Middlesex County, CT are:

- NOx: 0.641 grams/mile/vehicle (g/mi/veh)
- VOC: 0.984 g/mi/veh
- $PM_{2.5}$: 0.114 g/mi/veh
- SO_2: 0.0088 g/mi/veh
- CO: 13.68 g/mi/veh

Based on the above assumptions, it was calculated that the total emissions associated with the commuting of the construction crew to and from the project site for the Preferred Alternative would be approximately:

- NOx: 0.170 TPY

- VOC: 0.260 TPY
- $PM_{2.5}$: 0.030 TPY
- SO_2: 0.002 TPY
- CO: 3.619 TPY

5.1.3 Emissions from Painting Activities

For painting building structures, it was assumed that water-based latex paint would be used with a VOC content of half a pound per gallon and one gallon of paint covers approximately 300 SF. Three coats of paint would be applied (one primer and two finish) to interior surfaces,

For the Preferred Alternative, the analysis assumes drop ceilings or other surfaces not requiring paint and a ratio of walls needing paint to floor space of 2 to 1 for a total of 55,000 SF or area to paint.

Approximately 550 gallons of flat paint would be needed for interior construction of the public safety complex alternative. Total interior painting for buildings constructed over the entire construction period would create approximate VOC emissions of 0.138 tons.

Emissions from painting parking spaces were based on four-inch wide stripes. It was assumed that the average parking space is 9 feet wide by 19 feet long and every two parking spaces share a common line. Approximately 9.17 square feet would be painted for every parking space. For parking spaces, it was assumed that alkyd paint would be used with a VOC content of three pounds per gallon and one gallon of paint covers approximately 200 square feet. One coat of paint would be applied to the parking surfaces. Based on the construction of approximately 121 total spaces under the Preferred Alternative, estimated VOC emissions for painting parking spaces would be 0.009 tons.

5.1.4 Summary of Construction Emissions

After emissions analysis was performed for all aspects of construction, the totals were added to determine the combined annual construction emissions. Table C-5 summarizes the results.

TABLE C-5: EMISSIONS FROM CONSTRUCTION

Construction Activity	Total Annual Emissions (TPY)					
	NO_x	**VOC**	**$PM_{2.5}$**	**PM10**	**SO_2**	**CO**
Construction Equipment	3.454	0.261	0.183	0.171	0.086	0.922
Construction Crew Commuting	0.170	0.260	0.030		0.002	3.619
Painting (VOC only)		0.147				
Total Emissions from Construction	**3.623**	**0.668**	**0.213**	**0.171**	**0.088**	**4.541**

5.2 Operations Emissions

Operations emissions are from heating sources and new commuters associated with the Preferred Alternative.

5.2.1 Heating Source Emissions

Designs for the Emergency Operations Center complex have not yet been prepared; therefore, actual boiler or furnace types and sizes have not been determined. Operational heating requirements for the EA analysis are based on the most recent *Commercial Buildings Energy Consumption Survey* (CBECS) in 2003 conducted by the Department of Energy, Energy Information Administration. Table C35 from this document indicates that the average energy intensity for buildings using fuel oil in the Northeast U.S. for government-owned buildings is 0.22 gallons per SF of floor space (DOE, 2003).

The Emergency Operations Center Alternative space and water heating for an estimated 36,300 SF would require annually:

- (36,300 SF)(0.22 gal/SF) = 7,986 gallons of fuel oil

Operational heating emissions are based on the EPA's *AP-42 Fifth Edition, Compilation of Air Pollution Emission Factors Volume I, Chapter 1: Stationary Sources, Supplement E* (EPA, 1998) using fuel oil #6 with 2 percent sulfur limit. The following emission rates are assumed:

- NO_x = 55 lb NO_x lb/10^3 gal
- VOC = 1.04 lb/10^3 gal
- Filterable PM = 10 lb/10^3 gal (all PM)
- SO_2 = 314 lb/10^3 gal
- CO = 5 lb/10^3 gal

Table C-6 shows resultant annual emissions from space heating.

TABLE C-6: TOTAL ANNUAL EMISSIONS FROM HEATING

Heating	Total Annual Emissions (TPY)				
	NO_x	**VOC**	**PM**	**SO_2**	**CO**
Resultant Annual Emissions	0.240	0.005	0.005	0.147	0.002

5.2.2 Generators

While no information regarding back-up generators is available, it can reasonably be assumed that at least two emergency generators would be required for the Preferred Alternative. An estimated load of 600 kW (804 horsepower [hp]) each has been assumed. This applicability analysis assumes that the generator would have emissions that are equal to the standard in 40 CFR Part 60, Subpart IIII, as provided in "Table 1 to Subpart IIII of Part 60—Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007–2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder". These standards are:

- NOx = 5.058 g/bhp-hr

- Hydrocarbons (HC) = 1.0 g/bhp-hr
- PM = 0.268 g/bhp-hr (all PM combined)
- SO2 = 0.111 g/bhp-hr
- CO = 1.635 g/bhp-hr

The conversion of HC to VOC is calculated as follows:

- VOC = (1.053)(THC), therefore: VOC = (1.053 x 1.0) = 1.053 g/bhp-hr.

Both generators were evaluated using an assumption of 24 annual hours of emergency use and ten hours annually for testing. The resultant annual emissions of NOx and VOC are shown in Table C-7.

TABLE C-7: TOTAL ANNUAL EMISSIONS FROM GENERATORS

Activity	Total Annual Emissions - TPY				
	NO_x	VOC	PM	SO_2	CO
Two 600 kW generators, 34 annual hours total each	0.305	0.063	0.016	0.007	0.099

5.2.3 Vehicle Emissions from Daily Commuters

All personnel are expected to relocate from within the airshed. Therefore, no daily commuter emissions are expected from the Preferred Alternative.

5.2.4 Summary of Annual Operations Emissions

Annual operations emissions include emissions from heating the building space and water and emissions from daily employee traffic. There will not be an emergency generator. Table C-8 provides the total annual operations emissions.

TABLE C-8: ANNUAL EMISSIONS FROM OPERATIONS

Operations Activity	Total Annual Emissions –TPY				
	NOx	VOC	PM	SO_2	CO
Heating	0.240	0.005	0.005	0.147	0.002
Generator	0.305	0.063	0.016	0.007	0.099
Total Emissions from Operations	**0.544**	**0.068**	**0.021**	**0.154**	**0.101**

5.3 Combined Construction and Operations Emissions

The emissions from construction and operations would likely occur in different years not combine on an annual basis, however for a conservative analysis, both construction emissions and operation emissions have been combined. Table C-9 shows the maximum annual emissions expected from the preferred alternative. When these emission estimates are compared to the *de minimis* values, they all fall well below the *de minimis* values.

TABLE C-9: TOTAL ANNUAL EMISSIONS

Activity	Total Annual Emissions (TPY)					
	NO_x	**VOC**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**CO**
***de minimis* levels**	**100**	**50**	**100**	**100**	**100**	**100**
Construction	3.623	0.668	0.213	0.171	0.088	4.541
Full Operation	0.544	0.068	0.021	N/A	0.154	0.101
TOTAL COMBINED	**4.167**	**0.736**	**0.234**	**0.171**	**0.242**	**4.642**

5.4 Conclusion

As the annual emissions are well below *de minimis* levels and a full conformity determination is not required. A draft Record of Non-Applicability (RONA) can be found in Attachment One to Appendix C.

6.0 References

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ATTACHMENT ONE: RECORD OF NON-APPLICABILITY

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project/Action Name: BRAC 05 RECOMMENDATIONS FOR CLOSURE, DISPOSAL AND REUSE OF THE MIDDLETOWN UNITED STATES ARMY RESERVE CENTER (USARC) MIDDLETOWN, CONNECTICUT

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The General Conformity Rule applies to federal actions occurring in regions designated as being in nonattainment for the National Ambient Air Quality Standards (NAAQS) or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis*) rates of emissions have been established for federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as nonattainment exceeds these *de mimimis* levels, a general conformity analysis is required. Middlesex County is designated as a moderate ozone (8-hour) nonattainment area in an ozone transport region, thus the NO_x, and VOC, thresholds apply.

A General Conformity Analysis of this project/action is not required because maximum annual direct and indirect emissions from the emergency operation center alternative have been estimated as:

NO_X: 4.167 tons per year (TPY); VOC: 0.736 TPY;

These are below the *de minimis* levels established in 40 CFR 93.153 (b) of:
NO_x: 100 tons; VOC: 50 tons;

Furthermore, the project/action is not considered regionally significant under 40 CFR 93.153 (i).

Middlesex County is in attainment for criteria pollutants NO_2, SO_2, PM_{10}, $PM_{2.5}$, CO, and Pb and therefore these pollutants are not subject to conformity review.

Supporting documentation and emissions estimates can be found in Section 4.2 and Appendix C of the Environmental Assessment document.

Jeffrey M. Hrzic
Chief, Environmental Division
99th Regional Support Command

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APPENDIX D
ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

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ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

SOCIOECONOMIC IMPACT ASSESSMENT

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, the proposed project alternatives in Middletown, Connecticut would have a multiplier effect on the local and regional economy. With the proposed action alternatives, construction spending would generate new income and increased personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

THE ECONOMIC IMPACT FORECAST SYSTEM

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed the Economic Impact Forecast System (EIFS) to address the economic impacts of NEPA-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for the Proposed Action. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in the EIFS model are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS is developed under a joint project of the U.S Army Corps of Engineers (USACE), the Army Environmental Policy Institute (AEPI), and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an on-line system, and the EIFS Web application is hosted by the USACE, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of USACE, Mobile District are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data.

THE EIFS MODEL

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the EA and EIS process.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements which describe the Army action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army's action; and the percent of military living on-post. Once these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the Proposed Action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the Proposed Action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the Proposed Action. Population is the increase or decrease in the local population as a result of the Proposed Action.

THE SIGNIFICANCE OF SOCIOECONOMIC IMPACTS

Once model projections are obtained, the Rational Threshold Value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables:

Table C-1: Historical Deviation Variables

		Increase	Decrease
Sales Volume	X	100%	75%
Income	X	100%	67%
Employment	X	100%	67%
Population	X	100%	50%

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed

with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

The following are the EIFS inputs and output data and the RTVs for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.2.7.

Summary of Assumptions

Preferred Alternative: Traditional Army Disposal and Reuse as Emergency Operations Center Facility by the City Of Middletown

For purposes of running the EIFS model, the peak year for incoming personnel and overall construction spending were selected to determine the maximum impact that the disposal and reuse of the USARC site could have on the regional economy. For this action, no civilian or non-civilian personnel would re-locate within the ROI. Construction costs were used to determine the impact of this alternative. The project costs are assumed to be $10,115,225. These costs are based on findings in the 2008 redevelopment plan for the site prepared by RKG Associates. The impacts from project spending are shown in Tables C-1 through C-3. Table C-1 shows input to the model, C-2 shows resultant sales, income, and employment generated for the economy and the percent annual fluctuation it represents, and Table C-3shows the annual fluctuations in RTV for the ROI above or below which the action would be considered significant.

Table C-1: Forecast Input for the EIFS Model

EIFS Report Middlesex County, CT – Forecast Input	
Change In Local Expenditures	$10,115,230
Change In Civilian Employment	0
Average Income of Affected Civilian	$0
Percent Expected to Relocate	0
Change In Military Employment	0
Average Income of Affected Military	0
Percent of Military Living On-base	0
Employment Multiplier	2.62
Income Multiplier	2.62

Table C-2: EIFS Report for Middlesex County, Connecticut – Forecast Output

Forecast Output		
Employment Multiplier	2.62	
Income Multiplier	2.62	
Sales Volume – Direct	$6,254,452	
Sales Volume – Induced	$10,132210	
Sales Volume – Total	$16,386,660	0.22%
Income – Direct	$979,071	
Income - Induced	$1,586,095	
Income – Total (place of work)	$2,565,166	0.05%
Employment – Direct	24	
Employment – Induced	39	
Employment – Total	64	0.08%
Local Population	0	
Local Off-base Population	0	0.0%

Table C-3: EIFS Report for Middlesex County, Connecticut – RTV Summary

RTV Summary				
	Sales Volume	**Income**	**Employment**	**Population**
Positive RTV	15.64%	13.66%	6.00%	1.79%
Negative RTV	-4.74%	-4.09%	-3.40%	-0.76%

APPENDIX E
ENVIRONMENTAL CONDITION OF PROPERTY UPDATE REPORT

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ENVIRONMENTAL CONDITION OF PROPERTY UPDATE REPORT

Middletown USAR Center (CT005)
499 Mile Lane
Middletown, Connecticut 06457



Prepared For:

U.S. Army Corps of Engineers – Louisville District
Engineering Division – Environmental Engineering Branch
600 Dr. Martin Luther King, Jr. Place
Louisville, Kentucky 40202

Prepared By:

1066 Commerce Park Drive
Oak Ridge, Tennessee 37830

March 2010

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1.0 INTRODUCTION

XCEL Engineering, Inc. (XCEL), under contract to the U.S. Army Corp of Engineers (USACE) Louisville District, has prepared this Environmental Condition of Property (ECP) Update Report for the 99th Regional Support Command (RSC). A previous ECP was completed for USACE – Louisville District at the Middletown US Army Reserve (USAR) Center in March 2007. The facility is located at 499 Mile Lane in Middletown, Connecticut, hereafter referred to as the "Site" or "Property". In support of the ECP Update Report, a visual reconnaissance of the Site was conducted on July 21, 2009 with a follow-up visit on October 13, 2009. The purpose of the visit was to visually obtain information indicating the environmental condition of the Property and document any changes since the previous ECP.

1.1 PURPOSE OF ENVIRONMENTAL CONDITION OF PROPERTY (ECP) UPDATE REPORT

The primary purpose of the ECP Update Report is to identify any environmental conditions that may have changed materially since the completion of the original ECP Report and to identify any Recognized Environmental Conditions at the Property.

1.2 SCOPE OF SERVICES

This ECP Update Report has been performed for the Middletown USAR Center (CT005) in accordance with AR 200-1 and applicable ASTM standards. Under ASTM D 6008-96 (2005), the following components were completed: interviews, government record reviews, visual inspection of the Property and adjoining properties, and the declaration by the Environmental Professional responsible for the assessment.

2.0 BACKGROUND

2.1 PHYSICAL DESCRIPTION

The Property is located at 499 Mile Lane in Middletown, Middlesex County, Connecticut. The USAR Center is located on 23.7 acres of land and has one permanent structure (Reserve Center building), one parking lot, and remnants of Nike missile operations, which include the foundations of the former Warhead Building, former Missile Testing and Assembly Building, and former barracks. A fenced area contains three closed, underground missile silos. The Property is currently vacant and has not been occupied since January 2009.

Based on a review of historical resources, the area immediately surrounding the Property is and has been undeveloped, with the exception of a housing development located east of the Property. The USAR facility originally was constructed between 1956 and 1958 as a Nike Missile Launch facility. The current Reserve Center building was constructed in 1987 and the original Nike Missile facility structures on the Property were demolished in the late 1990s.

2.2 PREVIOUS ECP FINDINGS

In March 2007, CH2M Hill under contract to the U.S. Army Corps of Engineers, Louisville District, completed an ECP Report at the Property in accordance with ASTM D 6008. The text portion of the previous ECP Report is included in Appendix A. According to the report, areas of potential environmental concern included the following: historic fuel oil releases from underground storage tanks; reported onsite disposal of "potentially polluting materials"; a reported fuel oil spill from a transfer line; potential historical releases from an oil/water separator; the presence of volatile organic compounds (VOCs) and petroleum hydrocarbons in the groundwater; historical application of chlordane to building foundations; possible use of petroleum products as dust control; and potential releases from a former septic system/drain tile field. CH2M Hill classified the Site as an ECP Category Type 7 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property that is unevaluated or requires additional evaluation.

3.0 INTERVIEWS

3.1 INTERVIEW WITH STEPHEN LOMBARDI, SENIOR GEOLOGIST, AECOM ENVIRONMENT

Mr. Lombardi escorted XCEL during the reconnaissance of the Property and answered questions regarding the Site history. Mr. Lombardi has been involved with the Property for several years and was familiar with past environmental investigations conducted at the Property. He provided XCEL with copies of investigations conducted since the March 2007 ECP (see Section 6.0).

3.2 INTERVIEW WITH BLAYRE LINKER, FIELD ENVIRONMENTAL SPECIALIST – 99TH RSC

Ms. Blayre Linker is a contract Field Environmental Specialist for the 99th RSC. She accompanied XCEL during the site reconnaissance and performed an inspection for hazardous substances and petroleum products stored at the Property. Ms. Linker did not provide any information that was material in identifying recognized environmental conditions at the Property.

3.3 INTERVIEW WITH LAURA DELL'OLIO, NEPA AND BRAC ENVIRONMENTAL COORDINATOR – 99TH RSC

Ms. Laura Dell'Olio is the contract NEPA and BRAC Environmental Coordinator for the 99th RSC. She provided XCEL with the administrative record for the Property. Ms. Dell'Olio did not possess any specialized knowledge or experience that was material to recognized environmental conditions in connection with the Property.

3.4 INTERVIEW WITH CRAIG KELLEY, FIELD ENVIRONMENTAL SPECIALIST – 99TH RSC

Mr. Craig Kelley is a contract Field Environmental Specialist for the 99th RSC. He accompanied XCEL during the site reconnaissance and performed an inspection for hazardous substances and petroleum products stored at the Property. Mr. Kelley was unaware of any current recognized environmental conditions and did not provide any

information that was material in identifying recognized environmental conditions at the Property.

4.0 REVIEW OF REGULATORY DATABASE INFORMATION

An electronic database search of environmental records for the Property and surrounding sites was prepared by Environmental Data Resources, Inc. (EDR) on July 23, 2009. EDR focused on searching federal, state, and tribal environmental databases and historical and current land uses to identify sites of potential environmental concern with addresses in the areas immediately surrounding the Property. Full documentation of the EDR database review is provided in Appendix B.

Consistent with the March 2007 ECP, the Site was listed on the Manifest database for disposing of PCB-containing transformers off-site. Potential environmental sites of concern, located within corresponding ASTM search radius distances from the Property, were also evaluated. XCEL evaluated these properties and based on the regulatory status, distance, and/or inferred hydrogeologic relation to the Property, none of the regulated facilities identified in the database report have a probability to affect the environmental condition of the Property.

5.0 SITE RECONNAISSANCE

A site reconnaissance was performed to characterize on-site conditions and assess surrounding property uses and natural surface features that may have affected the condition of the Property. In addition, a reconnaissance was conducted of the surrounding roads and readily accessible adjacent properties to identify obvious potential environmental conditions. Photographs taken as part of the site reconnaissance are provided in Appendix C. The Site visit was conducted on July 21, 2009 with a subsequent Property inspection on October 13, 2009. The Site was represented by 99th RSC Environmental staff. Weather conditions were rainy and the outside temperature was approximately 70° F. XCEL conducted the site reconnaissance in a systematic manner focusing initially on the Property boundaries and exterior areas, which were surveyed in a grid pattern. XCEL also surveyed all interior spaces of existing improvements, focusing on areas of potential environmental concern (i.e., former storage tank areas, chemical storage facilities, mechanical rooms, etc). In addition, XCEL conducted a reconnaissance of the surrounding roads and readily accessible adjacent properties to identify obvious potential environmental conditions on neighboring properties.

No physical changes to the Site or adjoining properties were observed during XCEL's site inspection. No evidence of recognized environmental conditions was observed during the 2009 visual inspection of the Property.

6.0 FINDINGS SINCE PREVIOUS ECP

This section documents supplemental investigations and/or findings associated with the Property since the March 2007 ECP. Copies of supporting documentation are provided in Appendix D. An opinion of the impact to the environmental condition of the Property (if any) as a result of these investigations/findings is also discussed.

- Technical Memorandum, 2007. A Technical Memorandum entitled Site 08 – Groundwater, was prepared for the 94th Regional Readiness Command (RRC) by Kemron/Mactec in February 2007. The March 2007 ECP (Appendix A) was finalized before this memorandum was issued; therefore, the subject memorandum is summarized in this ECP Update Report. Eleven Areas of Concern (AOC) and potential AOCs were identified at the Property (refer to Appendix D). No further action was recommended for AOC Nos. 1, 2, 5, 6, 7, 8, and 9. Kemron/Mactec recommended additional soil and groundwater sampling at the riprap discharge area for AOC Nos. 3, 4, and 11. Additional groundwater monitoring wells were proposed at AOC Nos. 10 and 11 to delineate volatile organic compound (VOC) groundwater impacts.

- Final Remedial Investigation, 2008. A Final Remedial Investigation Report entitled Site 08 – Groundwater, dated May 2008, was prepared by Kemron/Mactec for the 94th RRC. According to the report, the Remedial Investigation (RI) was performed to attempt to determine the source of trichloroethylene (TCE) in groundwater, its extent, and the potential impacts to human health and the environment. AOCs which could be potential source areas of TCE were determined and soil borings were performed adjacent or downgradient of the AOCs. A source area for the TCE was not determined. According to the investigation, it was determined that a small plume of TCE-impacted groundwater is located within the overburden aquifer and appears to extend from the M8/MW-16 area to the northeast just beyond MW-18 and potentially to BR-4 and just beyond (refer to Appendix D). The horizontal extent of groundwater contamination is limited and the downgradient extent has been determined. The report concluded that based on the results of the RI, the TCE plume has not, and is not, expected to migrate to or beyond the site boundary, and as a result of data interpretation, the nature and extent of groundwater contamination has been appropriately delineated. A Human Health Risk Assessment (HHRA) was performed as part of the RI. The HHRA was based on current and reasonably foreseeable future land use, which has been identified as non-residential (i.e., military or industrial/commercial). The HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use. In addition, no significant risk was predicted to resident or migratory species. Based on the foregoing, Kemron/Mactec recommended no further action under CERCLA for Site 08 – Groundwater at the USARC facility in Middletown, Connecticut.

- Decision Document, 2008. A No Action Decision Document, dated July 2008, was prepared for Site 08 – Groundwater for the 94th RRC. This document summarized previous investigations including the RI conducted by Kemron/Mactec in 2008. The document declared the following: “The U.S. Army, as the lead agency, has determined that No Action under CERCLA is appropriate for Site 08 to ensure protection of human health and the environment for the

current and foreseeable future use of the property". The document also included comments received from the Connecticut Department of Environmental Protection (CTDEP) and Army responses (refer to Appendix D).

- Subsurface Investigation, 2009. A subsurface investigation entitled Wash Rack Subsurface Investigation, Middletown USAR Center, Middletown, Connecticut, dated March 2009, was prepared by AECOM, Inc. and Stell Environmental Enterprises, Inc. on behalf of the 94th RRC. According to the report, the site investigation consisted of seven soil borings, two of which were completed as temporary monitoring wells, to evaluate the potential for a release to the environment from the former concrete vehicle wash rack, catch basin, oil/water separator, and sanitary sewer manhole. Soil samples were analyzed for total metals, Volatile Organic Compounds (VOCs), Polynuclear Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), organochlorine pesticides, and Extractable Total Petroleum Hydrocarbons (ETPH). Groundwater samples were analyzed for dissolved metals, VOCs, PAHs, organochlorine pesticides, and ETPH. No compounds of concern were detected above the applicable standards in the sediment sample collected from the catch basin. No VOCs, PAHS, PCBs, organochlorine pesticides, or ETPH were detected in soil samples above applicable standards. At one sampling location, total arsenic was detected in soil at 23 milligrams/kilogram, which exceeded the Residential and Industrial Direct Exposure Criteria standard of 10 mg/kg. No concentrations of dissolved metals, PAHs, organochlorine pesticides, or ETPH were detected in groundwater in excess of the applicable standards. Chloroform was detected in groundwater at a concentration of 8.7 µg/L, exceeding the Groundwater Protection Criteria (GWPC) of 6 µg/L, but below the Residential Volatile Criteria of 26 µg/L. AECOM and Stell Environmental Enterprises concluded that a release exceeding the applicable standards associated with the sanitary sewer manhole and the grassy area adjacent to the wash rack had occurred and recommended additional investigation.

- Subsurface Investigation, 2009. A subsurface investigation entitled Leach Field and Former Building Foundation Subsurface Investigation, Middletown USARC, Middletown, Connecticut, dated May 2009, was prepared by AECOM, Inc. and Stell Environmental Enterprises, Inc. on behalf of the 94th RRC. According to the report, the site investigation was conducted, consisting of nine soil borings and five hand auger soil samples, to evaluate the potential for releases to the environment in the area of the former building foundation (due to reported historic pesticide applications), a heating oil UST formerly located south of the building, and a leach field located downgradient of the former building. Three of the soil borings were completed as temporary groundwater monitoring wells; however, the wells were dry and no groundwater samples were collected for analysis. Soil samples were analyzed for total metals, VOCs, PAHs, organochlorine pesticides, and ETPH. Analytical results revealed no concentrations of metals, VOCs, PAHs, organochlorine pesticides, or ETPH concentrations detected above applicable standards. AECOM and Stell Environmental Enterprises concluded that a release exceeding the applicable standards associated with the former building foundation, heating oil UST, and leach field had not occurred and no further investigation was recommended.

- Well Decommissioning, 2009. According to 99th RSC personnel, all monitoring wells installed as part of the RI were decommissioned in July 2009. Although requested, a formal report was not provided to XCEL. No monitoring wells were observed on the Property during XCEL's site reconnaissance.

Based on our review of the aforementioned investigations/findings, with the exception of the recommendations made in the Wash Rack Subsurface Investigation, XCEL is in concurrence with the findings outlined in the abovementioned documents. The Wash Rack Subsurface Investigation recommended additional investigation based on arsenic concentrations identified in soil and the detection of chloroform in groundwater. XCEL is in disagreement with this recommendation and holds the opinion that no further action is recommended at the former vehicle wash rack area. Our opinion is based on the following:

1. Chloroform was detected in groundwater at 8.7 µg/L, which is above the GWPC of 6 µg/L, but below the Residential Volatilization Criteria of 26 µg/L, and well below the Industrial/Commercial Volatilization Criteria of 62 µg/L. Based on the current or reasonably foreseeable future land use, no significant risk is predicted from this concentration of chloroform detected in groundwater. Additionally, chloroform was identified as a Contaminant of Potential Concern for groundwater and evaluated as part of the HHRA conducted in the Final RI for the Property in 2008. The HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use. Accordingly, it is XCEL's opinion that based on the identified foreseeable future land use, the chloroform concentrations do not pose an unacceptable risk to human health or the environment and no further action is recommended

2. Arsenic was identified in one soil sample (SB-7) at 23 mg/kg, exceeding the Residential and Industrial Direct Exposure Criteria standard of 10 mg/kg. A soil sample collected adjacent to SB-7 revealed an arsenic concentration of 4.2 mg/kg (SB-6) and the remaining soil samples (all collected within 60 feet of SB-7) ranged from 3.0 to 4.2 mg/kg, well below the Residential and Industrial Direct Exposure Criteria standard of 10 mg/kg. As such, the arsenic concentration identified at SB-7 should be considered anomalous and not representative of concentrations identified at the subject property. Additionally, arsenic was identified as a Contaminant of Potential Concern (COPC) for soil and was evaluated as part of the HHRA conducted in the Final RI for the Property in 2008. The HHRA was based on current and reasonably foreseeable future land use, which has been identified as non-residential (i.e., military or industrial/commercial). The HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use. In addition, no dissolved arsenic was detected in groundwater samples collected in the vicinity of the Wash Rack area. Accordingly, it is XCEL's opinion that based on the identified foreseeable future land use, the arsenic concentrations do not pose an unacceptable risk to human health or the environment and no further action is recommended.

7.0 CONCLUSIONS

XCEL has conducted this Environmental Condition of Property Update Report in accordance with AR 200-1 and applicable ASTM standards. Under ASTM D 6008-96 (2005), the following components were completed: interviews, government record reviews, visual inspections of the Property and adjoining properties, and the declaration by the Environmental Professional responsible for the assessment.

This ECP Update Report did not identify any new recognized environmental conditions at the Property during the visual site inspection, regulatory database search, or interviews with personnel knowledgeable about operations at the Property. The previous ECP (March 2007) classified the Site as an ECP Category Type 7 which is defined as an area or parcel of real property that is unevaluated or requires additional evaluation. Based on the components of this ECP Update Report and our review of supplemental investigations and/or findings associated with the Property since the March 2007 ECP, this ECP Update Report recommends the Property should be classified as an ECP Category Type 3 property, which, in accordance with ASTM D5746-98 (2002), is defined as an area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.

8.0 DECLARATION OF ENVIRONMENTAL PROFESSIONAL

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. A copy of my resume is provided in Appendix E.





Michael P. Dickinson, REPA, CES
Senior Environmental Property Assessor
XCEL Engineering, Inc.

9 MAR 10
Date

9.0 PRIOR ECP MEETS OR EXCEEDS ASTM REQUIREMENTS

The original ECP (March 2007) was reviewed and found to meet the requirements set forth in §4.6.2 of ASTM D 6008-96(2005) and the narrative discussion and findings of that report are incorporated by reference into this ECP Update as if contained here in its entirety.

COL, DPW

Joseph H. Ledlow
Colonel, US Army Reserve
Regional Engineer

15 MAR 2010

Date

10.0 POINTS OF CONTACT

Please contact Ms. Laura Dell'Olio (609-562-7661) or Mr. Michael Dickinson (865-481-3200) if you require further information.

APPENDIX A

Previous ECP (text only)

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FINAL

ENVIRONMENTAL CONDITION OF PROPERTY REPORT

MIDDLETOWN
U.S. ARMY RESERVE CENTER (CT005)
499 MILE LANE
MIDDLETOWN, CT 06457

Prepared For:

U.S. Army Corps of Engineers – Louisville District
Engineering Division – Environmental Engineering Branch
600 Dr. Martin Luther King, Jr. Place
Louisville, Kentucky 40202-2232

MARCH 2007

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CERTIFICATION

All information/documentation provided accurately reflects the environmental condition of the property. This ECP Report is in general accordance with the U.S. Department of Defense (DoD) requirements for completion of an Environmental Condition of Property (ECP) Report.

GARY PURYEAR **DATE**
Environmental Division ARIM
Chief Environmental Division
94th Regional Readiness Command

The undersigned certifies the contents of this report are in general accordance with DoD policies for the completion of an ECP report.

LENARD GUNNELL, P.G. **DATE**
Project Geologist
U.S. Army Corps of Engineers

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Executive Summary

CH2M HILL, under contract to the U.S. Army Corps of Engineers (USACE) Louisville District, prepared this Environmental Condition of Property (ECP) report for the Middletown U.S. Army Reserve (USAR) Center (Facility ID CT005), hereafter referred to as the "Property" or "USAR Center." The Property is located at 499 Mile Lane, Middlesex County, Middletown, Connecticut, 06457, and encompasses approximately 23.7 acres. This ECP Report was conducted in conformance with the Department of Defense's Base Redevelopment and Realignment Manual (BRRM), DoD 4165.77-M, Army Regulation 200-1, and the American Society for Testing and Materials (ASTM) Designation D6008-96 (2005), *Standard Practice for Conducting Environmental Baseline Surveys.*

This ECP Report details the history of the property, including the USAR and any prior tenant uses of the Property and the resulting environmental condition of the Property.

The USAR Center is on 23.7 acres of land and has one permanent structure (the Reserve Center building), one parking lot, and remnants of Nike missile operations, which include the foundations of the former Warhead Building, former Missile Testing and Assembly Building, and former barracks. A fenced area contains three closed, underground missile silos. As of September 2006 the Property is not occupied. Based on a review of aerial photographs and U.S. Geological Survey topographical maps, the area immediately surrounding the Property is and has been undeveloped, with the exception of a housing development located east of the Property. The facility originally was constructed between 1956 and 1958 as a Nike Missile Launch facility. The current Reserve Center building was constructed in 1987, and the original Nike Missile facility structures on the Property were demolished in the late 1990s.

Areas of potential environmental concern were reviewed and CH2M HILL identified the following related to the environmental condition of the Property: historic fuel oil releases from underground storage tanks; reported onsite disposal of "potentially polluting materials"; a reported fuel oil spill from a transfer line; potential historical releases from an oil/water separator; the presence of volatile organic compounds (VOCs) and petroleum hydrocarbons in the groundwater; historical application of chlordane to building foundations; possible use of petroleum products as dust control; and potential releases from a former septic system/drain tile field.

In accordance with Department of Defense policy defining the classifications (see Sherri Goodman Memorandum dated 21 October 1996), the Property has been classified as Type 7. This classification does not include categorizing the property based on *de minimis* conditions that generally do not present material risk of harm to the public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

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Abbreviations and Acronyms

ACM	asbestos-containing material
AMSA	Area Maintenance Support Activity
amsl	above mean sea level
AOC	area of concern
AR	army regulation
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	below ground surface
BRAC	Base Realignment and Closure
BRRM	Base Redevelopment and Realignment Manual
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	CERCLA Information System
CFR	Code of Federal Regulations
CORRACTS	Corrective Action Report
CTDEP	Connecticut Department of Environmental Protection
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
cis-1,2-DCE	cis-1,2-dichloroethene
DEC	Direct Exposure Criteria
DEP	Department of Environmental Protection
DoD	Department of Defense
DTC	Diversified Technology Consultants
EBS	Environmental Baseline Study
ECP	environmental condition of property
EDR	Environmental Data Resources, Inc.
EPH	extractable petroleum hydrocarbon
ERNS	Emergency Response Notification System
ETPH	extractable total petroleum hydrocarbons

FEMA	Federal Emergency Management Agency
IRFNA	inhibited red-fuming nitric acid
kg	kilogram
LBP	lead-based paint
LUST	leaking underground storage tank
MEC	munitions and explosives of concern
MEP	military equipment parking
msl	mean sea level
NEPA	National Environmental Policy Act
NPL	National Priorities List
OLISP	Office of Long Island Sound Program
OMS	organizational maintenance shop
OWS	oil/water separator
PCB	polychlorinated biphenyl
pCi/L	picoCuries per liter of air
POL	petroleum, oil, and lubricant
PPM	potentially polluting materials
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RCRIS	RCRA Information System
RRC	Regional Readiness Command
RSC	Regional Support Command
RSR	Remediation Standard Regulations
SHWS	State Hazardous Waste Site
SVOCs	semivolatile organic compounds
SWP3	Storm Water Pollution Prevention Plan
TCA	1,1,1-trichloroethane
TCE	trichloroethylene
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TSD	treatment, storage, or disposal

UDMH	unsymmetrical dimethylhydrazine
USACE	U.S. Army Corps of Engineers
USAR	U.S. Army Reserve
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds
VPH	volatile petroleum hydrocarbon

1 Introduction

CH2M HILL, under contract to the U.S. Army Corps of Engineers (USACE) Louisville District, was authorized to conduct an Environmental Condition of Property (ECP) report for the Middletown U.S. Army Reserve (USAR) Center (CT005), in response to the Base Realignment and Closure (BRAC) 2005 legislation. The facility is located at 499 Mile Lane, Middlesex County, Middletown, Connecticut, and is hereafter referred to as the Property or USAR Center. CH2M HILL prepared this ECP report under contract number W912QR-04-D-0020, Task Order No. 0018, with the Louisville District USACE.

A visual non-intrusive reconnaissance of the Property was conducted on August 22, 2006, in support of the ECP. The reconnaissance purpose was to obtain visual information indicating the likelihood of recognized environmental conditions associated with the Property or adjacent properties.

In preparing this ECP report, CH2M HILL gathered information from the available records and previous work from others; interviews with individuals purporting to be familiar with the Property; and observations from a site reconnaissance. The accuracy of the information obtained from these sources was not verified by CH2M HILL. As such, CH2M HILL will make no warranty, expressed or implied, relative to the accuracy, completeness, or reliability of the information used to create the records and reports prepared by others.

1.1 Purpose of Environmental Condition of Property

The Military Department with real property accountability shall assess, determine, and document the environmental condition of all transferable property in an ECP Report. This ECP Report is based on readily available information. Pursuant to the Department of Defense's (DoD) policy, set forth in the Base Redevelopment and Realignment Manual (BRRM) (DoD 4165.66-M, March 1, 2006) Section C8.3, the primary purposes of the ECP Report include the following:

- Provide the Army with information it may use to make disposal decisions.
- Provide the public with information relative to the environmental condition of the Property.
- Assist in community planning for the reuse of BRAC property.
- Assist federal agencies during the property screening process.
- Provide information for prospective buyers.
- Assist prospective new owners in meeting the requirements under U.S. Environmental Protection Agency's (USEPA) "All Appropriate Inquiry" regulations.
- Provide information about completed remedial and corrective actions at the property.

- Assist in determining appropriate responsibilities, asset valuation, and liabilities with other parties to a transaction.

The ECP Report contains the information required to comply with the provisions of 40 Code of Federal Regulations (CFR) Part 373, which require that a notice accompany contracts for the sale of, and deeds entered into, for the transfer of federal property on which any hazardous substance was stored, released, or disposed of. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120(h) stipulates that a notice is required if certain quantities of designated hazardous substances have been stored on the property for 1 year or more—specifically, quantities exceeding 1,000 kilograms (kg) or the reportable quantity, whichever is greater, of the substances specified in 40 CFR 302.4 or 1 kg of acutely hazardous waste as defined in 40 CFR 261.30. A notice is also required if hazardous substances have been disposed of or released on the property in an amount greater than or equal to the reportable quantity. Army Regulation (AR) 200-1 requires that the ECP Report address asbestos, lead-based paint (LBP), radon, and other substances potentially hazardous to human health.

This ECP Report used the American Society for Testing and Materials (ASTM) Designation D6008-96 (2005), *Standard Practice for Conducting Environmental Baseline Surveys*, the BRRM, CERCLA § 120, and AR 200-1.

1.2 Scope of Services

This ECP report covers the 23.7-acre USAR Center located at 499 Mile Lane, Middletown, Connecticut. The Property is located in a rural area and is surrounded by undeveloped property. All site maps, figures, and aerial photographs referenced herein are provided in Appendix A, while Appendix B contains the photographs taken during the August 22, 2006, site reconnaissance. Appendix C contains the Property chain of title information. Relevant historical environmental documents and reports are provided in Appendix D, while Appendix E contains the Environmental Data Resources, Inc. (EDR) radius search reports commissioned for this effort.

This ECP report classifies the property into one of seven DoD Environmental ECP categories in accordance with DoD policy defining the classifications (see Sherri Goodman Memorandum dated 21 October 1996).. The property classification categories are as follows:

- ECP Area Type 1—An area or parcel of real property where no release or disposal of hazardous substances or petroleum products or their derivatives has occurred (including no migration of these substances from adjacent properties).
- ECP Area Type 2—An area or parcel of real property where only the release or disposal of petroleum products or their derivatives has occurred.
- ECP Area Type 3—An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.
- ECP Area Type 4—An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred and all

remedial actions necessary to protect human health and the environment have been taken.

- ECP Area Type 5—An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred and removal or remedial actions, or both, are underway, but all required actions have not yet been taken.
- ECP Area Type 6—An area or parcel of real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, but required response actions have not yet been initiated.
- ECP Area Type 7—An area or parcel of real property that is unevaluated or requires additional evaluation.

2 Site Location and Physical Description

2.1 Site Location

The USAR Center is located at 499 Mile Lane, Middletown, Connecticut. The 23.7-acre Property is located in a rural area and is surrounded by undeveloped property. A housing development is located east of the Property on the south side of Mile Lane.

2.2 Asset Information

Facility Name and Address:	Middletown U.S. Army Reserve Center 499 Mile Lane Middletown, Connecticut
Property Owner:	U.S. Government
Date of Ownership:	September 22, 1955
Current Occupants:	Property vacated as of September 15, 2006
Zoning:	Residential
County, State:	Middlesex, Connecticut
U.S. Geological Survey (USGS) Quadrangle(s):	Middletown
Latitude/longitude:	41° 34′ 54.8″N; 72° 41′ 33.4″W

Legal Description:

The deed for this property specifies the Property as "Volume 269, Page 132, Tract No. A-106, Volume 269, Page 133, Tract No. A-106B, and Volume 269, Page 134, Tract No. A-107."

2.3 Physical Description

The USAR Center is located on a 23.7-acre parcel in the Middletown, Connecticut, and contains one permanent structure (the Reserve Center), one paved parking lot, and the foundations of three demolished buildings. These were foundations of buildings associated with a Nike missile battery previously located on the Property, including a former barracks, the Warhead Building (later used as a storage garage), and the Missile Test and Assembly Building (later used as a maintenance shop). There were formerly 2 additional buildings on the property that served as sentry stations/guardhouses, as well as 3 underground missile silos. These buildings were demolished sometime after 1998. Additional paved parking areas historically occurred on the property, just behind the current Reserve Center and just north of the former barracks building. Military vehicles also were parked historically in an

unpaved area near the former Nike missile silos. A location map is included as Figure 1 in Appendix A. A site layout plan is included as Figure 2 in Appendix A.

Construction of the current Reserve Center was completed in 1987. The building is an irregular-shaped, multiple-level structure, with a two-story drill hall. The building's interior is two levels in certain areas and consists of office space, classrooms, storage, a drill hall, and a kitchen area, which has not been in use for years. The main entrance is located on the north side of the facility and the entrance is secured.

The southern part of the property currently is wooded heavily. On the northern edge of the woods, near the rear of the Reserve Center, are two building foundations from the former Nike Warhead and Nike Missile and Test Assembly buildings. There is a wash rack with an oil/water separator (OWS), located approximately 25 feet north of the former Missile Test and Assembly building.

On the southeast corner of the facility is a fenced area that has sparse ground covering. The fenced area was the former location of the launch pads and silos for the Nike missile operations at the Property. The silos were reportedly pumped dry and filled with a sand slurry and debris from the walls of the silos in 1988.

The third foundation, formerly the barracks for personnel that supported the Nike missile operations, is located centrally on the property, just north of the Reserve Center. The building was converted for use as a Reserve Center until the current building was constructed in 1987. An undated aerial photo (Figure 3, Appendix A) found at the Property shows the Nike missile site when it was in operation.

On the northern portion of the property, approximately 300 feet of railroad track was built as part of reserve unit training. There are a several stacks of creosote-treated rail timbers on the facility and some scattered in the wooded area on the south side of the property.

Also on the north side of the property, remnants of the old septic system and leach bed are still in place underground, according to site interviews. The location and condition of the system is unknown.

Fourteen groundwater-monitoring wells are located on the Property, installed as part of various environmental site investigations described in the remainder of this report.

Topographically, the Property has an elevation difference of approximately 100 feet, and has been separated into four distinct step-like terraces. The lowest terrace borders Mile Lane and contains the section of railroad used for training and the abandoned leach bed/septic system. The second terrace contains the foundation of the former barracks building/Reserve Center. The third terrace is the Property of the current Reserve Center and the parking area. The highest terrace contains the foundations of the former Missile and Test Assembly (also known as the maintenance shop) and Warhead (also known as the garage) buildings, along with the former launch pad area/missile silos.

2.4 Site Hydrology and Geology

The USAR Center lies within the Connecticut Valley Lowland region of the New England physiographic province. The USAR Center lies within the South Central Lowlands

Ecoregion. The present topography observed in the vicinity of the Property is the direct result of glacial deposition and erosion related to the distribution of underlying bedrock masses and changing water levels of glacial Lake Hitchcock (CT Facilities Date Unknown). Topographic maps indicate that the Property has a total relief of approximately 100 feet. The Property lies between approximately 50 and 150 feet above mean sea level (amsl).

The bedrock formation underlying the Property has been described as belonging to the Portland Arkose Formation of Triassic age. This formation has been described to consist of gray-red to red-brown and pale brown, coarse to fine, arkose with interbedded arkose conglomerate, red and gray shale, mudstone, and gray-green feldspathic sandstone underlying the Portland Arkose dense gray to gray-green Hampden basalt. The surficial geology is composed of thin till in the southern portion of the Property and fine deposits at the north-northeastern portion of the Property. The till deposits are generally less than 10 to 15 feet thick and are loose to moderately compact, generally sandy and commonly stony. The fine deposits are composed of well-sorted, thing layers of alternating silt and clay, or thicker layers of very fine sand and silt (U.S. Army Environmental Hygiene Agency, 1992; Kemron, 2006**).**

2.4.1 Surface Water Characteristics

Figure 4 in Appendix A provides a portion of the 1965 Middletown, Connecticut, USGS topographic map that includes the Property. As shown, the Property is situated on an elevation that slopes from 150 feet amsl in the south to about 50 feet mean sea level (msl) in the north.

The Property lies within central Connecticut, in the floodplain of the Connecticut River Valley, which is bordered by upland of moderate to rugged relief. The closest surface water features to the Property are two brooks—the West Swamp Brook, located approximately 660 feet to the west of the Property, and the East Swamp Brook, located approximately 0.5 mile to the east of the Property. Both brooks feed into the Mattabesset River (CT Project Facilities, date unknown). An intermittent stream is located near the southeast boundary of the Property and on the adjacent property to the east.

The Stormwater Pollution Prevention Plan (SWP3) prepared for this Property (USGS, 1999) identified six storm drains by which stormwater runoff leaves the Property. Stormwater runoff from the Property also flows directly into grassy areas or riprapped drainage swales. The storm drains direct flow through 1-foot corrugated metal or plastic pipes with flared exit openings, into riprapped dry wells from where the stormwater infiltrates into the ground.

2.4.2 Hydrogeological Characteristics

According to information acquired from the U.S. Department of Agriculture (USDA), soils in the Property area are described as consisting of Udonrthents-Urban Land complex. This soil complex is described as areas that have been disturbed by cutting or filling and have had more than 2 feet of the upper part of the original soil removed or have been covered with more than 2 feet of fill material. These well-drained soils are found on the sides of drumlins and in glacial till uplands 8 to 15 percent on slope.

Groundwater beneath the Property is classified by the Connecticut Department of Environmental Protection (CTDEP) as "GA" quality, meaning that it is within the area of influence of existing private water supply wells or groundwater with potential to provide water to public or private water supply wells, and which is potable without treatment. Depth to groundwater is between 4 and 30 feet below ground surface (bgs). The direction of groundwater flow on the Property can vary. Groundwater in the area of the former Nike missile silos is east-northeast, discharging to West Swamp Brook, while groundwater flow on the southern side of the Property is predominantly to the north-northeast (Clean Harbors Environmental Engineering, 1990; Kemron, 2006).

2.5 Site Utilities

Water Service – The City of Middletown provides potable water service to the Property.

Sanitary Sewer System – The City of Middletown currently provides sanitary sewer service to the Property. The primary source of wastewater that is directed to the city sewer system includes non-process wastewater (bathrooms, sinks, etc.) There is a leach bed/septic system on the property that historically was used to discharge sanitary wastes.

Gas and Electric – Yankee Gas provides natural gas service to the Property, while Northeast Utilities provides electric service to the Property.

2.6 Water Supply Wells and Septic Systems

Interviews with site personnel indicate that a water supply well may have been located on the Property, however, there is currently no evidence of this well and its location is unknown. Site personnel also stated that an old septic system and leach bed are located on the north end of the Property, which historically were used for the disposal of sanitary waste.

3 Site History

3.1 History of Ownership

The U.S. Government purchased the USAR Center Property in September 1955. Two parcels (Tract No. A-106 and Tract No. A-106B) were purchased from Irving Sherman and a third (Tract No. A-107) was purchased from Paul Gilbert. The chain of title information was obtained from the Environmental Baseline Study (EBS), which was prepared by the 94th Regional Support Command (RSC) in November 1998. A copy of the chain of title is provided in Appendix C.

According to a city directory provided by EDR and dated June 24, 2006, the address of the USAR Center was not listed in the research source (Polk's City Directory and Robinson's City Directory). Subsequent city directory searches also do not list the Property. Historical documentation supports the original construction of the Nike missile battery in the late 1950s and the Reserve Center in 1987. The results of the city directory search are included in Appendix E.

3.2 Past Uses and Operations

The facility originally was constructed between 1956 and 1958 as a Nike Missile Launch facility (Nike surface-to-air missile battery HA-48), one of six missile launch sites constructed in the mid-1950s for the Army's Hartford Defense Area. The Middletown Nike battery was one of two Hartford Defense Area sites retained in the early 1960s for the Nike-Hercules missiles, which were armed with tactical nuclear warheads. Both Ajax and Hercules missiles were deployed at Nike missile battery HA-48 (USACE, 2003). The Nike air defense mission was taken over by the Connecticut National Guard in 1964. The Middletown Nike facility was decommissioned in 1968, and the property was transferred to the USAR in 1970. The 1205th transportation railway operating battalion occupied the Property until 2006, using it primarily for administrative purposes. The USAR used the existing Nike barracks and the Administration Building on the Property until 1987, when the new USAR Center was completed. The original structures on the Property were used for storage and office space until they were demolished in the late 1990s.

The Nike Missile Launch Facility consisted of buildings and equipment required to assemble, test, and maintain the Hercules missiles and associated launchers. Structures for the Launch Area included a barracks, a Missile Assembly and Test Building, a Warhead Building (including an acid fueling pad and pit), three missile silos, a septic tank and associated drainage field, and guard houses. The missile silos would have contained four launchers each, with a storage magazine for 30 missiles.

The Warhead Building was used to fuel the missiles and to store and assemble the explosive components of the missiles. The Warhead Building would have contained an acid fueling pad and pit. The USAR used the former Warhead Building as a garage for storage. The Missile Assembly and Test Building was used to conduct initial missile assembly and test

operations. Missiles arrived in major assembly components unassembled and unarmed. The assembly consisted of the installation of the missile fins, ailerons or elevons, and missile body sections and system tests. The USAR converted this building to a maintenance shop. Historical reports indicate that the "maintenance shop" was used to check fluid levels and component operation, and that vehicle maintenance was performed at the organizational maintenance shop (OMS) in West Hartford, Connecticut, or at the Area Maintenance Support Activity (AMSA) shop in Windsor Locks, Connecticut. There is also a wash rack and OWS located approximately 25 feet from the Missile Assembly and Test Building.

Topographic maps (dated 1965, 1972, 1984, and 1992) and historical aerial photographs (date unknown, 1989, and 1995) were a source of information on the past use and operations at the Property. Figures 3-9 in Appendix A provide USGS topographical maps and aerial views of the Property and surrounding areas.

The 1965, 1972, and 1984 USGS topographic maps (4, 5, and 6 of Appendix A) show the establishment of the location of the U.S. Military Reserve in a rural area. The Environmental Baseline Survey (Diversified Technology Consultants [DTC], 1998) states that the Property was farmland prior to development as a Nike Missile site in 1955. These maps indicate that the elevation of the Property and surrounding areas varies significantly, even within the Property. The figures also identify a housing development to the east of the Property. The 1992 topographic map (Figure 7, Appendix A) shows that the area has remained relatively unchanged from the mid-1960s and the notation of the U.S. Military Reserve has been removed.

An undated aerial photograph (Figure 3, Appendix A) shows the development of the Property and the locations of three Nike missile silos and launch pads, the barracks, the Warhead Building, the Missile Testing and Assembly Building, dog kennels, and the guard shacks. The entire property has been cleared of trees and shrubs. The 1989 aerial photo (Figure 8, Appendix A) was of poor quality, but the original structures and the new USAR Center can be seen on the Property along with the residential area to the east. The 1995 aerial photo (Figure 9, Appendix A) shows that the Property remained relatively unchanged from the 1989 photograph.

3.3 Past Use, Storage, Disposal, and Release of Hazardous Substances

3.3.1 Past Use and Storage of Hazardous Substances

Information related to the past use and storage of hazardous substances for USAR activities at the Property was compiled through review of reasonably available records, search of federal and state environmental databases, and interviews with USAR personnel. Prior to its closure in September 2006 janitorial chemicals and building maintenance-related products were stored in the designated storage area within the janitorial closet located in the Reserve Center.

Historical records also indicate that certain types of chemical products used and stored at the Property would have contained hazardous substances pursuant to CERCLA 101(14) (42 U.S. Code [USC] 9601(14)).

A SWP3, prepared in 1999, identifies the disposal of potentially polluting materials (PPM) behind the "control building" (also known as the former Warhead Building or Garage) and potential leaks from military vehicles parked in an unpaved area. PPMs include any hazardous material that could come in contact with precipitation or stormwater runoff. While the report did not include a hazardous material inventory, it did note that a pool of petroleum, oil, and lubricants (POLs) was present within the secondary containment berm of the POL shed and that discarded aerosol paint cans, some quart and gallon size paint cans, and a half-empty 1-gallon can of wood cleaner were present in an unused flammable materials storage cabinet located in the paved area behind the control building.

While no vehicle maintenance was reportedly performed at the Property during the USAR's tenure, three 55-gallon drums of unknown content were observed in a historical photograph taken prior to 1996 from outside of the former Missile Test and Assembly Building (also known as maintenance building). Two of the drums were on secondary containment pallets in the photograph. The drums were not present during a 1996 site visit. Additionally, a flammable materials cabinet, located just west of the northwest corner of the former Warhead Building, contained 3 one-gallon pain cans; 4 quart-sized paint cans; 8 aerosol paint cans; and 2 one-gallon cans of paint thinner. No staining or evidence of a release was observed on the ground near this storage cabinet, and the cans were all in fair to good condition in 1996 (DTC, 1998).

Several historical reports have been prepared to assess the potential environmental concerns associated with Nike Missile sites. Some of these reports were reviewed to assess potential sources of contamination at the Middletown Nike battery. The following general Nike missile operations and list of possible hazardous substances associated with the launch areas were developed from the documents:

Missiles arrived at the Nike batteries unassembled and unarmed. The missiles were assembled in the Missile Assembly and Test Building. Assembly consisted of installing missile fins, ailerons, and missile body sections. Missile systems tests also were performed in this building. Small quantities of solvents, lubricants, and paint and petroleum distillates commonly were used in the missile assembly/disassembly process.

Ajax missiles were fueled at the acid fueling pad with inhibited red-fuming nitric acid (IRFNA) and unsymmetrical dimethylhydrazine (UDMH) on the acid fueling pad. Drums of each compound were stored in the vicinity of the acid fueling pad. Due to the high reactivity of both compounds, strict protocol was followed for the handling of these materials. If a spill of these materials did occur, the IRFNA was neutralized with sodium bicarbonate and the UDMH was neutralized with acetic acid. Due to their high reactivity, IRFNA and UDMH do not typically persist in the environment. Minimal quantities of solvents and lubricants typically were used in the Warhead Building. Hercules used only solid propellant rocket motors (that is, M30 sustainer and M42 booster) for propulsion.

Typically each Nike battery contained three silos. Missiles fueled and ready for firing were stored below ground in the missile silo magazines. The missile silos contained a small rail system used to deliver the missiles to the elevator and launcher. Up to 8 fully loaded missiles could be stored in a silo. The rail system, elevators, and launchers were hydraulically operated. A sump was located in the bottom of each silo to collect hydraulic fluid or other materials used during general maintenance of the hydraulic system and

missiles. Solvents, paints, and hydraulic fluids typically were used and stored within the missile silos. These materials typically were washed into the sump which then discharged to the surface though a drainage tile. Drainage tile fields located on Nike batteries potentially may have accumulated hazardous materials. Floor drains located in operations buildings potentially were connected to the drainage tile system. Historically, drainage tile fields potentially accumulate unauthorized disposal of hazardous materials down floor drains, sinks and other facilities connected to the drainage system (Law Engineering, 1996; USACE, 2003; Law Environmental, Date Unknown).

During the site interviews, facility personnel noted the historical application of chlordane under the foundations of the demolished Nike missile buildings. As such, pesticides and herbicides likely were stored and used at the facility, although more detailed information was not available at the time of this report preparation.

3.3.2 Past Disposal and Release of Hazardous Substances

Information related to past disposal and potential release of hazardous substances at the Property was compiled through review of reasonably available records, search of federal and state environmental databases, and interviews with Army Reserve personnel. According to Army Reserve personnel and site records, onsite disposal of hazardous materials or wastes has not occurred at the Property while the property was used by the USAR.

The EBS indicates that the Property is listed with the State of Connecticut as "being suspect regarding the release of solvents, oils, and polychlorinated biphenyls (e) to the ground." The only spill reported with the State of Connecticut, on the Property, however, was a Number 2 fuel oil spill that was reported 1992 from a transfer line, which impacted groundwater.

As discussed in Sections 3.2 and 3.3.1, historical Nike Missile system reports indicate that hazardous substances were used at Nike missile sites including PCBs, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), POLs, and fuels. While site-specific information regarding the types and quantities of these hazardous substances was not reasonably available for the Property, several site investigations identified hazardous substance and petroleum releases to soil and groundwater, likely as a result of the historical Nike Missile battery operations. Contamination was identified during the following five investigations:

- Letter Report—Limited Subsurface Investigation, USAR Center, Mile Lane, Middletown, Connecticut, by Clean Harbors Environmental Engineering, December 7, 1990
- Technical Report—underground storage tank (UST) closure by ATEC Associates, March 1994
- UST Closure Report—UST removals at USAR Centers in Brocton and Springfield, Massachusetts, and Middletown, Connecticut, by Roy F. Weston, January 30, 1997
- EBS—Middletown USAR Center, by Diversified Technology Consultants, November 1998

- Draft Groundwater Monitoring Report—94th Regional Readiness Command (RRC) USAR Center, Middletown, Connecticut, by Kemron Environmental Services, August 1, 2006

During a limited subsurface investigation conducted of a 2,000-gallon UST by Clean Harbors in 1990, 1,1,1-trichloroethane (TCA), 1,1-dichloroethene (1,1-DCE), and 1,1-dichloroethane (1,1-DCA) were detected in the groundwater. However, it was subsequently determined that this contamination was not associated with the UST. Further investigation, performed during a Geohydrologic Study by the U.S. Army Environmental Hygiene Agency in 1992, detected carbon tetrachloride, trichloroethylene (TCE), and associated degradation products at levels exceeding the Primary Drinking Water Standards in three monitoring wells located near the center of the Property. It was suspected that these products came from a spill near the maintenance shop (also known as former Missile Assembly and Test Building). During the Geohydrologic Study, total petroleum hydrocarbons (TPH) were detected in several of the surface soil samples, but only one exceeded the regulatory limits. The study concludes that petroleum products likely were used to control dust at the Property, and that the TPH detected in surface soil samples did not appear to present a threat to the groundwater.

A third investigation conducted by Kemron in August 2005 and February 2006 reported that metals were detected in groundwater, but at levels below the applicable Remediation Standard Regulations (RSR) criteria. Cis-1,2-dichloroethene (cis-1,2-DCE) and toluene were detected in groundwater at concentrations below the applicable RSR criteria. Carbon tetrachloride, chloroform, and TCE were detected, but only TCE exceeded the applicable RSR criteria. No site-related SVOCs were detected in any of the groundwater samples. TPH was detected in one well, but at a concentration below the applicable RSR criteria.

3.4 Past Presence of Bulk Petroleum Storage Tanks

Based upon a review of reasonably available records, a search of federal and state environmental databases, interviews with USAR personnel, and a site reconnaissance, no aboveground storage tanks (AST) are currently or historically have been located on the Property. Four USTs containing No. 2 heating oil (a 2,000-gallon steel UST, a 550-gallon steel UST, a 550-gallon fiberglass UST, and a 2,500-gallon steel UST) previously were located at this facility, but have been removed.

Clean Harbors Environmental Engineering removed two No. 2 heating oil USTs (a 2,000-gallon steel UST and a 550-gallon steel UST) in 1990. According to the Limited Subsurface Investigation report (Clean Harbors, 1990), "minimal" contamination was encountered and excavated during the removal of the 550-gallon steel UST, however, the 2,000-gallon steel UST had several perforations on the sides and bottom of the tank and petroleum contaminated soils were encountered during the tank removal. One hundred cubic yards of contaminated soil were excavated and disposed off-site from the 2,000 gallon UST excavation. Soil borings were advanced and 3 groundwater monitoring wells were installed to determine the extent of soil contamination related to the 2,000-gallon UST release. No petroleum hydrocarbons were detected in the soil boring or groundwater samples following the removal of the UST; however TCA, 1,1-DCE, and 1,1-DCA were detected in one of the

groundwater samples. Clean Harbors replaced the 550-gallon steel UST with a 550-gallon double walled fiberglass UST.

ATEC Associates removed a 2,500-gallon fuel oil UST in 1994. The tank was located south of the Reserve Center. While the tank was inspected and found to be in excellent condition, contaminated soil was encountered and a total of 63.5 tons of soil was removed. Final confirmation soil samples indicated that VOCs, SVOCs, and TPH were reported at either non-detect levels or below the RSR criteria.

The 550-gallon fiberglass UST was removed by Roy F. Weston, Inc. in 1997. Upon removal of the tank, it was inspected and it appeared to be in acceptable condition and no releases were noted. Soil samples were collected and analyzed for volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), PCBs, and Resource Conservation and Recovery Act (RCRA)-8 metals. VPH and EPH analytes and PCBs were not detected. Several of the RCRA-8 metals were reported, but at concentrations that would be expected for background conditions.

The reports are included in Appendix D.

3.5 Review of Previous Environmental Reports

A review of reasonably available records produced several reports pertaining to the Property. The following subsections provide a brief summary of these reports. Copies of the reports, unless otherwise specified, are provided in Appendix D.

3.5.1 Nike Launcher Sites (Middletown and East Windsor, CT), a Photo Documentation of Two Nike Launcher Sites Slated for Demolition

The document was prepared by the USACE in 1988 and details the history of the Nike sites in the area and assesses the condition of the Property. The buildings were noted to be of cinderblock construction and to be in fair to good condition. The launcher area was overgrown and an established wetland area was noted on the southeast side of the launcher area. The launcher was in fair to poor condition. The underground components of the launchers (that is, the silos) were flooded and the elevators had been capped with rectangular concrete slabs. The launcher area was considered unsafe and recommended for demolition.

3.5.2 Letter Report, Limited Subsurface Investigation

Clean Harbors Environmental Engineering removed a 2,000-gallon No. 2 fuel, oil-steel UST and a 550-gallon No. 2 fuel, oil-steel UST in 1990. Inspection of the 2,000-gallon tank revealed several perforations on the sides and bottom of the tank and stained soil. One hundred cubic yards of contaminated soil were removed from the 2,000-gallon UST excavation and disposed offsite. Three soil borings were installed and completed with groundwater monitoring wells around the 2,000-gallon UST excavation to define the limits of the contamination. No petroleum hydrocarbons were detected in the soil boring or groundwater samples; however TCA, 1,1-DCA, and 1,1-DCE were detected in one of three groundwater samples. The 550-gallon steel tank was replaced with a 550-gallon, double-wall, fiberglass UST. Further site investigation was recommended to determine the source of the contamination.

3.5.3 Geohydrologic Study

As a follow up to the Limited Subsurface Investigation conducted by Clean Harbors Environmental Engineering in December 1990, the Geohydrologic Study was performed by the U.S. Army Environmental Hygiene Agency in June 1992. The purpose of the study was to conduct a limited environmental investigation to identify the source of TCA detected in groundwater. The study identified five areas of concern (AOCs):

- Three Nike Missile Silos. These silos were closed in 1988. Prior to closure, asbestos and hydraulic fluid were removed. The silos were then filled with a sand slurry and debris from the walls of the silos. While no samples were collected during the closure, solvents and metals are common contaminants associated with Nike missile site activities.
- Acid Neutralization Pit: located underneath the Garage (also known as the Warhead Building). These pits were typically used for disposal of waste liquids and solids at Nike sites. Wastes could have included waste POLs or solvents.
- 2,000-gallon UST
- Material storage (solvents)
- Septic Tank and Leaching Field. This was used until the facility was connected to the sanitary sewer system.

Fourteen groundwater monitoring wells were installed in June 1992 and one of the wells was found to be dry. Eight subsurface soil samples, one surface soil sample, and 13 groundwater samples were collected. Soil samples were analyzed for total metals, VOCs (except for 4 samples), SVOCs, and TPH. Groundwater samples were analyzed for dissolved metals, VOCs, SVOCs, TPH, nitrates/nitrites, pesticides and PCBs. TPH was detected in several of the surface soil samples, but only one exceeded the cited regulatory limit. The report concludes that petroleum products likely were used to control dust at the Property, and that the TPH detected in surface soil samples did not appear to present a threat to the groundwater. VOCs and SVOCs were not detected in the soil samples. Metals were detected in soil samples at concentrations similar to background levels.

Carbon tetrachloride, TCE, chloroform, and cis-1,2-DCE were detected in two groundwater samples. Carbon tetrachloride and TCE were detected at concentrations exceeding the CTDEP RSR criteria. Metals were detected in all groundwater samples at concentrations below applicable regulatory criteria.

The report recommended additional groundwater sampling.

3.5.4 Technical Report for Underground Storage Tank Closure

ATEC Associates removed a 2,500-gallon No. 2 fuel oil UST in March 1994. The tank was located south of the Reserve Center. Upon removal, the tank was inspected and found to be in excellent condition. No holes or areas of severe corrosion were noted during the tank inspection. However, contaminated soil was encountered and a total of 63.5 tons of soil was removed. Field screening and two soil samples of the final excavation were collected for VOCs, SVOCs, and TPH. The concentrations of the VOCs, SVOCs, and TPH were reported

at either non-detect levels or below the RSR criteria. The confirmatory analytical data for the tank closure was included in the report.

3.5.5 Underground Storage Tank Closure Report

A UST was removed by Roy F. Weston, Inc., in January 1997. The 550-gallon, fiberglass UST contained Number 2 fuel oil. Upon removal of the tank, it was inspected and it appeared to be in acceptable condition and no releases were noted. Soil samples were collected and analyzed for VPH, EPH, PCBs, and RCRA-8 metals. VPH and EPH analytes and PCBs were not detected. Several of the RCRA-8 metals were reported, but at concentrations that would be expected for background conditions.

3.5.6 Environmental Baseline Study

The EBS was prepared in November 1998 by DTC for the demolition of three Nike missile structures on the Property (the Warhead Building, the Missile Test and Assembly Building, and the Former Barracks Building). The report appendices were not reasonably available for this report. The following issues were discussed in the EBS report:

- The EBS summarized the findings of the June 1992 Geohydrologic Study prepared by the U.S. Army Environmental Hygiene Agency. This report is discussed in Section 3.5.3 above.
- The EBS summarized excerpts from the January 30, 1997, Underground Storage Tank Closure Report prepared by Roy F. Weston, Inc. This report is discussed in Section 3.5.5 above.
- The EBS summarized the December 7, 1990, Limited Subsurface Investigation prepared by Clean Harbors Environmental Engineering. This report is discussed above in Section 3.5.2.
- The EBS summarizes a 1996 Floor and Storm Drain Inventory and Natural Resources Inventory, conducted by the USACE. The summary states that a wash rack with OWS is located approximately 25 feet north of the former Missile Test and Assembly Building. The wash rack discharges to the OWS, which discharges to the sanitary sewer. No information is summarized regarding natural resources.
- The EBS summarizes a 1996 Total Facility Assessment Report prepared by the Fort Devens Engineering Team. The EBS summary indicates that the former Missile Test and Assembly Building is referred to as a maintenance shop and the former Warhead Building is referred to as Cold Storage Building. No vehicle maintenance was performed in the building at the time of the 1996 site visit, however, three 55-gallon drums of unknown content were observed in a historical photograph taken from outside of the former Missile Test and Assembly Building/OMS. Two of the drums were on secondary containment pallets in the photograph. The Fort Devens Facilities Engineering Team did not observe drums or any staining during the 1996 site visit.
- The EBS summarizes the results of a National Environmental Policy Act (NEPA) Screen conducted to identify the 100-year and 500-year floodplains, floodways, historic districts, archaeological and Indian burial sites; and threatened and endangered species

which may be impacted during the proposed demolition of the site buildings. This information has been incorporated in Section 7 of this report.

- The EBS states that asbestos surveys were performed historically on the Property in 1990 and in 1995. The surveys identified 144 square feet of 12-by-12-inch floor tile; 5,250 square feet of 9-by-9-inch floor tile; 275 linear feet (lf) of pipe insulation and associated fittings; 2,220 square feet of asbestos cement board; 23 thermal insulation mud fittings; and 100 square feet of water tank insulation. During the EBS visual inspection, asbestos-containing material (ACM) also was identified in the roofing materials of the Missile Test and Assembly Building. The buildings containing this ACM were demolished sometime after 1998.
- XRF technology identified LBP in all three buildings slated for demolition, however, a composite sample of building materials tested for toxicity characteristic leaching procedure (TCLP) lead did not contain levels above the detection limit.
- Four soil samples were collected during the EBS, two samples each from beneath the concrete slabs in the Warhead Building and the Missile Test and Assembly Building and analyzed for VOCs, SVOCs, PCBs, TPH, and RCRA metals. Total barium was detected in all four soil samples at concentrations below the CTDEP Residential Direct Exposure Criteria (DEC). TPH was detected in two soil samples at levels below the State Residential DEC. No other constituents were detected.
- The EBS indicates that the Property is listed with the State of Connecticut as "being suspect regarding the release of solvents, oils, and PCBs to the ground." A No. 2 fuel oil spill was reported at the site in 1992 from a transfer line, which reportedly impacted groundwater.
- During the EBS visual inspection the following observations related to environmental conditions were made:
  - Warhead Building. A-6-by-6-foot, soil-filled pit was identified approximately 25 feet southeast of the Warhead Building, which historically contained acid. A flammable materials cabinet, located just west of the northwest corner of the building, contained three 1-gallon paint cans; four quart-sized paint cans; eight aerosol paint cans; and two 1-gallon cans of paint thinner. No staining or evidence of a release was observed on the ground near this storage cabinet, and the cans were all in fair to good condition.

3.5.7 Stormwater Pollution Prevention Plan

The SWP3 was prepared by the USGS in September 1999. The plan stated the USAR Center posed a "moderate" risk to surface waters of the State of Connecticut, because of the disposal of PPMs behind the "control building" (also known as the former Warhead Building or Garage) and potential leaks from military vehicles parked in an unpaved area. PPMs include any hazardous material that could come in contact with precipitation or stormwater runoff. While the report did not include a hazardous material inventory, it did note that a pool of POL was present within the secondary containment berm of the POL shed (located in the Nike missile silo area) and that discarded aerosol paint cans, some quart and gallon size paint cans, and a half-empty 1-gallon can of wood cleaner were present in an unused flammables materials storage cabinet located in the paved area behind the control

building. Although no spill sites were noted in the report, it was recommended that military vehicles be parked only in an established military equipment parking (MEP) with drip pans.

The SWP3 also identifies the OWS and the wash rack on the Property, and reports that it was no longer used and was last serviced in October 1999 (however, the date of the SWP3 is September 1999).

3.5.8 94th Regional Support Command Water Quality Survey

The water quality survey was performed to evaluate water quality and provided recommendations to ensure that water is of good quality to protect human health. It was performed by the U.S. Army Center for Health Promotion and Preventative Medicine in February 2003. The water in the facility was found to be within potable standards, but the water still was found to be turbid and had a bad taste. The water also was found to be "aggressive" in nature due to pH levels or because sodium hydroxide was added to the water before discharging from the water treatment plant. The aggressive nature of the water could cause the leaching of lead from the piping system. Recommendations were made to replace the system with a new system using polyvinyl chloride (PVC) piping. It also was recommended that a point-of-use water filtration be installed to reduce the turbidity and that a daily flush plan should be implemented to remove metals from the water.

3.5.9 Groundwater Monitoring Report

The draft Groundwater Monitoring Report was submitted in August 2006 by Kemron Environmental Services. The report summarizes investigation activities conducted at the Property between 1990 and 1998, presents the groundwater data collected from the August 2005 and the February 2006 sampling events, and provides recommendations regarding whether a remedial investigation is warranted.

Five wells were sampled in August 2005, and nine wells were sampled in February 2006. Groundwater samples were generally analyzed for TPH, VOCs, SVOCs, and total and dissolved metals. Metals were detected in groundwater during both sampling events, but at levels below the applicable RSR criteria. Cis-1, 2-DCE and toluene were detected at concentrations below the applicable RSR criteria. Carbon tetrachloride, chloroform, and TCE were detected, but only TCE exceeded the applicable RSR criteria. No site-related SVOCs were detected in any of the groundwater samples. TPH was detected in one well, but at a concentration below the applicable RSR criteria.

The source of the TCE contamination was not identified, however, based on the sample locations is suspected be the former Garage (also known as the Warhead Building) and/or Maintenance Shop (also known as the Missile Test and Assembly Building) or former USTs. The former Nike missile silos are located side-gradient to the observed contamination, therefore, they are less likely to be the source.

The report recommends a supplemental investigation to further investigation potential sources of soil impacts that could explain the contamination noted in the impacted monitoring well. Additionally, a groundwater investigation was recommended to attempt to delineate the extent of VOC impacts observed. The recommendations are detailed in the report and are under review by the 94th RRC for implementation.

3.5.10 Historic Resources Inventory

A historic resources inventory was conducted at the facility by the Public Archaeology Laboratory in 1995. The Historic Inventory Report consisted of five completed inventory forms, a short description of the building, and a site history. The following five buildings were assessed:

- Storage Building—Originally built in 1956 as the Nike Enlisted Men's Barracks and Officers Quarters and was a one-story structure consisting of two contiguous wings. The building was constructed of concrete block with shed roofs. The building was converted into a Reserve Center and then used for storage after the new reserve Center was constructed in 1987.
- Storage Building—Originally built in 1958 as the Missile Assembly and Test Building and was a one-story structure built on a concrete slab with concrete block walls and a flat roof.
- Storage Building—Originally built in 1956 as the Nike missile Warhead Building and was a one-story structure built on a concrete slab with concrete block walls and a flat roof.
- Sentry Station—Originally built in 1956 as a sentry station, this is a one-story, 8-by-6.5-foot, concrete block building on a concrete slab.
- Reserve Center—a 16-by-74-foot brick building with a flat roof constructed in 1987. The building is situated on the brow of an open, terrace hillside. After construction, earth beams were piled up against the foundations on the northeast, northwest, and southeast sides of the building.

The report does not provide a summary of the historical significance of the buildings on the property.

4 Adjacent Properties

Adjacent property land uses are significant to the ECP process, as these current or past uses may have an environmental impact on the USAR Center. Typically adjacent properties within 0.25 mile of the USAR Center property boundaries are reviewed and surveyed visually. For the purposes of this ECP, the adjacent property reconnaissance was performed from the USAR Center property boundaries and from public access points. Historical aerial photographs and topographic maps also were reviewed for conditions or activities that may have had an environmental impact on the Property.

4.1 Land Uses

During the site reconnaissance, the adjacent properties were undeveloped. No evidence of past development of the adjacent lands was noted in aerial photos taken in 1989 and 1995 or on topographic maps from 1965, 1972, 1984, and 1992. An area to the east, approximately 0.4 mile away, has a residential development that has been present, according to topographic maps, since before 1965.

4.2 Findings

The EDR database search results were reviewed for any evidence that adjacent properties may have past or present environmental issues that would impact the USAR Center. The areas adjacent to the Property were undeveloped and appeared to be open, unused land. No major activities on the properties were identified during the site interviews.

Water well databases at the federal and state level were reviewed to identify any water supply source near the Property. Two water wells were found on the USGS database within 0.02 and 0.5 mile of the property. The owners of the wells were not specified in the EDR report, and they are not listed as wells used as drinking water sources.

5 Review of Regulatory Information

An essential component of an ECP is the review of records and databases containing information on the Property and adjacent properties. The review includes reasonably obtainable federal, state, and local government records, and is intended to identify a release or likely release of any hazardous substance or any petroleum product, which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product to the Property.

The majority of the regulatory information for this ECP was obtained from EDR on July 13, 2006. EDR provides a regulatory database summary that consolidates standard federal, state, local, and tribal environmental record sources based on ASTM D6008 recommended minimum search distances from the Property.

All findings reported in Sections 5.1, 5.2, and 5.3 below are from the EDR report unless otherwise noted. A copy of the complete EDR report is included in Appendix E.

5.1 Federal Environmental Records

5.1.1 Federal National Priorities List Sites within 1 Mile

USEPA maintains a record of the nations' worst uncontrolled or abandoned hazardous waste sites, known as the National Priorities List (NPL). Sites on the NPL undergo long-term remedial action under CERCLA. The USAR Center is not an NPL site, nor were any such sites located within 1 mile of the Property.

5.1.2 Federal Comprehensive Environmental Response, Compensation and Liability Act Information Systems Sites within 0.5 Mile

The CERCLA Information System (CERCLIS) contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the Act. CERCLIS contains sites that are either proposed to be or are on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL.

The USAR Center is not a CERCLIS site and there are no CERCLIS sites located within 0.5 mile of the center.

5.1.3 Resource Conservation and Recovery Act Corrective Action Sites within 1 Mile

RCRA corrective action (CORRACTS) sites represent facilities that have generated or managed hazardous wastes and require corrective action. The USAR Center is not a CORRACTS site, nor were any such sites identified within one mile of the USAR Center.

5.1.4 RCRA Treatment, Storage, and/or Disposal Sites within 0.5 Mile

RCRA defines and regulates sites that generate, transport, or provide treatment, storage, or disposal (TSD) of hazardous wastes. The RCRA Information System (RCRIS) includes selective information on these sites.

The USAR Center is not a RCRIS-TSD site and there are no such sites located with 0.5 mile of the USAR Center.

5.1.5 Federal RCRA Small and Large Quantity Generators List within 0.25 Mile

Conditionally exempt small quantity generators are defined as facilities generating less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. RCRA small quantity generators are defined as facilities generating between 100 kg and 1,000 kg of hazardous waste per month. A facility generating more than 1,000 kg of hazardous waste or over 1 kg of acutely hazardous waste per month is defined as a large quantity generator.

The USAR Center is not a small-quantity generator or large-quantity generator site, nor were any such sites located within 0.25 mile of the Property.

5.1.6 Federal Emergency Response Notification System List

The federal Emergency Response Notification System (ERNS) List maintains information on reported releases of oil and hazardous substances. The USAR Center is not on this notification list.

5.2 State and Local Environmental Records

Most of the information presented in this subsection was obtained from the EDR report. Additional information was also obtained from online database searches of the State of Connecticut's databases. No state and local agency personnel were interviewed via telephone during this assessment.

5.2.1 State Lists of Hazardous Waste Sites within 1 Mile

The USAR Center is not on the state list of hazardous waste sites. One site, the J.J. Vinci Coal Company, was identified within 1 mile of the USAR Center, and its information is summarized in Table 1. The company was cited for the alleged burial of drums and the presence of a lagoon. The USAR Center is upgradient of the site; therefore, any migration from the J.J. Vinci site would not affect the Property. Additionally, the EDR Report documented that remediation actions at the site were completed and approved by the CTDEP on July 13, 1989.

TABLE 1
Nearby State Hazardous Waste Sites
Middletown USAR Center, Middletown, CT

Company/Site	Address	Distance and Direction from Property	Regulatory Status	Elevation Relative to Property
J.J. Vinci Coal Company	1000 Newfield Street Middletown, CT 06457	Approx 5,260 ft. NE	Active	Lower

5.2.2 State-Registered Landfills or Solid Waste Disposal Sites within 0.5 Mile

The USAR Center does not have a solid waste landfill, incinerator, or transfer station within the Property boundaries.

No adjacent properties within 0.5 mile of the USAR Center have a solid waste landfill, incinerator, or transfer station.

5.2.3 State-Registered Leaking UST Sites within 0.5 Mile

In addition to information obtained from the EDR report, the CTDEP maintains a comprehensive database of leaking UST (LUST) sites. The USAR Center is not listed in the state LUST database.

However, within 0.5 mile of the Center, one LUST site was identified. A 1-gallon No. 2 diesel fuel spill from the Kasden Elm City fuel tank was reported in July 1989. Table 2 summarizes the information relative to the USAR Center, and provides the status of its corrective action. The site is downgradient of the Property and, therefore, offsite migration from this site will not impact the Property.

TABLE 2
Nearby Leaking Underground Storage Tank Sites
Middletown USAR Center, Middletown, CT

Company/Site	Address	Distance and Direction from Property	Regulatory Status	Elevation Relative to Property
Kasden Elm City Fuel	397 Mile Lane Middletown, CT 06457	Approx 1,330 ft. ENE	Inactive	Lower

5.2.4 State-Registered UST Sites within 0.5 Mile

The USAR Center is not a state-registered UST site, nor were any such sites identified within 0.5 mile of the USAR Center.

5.2.5 State Spills Incidents

The USAR Center is not listed on the Connecticut state petroleum spill list. However, the 1998 EBS indicates that a No. 2 fuel oil spill from a transfer line was reported in 1992.

5.2.6 Records of Contaminated Public Wells

The City of Middletown Water and Sewer Board does not own or operate any municipal water supply wells within 0.25 mile of the USAR Center.

5.2.7 Voluntary Remediation Program Sites within 0.5 Mile

The USAR Center is not listed in the Connecticut Brownfields Program (the successor to the Voluntary Cleanup Program). No sites located within 0.5 mile of the USAR Center are listed as being in the Brownfields Program.

5.2.8 State Registered Bulk Fertilizer and Pesticide Storage Facilities within 0.25 Mile

The USAR Center is not registered with the state as a bulk fertilizer and pesticide storage facility. Additionally, no adjacent properties within 0.25 mile were registered as one of these facilities.

5.3 Unmapped Sites

Some sites within the ASTM D6008 recommended minimum search distances have the same zip code as the USAR Center, but no street address. These sites, known as unmapped or orphan sites, can not be mapped from the EDR results alone. None of the sites were located within corresponding ASTM D6008 recommended minimum search distances.

5.4 Summary of Properties Evaluated to Determine Risk to the Property

To summarize Subsections 5.1 through 5.3, two separate properties, near or adjacent to the USAR Center, were evaluated as potential risks to the Property. These adjacent properties evaluated were identified as a result of information obtained during area reconnaissance, interviews, and regulatory database searches, and are summarized below in Table 3.

Based on an evaluation of reasonably available information and details concerning the properties listed in Table 3, none of the facilities evaluated exhibit significant environmental conditions that have the probability of adversely affecting the environmental conditions at the Property. The Kasden Elm City Fuel property and the J.J. Vinci Coal Company are located downgradient of the Property, therefore, have minimal potential to impact the Property. Additionally, the EDR report indicates that all remedial actions at the site were completed and approved by the CTDEP, therefore, impacts to the Property are unlikely.

TABLE 3
Properties Evaluated for Potential Environmental Risks
Middletown USAR Center, Middletown, CT

Company/Site	Database	Elevation Relative to Property?	Potential Impact on the Property?	Comments
Kasden Elm City Fuel	LUST	Lower	No	Downgradient of the Property
J.J. Vinci Coal Company	SHWS	Lower	No	Downgradient of the Property

Notes: SHWS = State Hazardous Waste Site

6 Site Investigation and Review of Hazards

Findings documented in the following subsections are based on the August 22, 2006, site reconnaissance, a review of reasonably available records, search of federal and state environmental databases, and information obtained from USAR personnel.

6.1 Underground Storage Tanks/Aboveground Storage Tanks

No ASTs or USTs were present on the property during the site reconnaissance. Four USTs were removed from the Property as described in Section 3.4.

6.2 Inventory of Chemicals/Hazardous Substances

Chemicals used and stored at the Property at the time of the site reconnaissance were associated with facility maintenance activities and janitorial services. Janitorial chemicals such as window cleaner, toilet bowl cleaner, tub-tile cleaners were stored in cabinets, in the bathroom area, and in the janitorial area. Building maintenance-related products such as latex paints, spray paints, lubricants, minor amounts of motor oil, and so forth were stored in flammable cabinets located in the storage bay in the south side of the Reserve Center.

Certain types of chemical products used and stored at the Property historically would have contained hazardous substances pursuant to CERCLA 101(14) (42 USC 9601(14)). Historical storage of these substances is discussed in Section 3.3.1 above.

6.3 Waste Disposal Sites

Available records and interviews did not indicate the practice of onsite waste disposal associated with the USAR activities other than through managed storage and offsite disposal, or through the sewer or septic systems. No waste disposal sites were observed during the site reconnaissance, nor were any signs of past onsite waste disposal (such as stressed vegetation or suspicious depressions in the landscape) observed.

The potential for historical waste disposal, primarily into the drainage field, is discussed in Section 3.3.1 above.

6.4 Pits, Sumps, Drywells, and Catch Basins

An acid neutralization pit has been reported in several documents and by site personnel in the former Warhead Building (also known as the Garage) during the operation as a Nike missile facility. The foundation of Warhead Building still was present south of the Reserve Center. A slight depression existed in the asphalt around the foundation and it was noted through site interviews that the depression was the acid neutralization pit. No stressed vegetation or staining was noted in the area.

There is a wash rack that discharges to an OWS located approximately 25 feet north of the former missile test and assembly building (also known as maintenance building). The wash rack reportedly discharged to the OWS and exits the site via the sanitary sewer (DTC, 1998). Reports indicate that the OWS was no longer in use as of 1999. It was last serviced in October of 1999 (USGS, 1999).

6.5 Asbestos-Containing Material

The Reserve Center was built in 1987. Because of the recent date of construction, asbestos likely was not used in construction materials for the building. ACM previously located at the facility is discussed in Section 3.5.6 above.

6.6 PCB-containing Equipment

No transformers or other DoD-owned, PCB-containing equipment were noted during the site reconnaissance, and no documented surveys of the facility were available at the time of this report preparation. Site personnel indicated during the site reconnaissance that if PCB-containing equipment was present, it most likely was removed during the demolition of the Nike missile buildings.

6.7 Lead-based Paint

Because the Reserve Center was constructed after 1978, there is limited potential for LBP. At the time of the site reconnaissance, the painted surfaces at this facility were in good condition. The historical presence of LBP in demolished buildings is discussed in Section 3.5.6 above.

6.8 Radon

Radon surveys have not been performed for the Property. USEPA and USGS predicted an average screening level of 2 to 4 picoCuries per liter of air (pCi/L) in Middlesex County. USEPA has recommended 4 pCi/L as an action level for radon abatement. Based on this information, the radon concern is considered low for the Property because average levels in the area are below 4 pCi/L.

6.9 Munitions and Explosives of Concern

Based on a review of available records, the site reconnaissance, and interviews with USAR Center personnel, there are no indications that munitions and explosives of concern (MEC) are or were present at the Property. As one of two Hartford Defense Area sites retained in the early 1960s, Nike-Hercules missiles, which were armed with tactical nuclear warheads and Nike Ajax missiles were present on the Property. The primary munitions associated with Nike sites included the Hercules missiles themselves and missile propellants and fuels. These propellants and fuels could have included jet fuel (JP-4), perchlorate (solid rocket fuel), analine-furfuryl alcohol (starter fuel), IRFNA (rocket fuel oxidizing agent), and UDMH (starter fluid). The exact components comprising the warheads, missile propellants

and fuels used at the Property were not detailed in the reports reviewed during the preparation of this ECP report. Due to the highly reactive nature of the liquid fuels, great care typically was taken during missile fueling activities. Liquid rocket fuels rarely were spilled in significant quantities. All facilities associated with the former use of the Property as a Nike missile battery have been demolished. There were no records that indicate the warheads were handled improperly.

6.10 Radioactive Materials

Based on a review of available records, the site reconnaissance, and interviews with USAR Center personnel, there is no indication that radioactive materials were released at the USAR Center. Nike Hercules missiles likely were armed with nuclear warheads. The radioactive materials (electron tubes) in these missiles were shipped, stored, handled and disposed of in accordance with technical manuals (USACE, 2003). Periodic wipe tests were performed to identify radioactive leaks. The wipes were to be disposed of in lead-lined drums as radioactive waste but frequently were disposed of as regular solid waste. However, no accounts of radioactive leakage have been identified at Nike missile sites (Law Engineering Testing Company, 1986).

7 Review of Special Resources

7.1 Land Use

The City of Middletown has designated this Property and surrounding properties as Residential. The Property is located in an area that consists mostly of undeveloped land, with residential use east of the Property.

7.2 Coastal Zone Management

The Office of Long Island Sound Program (OLISP) is the lead agency for the Connecticut Coastal Management Program. OLISP defines coastal zone as area within 1,000 feet from a tidal river or the shore. This Property is not included in the coastal zone management plan nor is it in a coastal zone.

7.3 Wetlands

According to the 1988 U.S. Fish and Wildlife Service (USFWS) National Wetlands maps (Figure 10, Appendix A), no wetlands are located on the Property, or on adjacent properties. However, a 1988 report on the Nike launcher sites indicates the presence of a well established wetland on the southern end of the facility. During the August site reconnaissance for this ECP report, a dry creek bed was observed on the southern end of the property.

7.4 100-year Floodplain

A review of the Federal Emergency Management Agency (FEMA) digital Flood Hazard Area map indicates that the Property is not located within the 100-year floodplain. Figure 11 in Appendix A provides a map of the 100-year floodplain elevations located in the immediate vicinity of the Property.

7.5 Natural Resources

The EBS summarizes a NEPA Screen conducted in advance of building demolition in the late 1990s. The NEPA Screen did not identify any endangered or threatened species on the Property based on a review of the federal and state list of endangered or threatened species contained in Department of Environmental Protection's (DEP) Natural Diversity Data Base.

7.6 Cultural Resources

A historical resource inventory report for the Property was prepared in 1995. The report describes five buildings, four of which have since been demolished. The State of Connecticut Historical Commission stated that the demolition activities would not impact any historic, architectural, or archaeological resources listed or eligible for the National Register of

Historic Places. The current structure, the Reserve Center, was built in 1987 and based on the date of construction would not meet the criteria for inclusion on the register. Appendix D provides a copy of the report.

8 Conclusions

The following information was obtained after reviewing available historical information, conducting interviews with knowledgeable parties connected with the Property or with state and local agencies, and conducting a reconnaissance of the Property and adjacent properties.

8.1 Findings

Hazardous Substances. According to USAR personnel and site records, onsite disposal of hazardous substances pursuant to CERCLA 101(14) (42 USC 9601(14)) or wastes has occurred at the Property. Given the primarily administrative nature of USAR activities at the Property, these releases likely are related to activities conducted at the Property when it operated as a Nike missile facility. Hazardous substances were commonly associated with Nike missile operations including:

- Solvents, POLs, and paints used during missile assembly and disassembly
- Solvents and lubricants used as part of missile fueling operations
- Solvents, paints, and hydraulic fluids used in the missile silos
- Drain tile fields which could have received hazardous substances discharged into facility drains.

Various site investigations have been performed on the Property, which indicate that both soil and groundwater have been impacted by historical releases. The investigations report that TCA, 1,1-DCE, 1,1-DCA, carbon tetrachloride, TCE, chloroform, TPH, cis-1,2-DCE and toluene have been detected in the groundwater. TCE is the only constituent that consistently has been detected at concentrations exceeding the applicable CTDEP RSR criteria. The source of this contamination has not been identified and is suspected to be in the areas around the Garage, Maintenance Building, and/or the Nike missile silo area. Investigations are still underway to determine the nature and extent of contamination.

During the site interviews, site personnel noted the historical application of chlordane under the foundations of the Nike missile buildings. A 1999 report also notes that PPMs were potentially improperly disposed of behind the Garage. The report does not specify the types of PPMs.

An OWS is located on the property. The OWS has not been used since at least 1999 and it reportedly was serviced last in 1999. Older OWSs frequently leak, and, therefore, may be a potential source of observed groundwater contamination.

While not hazardous substances, petroleum products reportedly were used on the Property to control dust.

USTs/ASTs. No ASTs have been located at the USAR Center. However four USTs containing No. 2 fuel oil have been removed from the Property. A 2,000-gallon No. 2 fuel oil UST was removed in December 1990. One hundred cubic yards of petroleum-contaminated

soil were excavated and disposed offsite. A subsequent investigation detected TCA,1,1-DCE, and 1,1-DCA in the groundwater, however, the UST is not suspected to be the source of the groundwater contamination.

A 550-gallon steel No. 2 fuel oil UST was also removed in 1990. The report indicates that "minimal" contamination was observed during removal of this tank.

A 2,500-gallon No. 2 fuel oil UST was removed in March 1994 along with 63.5 tons of petroleum-impacted soil. Confirmation soil samples collected following the excavation indicate that VOCs, SVOCs, and TPH were either non-detect or below the CTDEP regulatory criteria.

A 550-gallon fiberglass No. 2 fuel oil tank was removed in 1997. According to the closure documents, there is no evidence of a petroleum release from this UST.

Non-USTs/ASTs Petroleum Storage. No non-UST/AST petroleum storage was observed at the facility during the site reconnaissance. Historical reports indicate the presence of 55-gallon drums (contents unknown), hydraulic fluids, lubricants, and fuels historically at the Property. A POL shed was formerly located in the Nike missile silo area on the Property. A pool of POL was noted in the bottom of this shed during a 1999 site visit. The POL pool was no longer present during the 2006 site reconnaissance.

PCBs. No transformers or other DoD-owned, PCB-containing equipment were noted during the site reconnaissance, and no documented surveys of the facility were available at the time of this Draft ECP report preparation. Site personnel indicated during the site reconnaissance that if PCB-containing equipment was present, it was most likely removed during the demolition of the Nike missile buildings

ACM. The only remaining buildings at the USAR Center were built in 1987. Because of the recent date of construction, asbestos was not likely present in any of the construction materials used for this building.

LBP. Because the USAR Center was constructed after 1978, there is limited potential for LBP. At the time of the site reconnaissance, the painted surfaces at this facility were in good condition.

Radiological Materials. Based on a review of available records, the site reconnaissance, and interviews with USAR Center personnel, there is no indication that radioactive materials were released at the USAR Center.

Radon. Radon surveys have not been performed for the Property. Based on the USEPA and USGS predicted average screening level of 2 to 4 pCi/L of air in Middlesex County, the radon concern is considered low for the Property because average levels in the area are below the USEPA-recommended action level.

MEC. Available records do not indicate any MEC currently or formerly located at this Property.

Surrounding Properties. Potential environmental sites of concern, located within the ASTM D6008 recommended minimum search distances from the Property, were evaluated through database review and site reconnaissance. None of the adjacent properties evaluated

exhibited environmental conditions that had or have the potential to adversely affect environmental conditions at the Property.

Wetlands and Floodplain. According to the 1988 USFWS National Wetlands maps and visual observations, no wetlands were observed on the Property, or on adjacent properties. However, a 1988 report noted that a well-established wetland was present at the Property.

A review of the FEMA digital Flood Hazard Area map indicates that the Property does not lie within the nearest 100-year floodplain.

Threatened and Endangered Species. A NEPA Screen conducted in the late 1990s did not identify any endangered or threatened species on the Property based on a review of the federal and state list of endangered or threatened species contained in DEP's Natural Diversity Data Base.

Archaeological and Historical Resources. Because the Reserve Center building was constructed in 1987, it is not yet eligible for listing on the National Register of Historic Places.

8.2 Environmental Condition of Property

Findings of this ECP report were based on reasonably available environmental information, interviews with site and state and local personnel, review of previous environmental studies and federal and state databases, and file information related to the storage, release, treatment, or disposal of hazardous substances or petroleum products. Results also were based on visual observations of the Property and adjacent properties.

In accordance with DoD policy defining the classifications (see Sherri Goodman Memorandum dated 21 October 1996), the Property has been classified into one of seven property types. Based on the results of this ECP study, the property has been assigned an overall DoD Environmental Condition Type 7. The property type is based primarily on the following major findings.

- The presence of various contaminants (TCA, 1,1-DCE, 1,1-DCA, carbon tetrachloride, TCE, carbon tetrachloride, chloroform, extractable total petroleum hydrocarbons [ETPH], cis-1,2-DCE , and toluene) in the groundwater. The source of this contamination is unknown and investigations are currently underway.
- Potential releases from the former septic system/drain tile field that was historically used for the Nike missile site.
- The possible improper disposal of PPMs behind the garage.

9 References

Persons Contacted

- Steve Lombardi, 94th Regional Readiness Environmental Contractor, 978-796-2607, August 21, 2006
- Gary Puryear, Director 94th Regional Readiness Environmental Department, August 21, 2006
- Sgt. Brooks, 1205th TROB, Cell 203-980-6683. Transferred to 226th TROB in Chicopee, MA.

Resources Consulted

- Aerial Photographs provided by EDR dated 1998, and 1995.
- Undated Aerial Photograph provided by Sgt. Brooks during the Site visit on August 21, 2006.
- FEMA Flood Hazard Insurance Map, http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView
- USFWS National Wetlands Inventory maps
- USEPA Map of Radon Zones, http://www.epa.gov/radon/zonemap.html
- OSLIP, http://www.dep.state.ct.us/olisp/index.htm.
- Federal Regulatory Databases
  - NPL, April 20, 2006
  - Proposed NPL Sites
- State and Local Regulatory Databases
  - Underground Storage Tank Data

Works Cited

ATEC Associates. 1994.Technical Report for Underground Storage Tank Closure.

Clean Harbors Environmental Engineering. 1990. Letter Report, Limited Subsurface Investigation, USARC, Mile Lane, Middletown, CT. December 7.

DTC. 1998. Environmental Baseline Study, Middletown U.S. Army Reserve Center.

Goodman, Sherri. 1996. Memorandum. October 21.

Kemron Environmental Services. 2006. 94th Regional Readiness Command US Army Reserve Center, Middletown, CT, Draft Groundwater Monitoring Report.

Law Engineering Testing Company. 1986. Final Report Investigation of Former Nike Missile Sites for Potential Toxic and Hazardous Waste.

Law Environmental Services. (Date Unknown).The Nike Missile Site Investigation Program.

Public Archaeology Laboratory. 1995. Historic Resources Inventory.

U.S. Army Center for Health Promotion and Preventative Medicine. 2003. 94th RSC Water Quality Survey No. 31-00V1-03 Middletown USARC.

USACE. 1988. Nike Launcher Sites (Middletown and East Windsor, CT), a Photo Documentation of Two Nike Launcher Sites Slated for Demolition by the USACE.

USACE. 2003. Final Report, Nike Missile Battery, Environmental Conditions Assessment Guide.

U.S. Army Environmental Hygiene Agency. 1992. Geohydrologic Study No. 38-26-KL46-92.

USGS, Connecticut Division. 1999. U.S. Army Reserve Stormwater Pollution Prevention Plan.

Weston, Roy F. 1997.Underground Storage Tank Closure Report for UST removals at USARCs in Brocton and Springfield MA and Middletown, CT.

APPENDIX B

Database Search Report

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Middletown USARC (CT005)
499 Mile Lane
Middletown, CT 06457

Inquiry Number: 2548881.1s
July 23, 2009

The EDR Radius Map™ Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

499 MILE LANE
MIDDLETOWN, CT 06457

COORDINATES

Latitude (North):	41.582300 - 41° 34' 56.3''
Longitude (West):	72.685400 - 72° 41' 7.4''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	692949.8
UTM Y (Meters):	4605775.5
Elevation:	35 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	41072-E6 MIDDLETOWN, CT
Most Recent Revision:	1992

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 7 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
US ARMY RESERVE CENTER 499 MILE RD MIDDLETOWN, CT 06457	MANIFEST	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Transporters, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SDADB ---------- Site Discovery and Assessment Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- List of Landfills/Transfer Stations

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Underground Storage Tank Data
AST ---------- Marine Terminals and Tank Information
INDIAN UST ---------- Underground Storage Tanks on Indian Land

EXECUTIVE SUMMARY

State and tribal institutional control / engineering control registries

AUL ---------- ELUR Sites

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Remediation Sites
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---------- Brownfields Inventory

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
SWRCY ---------- Recycling Facilities
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---------- Clandestine Drug Labs
CDL ---------- Clandestine Drug Lab Listing

Local Land Records

LIENS 2 ---------- CERCLA Lien Information
LUCIS ---------- Land Use Control Information System
LIENS ---------- Environmental Liens Listing
CT PROPERTY ---------- Property Transfer Filings

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System
SPILLS ---------- Oil & Chemical Spill Database

Other Ascertainable Records

RCRA-NonGen ---------- RCRA - Non Generators
DOT OPS ---------- Incident and Accident Data
DOD ---------- Department of Defense Sites
CONSENT ---------- Superfund (CERCLA) Consent Decrees
ROD ---------- Records Of Decision
UMTRA ---------- Uranium Mill Tailings Sites
MINES ---------- Mines Master Index File
TRIS ---------- Toxic Chemical Release Inventory System

TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
DRYCLEANERS	Drycleaner Facilities
ENF	Enforcement Case Listing
NPDES	Wastewater Permit Listing
AIRS	Permitted Air Sources Listing
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Protection's Inventory of Hazardous Disposal Sites.

A review of the SHWS list, as provided by EDR, and dated 04/28/2009 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
J.J. VINCI COAL COMPANY	***1000 NEWFIELD STREET***	***ENE 1/2 - 1 (0.632 mi.)***	***5***	***17***

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Protection's Leaking Underground Storage Tank List.

A review of the LUST list, as provided by EDR, and dated 06/10/2009 has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	***397 MILE LANE***	***E 0 - 1/8 (0.098 mi.)***	***2***	***8***
KAMIN RESIDENCE	15 HEMLOCK LA.	SE 1/8 - 1/4 (0.208 mi.)	4	14

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 12/31/2007 has revealed that there is 1 FUDS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NIKE 48		SSW 1/8 - 1/4 (0.172 mi.)	3	14

LWDS: The Leachate and Waste Water Discharge Inventory Data Layer (LWDS) includes point locations digitized from Leachate and Wastewater Discharge Source maps compiled by the Connecticut DEP.

A review of the LWDS list, as provided by EDR, and dated 04/20/2002 has revealed that there are 2 LWDS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
OIL/CHEMICAL SPILLS	1021356/773390	E 1/2 - 1 (0.704 mi.)	6	24

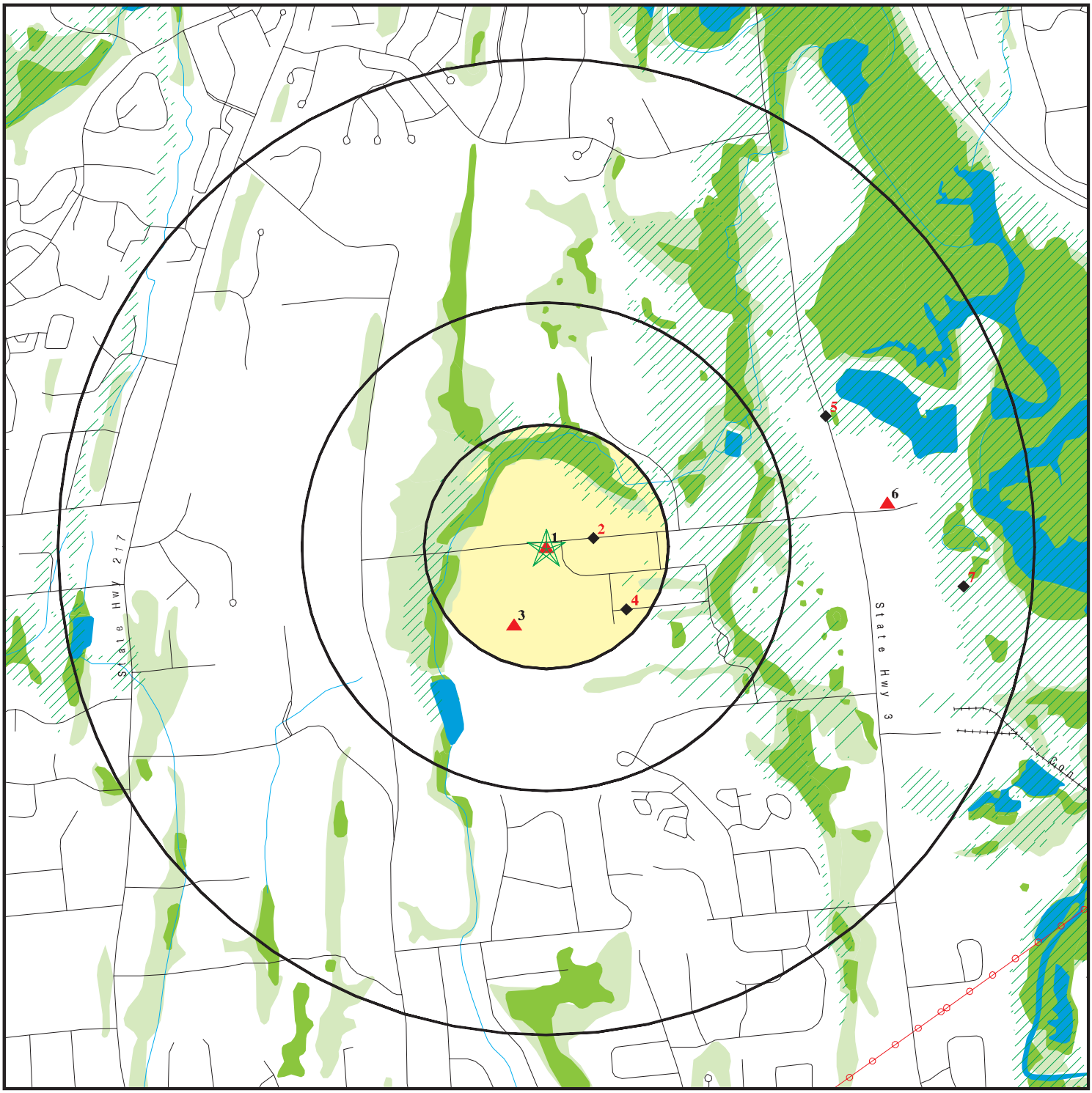
Lower Elevation	Address	Direction / Distance	Map ID	Page
LANDFILL	1022189/772479	E 1/2 - 1 (0.858 mi.)	7	24

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
CL&P/MIDDLETOWN STATION	NPDES
TOWN OF MIDDLETOWN PARKS & REC DEP	MANIFEST
CITY OF MIDDLETOWN	MANIFEST
MIDDLETOWN,CITY OF RUSSELL LIBRARY	MANIFEST
MIDDLETOWN HIGH SCHOOL	MANIFEST
MIDDLETOWN PLATE & GLASS	MANIFEST
MIDDLETOWN TOYOTA, INC.	MANIFEST
CSG 22A-419	MANIFEST
CITY OF MIDDLETOWN, MT. HIGBY RESE	MANIFEST
MIDDLETOWN TOWN GARAGE	MANIFEST
CONNECTICUT DEAPRTMENT OF TRANSPOR	MANIFEST
PHOENIX PRODUCTS COMPANY	MANIFEST
CITY OF MIDDLETOWN	MANIFEST
BISH ELECTRIC	MANIFEST
CT DEPT OF TRANSPORTATION	MANIFEST
ROUTE 72	SWF/LF
NEWFIELD STREET	SWF/LF, SPILLS
PAR ELECTRICAL	LUST
ARMY RESERVE CENTER	LUST
WADSWORTH FALLS STATE PARK	FINDS, RCRA-NonGen

OVERVIEW MAP - 2548881.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

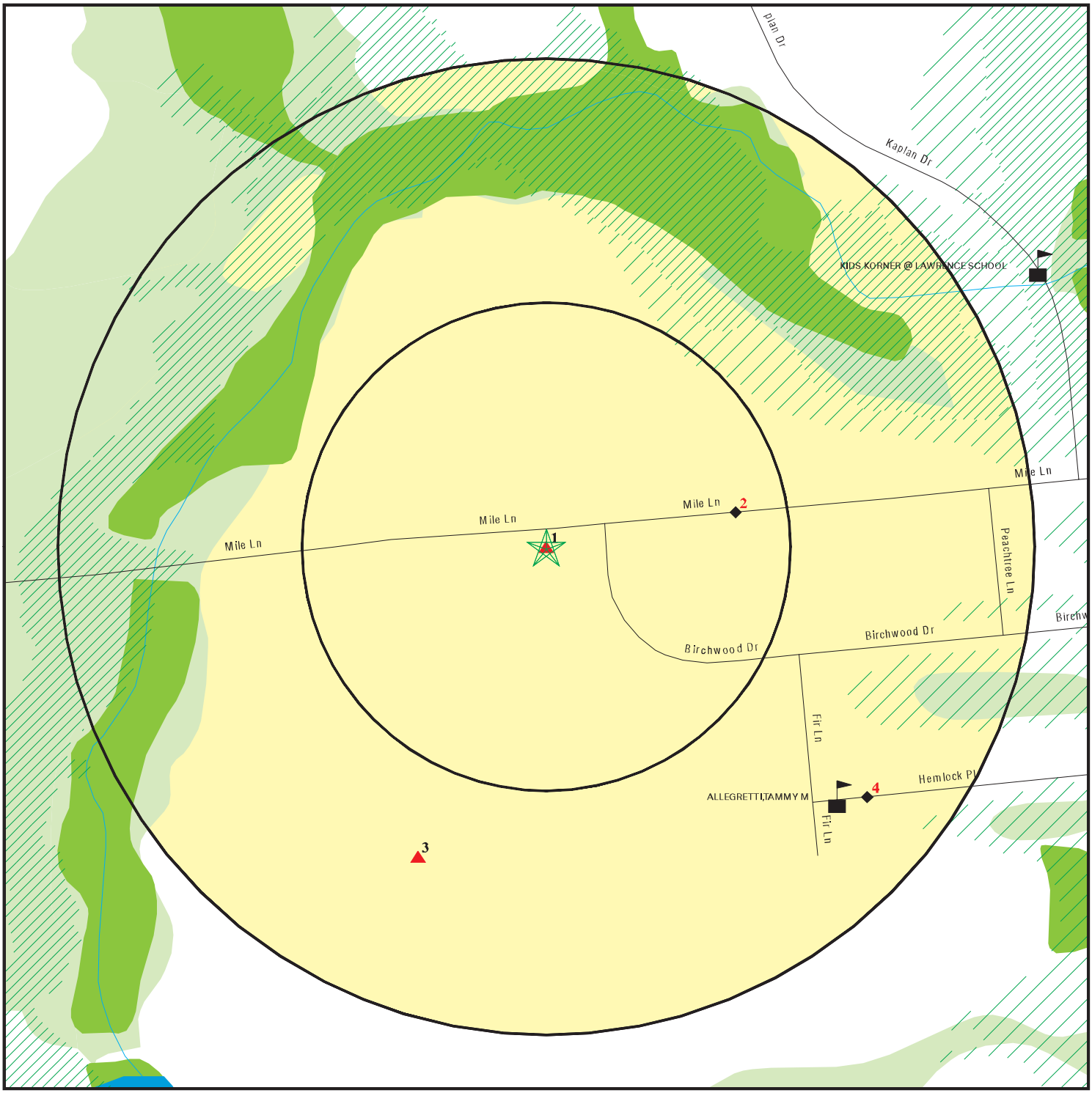
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

N

SITE NAME: Middletown USARC (CT005)	CLIENT: Xcel Engineering
ADDRESS: 499 Mile Lane	CONTACT: Michael Dickinson
Middletown CT 06457	INQUIRY #: 2548881.1s
LAT/LONG: 41.5823 / 72.6854	DATE: July 23, 2009 10:26 am

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DETAIL MAP - 2548881.1s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

SITE NAME: Middletown USARC (CT005)	CLIENT: Xcel Engineering
ADDRESS: 499 Mile Lane	CONTACT: Michael Dickinson
Middletown CT 06457	INQUIRY #: 2548881.1s
LAT/LONG: 41.5823 / 72.6854	DATE: July 23, 2009 10:26 am

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.000	0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS		0.500	0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.500	0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.000	0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.500	0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG		0.250	0	0	NR	NR	NR	0
RCRA-SQG		0.250	0	0	NR	NR	NR	0
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
Federal ERNS list								
ERNS		TP	NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS		1.000	0	0	0	1	NR	1
SDADB		0.500	0	0	0	NR	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.500	0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST		0.500	1	1	0	NR	NR	2
INDIAN LUST		0.500	0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
AST		0.250	0	0	NR	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.500	0	0	0	NR	NR	0
INDIAN VCP		0.500	0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS		0.500	0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.500	0	0	0	NR	NR	0
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		TP	NR	NR	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
LIENS		TP	NR	NR	NR	NR	NR	0
CT PROPERTY		TP	NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS		TP	NR	NR	NR	NR	NR	0
SPILLS		TP	NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.250	0	0	NR	NR	NR	0
DOT OPS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	1	0	0	NR	1
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
LWDS		1.000	0	0	0	2	NR	2
MANIFEST	X	0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
ENF		TP	NR	NR	NR	NR	NR	0
NPDES		TP	NR	NR	NR	NR	NR	0
AIRS		TP	NR	NR	NR	NR	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
SCRD DRYCLEANERS		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **US ARMY RESERVE CENTER** **MANIFEST** **1009220557**
Target **499 MILE RD** **N/A**
Property **MIDDLETOWN, CT 06457**

Actual:
35 ft.

NY MANIFEST:

EPA ID:	CTP000024359
Country:	USA
Mailing Name:	US ARMY RESERVE CENTER
Mailing Contact:	PAUL DUFFY
Mailing Address:	499 MILE RD
Mailing Address 2:	Not reported
Mailing City:	MIDDLETOWN
Mailing State:	CT
Mailing Zip:	06457
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	877-519-8533

Document ID:	NYB9299304
Manifest Status:	Not reported
Trans1 State ID:	NJD054126164
Trans2 State ID:	Not reported
Generator Ship Date:	01/23/2001
Trans1 Recv Date:	01/23/2001
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	02/06/2001
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	CTP000024359
Trans1 EPA ID:	NYD049836679
Trans2 EPA ID:	Not reported
TSDF ID:	0448291ME
Waste Code:	B006 - PCB TRANSFORMERS WITH 500 PPM OR > PCB
Quantity:	00325
Units:	K - Kilograms (2.2 pounds)
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	01.00
Year:	01
Manifest Tracking Num:	Not reported
Import Ind:	Not reported
Export Ind:	Not reported
Discr Quantity Ind:	Not reported
Discr Type Ind:	Not reported
Discr Residue Ind:	Not reported
Discr Partial Reject Ind:	Not reported
Discr Full Reject Ind:	Not reported
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	Not reported

2
East
< 1/8
0.098 mi.
520 ft.

397 MILE LANE
MIDDLETOWN, CT

LUST **S105440254**
SPILLS **N/A**

Relative:
Lower

Actual:
29 ft.

LUST:

LUST ID:	5917
UST Facility Id:	Not reported
LUST Case Id:	34042
Lust Status:	Completed
Processing Status:	Not reported
Motor Fuel:	False
Diesel:	False
Gasoline:	False
Other:	False
Other Release:	Not reported
No Release:	False
Leak:	False
Tank:	False
Piping:	False
Overfill:	False
Removal:	False
Incident Date:	5/14/1998
Entry Date:	Not reported
Site Case Id:	9802938
UST Site Id:	Not reported
Cost Recovery Spill Case #:	Not reported
Old SITS Number:	Not reported
Case Log Id:	Not reported
Monthly Report Id:	0
UST Owner Id:	Not reported
LUST Owner Id:	Not reported
UST Event Id:	6032
Contact Info:	Not reported
Site Contact City,St,Zip:	UNKNOWN
2nd Contact:	Not reported
2nd Contact Address:	Not reported
2nd Contact City,St,Zip:	UNKNOWN
2nd Contact Address 2:	Not reported
2nd Contact City 2:	Not reported
2nd Contact Phone Number:	Not reported
2nd Contact Fax Number:	Not reported
2nd Contact Type:	Not reported
Facility City Num:	83
Site Contact:	Not reported
Site Contact Address:	Not reported
Site Contact Add 2:	Not reported
Site Contact City 2:	Not reported
Site Contact Phone:	Not reported
Site Contact Fax:	Not reported
Site Contact Type:	Not reported
Department Contact 1:	Not reported
Department Contact 2:	Not reported
Referral Source:	Not reported
Date Referred:	Not reported
Emergency:	False
Private Heating Fuel:	False
Commercial Heating Fuel:	True

(Continued) **S105440254**

Commercial HF < 2100 Gal.:	False
Commercial HF > 2100 Gal.:	False
Commercial HF - Size Unk:	True
No LUST Site:	False
Cost Recvry Prgm Candidate:	False
OCSRD Complete:	True
Follow Up Flag:	False
Alternate Water Supply:	False
Relocation:	False
Responsible Party:	False
Resp Party Name:	Not reported
Resp Party Address:	Not reported
Resp Party City,St,Zip:	Not reported
Resp Party Town Number:	UNKNOWN
Resp Party Phone:	Not reported
Resp Party Fax:	Not reported
Resp Party Name 2:	Not reported
Resp Party Address 2:	Not reported
Resp Party Phone 2:	Not reported
Investigator Id:	35
Follow Update:	Not reported
Area Lextent:	Not reported
Annual Precipitation:	Not reported
Affected Population:	Not reported
Population Setting:	Not reported
Ground Water Direction:	Not reported
Ground Water Gradient:	Not reported
Hydro Basin:	Not reported
Drastic:	Not reported
Geo Setting:	Not reported
Ground Water Classification:	Not reported
Receptor:	Not reported
Ground Water Flow Direction:	Not reported
Ground Water Depth:	Not reported
Areas Of Concern:	Not reported
Free Product Inches:	Not reported
Fund Date:	Not reported
Fund Planned:	No
Fund Obligated:	No
Fund Outlayed:	No
Fund Judgment:	No
Fund Recovered:	No
Cellar Borings:	False
Install Micro Wells:	False
Ground Water Sample:	False
Soil Sample:	False
Soil Gas:	False
Site Inspect:	False
Soil Excavate:	False
Geo Probe:	False
Survey:	False
Potable Well Sample:	False
Sample MWS:	False
Ground Water Gauging:	False
Soil Venting:	False
Active:	False
NOV Action:	None

(Continued) **S105440254**

NOV Issued:	Not reported
NOV Due:	Not reported
NOV Received:	Not reported
NOV Closed:	Not reported
NOV Disc Date:	Not reported
NOV Issued Date:	Not reported
NOV Compliance Sched:	Not reported
NOV Admin Order:	Not reported
NOV Referred To Ag:	Not reported
Stop All NOV Actions:	False
Release Invest Rpt:	False
DEP App Letter 1:	False
Correct Action Plan:	False
DEP App Letter 2:	False
Rem Sys Install:	False
Rem Sys Install Date:	Not reported
Closure Date:	Not reported
Rem Sys Monitoring Rpt:	False
Qrtly Gwater Mon Rpts:	False
Closure Req Rpt:	False
DEP Closure Letter:	False
Referred To:	Not reported
No Wells:	Not reported
Lph Wells:	Not reported
User Stamp:	Not reported
Date Stamp:	Not reported
Correspondence:	Not reported
Environmental Impact:	Not reported
Follow Up:	Not reported
GW Comments:	Not reported
Location Desc:	Not reported
NOV COmments:	Not reported
Release Desc:	Not reported
Running Comments:	#2 FUEL OIL, , REMOVE SOIL
Work Performed:	Not reported

SPILLS:

Year of Database:	5/7/1998
Case Number:	9802763
Who Took Spill:	208
Assigned To:	0
Report Date:	5/7/1998
Report Time:	5/7/1998 9:46:39 PM
Date Release:	5/7/1998
Time Responded:	Not reported
Reported By:	dolly
Phone:	203 2340684
Representing:	casden elm city fuel
Terminated:	YES
Recovd (Total):	0
Total (Water):	0
Facility Status:	Closed
Date Responded:	Not reported
Time Responded:	Not reported
Who Assigned Spill:	Not reported
Continuous Spill:	False
Released Substance:	#2 fuel oil

(Continued) **S105440254**

Qty:	1 (Gallons)
Emergency Measure:	cleaned
Water Body:	Not reported
Discharger:	Not reported
Telephone:	Not reported
Discharger Addr:	Not reported
Dicharger City,St,Zip:	Not reported
Responsible Party:	Not reported
RP Address 1:	Not reported
RP City,St,Zip:	CT
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Address:	Not reported
Property Owner 1 City,ST,Zip:	Not reported
Historic:	False
Waterbody:	False
Qty Rec Water:	Not reported
Waterway:	Not reported
OPA:	Not reported
EPA:	Not reported
EPA Time:	Not reported
EPA Date:	Not reported
EPA Contact:	Not reported
USCG Contact:	Not reported
USCG:	Not reported
USCG Time:	Not reported
USCG Date:	Not reported
Spill Fund:	Not reported
Authorized By:	Not reported
Date Authorized:	Not reported
Time Authorized:	Not reported
OCSRD Rep:	Not reported
Accepted By:	Not reported
Time Authorized:	Not reported
Date Accepted:	Not reported
Transportation:	Not reported
Make:	Not reported
Registration:	Not reported
Tractor No:	Not reported
Trailer Registrtn:	Not reported
Vehicle Operator:	Not reported
License No:	Not reported
Vehicle Owner:	Not reported
Owner Phone:	Not reported
Special Contact:	Not reported
Contractor Retained:	Not reported
Time Requested:	Not reported
Date Requested:	Not reported
Date Arrived:	Not reported
Time Arrived:	Not reported
Time Stamp:	5/8/1998 10:06:33 AM
Sr Inspector:	Monarca, Vincent
At Inspctor:	**NO RESPONSE
User Stamp:	Not reported
Action ID:	11
Action:	Cleaned
Other Action:	Not reported

(Continued) **S105440254**

Agency ID: 8
Agency: DEP Dispatch
Other Agency: Not reported
DEP Bureau: Not reported
DEP Agency: Not reported
Cause ID: 4
Cause: Above Ground Tank Failure
Other Cause: Not reported
Media ID: 4
Media: Ground Surface
Other Media: Not reported
Class ID: Not reported
Class: Not reported
Other Class: Not reported
Release ID: 1
Release Type: petroleum
Other Release: Not reported
Waterbody ID: Not reported
Waterbody: Not reported
Other Wtrbody: Not reported

Year of Database: 5/14/1998
Case Number: 9802938
Who Took Spill: 934
Assigned To: 0
Report Date: 5/14/1998
Report Time: 5/14/1998 2:25:23 PM
Date Release: 5/14/1998
Time Responded: Not reported
Reported By: KASDEN ELM CITY
Phone: 860 2349276
Representing: Self
Terminated: YES
Recovd (Total): 1
Total (Water): 0
Facility Status: Closed
Date Responded: Not reported
Time Responded: Not reported
Who Assigned Spill: Not reported
Continuous Spill: False
Released Substance: #2 FUEL OIL
Qty: 1 (Gallons)
Emergency Measure: REMOVE SOIL
Water Body: NONE
Discharger: SAME
Telephone: Not reported
Discharger Addr: Not reported
Dicharger City,St,Zip: Not reported
Responsible Party: YES
RP Address 1: Not reported
RP City,St,Zip: CT
Property Owner Name: Not reported
Property Owner Phone: Not reported
Property Owner Address: Not reported
Property Owner 1 City,ST,Zip: Not reported
Historic: False
Waterbody: False

(Continued) **S105440254**

Qty Rec Water:	Not reported
Waterway:	Not reported
OPA:	Not reported
EPA:	Not reported
EPA Time:	Not reported
EPA Date:	Not reported
EPA Contact:	Not reported
USCG Contact:	Not reported
USCG:	Not reported
USCG Time:	Not reported
USCG Date:	Not reported
Spill Fund:	Not reported
Authorized By:	Not reported
Date Authorized:	Not reported
Time Authorized:	Not reported
OCSRD Rep:	Not reported
Accepted By:	Not reported
Time Authorized:	Not reported
Date Accepted:	Not reported
Transportation:	Not reported
Make:	Not reported
Registration:	Not reported
Tractor No:	Not reported
Trailer Registrtn:	Not reported
Vehicle Operator:	Not reported
License No:	Not reported
Vehicle Owner:	Not reported
Owner Phone:	Not reported
Special Contact:	Not reported
Contractor Retained:	Not reported
Time Requested:	Not reported
Date Requested:	Not reported
Date Arrived:	Not reported
Time Arrived:	Not reported
Time Stamp:	5/15/1998 8:03:19 AM
Sr Inspector:	Williamson, Matt
At Inspctor:	**NO RESPONSE
User Stamp:	Not reported
Action ID:	11
Action:	Cleaned
Other Action:	Not reported
Action ID:	18
Action:	Soil Removed
Other Action:	Not reported
Agency ID:	8
Agency:	DEP Dispatch
Other Agency:	Not reported
DEP Bureau:	Not reported
DEP Agency:	Not reported
Cause ID:	3
Cause:	Inground Tank Failure
Other Cause:	Not reported
Media ID:	4
Media:	Ground Surface
Other Media:	Not reported
Class ID:	Not reported
Class:	Not reported

(Continued) **S105440254**

Other Class: Not reported
Release ID: 1
Release Type: petroleum
Other Release: Not reported
Waterbody ID: 9
Waterbody: Other
Other Wtrbody: N/A

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3 **NIKE 48** **FUDS** **1010309666**
SSW **N/A**
1/8-1/4 **CROMWELL, CT**
0.172 mi.
906 ft.

Relative:
Higher

Actual:
94 ft.

FUDS:
Federal Facility ID: CT9799F1744
FUDS #: D01CT0058
Facility Name: NIKE 48
City: CROMWELL
State: CT
EPA Region: 1
County: MIDDLESEX
Congressional District: 01
US Army District: New England District (NAE)
Fiscal Year: 2007
Telephone: 978-318-8238
NPL Status: Not Listed
RAB: Not reported
CTC: 5.65248
Current Owner: OTHER

FUDS Description Details:
N/A

FUDS History Details:
N/A

FUDS Current Program Details:

FUDS Future Program Details:

---

4 **KAMIN RESIDENCE** **LUST** **S105738758**
SE **15 HEMLOCK LA.** **N/A**
1/8-1/4 **MIDDLETOWN, CT 06457**
0.208 mi.
1100 ft.

Relative:
Lower

Actual:
25 ft.

LUST:
LUST ID: 0
UST Facility Id: 0
LUST Case Id: 45048
Lust Status: Pending
Processing Status: closed
Motor Fuel: True
Diesel: False

KAMIN RESIDENCE (Continued) **S105738758**

Gasoline:	True
Other:	False
Other Release:	Not reported
No Release:	False
Leak:	False
Tank:	False
Piping:	False
Overfill:	False
Removal:	False
Incident Date:	Not reported
Entry Date:	Not reported
Site Case Id:	Not reported
UST Site Id:	0
Cost Recovery Spill Case #:	0
Old SITS Number:	0
Case Log Id:	178
Monthly Report Id:	0
UST Owner Id:	0
LUST Owner Id:	Not reported
UST Event Id:	0
Contact Info:	J. Monopoli- Middletown Health
Site Contact City,St,Zip:	UNKNOWN
2nd Contact:	Not reported
2nd Contact Address:	Not reported
2nd Contact City,St,Zip:	UNKNOWN
2nd Contact Address 2:	Not reported
2nd Contact City 2:	Not reported
2nd Contact Phone Number:	Not reported
2nd Contact Fax Number:	Not reported
2nd Contact Type:	Not reported
Facility City Num:	83
Site Contact:	Not reported
Site Contact Address:	Not reported
Site Contact Add 2:	Not reported
Site Contact City 2:	Not reported
Site Contact Phone:	Not reported
Site Contact Fax:	Not reported
Site Contact Type:	Not reported
Department Contact 1:	Not reported
Department Contact 2:	Not reported
Referral Source:	OCSRD-Brian Emanuelson
Date Referred:	11/13/1992
Emergency:	False
Private Heating Fuel:	False
Commercial Heating Fuel:	False
Commercial HF < 2100 Gal.:	False
Commercial HF > 2100 Gal.:	False
Commercial HF - Size Unk:	False
No LUST Site:	False
Cost Recvry Prgm Candidate:	False
OCSRD Complete:	False
Follow Up Flag:	False
Alternate Water Supply:	False
Relocation:	False
Responsible Party:	False
Resp Party Name:	Not reported
Resp Party Address:	Not reported

KAMIN RESIDENCE (Continued) **S105738758**

Resp Party City,St,Zip:	Not reported
Resp Party Town Number:	UNKNOWN
Resp Party Phone:	Not reported
Resp Party Fax:	Not reported
Resp Party Name 2:	Not reported
Resp Party Address 2:	Not reported
Resp Party Phone 2:	Not reported
Investigator Id:	0
Follow Update:	Not reported
Area Lextent:	Not reported
Annual Precipitation:	Not reported
Affected Population:	Not reported
Population Setting:	Not reported
Ground Water Direction:	Not reported
Ground Water Gradient:	Not reported
Hydro Basin:	Not reported
Drastic:	Not reported
Geo Setting:	Not reported
Ground Water Classification:	Not reported
Receptor:	Not reported
Ground Water Flow Direction:	Not reported
Ground Water Depth:	Not reported
Areas Of Concern:	Not reported
Free Product Inches:	Not reported
Fund Date:	Not reported
Fund Planned:	No
Fund Obligated:	No
Fund Outlayed:	No
Fund Judgment:	No
Fund Recovered:	No
Cellar Borings:	False
Install Micro Wells:	False
Ground Water Sample:	False
Soil Sample:	False
Soil Gas:	True
Site Inspect:	False
Soil Excavate:	False
Geo Probe:	False
Survey:	False
Potable Well Sample:	False
Sample MWS:	False
Ground Water Gauging:	False
Soil Venting:	False
Active:	False
NOV Action:	None
NOV Issued:	Not reported
NOV Due:	Not reported
NOV Received:	Not reported
NOV Closed:	Not reported
NOV Disc Date:	Not reported
NOV Issued Date:	Not reported
NOV Compliance Sched:	Not reported
NOV Admin Order:	Not reported
NOV Referred To Ag:	Not reported
Stop All NOV Actions:	False
Release Invest Rpt:	False
DEP App Letter 1:	False

KAMIN RESIDENCE (Continued) **S105738758**

Correct Action Plan:	False
DEP App Letter 2:	False
Rem Sys Install:	False
Rem Sys Install Date:	Not reported
Closure Date:	Not reported
Rem Sys Monitoring Rpt:	False
Qrtly Gwater Mon Rpts:	False
Closure Req Rpt:	False
DEP Closure Letter:	False
Referred To:	Not reported
No Wells:	Not reported
Lph Wells:	Not reported
User Stamp:	Not reported
Date Stamp:	Not reported
Correspondence:	Not reported
Environmental Impact:	oil in storm sewer
Follow Up:	Not reported
GW Comments:	Not reported
Location Desc:	Not reported
NOV COmments:	Not reported
Release Desc:	oil in storm sewer
Running Comments:	Not reported
Work Performed:	SGS

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5 **J.J. VINCI COAL COMPANY** **SHWS** **S100996958**
ENE **1000 NEWFIELD STREET** **LUST** **N/A**
1/2-1 **MIDDLETOWN, CT 06457** **SPILLS**
0.632 mi. **SDADB**
3337 ft.

Relative:
Lower

Actual:
11 ft.

SHWS:

State ID:	694
PTP Id Number:	Not reported
WPC Number:	Not reported
EPA ID:	CTD983903659
PO Office:	Not reported
Lat/Long:	41.5864/-72.6671
Location Method:	UNK
Groundwater Class:	GB
Surface Water Qualification:	C/B
Waste Category:	CHLR VOC, SEMI VOC, METALS
Disposal Method:	LAGOON, DRUMS, UST
Sample:	True
Other Dept of Env. Protection:	HMMU
Updated By:	DANYLUK, M.
Update Program:	FPRE
Date Updated:	5/3/2000
Duplicate:	False
Program:	D&A
Inventory Date:	7/13/1989
On Inventory:	True
Assessed:	True
87 Group:	Not reported
87 Origin:	D & A
On 87:	False
Comments:	DISPOSAL ACTIVITY: ALLEDGED BURIED DRUMS - LAGOON (7/89) OCSD RESPONDED TO SPILL OF #2 FUEL OIL ON 7/3/85. SPILL OF DIESEL FUEL ON 11/16/89. DEP ORDER 2500. (5/00)

J.J. VINCI COAL COMPANY (Continued) **S100996958**

LUST:

LUST ID:	3688
UST Facility Id:	1555
LUST Case Id:	31714
Lust Status:	Investigation
Processing Status:	Not reported
Motor Fuel:	False
Diesel:	False
Gasoline:	False
Other:	False
Other Release:	Not reported
No Release:	False
Leak:	False
Tank:	False
Piping:	False
Overfill:	False
Removal:	False
Incident Date:	7/15/1989
Entry Date:	Not reported
Site Case Id:	Not reported
UST Site Id:	Not reported
Cost Recovery Spill Case #:	Not reported
Old SITS Number:	Not reported
Case Log Id:	Not reported
Monthly Report Id:	0
UST Owner Id:	3693
LUST Owner Id:	CXM
UST Event Id:	3764
Contact Info:	Not reported
Site Contact City,St,Zip:	UNKNOWN
2nd Contact:	Not reported
2nd Contact Address:	Not reported
2nd Contact City,St,Zip:	UNKNOWN
2nd Contact Address 2:	Not reported
2nd Contact City 2:	Not reported
2nd Contact Phone Number:	Not reported
2nd Contact Fax Number:	Not reported
2nd Contact Type:	Not reported
Facility City Num:	83
Site Contact:	Not reported
Site Contact Address:	Not reported
Site Contact Add 2:	Not reported
Site Contact City 2:	Not reported
Site Contact Phone:	Not reported
Site Contact Fax:	Not reported
Site Contact Type:	Not reported
Department Contact 1:	Not reported
Department Contact 2:	Not reported
Referral Source:	Not reported
Date Referred:	Not reported
Emergency:	False
Private Heating Fuel:	False
Commercial Heating Fuel:	False
Commercial HF < 2100 Gal.:	False
Commercial HF > 2100 Gal.:	False
Commercial HF - Size Unk:	False
No LUST Site:	False

J.J. VINCI COAL COMPANY (Continued) **S100996958**

Cost Recvry Prgm Candidate:	False
OCSRD Complete:	False
Follow Up Flag:	False
Alternate Water Supply:	False
Relocation:	False
Responsible Party:	False
Resp Party Name:	Bob Vinci
Resp Party Address:	Not reported
Resp Party City,St,Zip:	Not reported
Resp Party Town Number:	UNKNOWN
Resp Party Phone:	8606322333
Resp Party Fax:	Not reported
Resp Party Name 2:	Not reported
Resp Party Address 2:	Not reported
Resp Party Phone 2:	Not reported
Investigator Id:	Not reported
Follow Update:	Not reported
Area Lextent:	Not reported
Annual Precipitation:	Not reported
Affected Population:	Not reported
Population Setting:	Not reported
Ground Water Direction:	Not reported
Ground Water Gradient:	Not reported
Hydro Basin:	Not reported
Drastic:	Not reported
Geo Setting:	Not reported
Ground Water Classification:	GB
Receptor:	Not reported
Ground Water Flow Direction:	NW (topo)
Ground Water Depth:	Not reported
Areas Of Concern:	Not reported
Free Product Inches:	Not reported
Fund Date:	Not reported
Fund Planned:	No
Fund Obligated:	No
Fund Outlayed:	No
Fund Judgment:	No
Fund Recovered:	No
Cellar Borings:	False
Install Micro Wells:	False
Ground Water Sample:	False
Soil Sample:	False
Soil Gas:	False
Site Inspect:	False
Soil Excavate:	False
Geo Probe:	False
Survey:	False
Potable Well Sample:	False
Sample MWS:	False
Ground Water Gauging:	False
Soil Venting:	False
Active:	False
NOV Action:	None
NOV Issued:	Not reported
NOV Due:	Not reported
NOV Received:	Not reported
NOV Closed:	Not reported

J.J. VINCI COAL COMPANY (Continued) **S100996958**

NOV Disc Date:	Not reported
NOV Issued Date:	Not reported
NOV Compliance Sched:	Not reported
NOV Admin Order:	Not reported
NOV Referred To Ag:	Not reported
Stop All NOV Actions:	False
Release Invest Rpt:	False
DEP App Letter 1:	False
Correct Action Plan:	False
DEP App Letter 2:	False
Rem Sys Install:	False
Rem Sys Install Date:	Not reported
Closure Date:	Not reported
Rem Sys Monitoring Rpt:	False
Qrtly Gwater Mon Rpts:	False
Closure Req Rpt:	False
DEP Closure Letter:	False
Referred To:	Not reported
No Wells:	0
Lph Wells:	Not reported
User Stamp:	Allison Forrest/aforrest
Date Stamp:	5/29/2009
Correspondence:	Not reported
Environmental Impact:	Not reported
Follow Up:	Not reported
GW Comments:	Connecticut River is nearby. No known potable water wells. No MW or sniffer tank wells on site.
Location Desc:	Not reported
NOV COmments:	Not reported
Release Desc:	Not reported
Running Comments:	Open LUST Cases: F83-01555 (SAS-09-0016)
Work Performed:	Not reported

SPILLS:

Year of Database:	7/26/1999
Case Number:	9904895
Who Took Spill:	208
Assigned To:	917
Report Date:	7/24/1999
Report Time:	1:34:00 PM
Date Release:	7/24/1999
Time Responded:	1:35:00 PM
Reported By:	ANONYMOUS
Phone:	000 0000000
Representing:	Self
Terminated:	NO
Recovd (Total):	0
Total (Water):	0
Facility Status:	Closed
Date Responded:	Not reported
Time Responded:	Not reported
Who Assigned Spill:	Not reported
Continuous Spill:	False
Released Substance:	OIL
Qty:	0 (Gallons)
Emergency Measure:	NONE
Water Body:	Not reported

J.J. VINCI COAL COMPANY (Continued) **S100996958**

Discharger:	unknown
Telephone:	Not reported
Discharger Addr:	Not reported
Dicharger City,St,Zip:	Not reported
Responsible Party:	Not reported
RP Address 1:	Not reported
RP City,St,Zip:	CT
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Address:	Not reported
Property Owner 1 City,ST,Zip:	Not reported
Historic:	False
Waterbody:	False
Qty Rec Water:	Not reported
Waterway:	Not reported
OPA:	Not reported
EPA:	Not reported
EPA Time:	Not reported
EPA Date:	Not reported
EPA Contact:	Not reported
USCG Contact:	Not reported
USCG:	Not reported
USCG Time:	Not reported
USCG Date:	Not reported
Spill Fund:	Not reported
Authorized By:	Not reported
Date Authorized:	Not reported
Time Authorized:	Not reported
OCSRD Rep:	Not reported
Accepted By:	Not reported
Time Authorized:	Not reported
Date Accepted:	Not reported
Transportation:	Not reported
Make:	Not reported
Registration:	Not reported
Tractor No:	Not reported
Trailer Registrtn:	Not reported
Vehicle Operator:	Not reported
License No:	Not reported
Vehicle Owner:	Not reported
Owner Phone:	Not reported
Special Contact:	Not reported
Contractor Retained:	Not reported
Time Requested:	Not reported
Date Requested:	Not reported
Date Arrived:	Not reported
Time Arrived:	Not reported
Time Stamp:	12/17/1999 2:53:46 PM
Sr Inspector:	Monarca, Vincent
At Inspctor:	Emanuelson, Brian
User Stamp:	Not reported
Action ID:	20
Action:	Other
Other Action:	none
Agency ID:	Not reported
Agency:	Not reported
Other Agency:	Not reported

J.J. VINCI COAL COMPANY (Continued) **S100996958**

DEP Bureau: Not reported
DEP Agency: Not reported
Cause ID: 26
Cause: Other
Other Cause: unknown
Media ID: 6
Media: Other
Other Media: Unknown
Class ID: 11
Class: Other
Other Class: unknown
Release ID: 1
Release Type: petroleum
Other Release: Not reported
Waterbody ID: Not reported
Waterbody: Not reported
Other Wtrbody: Not reported

Site Discovery and Assessment:

Facility ID:	694
Rem Master ID:	1204
PTP Id:	Not reported
WPC Number:	Not reported
Postal District:	Not reported
Latitude:	41.5864
Longitude:	-72.6671
Lat/Long Determined By:	UNK
Ground Water Quality Classification:	GB
Surface Water Quality Classification:	C/B
Waste Type:	CHLR VOC, SEMI VOC, METALS
Disposal:	LAGOON, DRUMS, UST
Sample Data Available:	True
Updated By:	DANYLUK, M.
Update Program:	FPRE
Updated:	5/3/2000
Date Created:	SS
Duplicate:	Not reported
EPA CERCLIS Id:	Not reported
Number EPA RCRIS Id:	Not reported
Site on EPA's CERCLIS:	True
Site Archived from CERCLIS:	False
Archive Date:	Not reported
EPA's Removal at Site:	False
Deferred to another EPA Program:	False
EPA Env Priority Initiative Site:	False
Federal Facility:	False
Site on EPA's National Priority List:	False
Part of an NPL site:	False
RCRA Generator Status:	Not reported
RCRA Permit Status:	Not reported
Referral Id:	658
Source of referral:	SUPERFUND
Date Received:	1/1/1989
Staff Assigned:	POST, M.
Remediation Program:	D&A
Date dt_assigned:	Not reported

Remediation Complete Approved DEP/Verified by LEP: 7/13/1989

J.J. VINCI COAL COMPANY (Continued) **S100996958**

Outcome: INVENTORY
Remedial Id: Not reported
PTP Id: Not reported
Remediation Program: Not reported
Remediation Program Entered: Not reported
Staff Assigned: Not reported
Remediation Program: Not reported
Date dt_assign: Not reported
Project Phase: Not reported
Order issued: Not reported
Order Number: Not reported
Date order issued: Not reported
Remedial Investigation Start: Not reported
Remedial Investigation Completed: Not reported
Remedial Design Start: Not reported
Remedial Design complet: Not reported
Remedial Action Start: Not reported
Remedial Action Completed: Not reported
Date Oper/ maintenance Started: Not reported
GW monitoring: Not reported
Remediation complete Approved DEP/Verified by LEP: Not reported
Order Id: Not reported
Order Number: Not reported
Date order issued: Not reported
Staff Assigned: Not reported
Type of Order: Not reported
Order Respondent: Not reported
Admin Appeal Date: Not reported
Date of Admin Appeal Ruling: Not reported
Date of Admin Appeal Ruling: Not reported
Date of Final Order: Not reported
Date of Court Appeal: Not reported
Date of Court Ruling: Not reported
Date of Court Ruling: Not reported
Date Order Modified: Not reported
Date Referred to AG: Not reported
Judgement: Not reported
Date of AGR judgement: Not reported
Penalty assessed: Not reported
Order Complete: Not reported
In compliance: Not reported
Comments: Not reported
Comments: DISPOSAL ACTIVITY: ALLEDGED BURIED DRUMS - LAGOON (7/89) OCSD RESPONDED TO SPILL OF #2 FUEL OIL ON 7/3/85. SPILL OF DIESEL FUEL ON 11/16/89. DEP ORDER 2500. (5/00)

SDADB:
Waste Id: 5
Waste Type: CHLR VOC
Description: Chlorinated Volatile Organic Compounds

6
East
1/2-1
0.704 mi.
3719 ft.

OIL/CHEMICAL SPILLS
1021356/773390
, CT

LWDS **S108313954**
N/A

Relative:
Higher

Actual:
46 ft.

LWDS:

ArcView Legend Symbology:	SPILL
Leachate and Wastewater Number:	4600015
Status of the Discharge Activity:	INACTIVE
Leachate and Waste Flow:	GROUND
Feature Number on Hazardous Waste List:	0
Subregional Basin Feature Number:	4600
Name:	J.J. Vinci Coal
Alias:	Not reported
Description:	oil disposal on ground
Description 2:	Not reported
State Plane x:	1021356
State Plane y:	773390

7
East
1/2-1
0.858 mi.
4532 ft.

LANDFILL
1022189/772479
, CT

LWDS **S108313955**
N/A

Relative:
Lower

Actual:
23 ft.

LWDS:

ArcView Legend Symbology:	LANDFILL
Leachate and Wastewater Number:	4600016
Status of the Discharge Activity:	INACTIVE
Leachate and Waste Flow:	GROUND
Feature Number on Hazardous Waste List:	0
Subregional Basin Feature Number:	4600
Name:	City of Middletown
Alias:	Not reported
Description:	closed bulky waste landfill
Description 2:	Not reported
State Plane x:	1022189
State Plane y:	772479

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MIDDLETOWN	1001481209	WADSWORTH FALLS STATE PARK	ROUTE 157	06457	FINDS, RCRA-NonGen
MIDDLETOWN	1007892961	CITY OF MIDDLETOWN, MT. HIGBY RESE	ROUTE 66		MANIFEST
MIDDLETOWN	1007896235	MIDDLETOWN TOWN GARAGE	ROUTE 66		MANIFEST
MIDDLETOWN	S108723203		ROUTE 72		SWF/LF
MIDDLETOWN	1007910266	CONNECTICUT DEAPRTMENT OF TRANSPOR	ROUTE 9 SOUTH		MANIFEST
MIDDLETOWN	1007905091	PHOENIX PRODUCTS COMPANY	ROUTE 91 NORTH @ REST AREA		MANIFEST
MIDDLETOWN	S108650317	CITY OF MIDDLETOWN	270 CYNTHIA LN		MANIFEST
MIDDLETOWN	S109377272	PAR ELECTRICAL	2175 SOUTH MAIN STREET (ROUTE		LUST
MIDDLETOWN	S102413726	ARMY RESERVE CENTER	MILE LN.	06457	LUST
MIDDLETOWN	S102958392		NEWFIELD STREET		SWF/LF, SPILLS
MIDDLETOWN	1007906935	BISH ELECTRIC	76 WEST STREET (RTE 66)	06457	MANIFEST
MIDDLETOWN	1009220627	CT DEPT OF TRANSPORTATION	UNION ST OV RTE 9	06457	MANIFEST
COUNTY	1007891593	TOWN OF MIDDLETOWN PARKS & REC DEP	BERNIE O'ROURKE DRIVE MIDDLET	06457	MANIFEST
COUNTY	1007950627	CITY OF MIDDLETOWN	111 BRIDGE ST. MIDDLWTOWN	06457	MANIFEST
COUNTY	1007970247	MIDDLETOWN,CITY OF RUSSELL LIBRARY	123 BROAD ST. MIDDLETOWN	06457	MANIFEST
COUNTY	S108307495	CL&P/MIDDLETOWN STATION	RIVER ROAD	06457	NPDES
COUNTY	1007916463	MIDDLETOWN HIGH SCHOOL	311 SUNTIGTON HILL AVENUE MIDD	06457	MANIFEST
COUNTY	1007929644	MIDDLETOWN PLATE & GLASS	40 UNION ST. MIDDLETOWN	06457	MANIFEST
COUNTY	1007884015	MIDDLETOWN TOYOTA, INC.	545 WASHINGTON STREET MIDDLE	06457	MANIFEST
MIDDLETOWN	1008985816	CSG 22A-419	RT 17		MANIFEST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/23/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2009
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 101

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 07/14/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2009
Date Data Arrived at EDR: 04/02/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 39

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (888) 372-7341
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (888) 372-7341
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (888) 372-7341
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (888) 372-7341
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/22/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/22/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 109

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/21/2009
Next Scheduled EDR Contact: 10/19/2009
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Inventory of Hazardous Disposal Sites

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/30/2009
Date Made Active in Reports: 05/13/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 860-424-3721
Last EDR Contact: 02/27/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Varies

SDADB: Site Discovery and Assessment Database

All sites reported to Permitting, Enforcement, and Remediation Division where it is suspected that hazardous waste may have been disposed or sites that are eligible for listing on the State Inventory of Hazardous Waste Disposal Sites.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/30/2009
Date Made Active in Reports: 05/13/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 860-424-3721
Last EDR Contact: 02/27/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: List of Landfills/Transfer Stations

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 06/04/2009
Date Data Arrived at EDR: 06/22/2009
Date Made Active in Reports: 07/09/2009
Number of Days to Update: 17

Source: Department of Environmental Protection
Telephone: 860-424-3366
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Annually

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank List

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/10/2009
Date Data Arrived at EDR: 06/12/2009
Date Made Active in Reports: 07/09/2009
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: 860-424-3376
Last EDR Contact: 01/15/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/24/2009
Date Data Arrived at EDR: 03/03/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/20/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/24/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 28

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/20/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 06/04/2009
Date Data Arrived at EDR: 06/05/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 12

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

UST: Underground Storage Tank Data
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 07/07/2009
Date Data Arrived at EDR: 07/07/2009
Date Made Active in Reports: 07/23/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3376
Last EDR Contact: 07/06/2009
Next Scheduled EDR Contact: 09/21/2009
Data Release Frequency: Semi-Annually

AST: Marine Terminals and Tank Information
A listing of bulk petroleum facilities that receive petroleum by a vessel.

Date of Government Version: 06/29/2009
Date Data Arrived at EDR: 06/29/2009
Date Made Active in Reports: 07/20/2009
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: 860-424-3233
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/22/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/20/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 06/04/2009
Date Data Arrived at EDR: 06/05/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 12

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/24/2009
Date Data Arrived at EDR: 03/03/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

AUL: ELUR Sites
Environmental Land Use Restriction sites.

Date of Government Version: 06/15/2009
Date Data Arrived at EDR: 06/15/2009
Date Made Active in Reports: 07/09/2009
Number of Days to Update: 24

Source: Department of Environmental Protection
Telephone: 860-424-3912
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Remediation Sites
Sites involved in the Voluntary Remediation Program.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/30/2009
Date Made Active in Reports: 05/13/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 860-424-3705
Last EDR Contact: 02/27/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/20/2009
Next Scheduled EDR Contact: 10/19/2009
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Inventory
CBRA has identified over 200 brownfield sites eligible for redevelopment. In most cases these are prime properties for commercial or industrial use. CBRA's grants, assistance and financing lower the financial risks and eliminate the legal, regulatory and environmental risks of redevelopment.

Date of Government Version: 06/08/2009
Date Data Arrived at EDR: 06/09/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 6

Source: Connecticut Brownfields Redevelopment Authority
Telephone: 860-258-7833
Last EDR Contact: 07/13/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/01/2008
Date Data Arrived at EDR: 11/14/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 07/14/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 07/13/2009
Next Scheduled EDR Contact: 09/21/2009
Data Release Frequency: Varies

SWRCY: Recycling Facilities

A listing of recycling facilities.

Date of Government Version: 01/14/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 22

Source: Department of Environmental Protection
Telephone: 860-424-3223
Last EDR Contact: 06/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/26/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

CDL: Clandestine Drug Lab Listing

A listing of clandestine drug lab locations included in the Spills database.

Date of Government Version: 02/18/2009
Date Data Arrived at EDR: 02/20/2009
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: 860-424-3361
Last EDR Contact: 04/27/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of environmental liens placed by the Cost Recovery Program.

Date of Government Version: 07/10/2009
Date Data Arrived at EDR: 07/13/2009
Date Made Active in Reports: 07/22/2009
Number of Days to Update: 9

Source: Department of Environmental Protection
Telephone: 860-424-3120
Last EDR Contact: 07/07/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Varies

CT PROPERTY: Property Transfer Filings

A listing of sites that meet the definition of a hazardous waste establishment. They can be generators, dry cleaners, furniture strippers, etc. These sites have been sold to another owner.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/30/2009
Date Made Active in Reports: 05/13/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 860-424-3789
Last EDR Contact: 02/27/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 43

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/16/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Annually

SPILLS: Oil & Chemical Spill Database
Oil and Chemical Spill Data.

Date of Government Version: 05/18/2009
Date Data Arrived at EDR: 05/21/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 860-424-3024
Last EDR Contact: 04/27/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Semi-Annually

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (888) 372-7341
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 05/14/2008
Date Data Arrived at EDR: 05/28/2008
Date Made Active in Reports: 08/08/2008
Number of Days to Update: 72

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/05/2008
Date Made Active in Reports: 09/23/2008
Number of Days to Update: 18

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 07/01/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 01/27/2009
Date Data Arrived at EDR: 04/23/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 18

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/20/2009
Next Scheduled EDR Contact: 10/19/2009
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/23/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 21

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/08/2009
Number of Days to Update: 1

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 03/24/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 42

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/23/2009
Next Scheduled EDR Contact: 09/21/2009
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 04/09/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 69

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 06/16/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 07/14/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/14/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 03/20/2009
Date Data Arrived at EDR: 03/20/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 07/13/2009
Next Scheduled EDR Contact: 10/12/2009
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 02/26/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 05/04/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/02/2009
Date Data Arrived at EDR: 04/24/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 25

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/29/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 05/01/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 18

Source: EPA
Telephone: (617) 918-1111
Last EDR Contact: 06/29/2009
Next Scheduled EDR Contact: 09/28/2009
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 05/22/2009
Number of Days to Update: 92

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Biennially

LWDS: Connecticut Leachate and Wastewater Discharge Sites

The Leachate and Waste Water Discharge Inventory Data Layer (LWDS) includes point locations digitized from Leachate and Wastewater Discharge Source maps compiled by the Connecticut DEP. These maps locate surface and groundwater discharges that (1) have received a waste water discharge permit from the state or (2) are historic and now defunct waste sites or (3) are locations of accidental spills, leaks, or discharges of a variety of liquid or solid wastes.

Date of Government Version: 04/20/2002
Date Data Arrived at EDR: 03/12/2007
Date Made Active in Reports: 03/16/2007
Number of Days to Update: 4

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Varies

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/11/2008
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 98

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 07/21/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Annually

DRYCLEANERS: Drycleaner Facilities

A listing of drycleaner facility locations.

Date of Government Version: 07/18/2008
Date Data Arrived at EDR: 08/08/2008
Date Made Active in Reports: 08/27/2008
Number of Days to Update: 19

Source: Department of Environmental Protection
Telephone: 860-424-3026
Last EDR Contact: 07/20/2009
Next Scheduled EDR Contact: 10/05/2009
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENFORCEMENT: Enforcement Case Listing

The types of enforcement actions included are administrative consent orders, final unilateral orders and final dispositions of civil cases through the Attorney General's Office.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 860-424-3265
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Varies

NPDES: Wastewater Permit Listing

A listing of permits issued by the DEP.

Date of Government Version: 01/23/2009
Date Data Arrived at EDR: 01/23/2009
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 55

Source: Department of Environmental Protection
Telephone: 860-424-3832
Last EDR Contact: 07/20/2009
Next Scheduled EDR Contact: 10/19/2009
Data Release Frequency: Varies

AIRS: Permitted Air Sources Listing

A listing of permitted air sources in Connecticut.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/01/2008
Date Made Active in Reports: 10/10/2008
Number of Days to Update: 9

Source: Department of Environmental Protection
Telephone: 860-424-3026
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 04/13/2009
Date Data Arrived at EDR: 04/14/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/22/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 05/05/2009
Date Made Active in Reports: 05/22/2009
Number of Days to Update: 17

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 05/05/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/22/2009
Date Data Arrived at EDR: 05/27/2009
Date Made Active in Reports: 07/01/2009
Number of Days to Update: 35

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/11/2008
Date Made Active in Reports: 10/02/2008
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/12/2009
Date Made Active in Reports: 06/29/2009
Number of Days to Update: 17

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data
Hazardous waste manifest information.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/09/2009
Date Made Active in Reports: 05/20/2009
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/22/2008
Date Made Active in Reports: 09/08/2008
Number of Days to Update: 17

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/06/2009
Next Scheduled EDR Contact: 10/05/2009
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Daycare Centers: Licensed Child Care Facilities
Source: Department of Public Health
Telephone: 860-509-8045

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Soils
Source: Department of Environmental Protection
Telephone: 860-871-4047

STREET AND ADDRESS INFORMATION

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APPENDIX C

Site Reconnaissance Photographs

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Front Elevation of USAR Center Administration Building



Rear Elevation of USAR Center Administration Building



Former NIKE Missile Silo Area in Southwest Portion of the Property



Metal Shed Observed in the Former NIKE Missile Silo Area



View of Foundation of Former Barracks Building North of USAR Center Administration Building



Signage off Mile Lane



Stormwater Discharge Pipe Observed on the East side of the USAR Center Administration Building



Typical Interior View of USAR Center Administration Building



View of Mile Lane to the North with Residences Immediately Beyond



View of Undeveloped Woodlands to the South



View of Residential Properties to the East



View of Undeveloped Land to the West

APPENDIX D

Supporting Documentation

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APPENDIX D: SUPPORTING DOCUMENTATION

NOTE: The electronic files for all supporting documents used as references in this ECP Update Report are included on the enclosed compact disc. Hard copies of selected documents or document excerpts are included in Appendix D.

Appendix	Date	Document Title
D1	March 2, 2007	*Technical Memorandum: Site 08 – Groundwater,* 94th Regional Readiness Command, U.S. Army Reserve Center, Middletown, CT Kemron Environmental Services/MACTEC
D2	May 20, 2008	*Final Remedial Investigation Report: Site 08 – Groundwater,* 94th Regional Readiness Command, U.S. Army Reserve Center, Middletown, CT Kemron Environmental Services/MACTEC
D3	August 8, 2008	*Decision Document (DD) Recommending No Action (NA) for Site-08 Groundwater at Middletown, Connecticut, USARC* 94th Regional Readiness Command
D4	March 2009	*Wash Rack Subsurface Investigation: Middletown United States Army Reserve Center, Middletown, Connecticut* AECOM, Inc. and Stell Environmental Enterprises
D5	May 2009	*Leachfield and Former Building Foundation Subsurface Investigation: Middletown United States Army Reserve Center, Middletown, CT* AECOM, Inc. and Stell Environmental Enterprises
D6	August 11, 2009	*Well Abandonment Summary: USARC Facilities in Middletown, CT, Danvers, MA and Narragansett, RI* Kemron Environmental Services/MACTEC

COMPACT DISC contains: *APPENDIX D: SUPPORTING DOCUMENTATION (D-1 through D6)*

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Technical Memorandum

94th Regional Readiness Command
US Army Reserve Center (USARC)
499 Mile Lane, Middletown, Connecticut
Site 08 - Groundwater
Contract # W911SO-04-F0017

Overview

The facility is located at 499 Mile Lane, in Middletown, Connecticut situated on the south side of Mile Lane in a primarily residential section of town. This facility consists of a 23.7-acre parcel of land that was used from the mid 1950s to the early 1960s as a NIKE missile launching facility, furnished with three launch silos. Operations typically conducted at NIKE sites included missile assembly and disassembly, missile fueling and warheading, missile maintenance and testing, general launcher and magazine maintenance, vehicle maintenance and general facility maintenance. The launch silos were closed by the New England District of the Army Corps of Engineers (NEDACE) in 1988. A site locus which indicates the facility location is included as **Figure 1-1**.

In the early 1960s the facility was converted to a USARC facility and has been operated as such since. Three buildings (former Reserve Center Building, former Maintenance Building/Missile Test and Assembly Building and former Garage/Warhead Building) were demolished in the late 1990's; however, their concrete slab foundations remain. The Current Reserve Center building was constructed prior to demolition of the former reserve center building. Three underground storage tanks (USTs) were removed from the site between 1990 and 1997. A layout of the facility is included as **Figure 1-2**.

The property currently consists of the USARC building and three former slab on grade foundations located on a multi-tiered hillside. Several paved parking areas and driveways are located on the property along with grass and wooded areas.

Based on previous investigations, the soil underlying the USARC facility is comprised of till, which consists of reddish-brown, fine sand, silt, and clay and little fine to coarse gravel. The till is underlain by weathered arkosic rock at an average depth of 20 feet below ground surface (bgs).

The facility is located in a GA groundwater classified area, which indicates that it is presumed to be within the area of influence of existing private water supply wells or of groundwater with potential to provide water to public or private water supply wells. Groundwater classified as GA should be suitable for direct human consumption without prior treatment. There are no known water supply wells located at least a ½ mile immediately downgradient of the facility.

Regulatory Framework

The U.S. Army, as the lead agency, is conducting response actions at Site 08 "groundwater" in accordance with the Defense Environmental Restoration Program (DERP), which requires that these activities be conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Army's intent is to achieve site closure under CERCLA specific to Site 08 at the USARC property.

Federal maximum contaminant levels (MCLs) have been used as screening criteria during evaluation of the 2005 and 2006 site groundwater data. In accordance with CERCLA and the NCP, a risk assessment will be performed based on current and reasonably foreseeable future land use. The risk assessment will be performed using available site data to evaluate potential risks to receptors based on an industrial/commercial land use scenario. The risk assessment results will be used as the basis for future actions at the facility as appropriate under CERCLA.

Areas of Concern (AOCs)

AOCs and potential AOCs have been developed for the facility based on evaluation of prior data and review of prior reports and other relative information. The following AOCs have been identified for the property:

- AOC No. 1 - Former 2,000-gallon Fuel Oil UST at the Former Reserve Center/Barracks Building
- AOC No. 2 - Former Maintenance / Missile Test and Assembly Building
- AOC No. 3 - Former 550-gallon Fuel Oil UST at the Former Maintenance / Missile Test and Assembly Building
- AOC No. 4 - Catch Basin Located Adjacent to the Former Maintenance / Missile Test and Assembly Building with Outfall
- AOC No. 5 - Former Garage / Warhead Building
- AOC No. 6 - Former Acid Neutralization Pit within the Former Garage / Warhead Building
- AOC No. 7 - Former Missile Silos
- AOC No. 8 - Former Acid Storage Shed
- AOC No. 9 - Former Leaching Field
- AOC No. 10 - Former 2,500-gallon Fuel Oil UST at the Current Reserve Center
- AOC No. 11 - Well M8 area

Select AOCs have been previously investigated and been determined that a release to the environment has not occurred. For other select AOCs, releases have been noted and have been properly remediated (i.e., AOCs 1, 3, and 10).

Groundwater impacts, specifically chlorinated solvents, have been noted in M8 and neighboring wells and potentially in a downgradient bedrock well. The focus of the Army's work at Middletown is remediation of the TCE and degradation products in groundwater. The remainder of this Technical Memorandum provides a summary of historic work performed and data collected at the above listed AOCs.



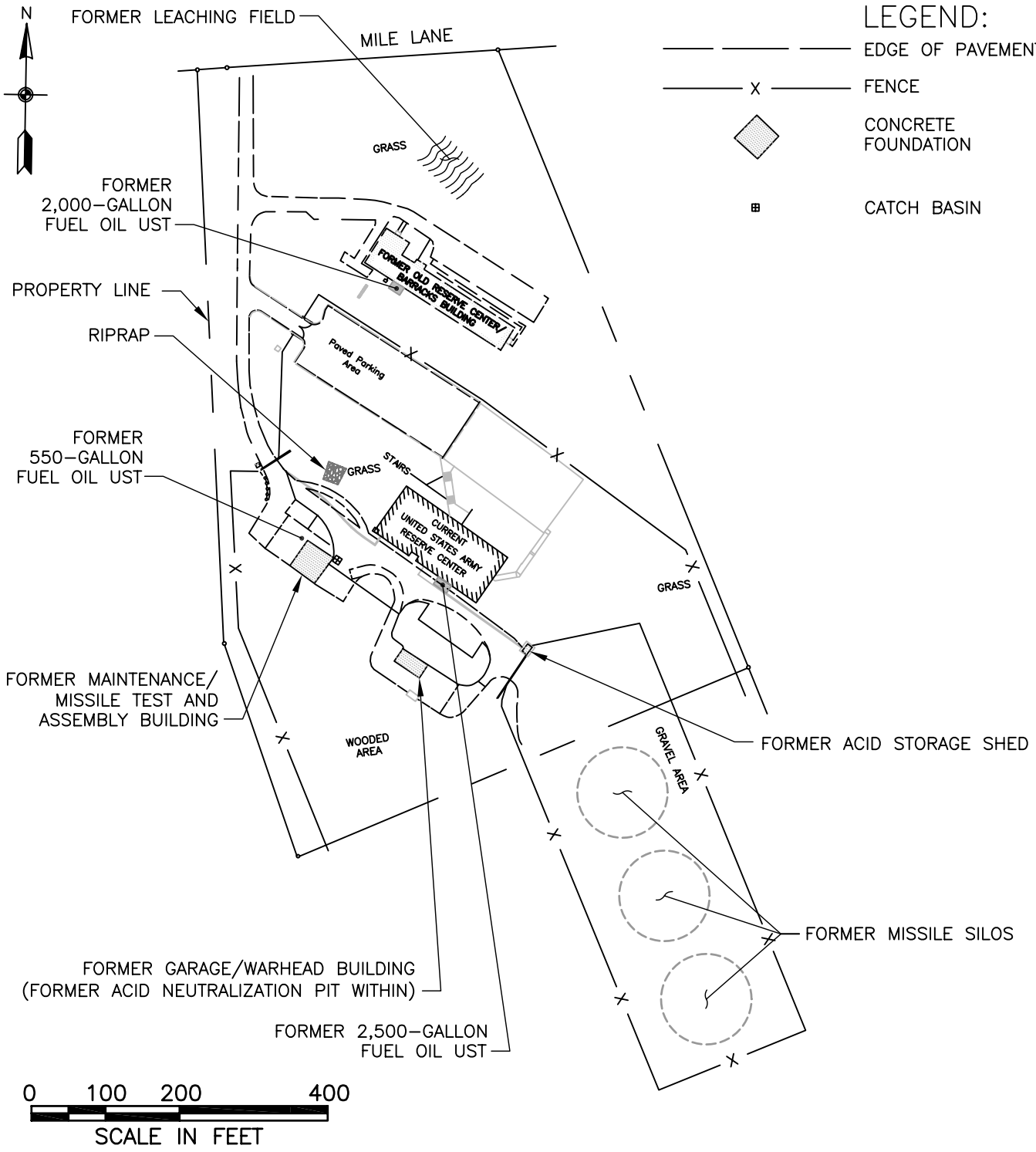
SOURCE:
USGS – MIDDLETOWN, CT
1965 – REVISED 1992

0 600 1200 2400
SCALE IN FEET

Prepared/Date: MRS 08/01/2006
Checked/Date: JRY 08/01/2006

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	kemron ENVIRONMENTAL SERVICES MACTEC	LOCUS MAP Project 3618-04-8110 Figure 1-1

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DRAWING REFERENCE: PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 02/28/2007
Checked/Date: JRY 02/28/2007

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Site Layout Project 3618-04-8110 Figure 1-2

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AOC No. 1

AOC No. 1 - Former 2,000-gallon Fuel Oil UST at the Former Reserve Center / Barracks Building

Overview

An underground storage tank (UST) was formerly located adjacent to the Former Reserve Center / Barracks Building located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane, in Middletown, Connecticut. The UST was 2,000-gallons in capacity and was used to store fuel oil to heat the Former Reserve Center / Barracks Building. The UST was removed in 1990 and its former location is shown on **Figure 2-1** which is attached.

Chemical Usage

The 2,500-gallon UST was used to store fuel oil which was used to heat the Former Reserve Center / Barracks Building.

Potential Release Mechanisms

Releases to the environment could include releases of fuel oil through cracks or holes in the UST and/or piping and releases could have occurred during filling of the UST. Releases could originate surficially or at depth.

Previous Environmental Investigations

Previous environmental investigations associated with the Former 2,500-gallon Fuel Oil UST include the following:

- Limited Subsurface Investigation by Clean Harbors Environmental Engineering, Inc. (CHEE) dated December 7, 1990.
- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Revised Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Limited Subsurface Investigation by CHEE (December 1990)</u>

CHEE conducted a subsurface investigation to investigate the possibility of petroleum migration in site soils and groundwater caused by a former leaking 2,000-gallon fuel oil UST which was located along the southwestern side of the Former Reserve Center / Barracks Building as shown on **Figure 2-1**. The UST was removed by Clean Harbors Inc. (CHI) and several perforations were noted on its sides and bottom. During removal of the UST, petroleum contaminated soils were encountered around the perimeter of the tank and the surrounding impacted soils were removed (approx. 100 cubic yards) to a depth of approximately 7 ft, where groundwater started entering the excavation.

Three soil borings (CHI-1 through CHI-3) were performed in the vicinity of the UST excavation and surrounding the Former Reserve Center / Barracks Building as shown on **Figure 2-1**. The soil borings were subsequently completed as monitoring wells. Soil samples were collected from CHI-1 and CHI-2 from the 5 to 7 depth interval and were analyzed for total petroleum hydrocarbons (TPH) by Environmental Protection Agency (EPA) Method 418.1. The soil sample collected from CH-1 was also analyzed for volatile organic compounds (VOCs) by EPA Method 8240. TPH and VOCs were not detected in the soil samples.

Groundwater samples were collected from all three wells and were analyzed for TPH and VOCs. 1,1-Dichloroethane (1,1-DCA) was detected at a concentration of 6 micrograms per liter (ug/l) and 1,1,1-trichloroethane (1,1,1-TCA) was detected at a concentration of 9 ug/l in CHI-1. The concentration of 1,1-DCA detected is below the applicable Remediation Standard Regulations (RSR) Groundwater Protection Criteria (GWPC) of 70 ug/l and the concentration of 1,1,1-TCA was below the GWPC of 200 ug/l. VOCs were not detected in CHI-2 and CHI-3.

Geohydrological Study by USAEHA (June 1992)

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-1**.

Overburden monitoring wells M10, M10B, M11 and M12 were installed at locations surrounding the Former Reserve Center / Barracks Building. Soil samples were collected from boring M10 from the 2 to 38 inch and approximately 4 to 5 foot depth intervals. A soil sample was also collected from location SS-1 from the 2 to 16 inch depth interval from the former UST location. The samples were analyzed for TPH, VOCs by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, and total RCRA 8 metals. The shallow soil sample from M10 was also analyzed for toxicity characteristic leaching procedure (TCLP) chromium and lead and the soil sample from SS-1 was also analyzed for TCLP chromium. Select total metals (arsenic, barium, chromium and lead) were detected in all three soil samples; however, the reported concentrations were well below applicable RSR criteria. TPH, VOCs, SVOCs, the remaining four total RCRA 8 metals and TCLP chromium and lead were not detected.

Groundwater samples were collected from M10B, M11 and M12 and were analyzed for TPH, VOCs, SVOCs and dissolved metals. Methylene chloride and toluene at 1 ug/l were detected in M10B at concentrations well below applicable RSR criteria. Dissolved barium, cadmium, lead, mercury and zinc were detected in at least one of the groundwater but the reported concentrations did not exceed applicable RSR criteria. TPH, SVOCs and the remaining dissolved metals and VOCs were not detected.

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing accessible monitoring wells in August 2005 and February 2006. Groundwater samples were collected from M11 during both events and a groundwater sample was collected from M12 during the February 2006 event. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M11 were analyzed for VOCs, SVOCs, total and dissolved metals and extractable total petroleum hydrocarbons (ETPH) during the February event and analyzed for VOCs and total and dissolved metals during the August event. The groundwater sample from M12 was

analyzed for VOCs, SVOCs, total and dissolved metals and ETPH. Toluene was detected in M11 at an estimated trace concentration less than 1 ug/l during the August event and acetone was detected in M11 at an estimated concentration less than 5 ug/l during the February event. Several total and dissolved metals were detected but the reported concentrations did not exceed MCLs. SVOCs, ETPH and the remaining total and dissolved metals and VOCs were not detected.

RI Investigation by KEMRON/MACTEC (on-going)

Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells. Groundwater samples were collected from M10, M11 and M12 during the sample event and no additional wells or other explorations were completed in the vicinity of the Former 2,000-gallon UST.

The groundwater samples collected from the three wells were analyzed for VOCs and ETPH. VOCs and ETPH were not detected the samples.

Remedial Activities

Approximately 100 cubic yards of fuel oil impacted soil was removed during the removal of the 2,500-gallon fuel oil UST in 1990.

Conclusions

The 2,000-gallon fuel oil UST was removed in 1990 and at the time of removal holes were noted in the sides and bottom of the UST. Petroleum impacted soils were also noted in the UST grave and approximately 100 cubic yards of impacted soil was removed.

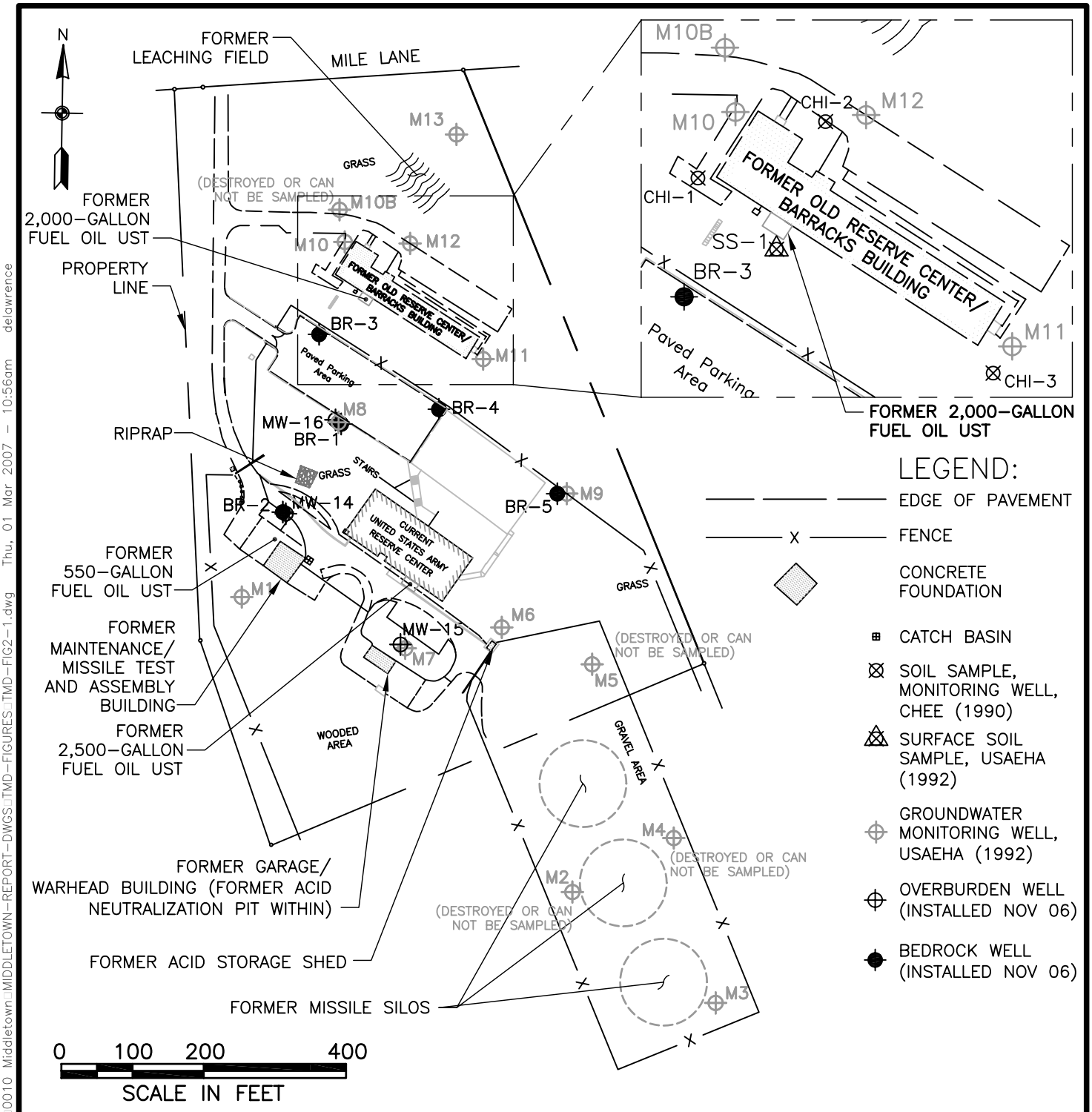
Soil samples were previously collected from borings performed in the vicinity of the UST excavation and surrounding the Former Reserve Center / Barracks Building. A soil sample was also collected from a shallow boring performed with the former UST excavation. Select total metals were detected in the soil samples; however, the reported concentrations were well below applicable RSR criteria. The soil samples were analyzed for several other parameters which were not detected.

Overburden groundwater has been sampled on five occasions since 1990 from wells located in the vicinity of the UST excavation and surrounding the Former Reserve Center / Barracks Building. 1,1-DCA and 1,1,1-TCA were previously detected in well CHI-1 in 1990 but at concentrations below RSR criteria. 1,1-DCA and 1,1,1-TCA have not been detected in wells in the vicinity during the four subsequent sample events. Trace concentrations of toluene and methylene chloride have been detected along with select total and dissolved metals but at concentrations well below MCLs. The groundwater samples were analyzed for several other parameters which were not detected.

The approach using CERCLA for this facility is focused on only those contaminant sources that are believed to be potential risk contributors to the groundwater impacts identified in groundwater, specifically chlorinated solvents noted in M8 and neighboring wells. Since the intent of this contract is to achieve site closure under CERCLA specific to Site 08 and the Former 2,000-gallon Fuel Oil UST is downgradient of M8, this AOC would not be a source of impact to site groundwater and no further investigation is proposed.

Recommendations

No further CERCLA investigations are recommended at the Former 2,000-gallon Fuel Oil UST.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 02/28/07
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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	kemron ENVIRONMENTAL SERVICES MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER 2,000-GALLON FUEL OIL UST Figure 2-1

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AOC No. 2

Former Maintenance / Missile Test and Assembly Building

Overview

A former building that has been previously known as the Missile Test and Assembly Building, and in more recent years as the Maintenance Building, was located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. Currently, only a concrete slab foundation remains but historically the building was reportedly used as a maintenance building and for missile testing and assembly. The location of the former Maintenance/Missile Test and Assembly Building is shown on **Figure 2-2** which is attached.

Chemical Usage

Chemicals stored in the building when it was a maintenance building would presumably consist of petroleum products and maintenance fluids, cleaners, and paints. Chemicals that were most likely to have been used when the building was used for missile assembly and testing were probably similar to its maintenance building use.

Potential Release Mechanisms

Releases to the environment could include spills of chemicals used in the building to soils through the buildings concrete flooring and to areas immediately adjacent to the building.

Previous Environmental Investigations

Previous environmental investigations associated with the former Maintenance/Missile Assembly and Test Building include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Environmental Baseline Study by Diversified Technology Consultants (DTC) dated November 1998
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-2**.

Monitoring well M8 was installed at the base of the hillside downgradient of the former Maintenance/Missile Assembly and Test Building and monitoring well M1 was installed to the southwest and upgradient of the area. A soil sample was collected from boring M1 from the 4 to 20 inch depth interval and analyzed for total petroleum hydrocarbons (TPH) by Environmental Protection Agency

(EPA) Method 418.1, volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, total RCRA 8 metals and toxicity characteristic leaching procedure (TCLP) chromium. Select total metals (arsenic, barium, chromium and lead) were detected; however, the reported concentrations were well below applicable RSR criteria. TPH, VOCs, SVOCs, the remaining four total RCRA 8 metals and TCLP chromium were not detected.

Groundwater samples were collected from M1 and M8 and were analyzed for TPH, VOCs, SVOCs, and dissolved metals. Carbon tetrachloride at 14 micrograms per liter (ug/l) and trichloroethene (TCE) at 38 ug/l were detected in M8 at concentrations above the GWPC of 5 ug/l for both compounds. Dissolved mercury was detected at a concentration of 1.5 ug/l, which exceeds the Surface Water Protection Criteria (SWPC) of 0.4 ug/l. Chloroform, cis-1,2-dichloroethene (cis-1,2-DCE), and dissolved barium and zinc were detected, but the reported concentrations did not exceed applicable RSR criteria. TPH, SVOCs, and the remaining dissolved metals and VOCs were not detected.

Dissolved arsenic was detected at a concentration of 20 ug/l, in M1 which exceeds the SWPC of 4 ug/l. Carbon tetrachloride and dissolved barium, lead, and zinc were detected, but the reported concentrations did not exceed applicable RSR criteria. TPH, SVOCs, and the remaining dissolved metals and VOCs were not detected.

Environmental Baseline Study by DTC (November 1998)

An Environmental Baseline Study was completed in support of proposed demolition of several on-site buildings including the former Maintenance/Missile Assembly and Test Building. Soil sampling was conducted though the floor of the former Maintenance/Missile Assembly and Test Building. Soil samples were collected at two locations (S3 and S4) directly below the concrete flooring. The soil samples were analyzed for VOCs, SVOCs, TPH, PCBs, and synthetic precipitation leaching procedure (SPLP) RCRA 8 metals. SPLP barium was detected in both samples (up to 0.57 milligrams per liter (mg/l)) and TPH was detected in both samples (up to 72 parts per million (ppm)) at concentrations which are below applicable RSR criteria. VOCs, SVOCs, PCBs, and the remaining SPLP metals were not detected in the samples. The sample locations are shown on **Figure 2-2.**

RI Investigation by KEMRON/MACTEC (on-going)

To support the ongoing CERCLA remedial investigation, a series of soil borings were performed in November 2006 at the facility. Soil borings SB-6 through SB-9 were performed in the vicinity of the former Maintenance/Missile Assembly and Test Building as shown on **Figure 2-2**. The soil borings were advanced to bedrock refusal, which was encountered at depths of approximately 20 feet below ground surface (bgs). A soil sample was collected from each boring for laboratory analysis for ETPH and VOCs. ETPH was detected at an estimated concentration of less than 12 mg/kg in one soil samples and acetone and TCE were detected once in separate soil samples at estimated trace concentrations. ETPH and other VOCs were not detected in the other samples analyzed.

Additional groundwater monitoring wells were also installed during the November 2006 investigation activities at the site. Overburden monitoring well MW-14 and shallow bedrock monitoring well BR-2 were installed downgradient of the former Maintenance/Missile Assembly and Test Building as shown on **Figure 2-2**. Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells including MW-14 and BR-2 during the sample event.

The groundwater samples collected from MW-14 and BR-2 were analyzed for VOCs. The groundwater sample from MW-14 was also analyzed for ETPH. Trace estimated concentrations less than 1 ug/l of carbon tetrachloride, chloroform, and TCE were detected in MW-14 and carbon disulfide was detected in

BR-2 at a concentration just over 1 ug/l. ETPH and the remaining VOCs were not detected in the samples.

Additional investigation was completed in November 2006 in the vicinity of M8 located downgradient of the former Maintenance/Missile Assembly and Test Building. A discussion of that work is included under AOC No. 11 - Monitoring Well M8 Area.

Remedial Activities

Remedial activities have not been conducted at the former Maintenance/Missile Assembly and Test Building.

Data Gaps

The area surrounding the former Maintenance/Missile Assembly and Test Building has been investigated with no evidence of a release noted. A source of the VOC impacted groundwater noted downgradient at M8 has not been identified.

Conclusions

Soil samples were previously collected from soils directly below the concrete flooring of the former Maintenance/Missile Assembly and Test Building and from soil boring locations adjacent to and downgradient of the former building. TPH, select total metals, and SPLP barium were detected in samples collected underneath the building; however, the reported concentrations were well below applicable RSR criteria. ETPH, acetone and TCE were detected once in separate soil samples in downgradient borings at estimated trace concentrations. The soil samples were analyzed for several other parameters which were not detected. RSR Criteria have been used as screening criteria during evaluation of site data.

Overburden and bedrock groundwater quantity has been sampled directly downgradient of the former Maintenance/Missile Assembly and Test Building. Trace estimated concentrations of carbon tetrachloride, chloroform, and TCE were detected in overburden groundwater and carbon disulfide was detected in bedrock groundwater at a trace concentration. The groundwater samples were analyzed for other parameters which were not detected.

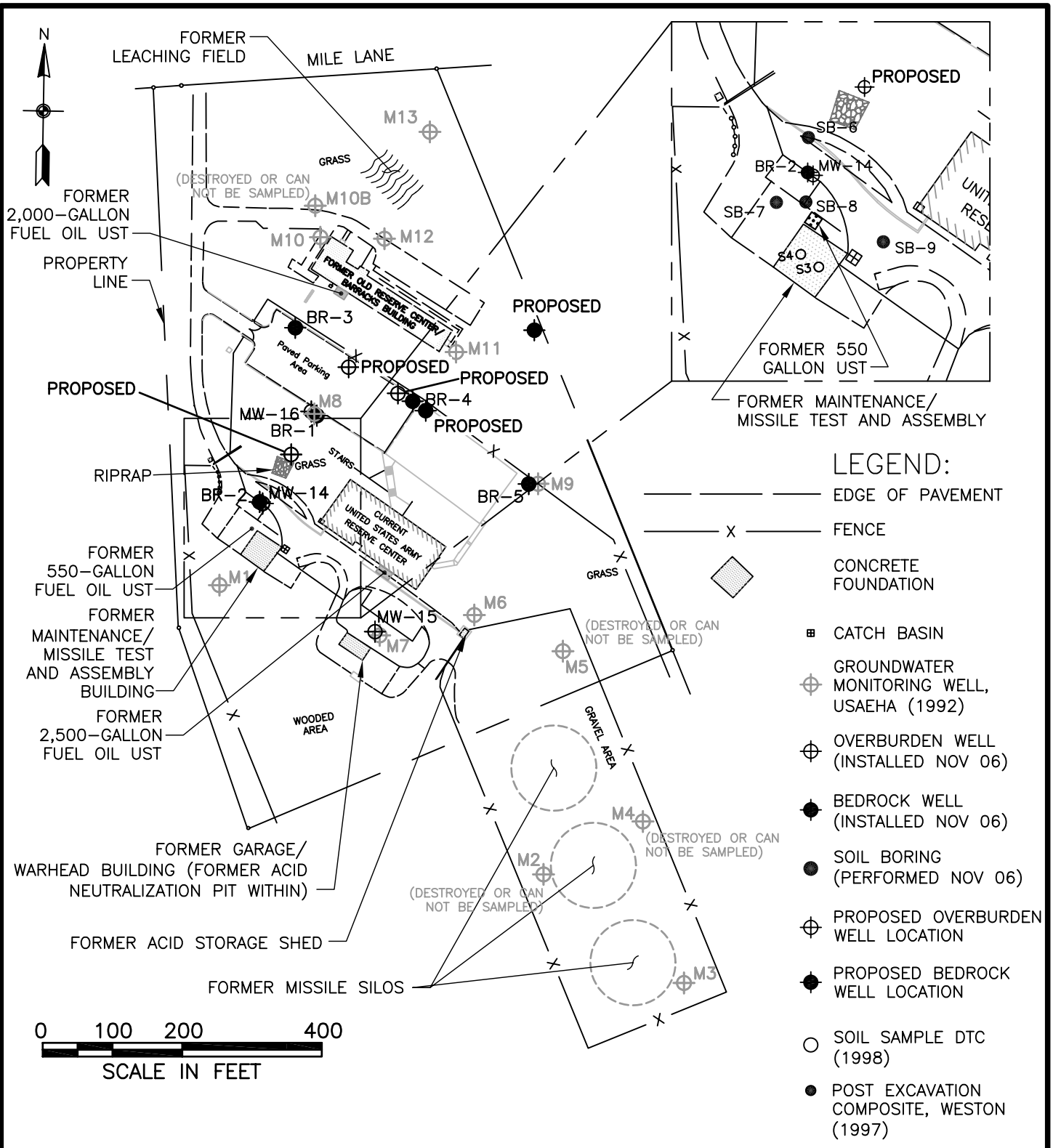
Groundwater quality has also been sampled from a location upgrade of the former Maintenance/Missile Assembly and Test Building. Dissolved arsenic was detected at 20 ug/l, a concentration which exceeds the SWPC of 4 ug/l during one event conducted in 1992; however, no exceedences of RSR criteria have occurred since. Carbon tetrachloride, chloroform, one SVOC, and dissolved barium, lead and zinc have been detected during past events but the reported concentrations did not exceed MCLs. The groundwater samples were analyzed for several other parameters which were not detected.

Carbon tetrachloride and TCE have been detected in overburden groundwater downgradient of the area at concentrations above applicable RSR criteria. The area surrounding the former Maintenance/Missile Assembly and Test Building has been investigated with no evidence of a release noted; however, the source of the VOC impacted groundwater noted downgradient at M8 has not been identified.

Recommendations

No further CERCLA investigations are recommended for the Former Maintenance/Missile Assembly and Test Building.

It is recommended that the discharge area (riprap) located between the M8 area and the former Maintenance/Missile Assembly and Test Building be investigated. A soil boring with collection and analysis of a soil sample and installation and sampling of a groundwater monitoring well at the base of the discharge location has been proposed. The results of the field investigation and subsequent CERCLA risk assessment will be documented in the future RI Report.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut
Project 3618-04-8110

KEMRON ENVIRONMENTAL SERVICES MACTEC

SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS

FORMER MAINTENANCE/ MISSILE TEST AND ASSEMBLY BUILDING

Figure 2-2

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AOC No. 3

Former 550-gallon Fuel Oil UST at the Former Maintenance / Missile Test and Assembly Building

Overview

An underground storage tank (UST) was formerly located adjacent to the Former Maintenance / Missile Test and Assembly Building on the US Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. The 550-gallon double-walled fiberglass UST was reportedly installed in 1990 was located along the northeast side of the former Maintenance/Missile Assembly and Test Building, as shown on **Figure 2-3** which is attached.

Chemical Usage

The former UST was used for the storage of fuel oil, which was used to heat the former Maintenance / Missile Test and Assembly Building.

Potential Release Mechanisms

Releases to the environment could include releases of fuel oil through cracks or holes in the UST and/or piping and releases could have occurred during filling of the UST. Releases could originate surficially or at depth.

Previous Environmental Investigations

Previous environmental investigations associated with the former 550-gallon fuel oil UST include the following:

- Final Underground Storage Tank Closure Report; UST Removals at United States Army Reserve Centers in Brockton and Springfield, Massachusetts and Middletown, Connecticut by Roy F. Weston, Inc. (Weston) dated January 30, 1997.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Final Underground Storage Tank Closure Report by Weston (January 30, 1997)</u>

A 550-gallon double-walled fiberglass UST was located along the northeast side of the former Maintenance/Missile Assembly and Test Building and was removed in August 1996. The UST was originally used for the storage of fuel oil but was abandoned when the building was converted to gas for heating. Approximately 20-gallons of oily water were removed from the tank at the time of removal. Soils removed during the UST removal were screened with a photoionization detector (PID) with no concentrations reported above background levels. One soil sample was collected from the tank grave. The sample was a composite of all four sidewalls and the excavation bottom. The sample was analyzed for volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), polychlorinated biphenyls (PCBs) by EPA Method 8080, and total RCRA 8 metals. VPH and EPH analytes and PCBs were not detected. Several total RCRA 8 metals were reported, but at concentrations which would be expected for background conditions. Following the UST removal, the excavation was restored. Weston

concluded that no evidence of a release from the tank or associated piping occurred. The locations of the UST and soil samples are shown on **Figure 2-3**.

RI Investigation by KEMRON/MACTEC (on-going)

To support the ongoing CERCLA remedial investigation, a series of soil borings were performed in November 2006 at the facility. Soil borings SB-6 through SB-9 were performed in the vicinity of the former UST as shown on **Figure 2-3**. The soil borings were advanced to bedrock refusal which was encountered at depths of approximately 20 feet below ground surface (bgs). A soil sample was collected from each boring for laboratory analysis for ETPH and VOCs. ETPH was detected at an estimated concentration of less than 12 mg/kg in one soil samples and acetone and TCE were detected once in separate soil samples at estimated trace concentrations. ETPH and other VOCs were not detected in the other samples analyzed.

Additional groundwater monitoring wells were also installed during the November 2006 investigation activities at the site. Overburden monitoring well MW-14 and shallow bedrock monitoring well BR-2 were installed downgradient of the former UST as shown on **Figure 2-3**. Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells including MW-14 and BR-2 during the sample event.

The groundwater samples collected from MW-14 and BR-2 were analyzed for VOCs. The groundwater sample from MW-14 was also analyzed for ETPH. Trace estimated concentrations less than 1 ug/l of carbon tetrachloride, chloroform and TCE were detected in MW-14 and carbon disulfide was detected in BR-2 at a concentration just over 1 ug/l. ETPH and the remaining VOCs were not detected in the samples.

Additional investigation was completed in November 2006 in the vicinity of M8 located downgradient of the former UST. A discussion of that work is included under AOC No. 11 - Monitoring Well M8 Area.

Remedial Activities

Remedial activities have not been conducted for the former 550-gallon fuel oil UST.

Data Gaps

No evidence of a release from the tank or associated piping was identified during removal of the UST in 1996. Additionally, the area surrounding the former Maintenance/Missile Assembly and Test Building has been investigated with no evidence of a release noted. A source of the VOC impacted groundwater noted downgradient at M8 has not been identified.

Conclusions

The UST was removed from adjacent to the former Maintenance/Missile Assembly and Test Building with soil samples collected from the tank grave. It was concluded that no evidence of a release from the tank or associated piping occurred.

Overburden and bedrock groundwater quantity has been sampled directly downgradient of the former UST. Trace estimated concentrations of carbon tetrachloride, chloroform and TCE were detected in overburden groundwater and carbon disulfide was detected in bedrock groundwater at a trace concentration. The groundwater samples were analyzed for other parameters which were not detected.

Groundwater quality has also been sampled from a location upgrade of the former UST. Carbon tetrachloride, chloroform, one SVOC and dissolved barium, lead and zinc have been detected during past events but the reported concentrations did not exceed MCLs. The groundwater samples were analyzed for several other parameters which were not detected.

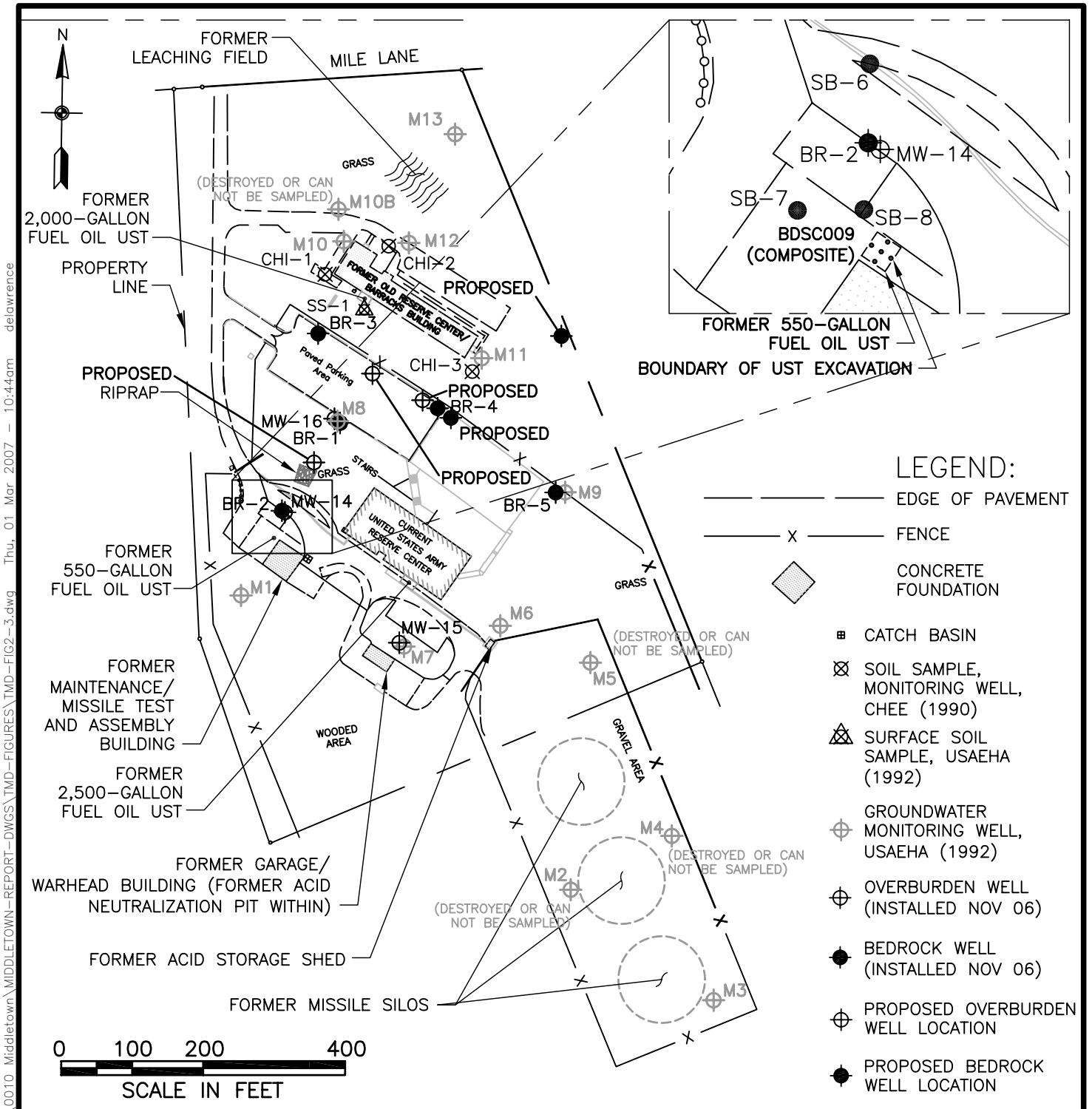
Carbon tetrachloride and TCE have been detected in overburden groundwater downgradient of the area at concentrations above applicable RSR criteria. The area surrounding the former UST has been investigated with no evidence of a release noted; however, the source of the VOC impacted groundwater noted downgradient at M8 has not been identified.

Recommendations

No further CERCLA investigations are recommended for the Former 550-gallon Fuel Oil UST.

It is recommended that the discharge area (riprap) located between the M8 area and the former Maintenance/Missile Assembly and Test Building be investigated. A soil boring with collection and analysis of a soil sample and installation and sampling of a groundwater monitoring well at the base of the discharge location has been proposed. The results of the field investigation and subsequent CERCLA risk assessment will be documented in the future RI Report.

Figure 2-3 – Site Features and Previous Exploration Locations - AOC 3



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Middletown, Connecticut
Project 3618-04-8110

KEMRON ENVIRONMENTAL SERVICES MACTEC

SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS

FORMER 550-GALLON FUEL OIL UST

Figure 2-3

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AOC No. 4

Catch Basin Located Adjacent to Former Maintenance / Missile Test and Assembly Building with Outfall

Overview

A catch basin is located off the northeast corner of the former Maintenance/Missile Test and Assembly Building as shown on **Figure 2-4** which is attached. The catch basin receives surface run-off from the surrounding area and is connected by an underground pipe to a riprap outfall on the hillside to the north of the former UST and Maintenance/Missile Assembly and Test Building.

Chemical Usage

Chemicals stored and used in the adjacent building when it was a maintenance building would presumably consist of petroleum products and maintenance fluids, cleaners and paints. Chemicals that were most likely to have been used when the building was used for missile assembly and testing were probably similar to its maintenance building use.

Potential Release Mechanisms

Releases to the environment could include spills of chemicals used in the building to the catch basin which discharges to a hillside to the north of the catch basin. Releases to the environment could also occur through any cracks or holes in the catch basin. Releases could originate surficially or at depth.

Previous Environmental Investigations

No investigation was conducted at the riprap outfall.

Remedial Activities

Remedial activities have not been conducted at the catch basin and outfall.

Data Gaps

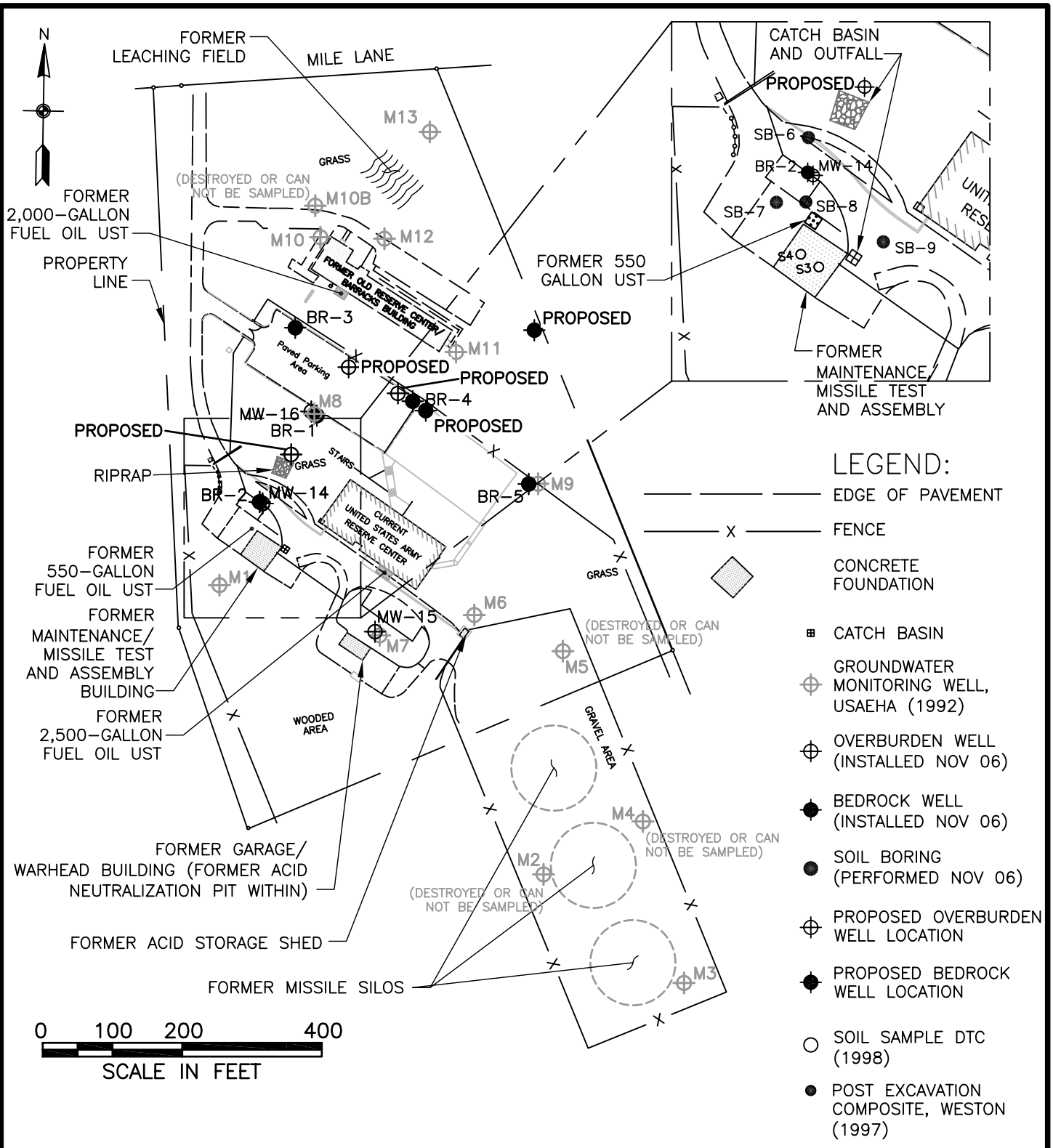
The riprap outfall has not been investigated. The discharge area reportedly receives water from a catch basin located adjacent to the former Maintenance/Missile Assembly and Test Building.

Conclusions

The discharge area reportedly receives water from a catch basin located adjacent to the former Maintenance/Missile Assembly and Test Building. No investigation was conducted at the riprap outfall.

Recommendations

It is recommended that the discharge area (riprap) located between the M8 area and the former UST and Maintenance/Missile Assembly and Test Building be investigated. A soil boring with collection and analysis of a soil sample and installation and sampling of a groundwater monitoring well at the base of the discharge location has been proposed. The results of the field investigation and subsequent CERCLA risk assessment will be documented in the future RI Report.



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KEMRON ENVIRONMENTAL SERVICES MACTEC

SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS
CATCH BASIN AND OUTFALL

Figure 2-4

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AOC No. 5

Former Garage / Warhead Building

Overview

A former building which has been previously known as the Warhead Building and in more recent years as the Garage was located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. A concrete slab foundation is all that remains of the building but reportedly, the building was historically used as a garage and for warhead related activities. The building also reportedly contained an acid neutralization pit (AOC No. 6) when it was used as the Warhead Building. The location of the former Garage/Warhead Building is shown on **Figure 2-5** which is attached.

Chemical Usage

Chemicals stored in the building when it was garage would presumably consist of petroleum products and vehicle maintenance fluids, cleaners and possibly paints. Chemicals that were most likely to have entered the acid neutralization pit include acids and waste fuel products that may have been generated during the fueling of the NIKE missiles.

Potential Release Mechanisms

Releases to the environment could include spills of chemicals used in the building to soils through the buildings concrete flooring and to areas immediately adjacent to the building. Releases would originate surficially from this AOC.

Previous Environmental Investigations

Previous environmental investigations associated with the former Garage/Warhead Building include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Environmental Baseline Study by Diversified Technology Consultants (DTC) dated November 1998
- Revised Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-5**.

Monitoring well M7 was installed adjacent and downgradient of the former Garage/Warhead Building. Soil samples were collected from the boring performed to install M7 from the 3 to 18 inch depth interval, 5 to 6.5 foot depth interval and 9.5 to 10.5 foot depth intervals. The soil samples were analyzed for TPH by EPA Method 418.1, VOCs by EPA Method 8260, SVOCs by EPA Method 8270, total RCRA 8 metals, and TCLP chromium and lead. TPH at 26 milligrams per kilogram (mg/kg) was detected in the sample from the shallowest internal and select total metals (arsenic, barium, chromium and lead) were detected; however, the reported concentrations were well below applicable RSR criteria. VOCs, SVOCs, the remaining four total RCRA 8 metals and TCLP chromium and lead were not detected.

The groundwater sample collected from M7 was analyzed for pH, TPH, VOCs, SVOCs and dissolved metals. pH was reported at 8.0 units and dissolved barium, lead, and zinc were detected. The detected metals did not exceed applicable RSR criteria. TPH, VOCs, SVOCs and the remaining dissolved metals were not detected.

Environmental Baseline Study by DTC (November 1998)

An Environmental Baseline Study was completed in support of proposed demolition of several on-site buildings including the former Garage/Warhead Building. Soil sampling was conducted though the floor of the former Garage/Warhead Building. Soil samples were collected at two locations (S1 and S2) directly below the concrete flooring. The soil samples were analyzed for VOCs, SVOCs, TPH, PCBs by EPA Method 8080 and synthetic precipitation leaching procedure (SPLP) RCRA 8 metals. SPLP barium was detected in both samples (up to 0.59 milligrams per liter (mg/l)) at concentrations below applicable RSR criteria. VOCs, SVOCs, TPH, PCBs and the remaining SPLP metals were not detected in the samples. The sample locations are shown on **Figure 2-5.**

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006 which included collection of groundwater samples from M7 during both events. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M7 were analyzed for VOCs, SVOCs, total and dissolved metals and ETPH during both the August 2005 and February 2006 sample events. Toluene was detected during the February event at an estimated trace concentration below 1 ug/l. Select total and dissolved metals were detected during both events at concentrations well below MCLs. ETPH, SVOCs and the remaining VOCs and total and dissolved metals were not detected. pH levels were also screened for in the field with neutral levels detected.

RI Investigation by KEMRON/MACTEC (on-going)

To support the CERCLA remedial investigation, a series of soil borings were performed in November 2006 at the facility. Soil boring SB-10 was performed adjacent to the former Garage/Warhead Building as shown on **Figure 2-5**. The soil boring was advanced to bedrock refusal which was encountered at 18.5 feet below ground surface (bgs). A soil sample was collected from the boring for laboratory analysis. The soil sample was analyzed for ETPH and VOCs. ETPH was detected at an estimated concentration of less than 12 mg/kg and VOCs were not detected.

Additional groundwater monitoring wells were also installed during the November 2006 investigation activities at the site. Monitoring well MW-15 was installed adjacent to M7 as shown on **Figure 2-5**. MW-15 was installed within the overburden and it was determined that M7 was previously installed within the bedrock. Groundwater samples were collected from existing accessible monitoring wells in

November 2006 along with newly installed wells. Groundwater samples were collected from M7 and MW-15 during the sample event.

The groundwater samples collected from M7 and MW-15 were analyzed for VOCs. The groundwater sample from MW-15 was also analyzed for ETPH. ETPH and VOCs were not detected in the samples. pH levels were also screened for in the field with neutral levels detected.

Remedial Activities

Remedial activities have not been conducted at the former Garage/Warhead Building.

Data Gaps

There do not appear to be any data gaps regarding the assessment and investigation of the former Garage/Warhead Building.

Conclusions

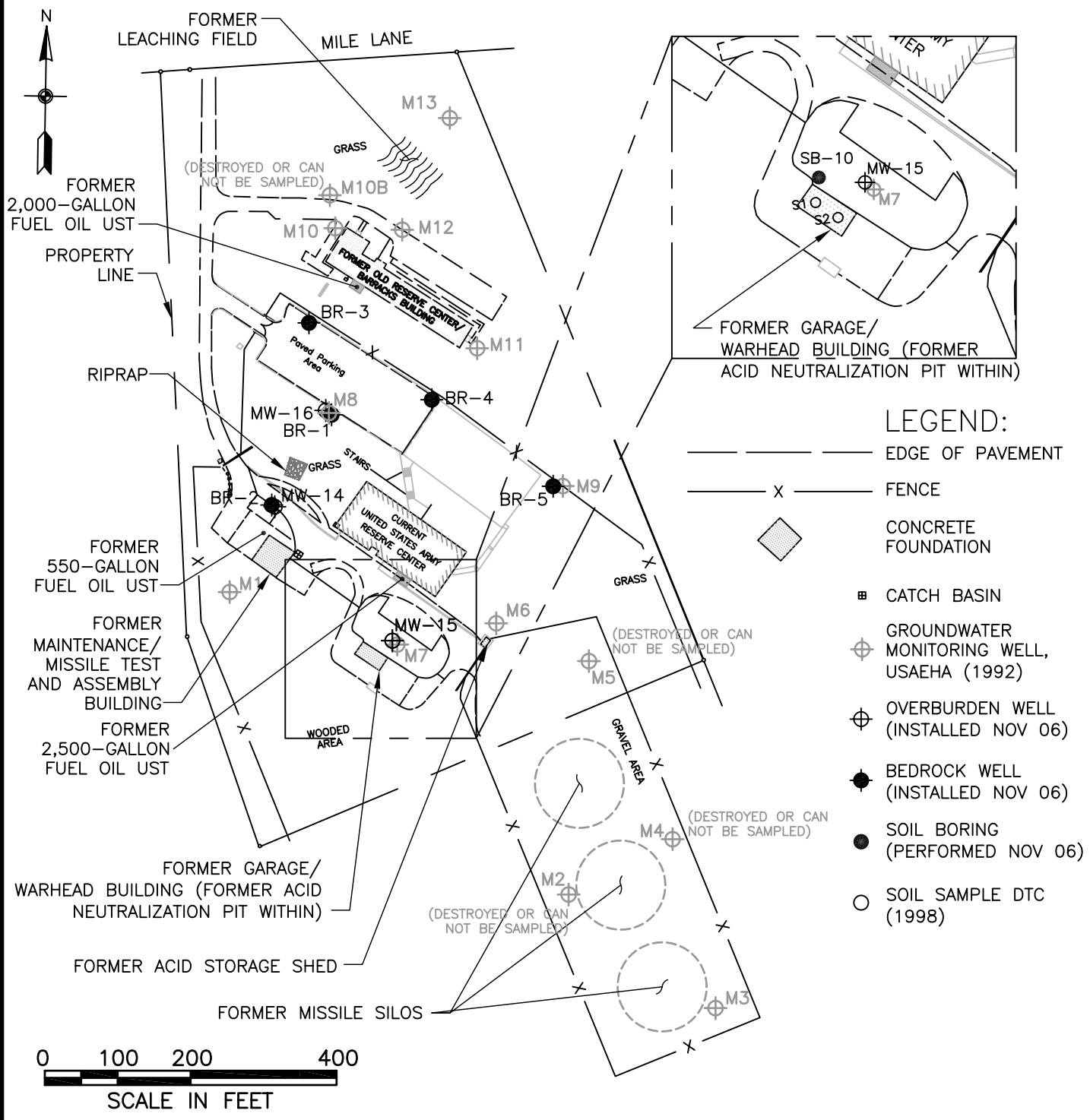
Soil samples have been collected from soils directly below the concrete flooring of the former Garage/Warhead Building and from soil boring locations adjacent to and downgradient of the former building. TPH has been detected at trace concentrations in soil samples from underneath the concrete flooring of the building. and SPLP barium was detected at concentrations which are were below applicable RSR criteria. ETPH has been detected at trace concentrations and select total metals were detected in a soil sample from a downgradient boring; however, the reported concentrations were well below applicable RSR criteria. The soil samples were analyzed for several other parameters which were not detected. RSR Criteria have been used as screening criteria during evaluation of site data.

Overburden and bedrock groundwater quantity has been sampled directly downgradient of the former Garage/Warhead Building. pH levels detected in groundwater were neutral. Toluene was detected at an estimated trace concentration and select total and dissolved metals have been detected but at concentrations well below MCLs in bedrock groundwater. VOCs and ETPH have not been detected in overburden groundwater. The groundwater samples have been analyzed for several other parameters which were not detected.

Based on the results of the soil and groundwater sample collection and analysis, it does not appear that additional investigation of this area is warranted.

Recommendations

No further CERCLA investigations are recommended at the former Garage/Warhead Building.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	kemron ENVIRONMENTAL SERVICES MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER GARAGE/WARHEAD BUILDING Figure 2-5

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AOC No. 6

Former Acid Neutralization Pit within the Former Garage / Warhead Building

Overview

A former building which has been previously known as the Warhead Building and in more recent years as the Garage was located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. A concrete slab foundation is all that remains of the building but reportedly, the building was historically used as a garage and for warhead related activities. The former acid neutralization pit (AOC No. 6) was located inside the former Garage/Warhead Building (AOC No. 5), which is shown on attached **Figure 2-6**.

Chemical Usage

Chemicals that were most likely to have entered the acid neutralization pit include acids and waste fuel products that may have been generated during the fueling of the NIKE missiles.

Potential Release Mechanisms

Releases of chemicals through cracks or pathways in the acid neutralization could also impact the environment. Releases could originate surficially or at depth.

Previous Environmental Investigations

Previous environmental investigations associated with the former Acid Neutralization Pit include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Environmental Baseline Study by Diversified Technology Consultants (DTC) dated November 1998
- Revised Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-6**.

Monitoring well M7 was installed adjacent and downgradient of the former Acid Neutralization Pit and Garage/Warhead Building. Soil samples were collected from the boring performed to install M7 from the 3 to 18 inch depth interval, 5 to 6.5 foot depth interval and 9.5 to 10.5 foot depth intervals. The soil

samples were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 418.1, VOCs by EPA Method 8260, SVOCs by EPA Method 8270, total RCRA 8 metals, and TCLP chromium and lead. TPH at 26 milligrams per kilogram (mg/kg) was detected in the sample from the shallowest internal and select total metals (arsenic, barium, chromium and lead) were detected; however, the reported concentrations were well below applicable RSR criteria. VOCs, SVOCs, the remaining four total RCRA 8 metals and TCLP chromium and lead were not detected.

The groundwater sample collected from M7 was analyzed for pH, TPH, VOCs, SVOCs and dissolved metals. pH was reported at 8.0 units and dissolved barium, lead and zinc were detected. The detected metals did not exceed applicable RSR criteria. TPH, VOCs, SVOCs and the remaining dissolved metals were not detected.

The USAEHA concluded that no contamination was found to be originating from several areas including the former acid neutralization pit.

Environmental Baseline Study by DTC (November 1998)

An Environmental Baseline Study was completed in support of proposed demolition of several on-site buildings including the former Garage/Warhead Building. Soil sampling was conducted though the floor of the former Garage/Warhead Building. Soil samples were collected at two locations (S1 and S2) directly below the concrete flooring. The soil samples were analyzed for VOCs, SVOCs, TPH, PCBs by EPA Method 8080, and SPLP RCRA 8 metals. SPLP barium was detected in both samples (up to 0.59 milligrams per liter (mg/l)) at concentrations below applicable RSR criteria. VOCs, SVOCs, TPH, PCBs and the remaining SPLP metals were not detected in the samples. The sample locations are shown on **Figure 2-6.**

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006 which included collection of groundwater samples from M7 during both events. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M7 were analyzed for VOCs, SVOCs, total and dissolved metals and ETPH during both the August 2005 and February 2006 sample events. Toluene was detected during the February event at an estimated trace concentration below 1 ug/l. Select total and dissolved metals were detected during both events at concentrations well below MCLs. ETPH, SVOCs and the remaining VOCs and total and dissolved metals were not detected. pH levels were also screened for in the field with neutral levels detected.

RI Investigation by KEMRON/MACTEC (on-going)

To support the CERCLA remedial investigation, a series of soil borings were performed in November 2006 at the facility. Soil boring SB-10 was performed adjacent to the former Acid Neutralization Pit and former Garage/Warhead Building as shown on **Figure 2-6**. The soil boring was advanced to bedrock refusal which was encountered at 18.5 feet bgs. A soil sample was collected from the boring for laboratory analysis. The soil sample was analyzed for ETPH and VOCs. ETPH was detected at an estimated concentration of less than 12 mg/kg and VOCs were not detected.

Additional groundwater monitoring wells were also installed during the November 2006 investigation activities at the site. Monitoring well MW-15 was installed adjacent to M7 as shown on **Figure 2-6**. MW-15 was installed within the overburden and it was determined that M7 was previously installed

within the bedrock. Groundwater samples were collected from existing accessible monitoring wells in November 2006 along with newly installed wells. Groundwater samples were collected from M7 and MW-15 during the sample event.

The groundwater samples collected from M7 and MW-15 were analyzed for VOCs. The groundwater sample from MW-15 was also analyzed for ETPH. ETPH and VOCs were not detected in the samples. pH levels were also screened for in the field with neutral levels detected.

Remedial Activities

Remedial activities have not been conducted at the former Acid Neutralization Pit.

Data Gaps

There do not appear to be any data gaps regarding the assessment and investigation of the former Acid Neutralization Pit.

Conclusions

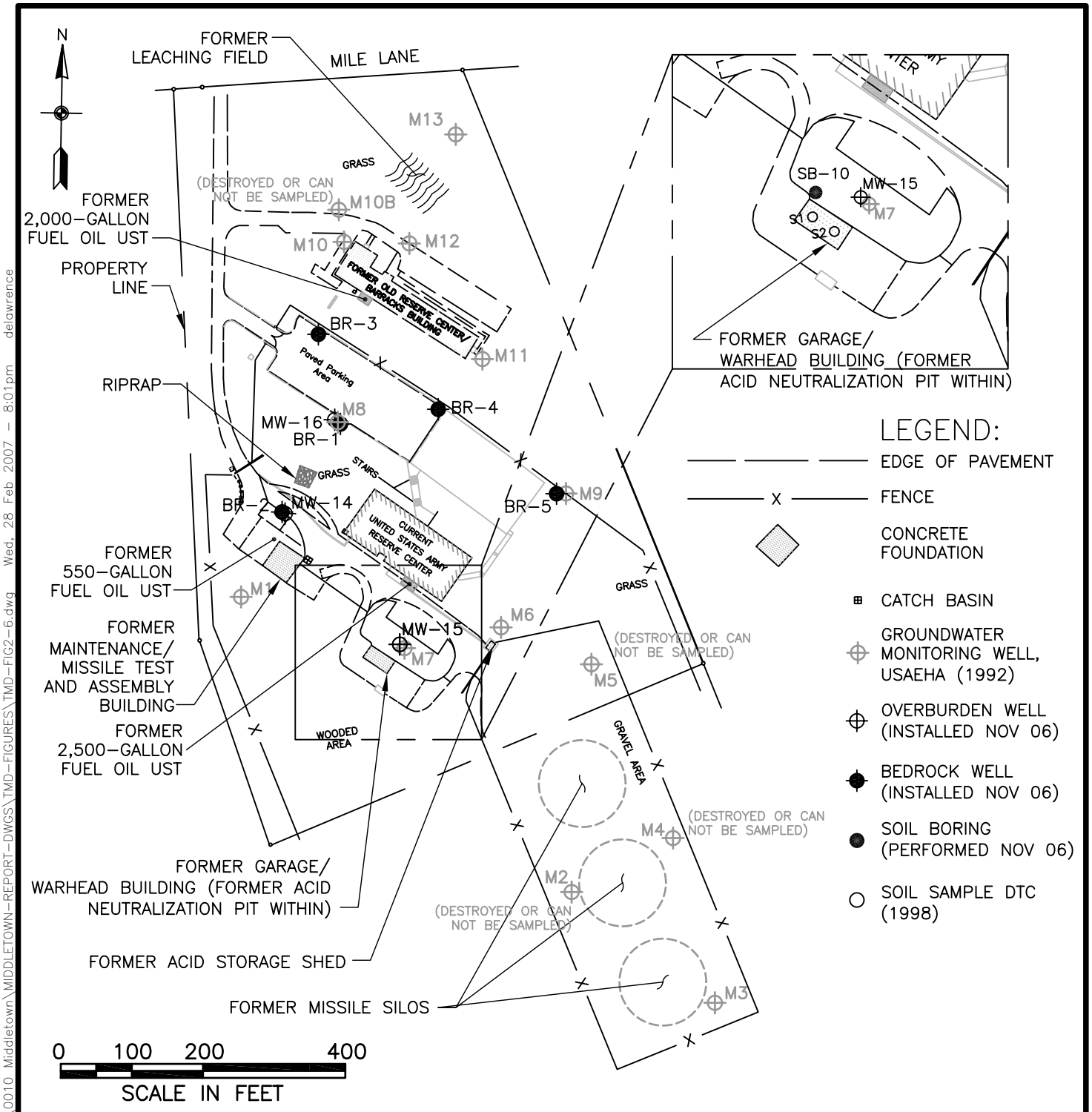
Soil samples have been collected from soils directly below the concrete flooring of the former Garage/Warhead building and from soil boring locations adjacent to and downgradient of the former building. TPH has been detected at trace concentrations in soil samples from underneath the concrete flooring of the building and SPLP barium was detected at concentrations which are were below applicable RSR criteria. ETPH has been detected at trace concentrations and select total metals were detected in a soil sample from a downgradient boring; however, the reported concentrations were well below applicable RSR criteria. The soil samples were analyzed for several other parameters which were not detected. RSR Criteria have been used as screening criteria during evaluation of site data.

Overburden and bedrock groundwater quantity has been sampled directly downgradient of the former Garage/Warhead Building. pH levels detected in groundwater were neutral. Toluene was detected at an estimated trace concentration and select total and dissolved metals have been detected but at concentrations well below MCLs in bedrock groundwater. VOCs and ETPH have not been detected in overburden groundwater. The groundwater samples have been analyzed for several other parameters which were not detected.

Based on the results of the soil and groundwater sample collection and analysis, it does not appear that additional investigation of this area is warranted.

Recommendations

No further CERCLA investigations are recommended at the former Acid Neutralization Pit.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	kemron ENVIRONMENTAL SERVICES MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER ACID NEUTRALIZATION PIT Figure 2-6

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AOC No. 7

Former Missile Silos

Overview

Three Former Missile Silos were located on the U.S. Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. The facility was used as a NIKE missile launching facility from the mid 1950s to the early 1960s. The Former Missile Silos were reportedly closed in 1988 by the Army Corps of Engineers. The contents of the Former Missile Silos were removed and silos were reportedly filled with a sand slurry and debris from the walls of the silos. The location of the Former Missile Silos is shown on **Figure 2-7** which is attached.

Chemical Usage

Chemicals stored and/or used in the Former Missile Silos would presumably consist of petroleum fuels, acids, maintenance fluids, cleaners and possibly paints.

Potential Release Mechanisms

Releases to the environment could include spills of chemicals used in the silos to soils through the flooring or to areas immediately adjacent to the silos. Releases could originate surficially or at depth from this AOC.

Previous Environmental Investigations

Previous environmental investigations associated with the former NIKE Silos include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by the US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Draft Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-7**.

Monitoring wells M2 through M5 were installed adjacent to the Former Missile Silos with one well was installed on each side of the area. A soil sample was collected from the boring performed to install M2 from the 2 to 8 inch depth interval. The sample was analyzed for total petroleum hydrocarbons (TPH) by Environmental Protection Agency (EPA) Method 418.1, volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, total RCRA 8 metals and toxicity characteristic leaching procedure (TCLP) chromium. TPH at 103 milligrams per kilogram

(mg/kg) and select total metals (arsenic, barium, chromium and lead) were detected; however, the reported concentrations were below applicable Remediation Standard Regulations (RSR) criteria. VOCs, SVOCs, the remaining four total RCRA 8 metals and TCLP chromium were not detected.

The groundwater samples collected from M2 through M5 were analyzed for pH, TPH, VOCs, SVOCs and dissolved metals. pH was detected at levels between 6.7 and 8.0 units in the four wells and dissolved barium, chromium, lead, mercury and zinc were detected. Dissolved mercury was detected in M3, M4 and M5 at concentrations of between 0.5 and 0.8 micrograms per liter (ug/l) which exceeds the Surface Water Protection Criteria (SWPC) of 0.4 ug/l. The other detected metals did not exceed applicable RSR criteria. TPH, VOCs, SVOCs and the remaining dissolved metals were not detected in the four wells.

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006. Groundwater samples were collected from M3 during both events. Monitoring wells M2, M4 and M5 were damaged and could not be sampled. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M3 were analyzed for VOCs, SVOCs, total and dissolved metals and extractable total petroleum hydrocarbons (ETPH) during both the August 2005 and February 2006 sample events. Cis-1,2-Dichloroethene (cis-1,2-DCE) was detected at an estimated trace concentration below 1 ug/l during the August event and was not detected during the February event. Select total and dissolved metals were detected during both events at concentrations well below MCLs. ETPH, SVOCs and the remaining VOCs and total and dissolved metals were not detected.

RI Investigation by KEMRON/MACTEC (on-going)

Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells. A groundwater sample was collected from M3 during the sample event and no additional wells or other explorations were completed in the vicinity of the Former Missile Silos.

The groundwater sample collected from M3 was analyzed for VOCs. VOCs were not detected in the sample.

Remedial Activities

Remedial activities have not been conducted at the Former Missile Silos.

Conclusions

A soil sample was collected from shallow soils (2 to 8 inch depth interval) adjacent to the Former Missile Silos. TPH and select total metals were detected; however, the reported concentrations were below applicable RSR criteria. The soil sample was analyzed for several other parameters which were not detected.

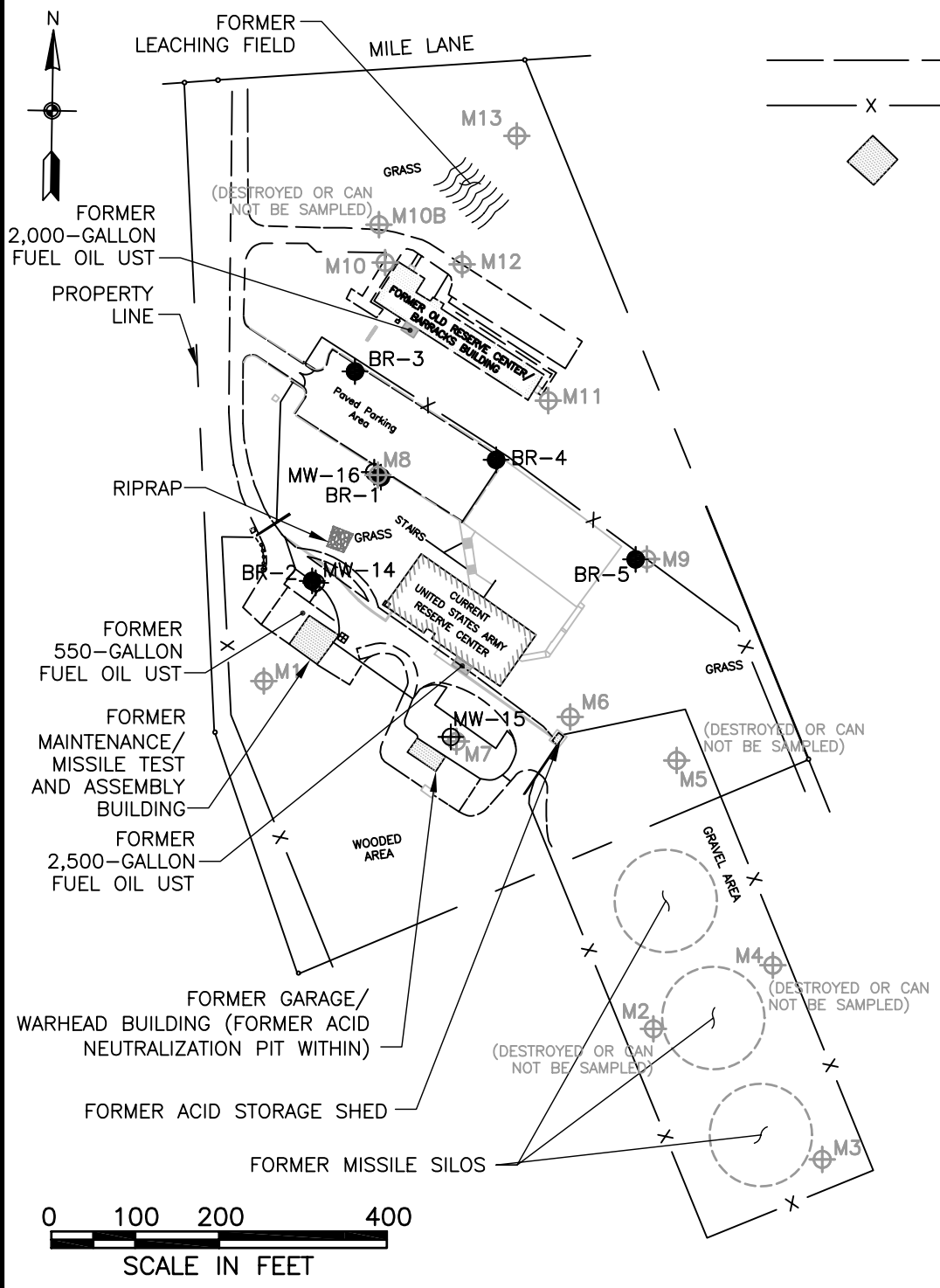
Groundwater quantity was sampled from all four sides of the Former Missile Silo area including directly downgradient of the area. Groundwater was sampled from M3 located to the south of the Former Missile Silos on four occasions since 1992. pH levels detected are neutral. Dissolved mercury was detected in 1992; however, total mercury was not detected during sampling events in 2005 and 2006. A trace concentration (less than 1 ug/l) of cis-1,2-DCE was detected and other select total and dissolved metals

were detected but at concentrations well below aMCLs. The groundwater samples have been analyzed for several other parameters which were not detected.

The approach using CERCLA for this facility is focused on only those contaminant sources that are believed to be potential risk contributors to the groundwater impacts identified in groundwater, specifically chlorinated solvents noted in M8 and neighboring wells. Since the intent of this contract is to achieve site closure under CERCLA specific to Site 08 and the Former Missile Silos are located cross-gradient of M8, this AOC would not be a source of impact to site groundwater and no further investigation is proposed.

Recommendations

No further CERCLA investigations are recommended at the Former Missile Silos.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	KEMRON ENVIRONMENTAL SERVICES / MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER MISSILE SILOS Figure 2-7

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AOC No. 8

Former Acid Storage Shed

Overview

An Acid Storage Shed was formerly located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. The location of the former Acid Storage Shed is shown on **Figure 2-8** which is attached.

Chemical Usage

The former building was noted as an Acid Storage Shed in the Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992. The report did not indicate the use of the building; however, based on the buildings name it is presumed that the building was used for acid storage.

Potential Release Mechanisms

Potential release mechanisms include spills during chemical handling and transport. Releases could occur during storage if storage containers failed or leaked and a pathway to soils was present. The construction of the former storage shed is not known; however, it is presumed that releases would only originate surficially.

Previous Environmental Investigations

Previous environmental investigations associated with the former Acid Storage Shed include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by the USAEHA dated June 1992.
- Draft Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-8**.

Monitoring well M6 was installed adjacent to the former Acid Storage Shed. A soil sample was collected from the boring performed to install M6 from the 1 to 6 inch depth interval. The sample was analyzed for TPH by EPA Method 418.1, VOCs by EPA Method 8260, SVOCs by EPA Method 8270, total RCRA 8 metals, and TCLP chromium and lead. TPH at 22 mg/kg and select total metals (arsenic, barium, chromium and lead) were detected; however, the reported concentrations were below applicable RSR

criteria. VOCs, SVOCs, the remaining four total RCRA 8 metals, and TCLP chromium and lead were not detected.

The groundwater sample collected from M6 was analyzed for pH, TPH, VOCs, SVOCs and dissolved metals. pH was reported at 7.2 units and dissolved barium, lead, mercury and zinc were detected. Dissolved mercury was detected at a concentration of 1.5 ug/l which exceeds the SWPC of 0.4 ug/l. The other detected metals did not exceed applicable RSR criteria. TPH, VOCs, SVOCs and the remaining dissolved metals were not detected.

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006 which included collection of groundwater samples from M6 during both events. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M6 were analyzed for VOCs, SVOCs, total and dissolved metals and ETPH during both the August 2005 and February 2006 sample events. Cis-1,2-Dichloroethene (cis-1,2-DCE) was detected at estimated trace concentrations below 1 ug/l for both events and toluene was detected during the February event at an estimated trace concentration below 1 ug/l. Select total and dissolved metals were detected during both events at concentrations well below MCLs. ETPH, SVOCs and the remaining VOCs and total and dissolved metals were not detected.

RI Investigation by KEMRON/MACTEC (on-going)

Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells. A groundwater sample was collected from M6 during the sample event and no additional wells or other explorations were completed in the vicinity of the former Acid Storage Shed.

The groundwater sample collected from M6 was analyzed for VOCs and ETPH. cis-1,2-DCE, methylene chloride and trichloroethene (TCE) were detected at estimated trace concentrations below 1 ug/l. ETPH and the remaining VOCs were not detected.

Remedial Activities

Remedial activities have not been conducted at the former Acid Storage Shed location.

Data Gaps

There do not appear to be any data gaps regarding the assessment and investigation of the former Acid Storage Shed.

Conclusions

To support the ongoing CERCLA remedial investigations, a soil sample was collected from shallow soils (1 to 6 inch depth interval) adjacent to the former Acid Storage Shed. TPH and select total metals were detected; however, the reported concentrations were below applicable RSR criteria. The soil sample was analyzed for several other parameters which were not detected.

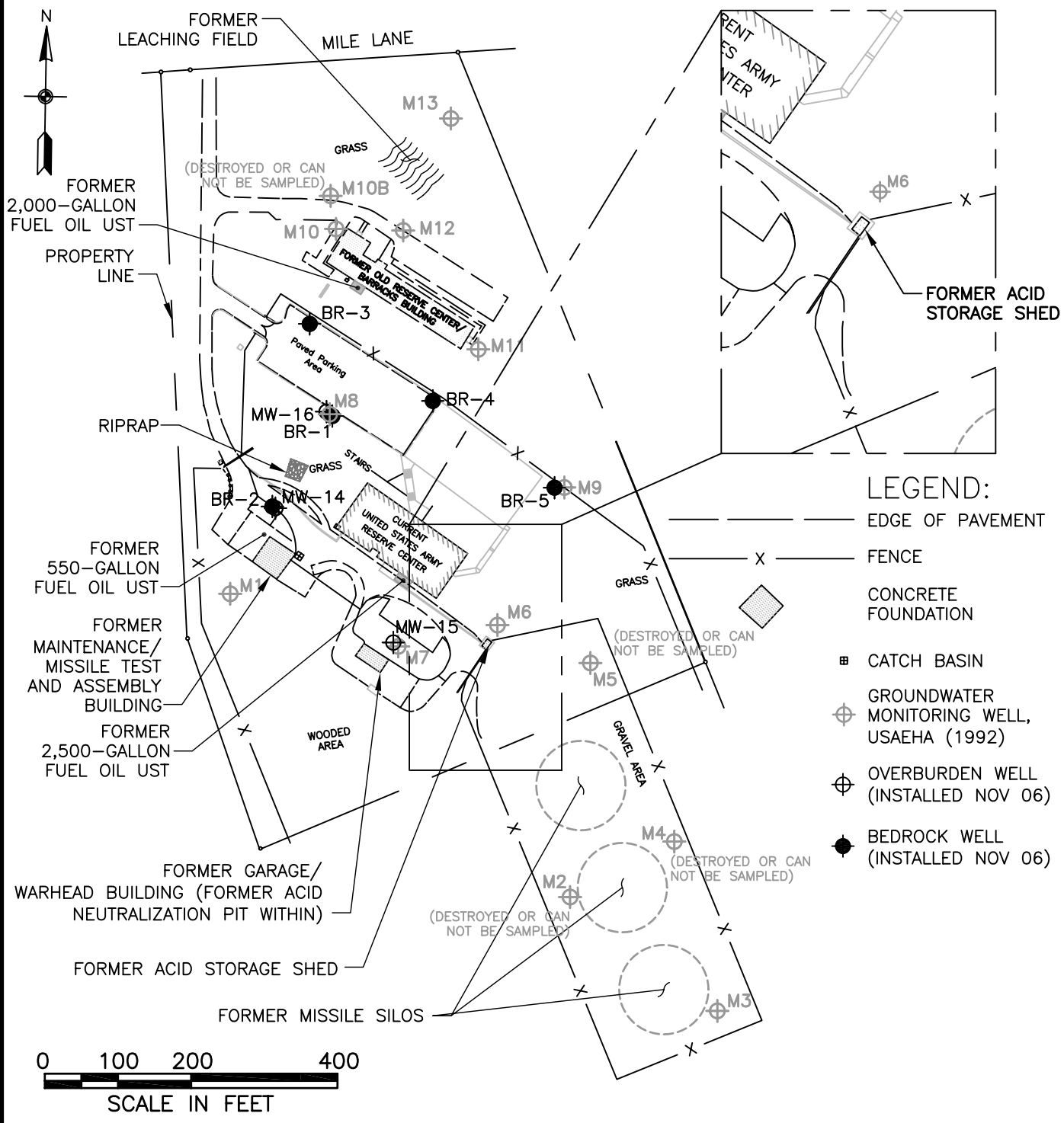
Groundwater quantity has been sampled directly downgradient of the former Acid Storage Shed on four occasions since 1992. pH levels detected are neutral. Dissolved mercury was detected in 1992 and total

mercury was detected during 2005; however, these concentrations were below the MCL. Mercury has not been detected in any other sample events. Trace concentrations (less than 1 ug/l) of select VOCs have been detected and other select total and dissolved metals were detected but at concentrations well below MCLs. The groundwater samples have been analyzed for several other parameters which were not detected.

Based on the results of the soil and groundwater sample collection and analysis, it does not appear that additional investigation of this area is warranted.

Recommendations

No further CERCLA investigations are recommended at the former Acid Storage Shed.



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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	KEMRON ENVIRONMENTAL SERVICES / MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER ACID STORAGE SHED Figure 2-8

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AOC No. 9

Former Leaching Field

Overview

A Former Leaching Field is located at the U.S. Army Reserve Center (USARC) facility located at 499 Mile Lane in Middletown, Connecticut. The facility has since been connected to the municipal sewer system. The leaching field is located on the northern portion of the property near Mile Lane as shown on **Figure 2-9** which is attached.

Chemical Usage

Chemical usage for the facility consisted of petroleum products for heating of buildings and fueling vehicles and vehicle, equipment and facility maintenance fluids, cleaners and possibly paints. Acids and waste fuel products may have been generated during the fueling of the NIKE missiles.

Potential Release Mechanisms

Potential release mechanisms include discharge of any petroleum products or chemicals to sinks and other drains which discharge to the septic system and leaching field. Releases would only originate surficially to the soil and groundwater in the leaching field. .

Previous Environmental Investigations

Previous environmental investigations associated with the Former Leaching Field include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by the US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Draft Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation in 1992 to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-9**.

Monitoring well M13 was installed downgradient of the Former Leaching Field. A groundwater sample was collected from the well and analyzed for total petroleum hydrocarbons (TPH) by Environmental Protection Agency (EPA) Method 418.1, volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, dissolved RCRA 8 metals and pH. pH was reported at 5.6 units and dissolved barium, cadmium, mercury and zinc were detected. The detected concentrations of dissolved metals were below applicable Remediation Standard Regulations (RSR) criteria. TPH, VOCs, SVOCs and the remaining dissolved metals were not detected.

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006 which included collection of a groundwater sample from M13 during the February 2006 event. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater sample collected from M13 was analyzed for VOCs, SVOCs, total and dissolved metals and extractable total petroleum hydrocarbons (ETPH). pH was measured during the sampling and was noted at 6.2 units. Select total and dissolved metals were detected at concentrations well below MCLs. VOCs, SVOCs, ETPH and the remaining total and dissolved metals were not detected.

RI Investigation by KEMRON/MACTEC (on-going)

Groundwater samples were collected from existing remaining accessible monitoring wells in November 2006 along with newly installed wells. A groundwater sample was collected from M13 during the sample event and no additional wells or other explorations were completed in the vicinity of the former leaching field.

The groundwater sample collected from M13 was analyzed for VOCs and ETPH. VOCs and ETPH were not detected.

Remedial Activities

Remedial activities have not been conducted at the Former Leaching Field location.

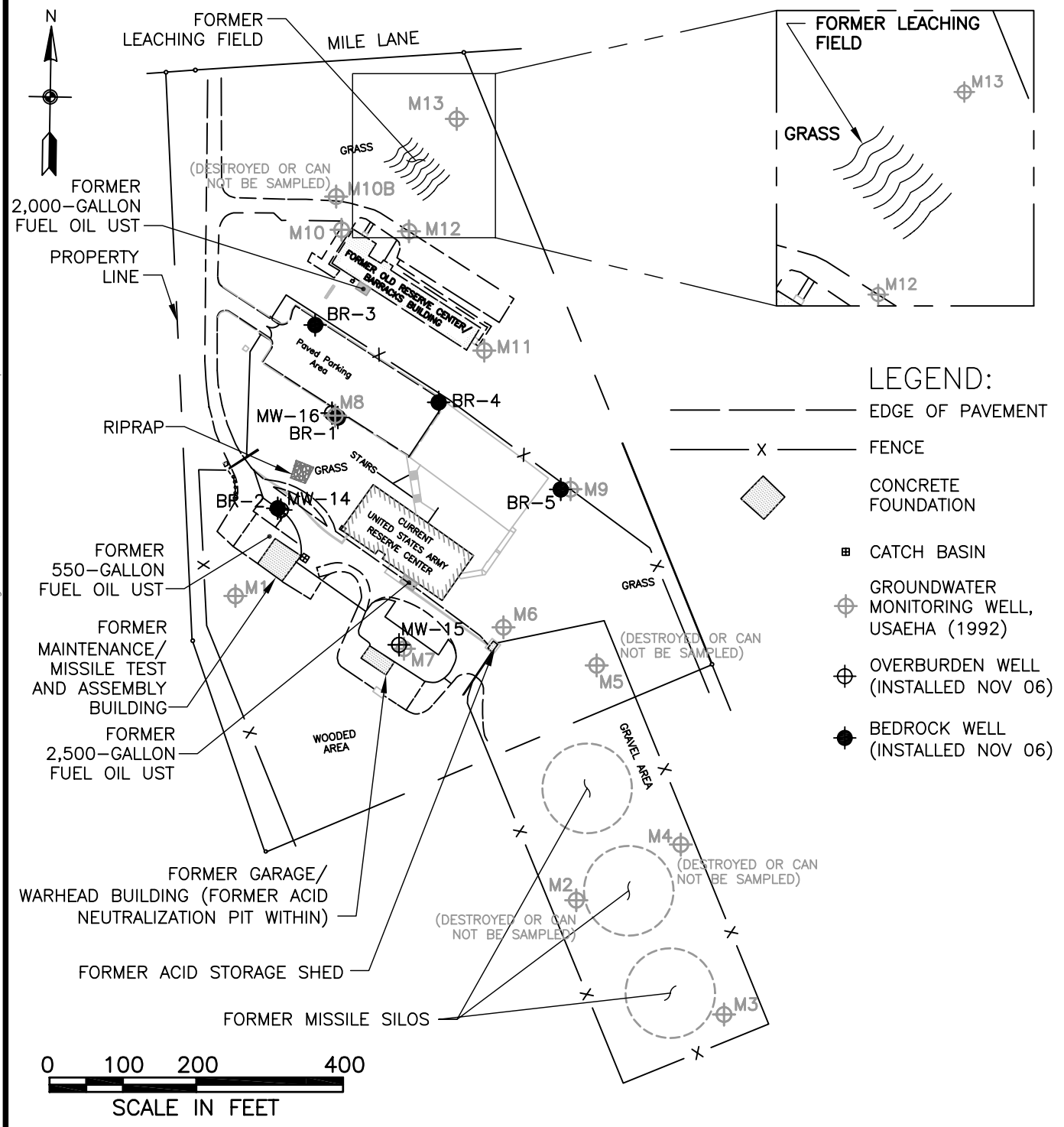
Conclusions

Groundwater quantity has been sampled directly downgradient of the Former Leaching Field on three occasions since 1992. pH levels detected are neutral. Select total and dissolved metals were detected but at concentrations well below applicable RSR criteria. The groundwater samples have been analyzed for several other parameters which were not detected.

The approach using CERCLA for this facility is focused on only those contaminant sources that are believed to be potential risk contributors to the groundwater impacts identified in groundwater, specifically chlorinated solvents noted in M8 and neighboring wells. Since the intent of this contract is to achieve site closure under CERCLA specific to Site 08 and the Former Leaching Field is downgradient of M8, this AOC would not be a source of impact to site groundwater and no further investigation is proposed.

Recommendations

No further CERCLA investigations are recommended at the Former Leaching Field.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 02/28/07
Checked/Date: JRY 02/28/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	KEMRON ENVIRONMENTAL SERVICES / MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER LEACHING FIELD Figure 2-9

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AOC No. 10

Former 2,500-gallon Fuel Oil UST at the Current Reserve Center

Overview

The Current Reserve Center building is located on the US Army Reserve Center (USARC) facility located at 499 Mile Lane, in Middletown, Connecticut. The building has offices, classrooms, and a drill hall used by US Army Reserve personnel. A former fuel oil UST was located on the southwest side of the building. The Current Reserve Center and former fuel oil UST are shown on **Figure 2-10** which is attached.

Chemical Usage

The building is currently heated by gas, but was formerly heated with heating oil, which was stored in a 2,500-gallon UST that was located on the southwest side of the building.

Potential Release Mechanisms

Releases to the environment could include releases of fuel oil through cracks or holes in the UST and/or piping and releases could have occurred during filling of the UST. Releases could originate surficially or at depth.

Previous Environmental Investigations

Previous environmental investigations associated with the Current Reserve Center include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Technical Report, Underground Storage Tank Closure prepared by ATEC Associates, Inc. (ATEC) dated March 2, 1994.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-10**.

Overburden monitoring well M8 was installed at the base of the hillside adjacent to the Current Reserve Center. A groundwater sample was collected from M8 and was analyzed for TPH by EPA Method 418.1, VOCs by EPA Method 8260, SVOCs by EPA Method 8270, and dissolved metals. Carbon tetrachloride at 14 ug/l and TCE at 38 ug/l were detected in M8 at concentrations above the applicable RSR GWPC of 5 ug/l for both compounds. Dissolved mercury was detected at a concentration of 1.5 ug/l which exceeds the SWPC of 0.4 ug/l. Chloroform, cis-1,2-DCE, and dissolved barium and zinc were detected but the

reported concentrations did not exceed applicable RSR criteria. TPH, SVOCs and the remaining dissolved metals and VOCs were not detected.

Based on overburden groundwater flow direction, M8 appears to be located hydraulically cross-gradient from the Current Reserve Center.

Technical Report, Underground Storage Tank Closure by ATEC (March 4, 1994)

The 2,500-gallon UST formerly used in store fuel oil was located along the southwestern side of the Current Reserve Center as shown on **Figure 2-10.** The UST was removed in November of 1993 and according to the report appeared to be free of holes or corrosion. The subsurface was evaluated from within and below the area of the removed tank for the possibility of soil impacted by petroleum products. Contaminated soil was encountered and a total of 63.65 tons were removed and disposed. Field screening of the final excavation extent (PE-1 through PE-10) for VOCs and TPH was completed with relativity low results detected, and two samples (LRS-1 and LRS-2) were analyzed at a fixed laboratory for VOCs, TPH and SVOCs. VOCs, TPH, and SVOCs were reported at either non-detect levels or below RSR criteria with the exception of 2-methylnaphthalene, which was detected at a concentration of 1.9 mg/kg in LRS-1, which is above the Pollutant Mobility Criteria for GA areas (GA PMC) of 0.98 mg/kg. The tank excavation was backfilled in January of 1994 with clean backfill.

RI Investigation by KEMRON/MACTEC (on-going)

A series of soil borings were performed in November 2006 at the facility. Soil boring SB-1 was performed downgradient of the former UST as shown on **Figure 2-10**. The soil boring was advanced to bedrock refusal which was encountered at a depth of approximately 20 feet bgs. A soil sample was collected from the boring for laboratory analysis for ETPH and VOCs. ETPH and VOCs were not detected in the samples analyzed.

Two bedrock wells (BR-4 and BR-5) were also installed in November 2006 downgradient of the former UST as shown on **Figure 2-10**. A groundwater sample was collected from BR-4 and was analyzed for VOCs. A sample could not be collected from BR-5 due to the limited quantity of water within the well. TCE was detected in BR-4 at a concentration of 38.5 ug/l, which is above the MCL. Cis-1,2-DCE and 1,1,1-trichloroethane (1,1,1-TCA) were detected at trace concentrations less than 2 ug/l in BR-4 and several other non-chlorinated VOCs were detected at trace concentrations below 5 ug/l. It is questionable; however, whether the sample collected from BR-4 is representative of bedrock groundwater conditions.

Overburden groundwater was also sampled at M8 and an adjacent well with TCE reported at concentrations above the MCL.

Remedial Activities

During the removal of the fuel oil UST in November of 1993, 63.65 tons of petroleum impacted soil were removed and disposed.

Data Gaps

There do not appear to be any data gaps regarding the assessment and investigation in the vicinity of the former UST; however, it should be determined whether the sample collected from BR-4 is representative of bedrock groundwater quality.

Conclusions

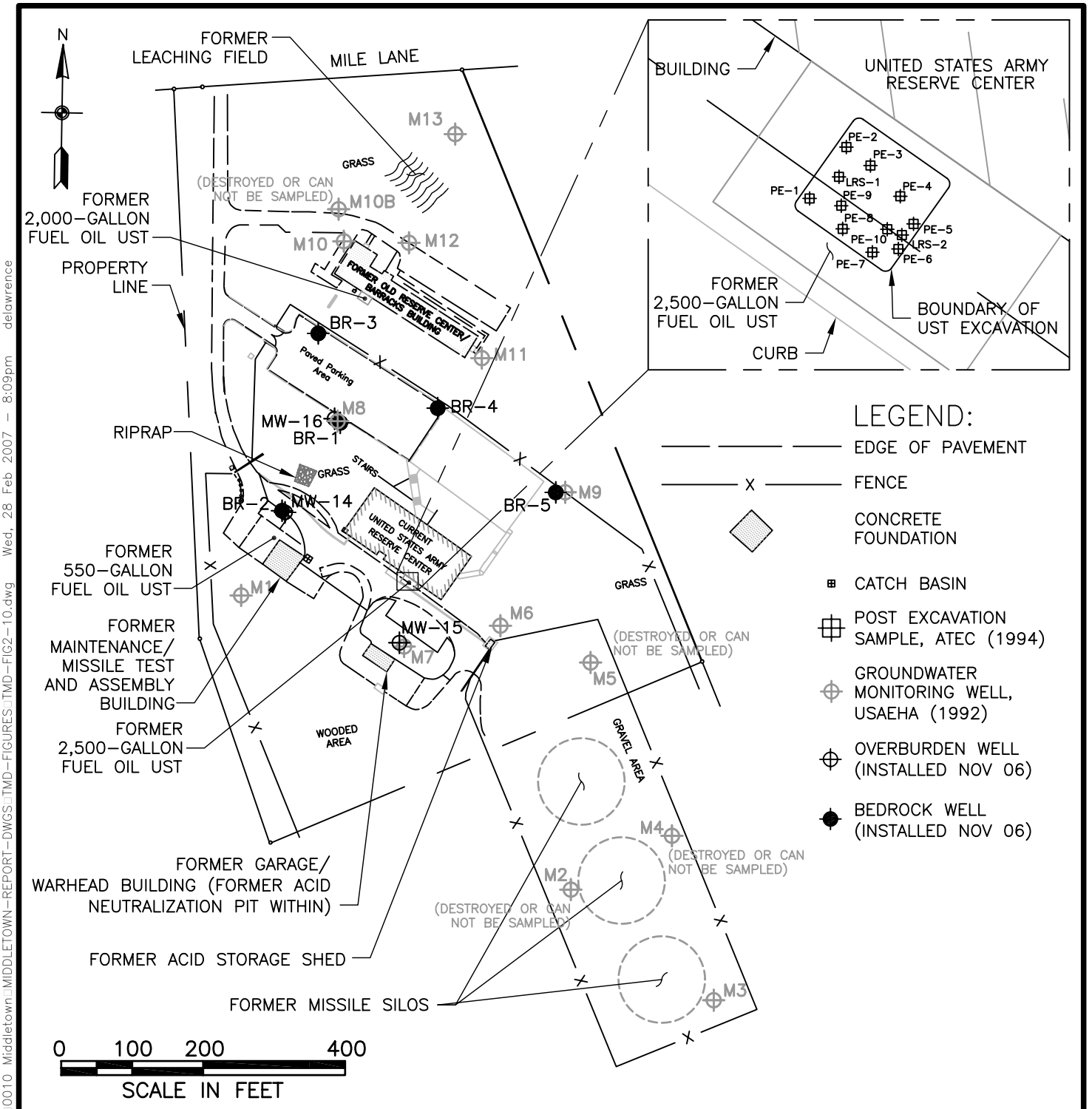
A soil sample was collected from a soil boring performed downgradient of the former UST. The soil sample was analyzed for VOCs and ETPH with no detections reported.

Bedrock groundwater was sampled downgradient of the former UST. TCE was detected at a downgradient bedrock well location at a concentration above the MCL, and two chlorinated VOCs and several other non-chlorinated VOCs were detected at trace concentrations.

Based on information obtained during the 2006 investigation, it is not certain that the samples collected from bedrock well BR-4 is representative of bedrock groundwater conditions.

Recommendations

To support the ongoing CERCLA remedial investigations, an additional bedrock well should be installed adjacent to BR-4 to verify whether that well is representative of bedrock groundwater conditions. The well should be installed further into the bedrock to verify that a water bearing fracture is encountered. The results of the field investigation and subsequent CERCLA risk assessment will be documented in a future Remedial Investigation Report.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	KEMRON ENVIRONMENTAL SERVICES / MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS FORMER 2,500 GALLON FUEL OIL UST Figure 2-10

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AOC No. 11

Monitoring Well M8 Area

Overview

Chlorinated volatile organic compounds (VOCs) have been detected in groundwater in monitoring well M8 during prior groundwater sampling events at the US Army Reserve Center (USARC) facility in Middletown, Connecticut. M8 is located at the base of a hillside and is not in the immediate vicinity of other potential areas of concern (AOCs) at the facility. The monitoring well M8 area is shown on **Figure 2-11** which is attached.

Chemical Usage

M8 is located at the base of a hillside and not in the immediate vicinity of other potential AOCs at the site; however, chemicals associated with other operations historically conducted at the site include petroleum products and maintenance fluids, cleaners and paints.

Potential Release Mechanisms

The source and potential release mechanism for chlorinated VOC impacted groundwater detected at M8 has not been determined. A potential source may include a release in the general vicinity of M8.

Previous Environmental Investigations

Previous environmental investigations associated with the M8 area include the following:

- Geohydrological Study No. 38-26-KL46-92 Site Investigation by US Army Environmental Hygiene Agency (USEHA) dated June 1992.
- Revised Groundwater Monitoring Report by KEMRON Environmental Services (KEMRON)/MACTEC Engineering & Consulting, Inc. (MACTEC) dated August 1, 2006.
- Data collected during the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) by KEMRON/MACTEC which is currently on-going.

<u>Geohydrological Study by USAEHA (June 1992)</u>

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site. As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed at select locations and sampled. Soil samples were collected from select boring locations and intervals during drilling of the monitoring wells. The monitoring well locations are shown on **Figure 2-11**.

Overburden monitoring well M8 was installed at the base of the hillside adjacent to the Current Reserve Center and downgradient of the former Maintenance/Missile Assembly and Test Building. A groundwater sample was collected from M8 and was analyzed for TPH by EPA Method 418.1, VOCs by EPA Method 8260, SVOCs by EPA Method 8270 and dissolved metals. Carbon tetrachloride at 14 ug/l and TCE at 38 ug/l were detected in M8 at concentrations above the applicable RSR GWPC of 5 ug/l for both compounds. Dissolved mercury was detected at a concentration of 1.5 ug/l which exceeds the SWPC of 0.4 ug/l. Chloroform, cis-1,2-DCE, and dissolved barium and zinc were detected but the

reported concentrations did not exceed applicable RSR criteria. TPH, SVOCs and the remaining dissolved metals and VOCs were not detected.

Monitoring wells installed at locations downgradient of M8 (M10B, M11, M12 and M13) were also sampled for the same parameters. Carbon tetrachloride and TCE were not detected in any of these wells.

Draft Groundwater Monitoring Report by KEMRON/MACTEC (2006)

Groundwater samples were collected from existing accessible monitoring wells in August 2005 and February 2006. A groundwater sample was collected from M8 during the February 2006 event. The groundwater sampling program was completed to obtain current groundwater quality data.

The groundwater samples collected from M8 were analyzed for VOCs, SVOCs, total and dissolved metals and ETPH. TCE was detected at 27.8 ug/l, a concentration above the MCL of 5 ug/l. Carbon tetrachloride, chloroform, and several total and dissolved metals were detected but the reported concentrations did not exceed MCLs. SVOCs and the remaining total and dissolved metals and VOCs were not detected.

Monitoring wells at locations downgradient of M8 were also sampled for the same parameters. Carbon tetrachloride and TCE were again not detected in any of these wells.

RI Investigation by KEMRON/MACTEC (on-going)

A series of soil borings were performed in November 2006 at the facility. Soil borings SB-1 through SB-5 were performed in the vicinity of monitoring well M8 as shown on **Figure 2-11**. The soil borings were advanced to bedrock refusal which was encountered at depths of approximately 20 feet bgs. A soil sample was collected from each boring for laboratory analysis for ETPH and VOCs. TCE was detected in soil samples from SB-2, SB-3, SB-4 and SB-5 at concentrations up to 12.5 microgram per kilogram (ug/kg) which are below the GA PMC of 100 ug/kg. Acetone and methylene chloride were detected in several of the samples at estimated trace concentrations. ETPH and other VOCs were not detected in the samples analyzed.

Additional groundwater monitoring wells were also installed during the November 2006 investigation activities at the site. Overburden monitoring well MW-16 and shallow bedrock monitoring well BR-1 were installed adjacent to M8 as shown on **Figure 2-11**. MW-16 was installed with a screened interval of 2 to 12 feet below the ground surface to intersect the top of the groundwater surface. M8 was screened deeper in the overburden at 10 to 20 feet bgs. Groundwater samples were collected from existing accessible monitoring wells in November 2006 along with newly installed wells including M8, MW-16 and BR-1.

The groundwater samples from all three wells were analyzed for VOCs and the groundwater samples from M8 and MW-16 were also analyzed for ETPH. TCE was detected in M8 and MW-16 at similar concentrations (35.5 ug/l and 32.4 ug/l, respectively) that were both above the MCL. Carbon tetrachloride and chloroform were detected in both wells at concentrations below MCLs and MTBE was detected in MW-16 at trace estimated concentration. ETPH and the remaining VOCs were not detected in the samples. Chloroform, trans-1,2-dichloroethene and TCE were detected in BR-1 at concentrations below MCLs and carbon tetrachloride and cis-1,2-DCE were detected at trace estimated concentrations.

Three bedrock wells (BR-3, BR-4 and BR-5) were also installed in November 2006 as shown on **Figure 2-11**. Groundwater samples were collected from BR-3 and BR-4 and were analyzed for VOCs. A sample could not be collected from BR-5 due to the limited quantity of water within the well. TCE was

detected in BR-4 at a concentration of 38.5 ug/l which is above the MCL. Cis-1,2-DCE and 1,1,1-trichloroethane (1,1,1-TCA) were detected at trace concentrations less than 2 ug/l in BR-4 and several other non-chlorinated VOCs were detected at trace concentrations below 5 ug/l in BR-3 and BR-4.

Bedrock wells BR-1, BR-3, BR-4 and BR-5 contained limited volumes of water (less than 1 foot) during the sampling event and from subsequent water level gauging events. Based on comparison of well heights, screened intervals and overburden groundwater depth, it is questionable whether the samples collected from these wells are representative of bedrock groundwater conditions.

Remedial Activities

Remedial activities have not been conducted at the monitoring well M8 area.

Data Gaps

A source of the VOC impacted groundwater noted at M8 has not been identified. The only other potential source area which has not been investigated is the riprap discharge area (AOC No. 4) located on the hillside between M8 and the former Maintenance/Missile Assembly and Test Building (AOC No. 2). The discharge area receives water from a catch basin located adjacent to the former Maintenance/Missile Assembly and Test Building.

TCE has been detected in well BR-4, which is screened within the shallow bedrock, at a concentration above the MCL. Based on the limited quantity of water within the well and subsurface properties noted at other locations on the property, it is not certain that the sample collected is representative of bedrock groundwater conditions.

The extent of TCE impacted groundwater has not been fully delineated.

Conclusions

To support the CERCLA remedial investigation, soil samples were collected from five soil borings performed within the vicinity of monitoring well M8 which has historically reported VOCs at concentrations above MCLs. TCE was detected in soil samples from four of the five sample locations, but at concentrations well below the MCL and acetone and methylene chloride were detected in several of the samples at estimated trace concentrations. ETPH and other VOCs were not detected in the samples analyzed.

Overburden groundwater has been sampled on four occasions since 1992 from the M8 area. Carbon tetrachloride and TCE have previously been detected in this well at concentrations above MCLs. Dissolved mercury was detected in 1992 and total mercury was also detected during a subsequent event; however, these concentrations were below the MCL. Carbon tetrachloride and mercury results from recent events have been well below MCLs. Chloroform, cis-1,2-DCE, and dissolved barium and zinc were detected but the reported concentrations did not exceed MCLs. The groundwater samples were analyzed for several other parameters which were not detected.

Bedrock groundwater has also been sampled directly adjacent to M8 and at downgradient locations. TCE and several other VOCs were detected in bedrock groundwater adjacent to M8 at concentrations below MCLs. TCE was detected at a downgradient bedrock well location at a concentration above the MCL and a two chlorinated VOCs and several other non-chlorinated VOCs were detected at trace concentrations.

Overburden monitoring wells installed at locations downgradient of the M8 area have also been sampled with carbon tetrachloride and TCE were not detected in any of these wells.

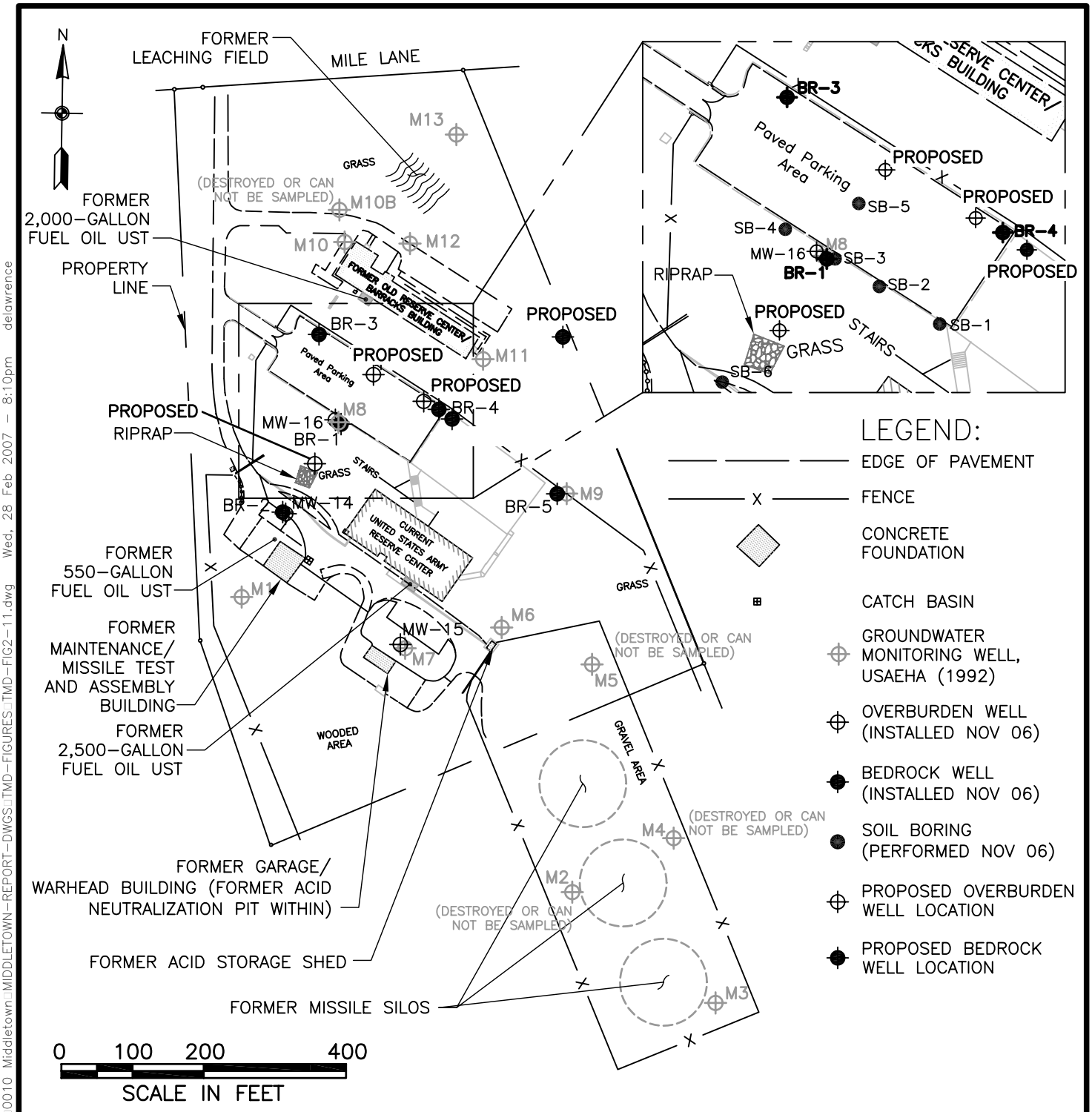
Based on information obtained during the 2006 investigation, it is not certain that the samples collected from bedrock wells BR-1, BR-3 and BR-4 are representative of bedrock groundwater conditions.

Recommendations

To support the CERCLA remedial investigation, it is recommended that the riprap discharge area (AOC No. 4) located between the M8 area and the former Maintenance/Missile Assembly and Test Building (AOC No. 2) is investigated. A soil boring with collection and analysis of a soil sample and installation and sampling of a groundwater monitoring well at the base of the discharge location has been proposed.

An additional bedrock well should be installed adjacent to BR-4 to verify whether that well is representative of bedrock groundwater conditions. The well should be installed further into the bedrock to verify that a water bearing fracture is encountered.

Additional overburden wells should also be installed so that delineation of the VOC groundwater impact area may be completed. One well is proposed to be installed adjacent to BR-4, and the other well is proposed to be installed between BR-3 and BR-4 as shown on **Figure 2-11**. The results of the field investigation and subsequent CERCLA risk assessment will be documented in a future Remedial Investigation Report.



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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut Project 3618-04-8110	KEMRON ENVIRONMENTAL SERVICES / MACTEC	SITE FEATURES AND PREVIOUS EXPLORATION LOCATIONS WELL M8 MONITORING AREA Figure 2-11

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KEMRON
ENVIRONMENTAL SERVICES

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May 20, 2008

David Ringquist
Central District Supervisor
Department of Environmental Protection
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127

RE: Final Remedial Investigation Report
Site 08 Groundwater; Middletown USARC

Dear Mr. Ringquist:

KEMRON Environmental Services (KEMRON), on behalf of the U.S. Army Environmental Command, is transmitting for your review one copy of the Final Remedial Investigation (RI) Report for Site 08 Groundwater at the U.S. Army Reserve Center in Middletown. The report has been prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Army's intent is to achieve site closure under CERCLA and achieve Response Complete under the Defense Environmental Restoration Program for Site 08.

The purpose of the RI Report is to summarize the results of investigations conducted, present the human health risk assessment and ecological risk evaluation, and provide a recommendation that either more work is required or No Action is appropriate. The RI Report concludes that there is no unacceptable risk to human health or the environment from exposure to site soil and groundwater, and therefore No Action under CERCLA is appropriate for Site 08 Groundwater.

Please note that a Public Notice will be published in the Hartford Courant to announce that this RI Report will be available for public review at the Russell Library in Middletown, Connecticut. In accordance with CERCLA requirements, public comments received on the RI Report will be addressed in the Responsiveness Summary portion of the Decision Document to be prepared by the U.S. Army.

Please contact Lou Ehrhard at 847-266-1350, ext. 10 or Mark Stelmack at 207-828-3592 if you have any questions.

Sincerely,
KEMRON Environmental Services, Inc.

Tracy Bergquist
Program Manager

cc:
Richard Mendoza, USAEC
Daniel Walsh, USAEC (Contractor for USAEC)
Heidi Novotny, USACE
Steve Lombardi, 94th RRC (w/ encl)

94th Regional Readiness Command
U.S. Army Reserve Center, Middletown, CT
Final Remedial Investigation Report
Site 08 - Groundwater
Contract # W911SO-04-F0017

Submitted to:
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ATTN: IMAE-CDN (Mr. Richard Mendoza)
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May 20, 2008

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LIST OF ACRONYMS

ADT	Aquifer Drilling and Testing, Inc
amsl	above mean sea level
ARAR	Applicable or Relevant and Appropriate Requirement
AOC	area of concern
ATEC	ATEC Associates, Inc.
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHEE	Clean Harbors Environmental Engineering, Inc.
CHI	Clean Harbors, Inc.
cis-1,2-DCE	cis-1,2-dichloroethene
CSF	cancer slope factor
COPC	Chemical of Potential Concern
CTDEP	Connecticut Department of Environmental Protection
DERP	Defense Environmental Restoration Program
DTC	Diversified Technical Consultants
ELCR	excess lifetime cancer risk
EPC	exposure point concentration
EPH	extractable petroleum hydrocarbons
ETPH	extractable total petroleum hydrocarbons
ft	feet
F&O	Fuss and O'Neill
GA PMC	Pollutant Mobility Criteria for Soil, GA Area
GWPC	Groundwater Protection Criteria
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
I/C DEC	Industrial / Commercial Direct Exposure Criteria for Soil
IRIS	Integrated Risk Information System
KEMRON	KEMRON Environmental Services, Inc.
MACTEC	MACTEC Engineering and Consulting, Inc.
MCL	Maximum Contaminant Level
mg/l	milligrams per liter
MRL	Minimum Risk Level
NCEA	National Center for Environmental Assessment

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LIST OF ACRONYMS, continued

NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEDACE	New England District of Army Corps of Engineers
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAGS	Risk Assessment for Superfund
RCRA	Resource Conservation and Recovery Act
R DEC	Residential Direct Exposure Criteria for Soil
RfC	reference concentration
RfD	reference dose
R GWVC	Residential Groundwater Volatilization Criteria for Groundwater
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RRC	Regional Readiness Command
RSR	Remediation Standard Regulations (Sections 22a-133k-1 through 22a-133k-3, Regulations of Connecticut State Agencies)
SF	slope factor
SI	Site Inspection
SPLP	Synthetic Precipitation and Leaching Procedure
STSC	Superfund Technical Support Center
SVOC	Semi-volatile Organic Compound
SWPC	Surface Water Protection Criteria for Substances in Groundwater
TCE	trichloroethylene
TPH	total petroleum hydrocarbons
UCL	Upper Confident Limit
ug/kg	micrograms per kilogram
UR	unit risk
USAEC	United States Environmental Command
USAEHA	United States Army Environmental Hygiene Agency
USARC	United States Army Reserve Center
USEPA	United States Environmental Protection Agency
USGS	Unites States Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds
VPH	volatile petroleum hydrocarbons

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Section 1.0 Project Background

1.1 Introduction

MACTEC Engineering and Consulting, Inc. (MACTEC), in partnership with KEMRON Environmental Services, Inc. (KEMRON) under contract to the United States Army Environmental Command (USAEC), has conducted a Remedial Investigation (RI) of Site 08, defined as groundwater at the U.S. Army Reserve Center (USARC) 94th Regional Readiness Command (RRC) facility in Middletown, Connecticut. The purpose of this RI is to address identified data gaps regarding site groundwater and to determine whether or not additional environmental restoration efforts are needed. This report presents the results of the soil boring, monitoring well installation and groundwater sampling conducted at the facility between November 2006 and October 2007.

1.2 Regulatory Framework

The U.S. Army, as the lead agency, is conducting response actions at Site 08 in accordance with the Defense Environmental Restoration Program (DERP), which requires that these activities be conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Army's intent is to achieve site closure under CERCLA specific to Site 08 at the USARC property.

In 1992, United States Army Environmental Hygiene Agency (USAEHA) conducted a subsurface investigation at the USARC facility. The purpose of the investigation was to examine potential impacted environmental media at the facility (USAEHA, 1992). USAEHA conducted background research, a site visit and sampling activities. The Site Investigation Report prepared by USAEHA generally meets the CERCLA requirements for a Preliminary Assessment (PA) and Site Inspection (SI).

This RI Report summarizes the results of previous investigation activities and presents the results of the RI conducted from November 2006 through October 2007 at Site 08. The analytical data from historical investigation activities (Section 1.6) have been compared to the Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations (RSR) criteria for soil and groundwater, which have been used as screening criteria during evaluation of historical Site data. The analytical data collected during the RI (Section 2.0) have been compared to the CTDEP RSR criteria for soil and the Federal Maximum Contaminant Levels (MCLs) for groundwater, which have been used as screening criteria during evaluation of Site RI data.

This RI Report also includes a human health risk assessment and an ecological risk evaluation for Site 08 that have been preformed in accordance with CERCLA, the NCP, and applicable United States Environmental Protection Agency (USEPA) guidance. The results of the risk assessments provide the basis for recommendations presented in this RI Report.

1.3 Site Location

The Site is located at 499 Mile Lane, in Middletown, Connecticut (**Figure 1-1**). The Site is situated on the south side of Mile Lane at the north end of the town of Middletown in a primarily residential section of town.

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1.4 Site Description and History

This facility consists of a 23.7-acre parcel of land (**Figure 1-2**) that was used from the mid 1950s to the early 1960s as a NIKE missile launching facility, furnished with three launch silos. Operations typically conducted at NIKE sites included missile assembly and disassembly, missile fueling and warheading, missile maintenance and testing, general launcher and magazine maintenance, vehicle maintenance and general facility maintenance. The launch silos were closed by the New England District of the Army Corps of Engineers (NEDACE) in 1988.

In the early 1960s the facility was converted to a USARC facility and has been operated as such since. Three buildings (former reserve center building, former maintenance building and former garage) were demolished in the late 1990's; however, their concrete slab foundations remain. The current USARC building was constructed prior to demolishment of the former reserve center building. Four underground storage tanks (USTs) were removed from the site between 1990 and 1997 (see Section 1.6 for further details).

The property currently consists of the USARC building and three former slab on grade foundations located on a multi-tiered hillside. Several paved parking areas and roadways are located on the property along with grass covered and wooded areas.

The site was listed during the 2005 Base Realignment and Closure (BRAC) process to be realigned. Recommendations made in this report are based on existing Site conditions and current land use.

1.5 Physical Setting

The 23.7-acre facility is currently comprised of one building, the main USARC building (**Figure 1-2**). There are also the concrete foundation slabs of three former buildings on the Site (former reserve center, former maintenance building and former garage). The old NIKE launch site is located at the southeast end of the Site.

1.5.1 Topography

The United States Geological Survey (USGS) Topographic map for the area (**Figure 1-1**) indicates that the Site has a total relief of approximately 150 feet (ft). The Site lies between approximately 50 and 200 ft above mean sea level (amsl). The Site is located in the Connecticut Valley Lowland physiographic province (USAEHA, 1992). The topography in the region is the result of glacial ice movement in a general north-south direction.

1.5.2 Bedrock Geology

The bedrock in the area is described in the State Geological and Natural History Survey of Connecticut; Quadrangle Report No. 8 on the Bedrock Geology of the Middletown Quadrangle, (Lehmann, 1955). The bedrock geologic map (**Figure 1-3**) identifies the bedrock underlying the Site as Portland Arkose consisting mostly of a reddish-brown arkose with interbedded arkose conglomerate, red and gray shale, mudstone and gray-green feldspathic sandstone. At the Site, the upper few feet is a red-brown conglomerate overlying red-brown or gray-red shale or mudstone (USAEHA, 1992).

An evaluation of likely bedrock fracture patterns at the site, based on best available published data, was completed by MACTEC during the RI. Geologic and topographic maps of the Middletown Quadrangle and electronically available aerial photographs were reviewed to determine if surface features or

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lineaments were present that provide an indication of possible un-mapped fault locations. Topographic changes observed indicate ridges and valleys are orientated in north-south directions and correspond to bedrock lithology. There are no linear features located to the north or south of the Site that would suggest evidence of a fault running through the Site.

Within the mapped quadrangle, geologic contacts and bedrock faults are orientated in a north-south to southwest-northeast direction. The Site is located along a ridge and no known or inferred faults are indicated on the geologic map within or near the Site. In the vicinity of the Site, the mapped geologic stratigraphy has been well established by Lehmann and consists of alternating sequences of detrital sedimentary rocks overlying basalt flows which are assigned to the upper part of the Newark Group of Triassic age. Lehmann also mapped bedding planes within the sedimentary units which strike north and dip east at shallow angles from 5 to 13 degrees. The uppermost sedimentary unit is the Portland Arkose which conformably overlies the Hampden basalt (e.g., strata are an unbroken sequence where one unit lies directly over the other as a consequence of depositional history). The Hampden basalt conformably overlies the East Berlin formation which consists of mudstone and shale interbedded with arkose and sandstone. The East Berlin formation overlies the Holyoke basalt sequence which consists of at least two distinct basalt flows. In this normal sequence of stratigraphic layering, the geologic contacts are not fault contacts.

The lateral continuity of these sedimentary and volcanic units allows the mapping of faults which, due to their vertical displacements, disrupt the stratigraphic sequence causing juxtaposition of sedimentary units and volcanic units of different ages. The primary mode of faulting in the Middletown Quadrangle is normal block faulting. The faults typically strike north to northeast and dip at moderate to steep angles to the west and northwest. The western hanging walls of the faults blocks are displaced downward relative to the eastern foot walls. The closest mapped fault is approximately 1.5 miles to the northwest of the Site. The mapped geology shows no indication that other faults have displaced the sedimentary and volcanic strata within this 1.5 mile radius from the Site.

Joint systems were mapped by Lehmann and are presented on a separate plate in that report (Lehmann, 1955). The joint systems are spatially associated with the mapped faults shown on the bedrock geologic map, a portion of which is reproduced in Figure 1-3. A lack of jointing in the vicinity of the Site is conspicuous in that plate. This lack of jointing in the Portland Arkose in the vicinity of the Site is an additional line of evidence suggesting significant geologic fault structures are not present in vicinity of the Site.

The direction of groundwater flow in bedrock at the Site is interpreted from water level data in site bedrock wells to be generally toward the northeast. In the absence of faulting, the anisotropy of hydraulic conductivity in the bedrock aquifer is likely to be controlled largely by bedding plane geometry, and have a principal axis dipping to the east with the inferred dip of bedding. Thus, preferential flow direction within the bedrock is likely to be generally coincident with the direction of groundwater movement as interpreted from water level data in bedrock wells.

1.5.3 Surficial Geology

The USGS Surficial Materials Map for Connecticut (Stone et al, 1992) shows the Site to be underlain by thin till in the southern portion of the property and fine deposits at the north-northeastern portion of the property. The till deposits are described as being generally less than 10 to 15 ft thick, loose to moderately compact, generally sandy and commonly stony. The fine deposits are described as being composed of well-sorted, thin layers of alternating silt and clay, or thicker layers of very fine sand and silt.

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1.5.4 Surface Water

There are no perennial surface water streams located on the Site; however, there is an intermittent stream located near the southeast boundary of the property and on the abutting property to the east. The closest perennial surface water body to the Site is West Swamp Brook, located on the abutting property to the west. This brook has been classified by the CTDEP as a "Class A" water resource. This classification indicates that water is known or presumed to meet water quality criteria which support designated uses. These designated uses include existing or potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply, and other uses including navigation (CTDEP, 1996).

1.5.5 Hydrogeology

Groundwater below the area of the Site has been classified by the CTDEP as "GA" quality. This classification is given to groundwater within the area of influence of existing private water supply wells or groundwater with potential to provide water to public or private water supply wells, and which is suitable for direct human consumption without prior treatment (CTDEP, 1996).

Groundwater flow follows topography and discharges to the West Swamp Brook to the north of the Site. Depth to overburden groundwater varies from about 2 to 20 ft, being shallower at the lower elevations.

1.5.6 Climate

The pertinent characteristics of Connecticut's climate are: (1) equable distribution of precipitation among the four seasons, (2) large ranges of temperature both daily and annually, (3) great differences in the same season or month of different years, and (4) considerable diversity of the weather over short periods of time (CSCC, 2004).

Precipitation tends to become evenly distributed throughout the year in all parts of Connecticut. The average annual precipitation in Middletown, Connecticut is approximately 52 inches per year. Variations in precipitation from month to month are sometimes extreme, but prolonged droughts and widespread floods are infrequent. Measurable precipitation falls on an average of one day in three, with the yearly total approximating 120 days (CSCC, 2004).

1.5.7 Land Use and Demography

The surrounding land use is mainly undeveloped with residences located to the east and northeast along Mile Lane. The residences are believed to be hydrologically downgradient of the Site 08.

1.6 Previous Investigations

1.6.1 Limited Subsurface Investigation, 1990

Clean Harbors Environmental Engineering, Inc. (CHEE) conducted a subsurface investigation to investigate the possibility of petroleum migration in site soils and groundwater caused by a former leaking 2,000-gallon fuel oil UST which was located along the southwestern side of the Former Reserve Center / Barracks Building as shown on **Figure 1-2**. The UST was removed by Clean Harbors Inc. (CHI) and several perforations were noted on its sides and bottom. During removal of the UST, petroleum contaminated soils were encountered around the perimeter of the tank and the surrounding impacted soils

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were removed (approx. 100 cubic yards) to a depth of approximately 7 ft, where groundwater started entering the excavation.

Three soil borings (CHI-1 through CHI-3) were performed in the vicinity of the UST excavation and surrounding the Former Reserve Center / Barracks Building and were subsequently completed as monitoring wells. Soil samples were collected from CHI-1 and CHI-2 from the 5 to 7 depth interval and were analyzed for total petroleum hydrocarbons (TPH) by Environmental Protection Agency (EPA) Method 418.1. The soil sample collected from CH-1 was also analyzed for volatile organic compounds (VOCs) by EPA Method 8240. TPH and VOCs were not detected in the soil samples.

Groundwater samples were collected from all three wells and were analyzed for TPH and VOCs. 1,1-Dichloroethane (1,1-DCA) was detected at a concentration of 6 micrograms per liter (ug/l) and 1,1,1-trichloroethane (1,1,1-TCA) was detected at a concentration of 9 ug/l in CHI-1. The concentration of 1,1-DCA detected is below the applicable RSR Groundwater Protection Criteria (GWPC) of 70 ug/l and the concentration of 1,1,1-TCA was below the GWPC of 200 ug/l. VOCs were not detected in CHI-2 and CHI-3. The sample locations are included on **Figure 1-4** and analytical results are presented on **Table 1-1.**

CHEE indicated that petroleum contamination noted during the tank removal was not widespread and did not appear to impact groundwater on the site. CHEE recommended that a groundwater monitoring program be implemented to monitor groundwater conditions over one hydrologic cycle.

1.6.2 Geohydrologic Study No. 38-26-KL46-92 Site Investigation, 1992

The USAEHA conducted a limited site investigation to examine the potentially impacted environmental media at the Site (USAEHA, 1992). Five main areas of concern (AOC) were identified at the Site:

- **Three NIKE Missile Silos** - Three NIKE missile silos were located on the southern portion of the property. The silos were closed by the NEDACE. The silos were pumped dry and were filled with a sand slurry and debris from the walls of the silos. No samples were taken during the closure.
- **Acid Neutralization Pit** - An acid neutralization pit was located underneath the former garage. Typically at NIKE sites, these pits were used for the disposal of waste liquids and solids. These wastes may have included used oil, lubricants and/or solvents.
- **2,000-gallon UST** - A 2,000-gallon UST used for the storage of fuel oil was located behind the old reserves center and was removed in 1990 by CHEE. This AOC was discussed in Section 1.6.1.
- **Material Storage (e.g., solvents)** - Materials were stored on the property during the construction of family housing. The materials were reportedly stored on the south side of the property.
- **Septic Tank and Leaching Field** - A septic tank and leaching field system was operated on-site until the site was connected to the sanitary sewer system.

As part of this investigation 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed and sampled. Eight soil samples were collected during drilling for the monitoring wells. In addition, one surface soil sample (SS-1) was collected. All soil samples were analyzed for total metals, VOCs (except four samples), semi-volatile organic compounds (SVOCs), and TPH. All of the installed monitoring wells were sampled (except M-10 and M-12) and samples analyzed for dissolved metals, VOCs, SVOCs, TPH, nitrites/nitrates, pesticides and polychlorinated biphenyls (PCBs). The sample locations are included on **Figure 1-4**.

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Analytical results (**Table 1-2**) indicated that soil samples from M-2, M-6 and M-7 exhibited TPH impacts but at concentrations below RSR criteria. VOCs and SVOCs were not detected in any soil sample. Total metals were not detected at concentrations above background levels, which were determined during the investigation. Background samples were collected from presumed non-impacted areas located up-gradient of site operations.

Groundwater samples (**Table 1-3**) indicated the presence of one or more VOCs in two groundwater samples (M1 and M8), including carbon tetrachloride, trichloroethylene (TCE), chloroform and cis-1,2-dichloroethene (cis-1,2-DCE). The concentrations of carbon tetrachloride and TCE are slightly above current RSR criteria. Dissolved metals were identified in all of the wells sampled; with the exception of arsenic and mercury, all metals were detected at levels below regulatory criteria. Total mercury exceeded the Surface Water Protection Criteria (SWPC) in five wells and equaled the SWPC in three wells and total arsenic exceeded the SWPC in M1.

The USAEHA concluded that no contamination was found to be originating from the former NIKE silos, former acid neutralization pit, former heating oil UST associated with the former reserve center and former septic tank and leaching fields.

Based on the results of the investigation USAEHA recommended:

- Resample monitoring wells M1, M8, and M10B for VOCs and continue to monitor every six months until the detected concentrations of carbon tetrachloride and TCE are less than 2 ug/L for two consecutive sampling events.
- Take water level measurements in wells M-1, and M-8, MW-9, MW-10B, MW-11, MW-12, and M-13 when the wells are resampled to confirm groundwater flow directions and determine any seasonal variations.
- Examine activities at the Site to determine whether any continuing activities might be a continuing source of contamination.
- Abandon monitoring well M-10 and the two remaining wells from a previous study.

1.6.3 Underground Storage Tank Closure, 1994

ATEC Associates, Inc. (ATEC) conducted closure of a 2,500-gallon UST located at the Site (ATEC, 1994). The 2,500-gallon UST was located along the southwestern side of the Current Reserve Center building. The UST was removed in November of 1993 and according to the report appeared to be free of holes or corrosion. The subsurface was evaluated from within and below the area of the removed tank for the possibility of soil impacted by petroleum products. Contaminated soil was encountered and a total of 63.65 tons were removed and disposed. Field screening of the final excavation extent (PE-1 through PE-10) for VOCs and TPH was completed with relativity low results detected, and two samples (LRS-1 and LRS-2) were analyzed at a fixed laboratory for VOCs, TPH and SVOCs. VOCs, TPH, and SVOCs were reported at either non-detect levels or below RSR criteria with the exception of 2-methylnaphthalene which was detected at a concentration above the Pollutant Mobility Criteria for GA areas (GA PMC) in LRS-1. The tank excavation was backfilled in January of 1994 with clean backfill. The sample locations are shown on **Figure 1-4** and sample results are presented on **Table 1-4**.

1.6.4 Final Underground Storage Tank Closure Report, 1997

Roy F. Weston, Inc. (Weston) coordinated the removal of a 550-gallon double-walled fiberglass UST from the site (Weston, 1997). The 550-gallon UST was located along the northeast side of the Maintenance/Missile Assembly and Test Building. Approximately 20-gallons of oily water was removed

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from the tank and the UST itself was removed in August 1996. The UST was originally used for the storage of fuel oil but was abandoned when the building was converted to gas for heating. Soils removed during the UST removal were screened with a photoionization detector (PID) with no concentrations reported above background levels. One soil sample was collected from the tank grave. The sample was a composite of all four sidewalls and the excavation bottom. The sample was analyzed for volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), and PCBs by EPA Method 8080, and total RCRA 8 metals. VPH and EPH analytes and PCBs were not detected. Several total RCRA 8 metals were reported, but at concentrations which would be expected for background conditions. Following the UST removal, the excavation was restored. The sample locations are shown on **Figure 1-4** and sample results are presented on **Table 1-5**.

Weston concluded that no evidence of a release from the tank or associated piping occurred.

1.6.5 Environmental Baseline Study, 1998

Diversified Technology Consults (DTC) prepared an Environmental Baseline Study which included a summary of previous environmental related activities and completion of asbestos and lead paint inspections and sampling in support of proposed demolition of several on-site buildings (DTC, 1998). Soil sampling was also conducted though the floor of the Former Garage/Warhead Building and Former Maintenance/Missile Assembly and Test Building. The soil samples, two per building, were collected from soils directly below the concrete flooring and were analyzed for VOCs, SVOCs, TPH, PCBs and synthetic precipitation leaching procedure (SPLP) RCRA 8 metals. SPLP barium was detected in all four samples (up to 0.59 milligrams per liter (mg/l)) and TPH was detected in both samples from underneath the Former Maintenance/Missile Assembly and Test Building (up to 72 parts per million (ppm)). The reported concentrations were below applicable RSR criteria and no other concentrations were above the laboratory's minimum reporting limit. The sample locations are shown on **Figure 1-4** and sample results are presented on **Table 1-6**.

1.6.6 Draft Groundwater Monitoring Report, 2006

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006 (KEMRON, 2006a). The groundwater sampling program was completed to obtain current groundwater quality data on-site since the last round of groundwater data was collected in 1992. Groundwater samples were collected from M1, M3, M6, M7 and M11 in August 2005 and groundwater samples were collected from M1, M3, M6, M7, M8, M9, M11, M12 and M13 in February 2006. Groundwater samples could not be collected from several wells in August 2005 since the wells were dry or did not contain enough groundwater volume for sampling. Groundwater wells M2, M4, M5 and M10B were damaged or abandoned and could not be sampled.

The groundwater samples were analyzed for VOCs, SVOCs, total and dissolved metals and extractable total petroleum hydrocarbons (ETPH). The groundwater sample from M11 could only be analyzed for VOCs and total and dissolved metals due to the limited quantity of sample that could be collected. A summary of the laboratory results are included in **Tables 1-7** and **1-8**.

VOCs were detected in three of the nine wells sampled in February 2006, including M6, M7, and M8. TCE was detected in M8 exceeded the RSR criteria, including the GWPC and the Residential Groundwater Volatilization Criteria (R GWVC). The remaining VOCs detected in M8 (carbon tetrachloride and chloroform) were detected at concentrations below RSR criteria. The concentrations of VOCs detected in M6 (cis-1,2-DCE and toluene) and in M7 (toluene) were below RSR criteria. In August 2005, one or more VOCs were detected in M1, M3, M6, or M11. Carbon tetrachloride,

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chloroform, cis-1,2-DCE, and toluene were detected in one or more of the samples from but at concentrations below the RSRs.

During the August 2005 sampling event, only one SVOC, di-n-octylphthalate, was detected in only one well (M1) but at a concentration below the GWPC. This compound is a common laboratory contaminant and the absence of other phthalates suggest that this is a laboratory artifact. SVOCs were not detected in wells that were sampled during the February 2006 event.

ETPH was detected in one well in February 2006, M8, but at a concentration below the GWPC. ETPH was not detected in the samples collected in August 2005, although the quantitation limits for ETPH for the August 2005 event were above the GWPC.

Several metals were detected in the groundwater samples in February 2006, including total and dissolved arsenic, barium, lead, and selenium; however, none of the detected metals exceeded the applicable RSR criteria. During the August 2005 sampling event, barium, lead, selenium, and mercury were detected in at least one of the five samples but at concentrations below the RSRs.

Analytical results from the groundwater sampling events suggest that groundwater has been impacted by past site activities. The detection of carbon tetrachloride, chloroform, and TCE in M8 in February 2006 is consistent with the results of prior (pre-2005) investigations, although the reported concentrations were somewhat higher in 1992 (**Table 1-3**).

1.7 Summary of Areas of Concern

AOCs and potential AOCs have been developed for the facility based on evaluation of prior data and review of prior reports and other relative information. The following AOCs have been identified for the property:

- AOC No. 1 - Former 2,000-gallon Fuel Oil UST at the Former Reserve Center/Barracks Building
- AOC No. 2 - Former Maintenance / Missile Test and Assembly Building
- AOC No. 3 - Former 550-gallon Fuel Oil UST at the Former Maintenance / Missile Test and Assembly Building
- AOC No. 4 - Catch Basin Located Adjacent to the Former Maintenance / Missile Test and Assembly Building with Outfall
- AOC No. 5 - Former Garage / Warhead Building
- AOC No. 6 - Former Acid Neutralization Pit within the Former Garage / Warhead Building
- AOC No. 7 - Former Missile Silos
- AOC No. 8 - Former Acid Storage Shed
- AOC No. 9 - Former Leaching Field
- AOC No. 10 - Former 2,500-gallon Fuel Oil UST at the Current Reserve Center
- AOC No. 11 - Well M8 area

Select AOCs have been previously investigated and been determined that a release to the environment has not occurred (i.e., AOCs 7, 8, and 9). For other select AOCs, releases have been noted and have been properly remediated (i.e., AOCs 1, 3, and 10).

Groundwater impacts, specifically chlorinated solvents, have been noted in M8 and neighboring wells. The focus of the Army's work at Middletown has been characterization of TCE and degradation products in groundwater. A specific release point(s) for the TCE detected in groundwater has not been determined.

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Potential sources of the TCE may include AOCs 2, 4, 5, 6, and 11. The RI discussed in this report focuses on investigation of these potential source areas and delineation of the previously identified groundwater impacts.

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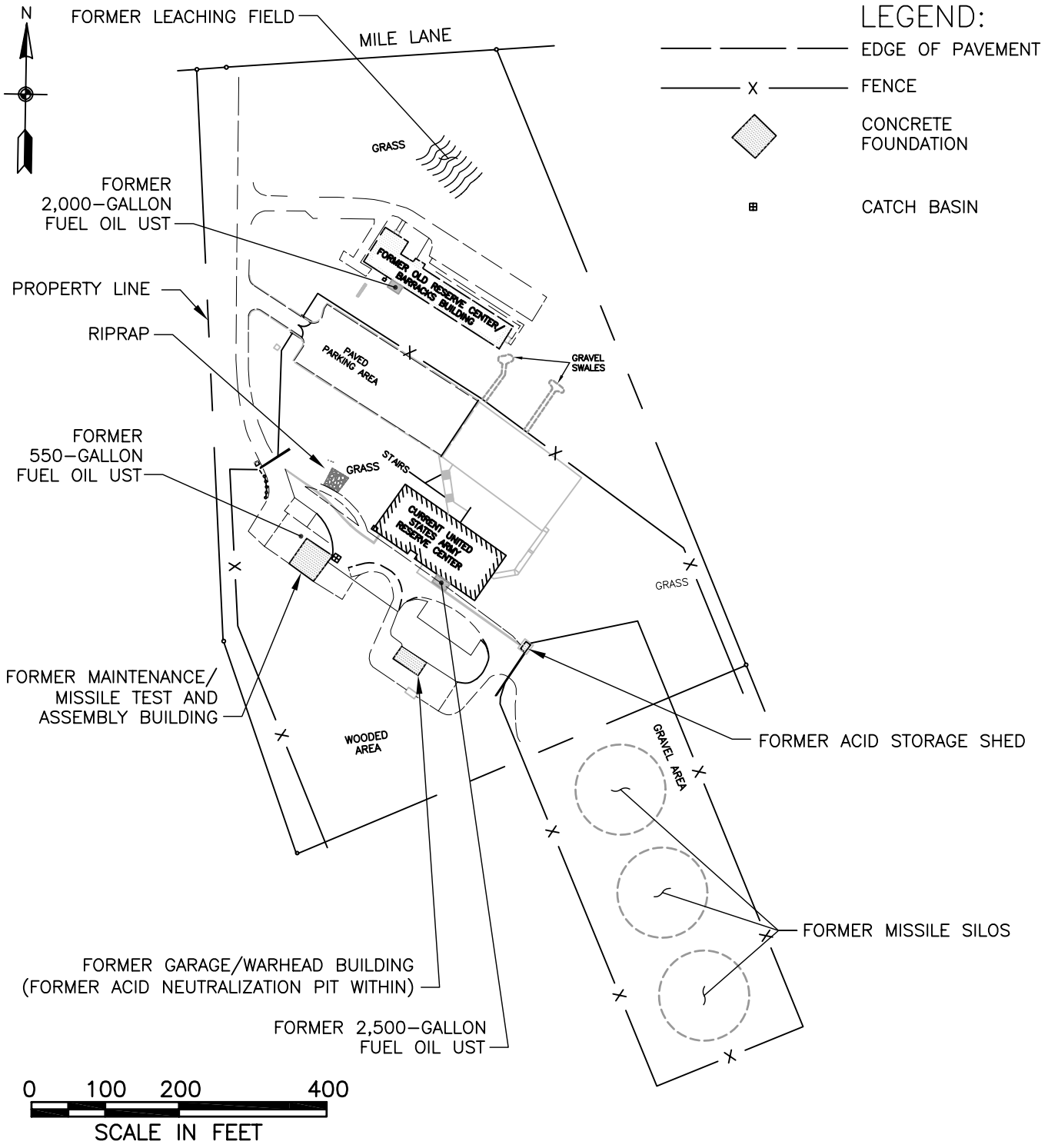
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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	kemron ENVIRONMENTAL SERVICES MACTEC	LOCUS MAP Project 3618-04-8110 Figure 1-1

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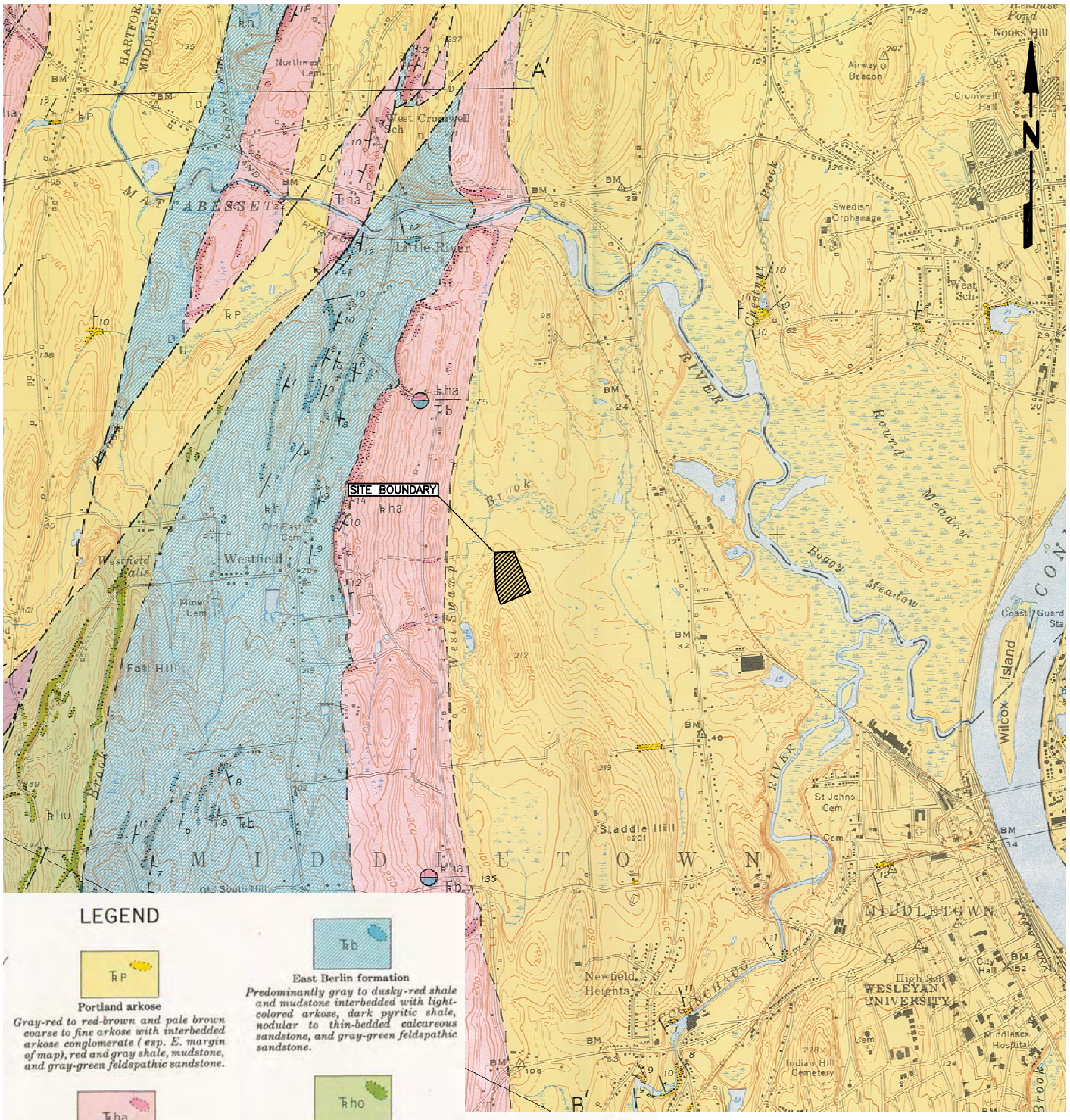
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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Site Layout Project 3618-04-8110 Figure 1-2

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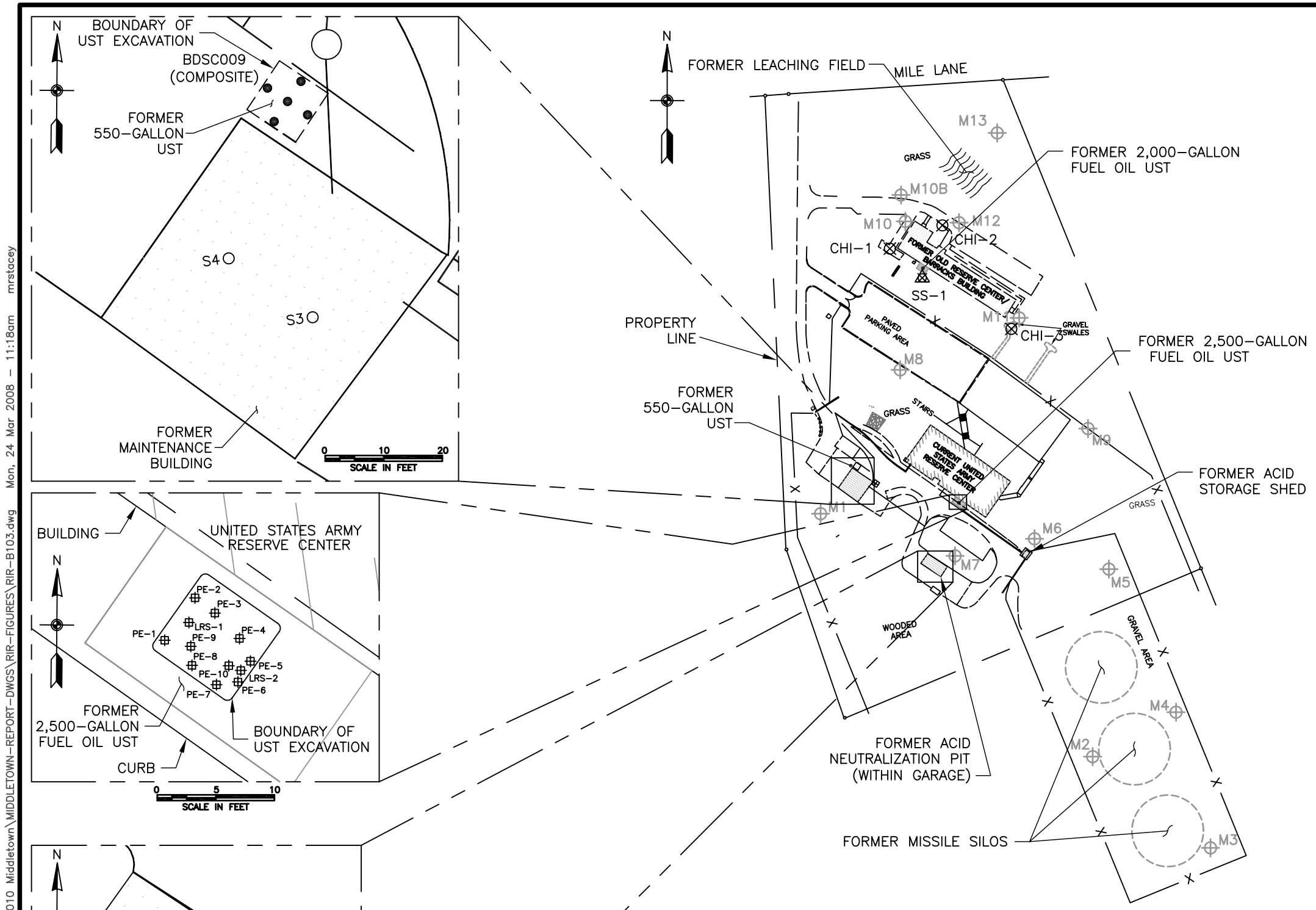
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94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

KEMRON ENVIRONMENTAL SERVICES MACTEC

BEDROCK GEOLOGIC MAP
Project 3618-04-8110
Figure 1- 3

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LEGEND:

- M1 ⊕ GROUNDWATER MONITORING WELL, USAEHA (1992)
- CHI ⊠ SOIL SAMPLE, MONITORING WELL, CHEE (1990)
- SS ⧋ SURFACE SOIL SAMPLE, USAEHA (1992)
- PE-1 ⊞ POST EXCAVATION SAMPLE, ATEC (1994)
- ● POST EXCAVATION COMPOSITE, WESTON (1997)
- S1 ○ SOIL SAMPLE, DTC (1998)
- EDGE OF PAVEMENT
- X FENCE
- CONCRETE FOUNDATION
- CATCH BASIN

DRAWING REFERENCES:

PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

FIGURES 2 AND 3 FROM THE "TECHNICAL REPORT, UNDERGROUND STORAGE TANK CLOSURE" PREPARED BY ATEC ASSOCIATES, INC. 1994.

FIGURE 2 "SKETCH PLAN OF STUDY AREA" FROM THE "LIMITED SUBSURFACE INVESTIGATION" PREPARED BY CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION. 1990.

FIGURES 3 AND 4 FROM THE "ENVIRONMENTAL BASELINE STUDY" PREPARED BY DIVERSIFIED TECHNOLOGY CONSULTANTS 1998.

FIGURES A-2, A-3 AND A-4 FROM THE "GEOHYDROLOGICAL STUDY NO. 38-26-KL46-92 SITE INVESTIGATION" PREPARED BY U.S,. ARMY ENVIRONMENTAL HYGIENE AGENCY. 1992.

FIGURE 2-3 "UST EXCAVATION SAMPLING MAP" FROM THE "FINAL UNDERGROUND STORAGE TANK CLOSURE REPORT" PREPARED BY ROY F. WESTON, INC. 1997.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: JBC 04/20/07
Checked/Date: JRY 04/20/07

KEMRON ENVIRONMENTAL SERVICES

94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

MACTEC

Previous Exploration Locations
Project 3618-04-8110
Figure 1-4

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Table 1-1
Summary of Analytical Results from the Limited Subsurface Investigation (CHEE, 1990)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Soil Samples	Sample Location:			CHI-1	CHI-2
	CTDEP RSR Criteria			04/02/90	04/02/90
	GA PMC[1] (mg/kg)	R DEC[2] (mg/kg)	I/C DEC[3] (mg/kg)	5-7'	5-7'
TPH (mg/kg)	500	500	2,500	<10	<10
VOCs (mg/kg)	varies	varies	varies	ND	--

Groundwater Samples	Sample Location:				CHI-1	CHI-2	CHI-3
	CTDEP RSR Criteria				04/04/90	04/04/90	04/04/90
	GWPC[4] (ug/l)	SWPC[5] (ug/l)	R GWVC[6] (ug/l)	I/C GWVC[7] (ug/l)			
TPH (ug/l)	500	--	--	--	**<1,000**	**<1,000**	**<1,000**
VOCs (ug/l)							
1,1-Dichloroethane	70	--	3,000	41,000	6	<5	<5
1,1,1-Trichloroethane	200	62,000	6,500	16,000	9	<5	<5

Notes:

TPH = Total Petroleum Hydrocarbons by Infrared (IR)

VOCs = Volatile Organic Compounds (EPA Method 8240)

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

ND = Not Detected

(1) GA PMC = Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(2) R DEC = Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(3) I/C DEC = Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(4) GWPC = Groundwater Protection Criteria for Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(5) SWPC = Surface Water Protection Criteria for Substances in Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(6) R GWVC = Proposed Residential Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).

(7) I/C GWVC = Proposed Industrail/Commerical Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003)

Bold = Quantitation limit above RSR value

Shaded and **Bold** indicates exceedances of RSR criteria

Table 1-2
Summary of Soil Analytical Results from the Geohydrologic Study No. 38-26-KL46-92 Site Investigation (USAEHA, 1992)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:			M1	M2	M6	M7	M7	M7	M10	M10	SS-1
	CTDEP RSR Criteria			06/02/92	06/02/92	06/04/92	06/04/92	06/04/92	06/04/92	06/06/92	06/06/92	06/06/92
	GA PMC[1] (mg/kg)	R DEC[2] (mg/kg)	I/C DEC[3] (mg/kg)	4"-20"	2"-8"	1"-6"	3"-18"	60"-78"	114"-126"	2"-38"	40"-63"	2"-16"
TPH (mg/kg)	**500**	**500**	**2,500**	<10	103	22	26	<10	<10	<10	<10	<10
VOCs (mg/kg)	**varies**	**varies**	**varies**	ND	ND	ND	ND	ND	ND	ND	ND	ND
SVOCs (mg/kg)	**varies**	**varies**	**varies**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (mg/kg)												
Arsenic	--	**10**	**10**	4.8	1.8	3.2	3.2	7.7	3.5	1.6	0.65	3.8
Barium	--	**4,700**	**140,000**	82	61	96	92	180	110	78	26	120
Cadmium	--	**34**	**1,000**	<0.25	<0.25	<0.25	<0.25	<0.25	0.28	<0.25	<0.25	0.26
Chromium	--	**3,900**	**51,000**	16	9.5	19	19	24	20	20	6.5	24
Lead	--	**500**	**1,000**	7.9	7.0	15	10	8.0	5.1	15	4.2	6.4
Mercury	--	**20**	**610**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	--	**340**	**10,000**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	--	**340**	**10,000**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
TCLP Metals (mg/l)												
Chromium	**0.05**	--	--	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	--	**<0.50**
Lead	**0.015**	--	--	--	--	**<0.50**	**<0.50**	--	--	**<0.50**	--	--

Notes:
TPH = Total Petroleum Hydrocarbons (EPA Method 418.1)
VOCs = Volatile Organic Compounds (EPA Method 8260)
SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
ND = Not detected above quantitation limit
(1) GA PMC = Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(2) R DEC = Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(3) I/C DEC = Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
Bold = Quantitation limit above RSR value
Shaded and **Bold** indicates exceedances of RSR criteria

Table 1-3
Summary of Groundwater Analytical Results from the Geohydrologic Study No. 38-26-KL46-92 Site Investigation (USAEHA, 1992)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:				M1	M2	M3	M4	M5	M6	M7	M8	M9	M10B	M11	M12	M13
	CTDEP RSR Criteria				06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92	06/09/92
	GWPC[1] (ug/l)	SWPC[2] (ug/l)	R GWVC[3] (ug/l)	I/C GWVC[4] (ug/l)													
TPH (ug/l)	**500**	**--**	**--**	**--**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	NA	**<1,000**
VOCs (ug/l)																	
Carbon tetrachloride	**5**	**132**	**5.3**	**14**	2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**14**	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	**6**	**14,100**	**26**	**62**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5
Cis-1,2-Dichloroethene	**70**	**--**	**830**	**11,000**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	**5**	**48,000**	**160**	**2,200**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5
Toluene	**1,000**	**4,000,000**	**7,100**	**41,000**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5
Trichloroethene	**5**	**2,340**	**27**	**67**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**38**	<0.5	<0.5	<0.5	<0.5	<0.5
SVOCs (ug/l)	**varies**	**varies**	**varies**	**varies**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Metals (ug/l)																	
Arsenic	**50**	**4**	**--**	**--**	**20**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**
Barium	**1,000**	**-**	**--**	**--**	240	240	380	330	320	220	230	310	220	120	130	200	100
Beryllium	**4**	**4**	**--**	**--**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**
Cadmium	**5**	**6**	**--**	**--**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	0.7
Chromium	**--**	**1,200**	**--**	**--**	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	**15**	**13**	**--**	**--**	2	6	7	2	<1	5	3	<1	2	<1	<1	3	<1
Mercury	**2**	**0.4**	**--**	**--**	<0.2	<0.2	**0.6**	**0.8**	**0.5**	**1.5**	<0.2	**0.6**	0.4	0.3	<0.2	0.4	0.4
Zinc	**5,000**	**123**	**--**	**--**	20	20	30	30	30	10	10	10	30	30	30	30	3

Notes:

TPH = Total Petroleum Hydrocarbons (EPA Method 418.1)
VOCs = Volatile Organic Compounds (EPA Method 8260)
SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)
µg/L = micrograms per liter
ND = Not Detected
(1) GWPC = Groundwater Protection Criteria for Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(2) SWPC = Surface Water Protection Criteria for Substances in Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies)
(3) R GWVC = Proposed Residential Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).
(4) I/C GWVC = Proposed Industrail/Commerical Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).
Bold = Quantitation limit above RSR value
Shaded and **Bold** indicates exceedances of RSR criteria

Table 1-4
Summary of Soil Analytical Results from the Underground Storage Tank Closure (ATEC, 1994)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:			PE-1	PE-2	PE-3	PE-4	PE-5	PE-6	PE-7	PE-8	PE-9	PE-10	LRS-1	LRS-2
	CT DEP RSR			11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93
	RDEC[1] (mg/kg)	I/C DEC[2] (mg/kg)	GA PMC[3] (mg/kg)	7'	7'	7'	7'	7'	7'	7'	7'	7'	7'	7'	7'
VOCs via PID (ppm)	--	--	--	ND	ND	2	ND	ND	ND	ND	ND	3	1	--	--
TPH via NDIR (ppm)	--	--	--	24.4	33.2	34.5	41.3	28.1	38.7	26.7	28.9	36.9	48.3	--	--
TPH (mg/kg)	**500**	**2,500**	**500**	--	--	--	--	--	--	--	--	--	--	<20	**52**
VOCs (mg/kg)	**varies**	**varies**	**varies**	--	--	--	--	--	--	--	--	--	--	ND	ND
SVOCs (mg/kg)															
Naphthalene	**1,000**	**2,500**	**5.6**	--	--	--	--	--	--	--	--	--	--	1.78	<0.33
Phenanthrene	**1,000**	**2,500**	**4**	--	--	--	--	--	--	--	--	--	--	0.74	<0.33
2-Methylnaphthalene	**474**	**2,500**	**0.98**	--	--	--	--	--	--	--	--	--	--	**1.9**	<0.33

Notes:
VOCs = Volatile Organic Compounds via photoionization detector (PID)
TPH = Total Petroleum Hydrocarbons via non-dispersive infrared analyzer (NDIR)
TPH = Total Petroleum Hydrocarbons (EPA Method 418.1)
VOCs = Volatile Organic Compounds (EPA Method 8260)
SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)
mg/kg = milligrams per kilogram
ND = Not Detected
(1) R DEC = Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(2) I/C DEC = Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(3) GA PMC = Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
Bold = Quantitation limit above RSR value
Shaded and **Bold** indicates exceedances of RSR criteria

Table 1-5
Summary of Soil Analytical Results from the Final Underground Storage Tank Closure Report (Weston, 1997)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:			BDSC009
	CTDEP RSR Criteria			08/09/96
	GA PMC[1] (mg/kg)	R DEC[2] (mg/kg)	I/C DEC[3] (mg/kg)	0-10'
VPH (mg/kg)	--	--	--	ND
EPH (mg/kg)	--	--	--	ND
PCBs (mg/kg)	--	**1**	**10**	ND
Total Metals (mg/kg)				
Arsenic	--	**10**	**10**	1.96
Cadmium	--	**34**	**1,000**	0.265
Chromium	--	**3,900**	**51,000**	9.88
Lead	--	**500**	**1,000**	11.6

Notes:
VPH = Volatile Petroleum Hydrocarbons
EPH = Extractable Petroleum Hydrocarbons
PCBs = polychlorinated biphenyl's (EPA Method 8080)
mg/kg = milligrams per kilogram
ND = Not detected above quantitation limit
(1) GA PMC = Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(2) R DEC = Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(3) I/C DEC = Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
Bold = Quantitation limit above RSR value
Shaded and **Bold** indicates exceedances of RSR criteria

Table 1-6
Summary of Soil Analytical Results from the Environmental Baseline Study (DTC, 1998)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:			S1	S2	S3	S4
	CTDEP RSR Criteria			08/19/97 3 to 12"	08/19/97 3 to 12"	08/19/97 3 to 12"	08/19/97 3 to 12"
	GA PMC[1] (mg/kg)	R DEC[2] (mg/kg)	I/C DEC[3] (mg/kg)				
TPH (mg/kg)	**500**	**500**	**2,500**	<50	<50	70	72
VOCs (mg/kg)	**varies**	**varies**	**varies**	ND	ND	ND	ND
SVOCs (mg/kg)	**varies**	**varies**	**varies**	ND	ND	ND	ND
PCBs (mg/kg)	**--**	**1**	**10**	<0.50	<0.50	<0.50	<0.50
SPLP Metals (mg/l)							
Barium	**1**	--	--	0.53	0.59	0.52	0.57

Notes:

TPH = Total Petroleum Hydrocarbons (EPA Method 418.1)
VOCs = Volatile Organic Compounds (EPA Method 8260)
SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)
PCBs = polychlorinated biphenyl's (EPA Method 8082)
SPLP = Synthetic Precipitation Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
ND = Not detected above quantitation limit
NE = No Criteria Established

(1) GA PMC = Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(2) R DEC = Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(3) I/C DEC = Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

Bold = Quantitation limit above RSR value

Table 1-7
Detected Constituents in Groundwater August 2005 Sampling Event (Kemron, 2006)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

						M1		M3		M6		M7		M11	
					Location:	M1		M3		M6		M7		M11	
					Sample ID:	CT08-GWS0126		CT08-GWS0327		CT08-GWS0627		CT08-GWS0724		CT08-GWS1110	
					Date Collected:	8/16/2005		8/19/2005		8/17/2005		8/16/2005		8/16/2005	
					Sample Type:	FS		FS		FS		FS		FS	
					Groundwater Depth:	15.60 ft		22.01 ft		19.40 ft		18.20 ft		10.32 ft	
	CTDEP RSR Criteria														
Analyte	GWPC[1]	SWPC[2]	R GWVC[3]	I/C GWVC[4]	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals															
Barium, Dissolved	1	--	--	--	mg/l	0.32		0.221		0.229		0.273		0.235	
Barium, Total	1	--	--	--	mg/l	0.213		0.266		0.273		0.176		0.136	
Lead, Dissolved	0.015	0.013	--	--	mg/l	0.005	U	0.00278	J	0.005	U	0.005	U	0.005	U
Lead, Total	0.015	0.013	--	--	mg/l	0.005	U	0.00268	J	0.005	U	0.005	U	0.005	U
Selenium, Dissolved	0.05	0.05	--	--	mg/l	0.000625	J	0.000569	J	0.001	U	0.001	U	0.001	U
Selenium, Total	0.05	0.05	--	--	mg/l	0.00111		0.00116		0.000663	J	0.001	U	0.001	U
Mercury, Dissolved	0.002	0.0004	--	--	mg/l	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Mercury, Total	0.002	0.0004	--	--	mg/l	0.0002	U	0.0002	U	0.000155	J	0.0002	U	0.0002	U
Volatile Organic Compounds															
Carbon tetrachloride	5	132	5.3	14	ug/l	4.58		1	U	1	U	1	U	1	U
Chloroform	6	14,100	26	62	ug/l	0.469	J	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	70	--	830	11,000	ug/l	1	U	0.289	J	0.721	J	1	U	1	U
Toluene	1,000	4,000,000	7,100	41,000	ug/l	1	U	1	U	1	U	1	U	0.482	J
Semivolatile Organic Compounds															
Di-n-octylphthalate	100	59	--	--	ug/l	13.6		5.1	U	5.15	U	5.13	U	--	
Extractable Total Petroleum Hydrocarbons															
ETPH	100	--	--	--	ug/l	**278**	**U**	**299**	**U**	**325**	**U**	**281**	**U**	--	

Notes:

mg/l = milligrams per liter

ug/l = micrograms per liter

FS = Field Sample

U = compound was not detected at concentrations greater than the associated quantitation limit

J = reported concentration is considered an estimated value

(1) GWPC = Groundwater Protection Criteria for Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(2) SWPC = Surface Water Protection Criteria for Substances in Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(3) R GWVC = Proposed Residential Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).

(4) I/C GWVC = Proposed Industrail/Commerical Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).

The GWPC for ETPH is 100 ug/l per updated regulations provided by the CTDEP in the technical guideline "Use of ETPH Analytical Test Method for Total Petroleum Hydrocarbons" 4/6/2004.

Bold = Quantitation limit above RSR value

Exceeds RSRs **27.7**

Table 1-8
Detected Constituents in Groundwater February 2006 Sampling Event (Kemron, 2006)
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Location:						M1		M3		M6		M7		M8		M8		M9		M11		M12		M13	
Sample ID:						CT08-GWS0128		CT08-GWS0325		CT08-GWS0628		CT08-GWS0715		CT08-GWD0819		CT08-GWS0819		CT08-GWS0913		CT08-GWS1111		CT08-GWS1218		CT08-GWS1313	
Date Collected:						2/21/2006		2/23/2006		2/22/2006		2/22/2006		2/22/2006		2/22/2006		2/22/2006		2/21/2006		2/23/2006		2/23/2006	
Sample Type:						FS		FS		FS		FS		FD		FS		FS		FS		FS		FS	
Groundwater Depth:						12.85 ft		21.20 ft		16.77 ft		16.91 ft		5.58 ft		5.58 ft		7.54 ft		6.38 ft		15.97 ft		7.14 ft	
	CTDEP RSR Criteria																								
Analyte	GWPC[1]	SWPC[2]	R GWVC[3]	I/C GWVC[4]	Unit	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals																									
Arsenic, Dissolved	0.05	0.004	--	--	mg/l	0.001	U	0.00071	J	0.0005	J	0.0011		0.00028	J	0.00078	J	0.0003	J	0.001	U	0.001	U	0.001	U
Arsenic, Total	0.05	0.004	--	--	mg/l	0.00035	J	0.00156	J	0.00072	J	0.00138	J	0.00027	J	0.00523	J	0.00032	J	0.001	UJ	NA		0.001	UJ
Barium, Dissolved	1	--	--	--	mg/l	0.219		0.257		0.262		0.173		0.345		0.31		0.057		0.0342		0.0263		0.0214	
Barium, Total	1	--	--	--	mg/l	0.226		0.267		0.285		0.19		0.356		0.35		0.0543		0.0325		NA		0.0278	
Lead, Dissolved	0.015	0.013	--	--	mg/l	0.005	U	0.00304	J	0.005	U	0.005	U	0.00256	J	0.00515		0.005	U	0.005	U	0.005	U	0.005	U
Lead, Total	0.015	0.013	--	--	mg/l	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.01	U	0.005	U	NA		0.005	U
Selenium, Dissolved	0.05	0.05	--	--	mg/l	0.001	U	0.00095	J	0.00068	J	0.001	U	0.001	U	0.00051	J	0.00063	J	0.001	U	0.001	U	0.001	U
Selenium, Total	0.05	0.05	--	--	mg/l	0.001	U	0.00457		0.00128		0.00065	J	0.00082	J	0.00093	J	0.00091	J	0.001	U	NA		0.00069	J
Volatile Organic Compounds																									
Acetone	700	--	50,000	50,000	ug/l		R		R		R		R		R	4.16	J		R		R	4.04	J		R
Carbon tetrachloride	5	132	5	14	ug/l	1	U	1	U	1	U	1	U	3.63		3.54		1	U	1	U	1	U	1	U
Chloroform	6	14,100	26	62	ug/l	1	U	1	U	1	U	1	U	1.11		1.14		1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	70	--	3	35	ug/l	1	U	1	U	0.578	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Toluene	1,000	4,000,000	7,100	41,000	ug/l	1	U	1	U	0.282	J	0.693	J	1	U	1	U	1	U	1	U	1	U	1	U
Trichloroethene	5	2,340	27	67	ug/l	1	U	1	U	1	U	1	U	**27.7**		**27.8**		1	U	1	U	1	U	1	U
Extractable Total Petroleum Hydrocarbons																									
ETPH	100	--	--	--	ug/l	100	U	100	U	102	U	102	U	100	U	54.6	J	100	U	106	U	118	U	102	U

Notes:

mg/l = milligrams per liter

ug/l = micrograms per liter

FS = Field Sample

FD = Field Duplicate

U = compound was not detected at concentrations greater than the associated quantitation limit

J = reported concentration is considered an estimated value

R = result is rejected and considered unusable

(1) GWPC = Groundwater Protection Criteria for Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(2) SWPC = Surface Water Protection Criteria for Substances in Ground Water (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).

(3) R GWVC = Proposed Residential Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).

(4) I/C GWVC = Proposed Industrail/Commerical Ground Water Volatilization Criteria (Proposed Revisions to Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003).

The GWPC for ETPH is 100 ug/l per updated regulations provided by the CTDEP in the technical guideline "Use of ETPH Analytical Test Method for Total Petroleum Hydrocarbons" 4/6/2004.

Exceeds RSRs **27.7**

Section 2.0 Remedial Investigation

MACTEC conducted the RI at the Site between November 6, 2006 and October 29, 2007. The specific methodologies for the RI field tasks, conducted in accordance with the approved Sampling and Analysis Plan (KEMRON, 2005b), Sampling and Analysis Plan Addendum (KEMRON, 2006b), Supplement to the Sampling and Analysis Plan Addendum (KEMRON, 2007a) and Supplement No. 2 to the Sampling and Analysis Plan Addendum (KEMRON, 2007b), are outlined in the following paragraphs.

2.1 RI Field Activities

2.1.1 Mobilization/Demobilization

MACTEC mobilized to the site on November 6, 2006 and began subsurface exploration that day. The subsurface exploration was completed by Aquifer Drilling and Testing, Inc (ADT) of Bloomfield, Connecticut under the direction of MACTEC. Subsurface exploration was completed on November 6 through 10 and 16 and 17, 2006. MACTEC personal were also on-site on November 15, 27 through 29 and December 1, 2006 to conduct well development and groundwater sampling. The land survey was completed on January 5 and 8, 2007 by Fuss and O'Neill (F&O) of Manchester, Connecticut under the direction of MACTEC.

MACTEC remobilized to the site on March 5, 2007 and began a supplemental round of subsurface exploration. The subsurface exploration was again completed by ADT under the direction of MACTEC. Subsurface exploration was completed on March 5 through 9, 2007. MACTEC personal were also on-site on March 12, 13 and 16, 2007 to conduct groundwater sampling and conduct measurements to incorporate new exploration locations into the existing land survey.

MACTEC remobilized to the site again on October 9, 2007 and began a second supplemental round of subsurface exploration. The subsurface exploration was again completed by ADT under the direction of MACTEC. Subsurface exploration was completed on October 9 through 12 and 15, 2007. MACTEC personal were also on-site on October 29, 2007 to conduct groundwater sampling and conduct measurements to incorporate new exploration locations into the existing land survey.

2.1.2 Site Clearance and Utility Mark-Out

Prior to completing intrusive subsurface investigations, locations were cleared of underground utilities. MACTEC personnel marked the proposed exploration locations and reviewed the locations relative to known utilities using available maps. The proposed locations were also cleared for underground utilities by contacting the commercial utility clearing service "Call-Before-You-Dig". The actual locations completed are presented on **Figure 2-1**.

2.1.3 Direct Push Soil Sampling

Soil borings were performed to investigate the subsurface at various locations on-site. Soil borings were performed adjacent and downgradient of Former Maintenance/Missile Test and Assembly Building, the outfall connected to the catch basin adjacent to the Former Maintenance/Missile Test and Assembly Building, the Former Garage/Warhead Building, the Former Acid Neutralization Pit within the Former Garage/Warhead Building, and the Well M8 area. These areas were identified as possible sources of the TCE impact observed in groundwater from M8.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

Ten direct-push boring locations (SB-1 through SB-10) were completed as planned and are shown on **Figure 2-1**. Soil cores were collected continuously at five foot intervals from the ground surface to refusal on the apparent bedrock surface. The bedrock surface was encountered at depths between 18 and 24 feet below ground surface (bgs). The subsurface soils consisted primarily of a dense mixture of clay, silt and fine sand with trace amounts of gravel. Upon retrieval of each five foot soil core from each borehole, the core was screened with a PID to determine whether any intervals exhibited organic vapors detectable by the PID. A slightly evaluated PID reading of 50 ppm was noted in the 5 to 10 foot soil interval in SB-8. No other soil intervals exhibited PID readings indicative of possible subsurface impact. Similarly, visual inspections of the cores did not reveal any areas of readily discernable contamination. Samples were collected from select intervals from each soil boring location for laboratory analysis. The soil boring logs which include the soil profile and results of the PID screened are included in **Appendix A**.

One soil sample was submitted from each boring to KEMRON in Marietta, Ohio for analysis. The soil samples were submitted for analysis of VOCs and ETPH.

2.1.4 Overburden Groundwater Monitoring Well Installation

Overburden groundwater monitoring wells were installed at eight locations (MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-20 and MW-21) on the property as shown on **Figure 2-1**. The overburden wells were installed to provide additional information on overburden groundwater quality in areas where data gaps potentially existed. Overburden groundwater monitoring wells were installed adjacent or downgradient of the Former Maintenance/Missile Test and Assembly Building, the outfall connected to the catch basin adjacent to the Former Maintenance/Missile Test and Assembly Building, the Former Garage/Warhead Building, the Former Acid Neutralization Pit within the Former Garage/Warhead Building, and the well M8 area.

Soil cores were collected from select wells during installation. Soil cores were not collected from certain wells since soil borings were performed within close proximity to these wells. Soil cores were screened with a PID with no soil intervals exhibiting PID readings indicative of possible subsurface impact. A soil sample collected during the installation of MW-17 and was submitted to KEMRON for analysis. The soil sample was submitted for analysis of VOCs.

Hollow-stem auger drilling methods were used to install the overburden wells. The wells were installed at depth so the screened portion of the well would intersect the groundwater surface. The wells were installed with 10 feet of 0.010 inch slot, two inch diameter PVC set at the bottom of the borehole. Solid PVC riser was installed to the ground surface. The well was constructed with appropriate sand pack and seal and a protective roadbox or standpipe. Monitoring well construction diagrams and soil boring logs are included in **Appendix A**.

2.1.5 Bedrock Groundwater Monitoring Well Installation

Bedrock groundwater monitoring wells were installed at seven locations (BR-1, BR-2, BR-3, BR-4, BR-5, BR-6 and BR-7) on the property as shown on **Figure 2-1**. Two additional bedrock wells (BR-4A and BR-5A) were also installed to supplement previously installed wells BR-4 and BR-5. The bedrock wells were installed to provide additional information on bedrock groundwater quality in areas where data gaps potentially existed.

At locations BR-1, BR-3, BR-4 and BR-5 soil cores were collected continuously from the ground surface until refusal on the apparent bedrock surface using direct-push technology. Soil cores were collected

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continuously at five foot intervals with the bedrock surface encountered at depths between 19 and 24 feet bgs. Soil cores were screened using a PID with and readings indicative of possible subsurface impact were not observed. Soil cores were not collected from BR-2, BR-4A, BR-5A, BR-6 and BR-7 since a soil boring or a boring completed as an overburden well was performed adjacent to the bedrock well. The soil boring logs which include the soil profile and results of the PID screening are included in **Appendix A**.

For all nine bedrock wells, four inch steel casing was installed from the ground surface to the top of the bedrock surface. For BR-1, a four inch core barrel was used to core 14 feet into bedrock. The bedrock consisted of highly fractured shale with traces of silt and clay. For BR-2, an air hammer was used to penetrate approximately 15 into the bedrock and for BR-3 through BR-5 a roller-bit was used to penetrate approximately 15 into the bedrock. Bedrock wells BR-1 through BR-5 were installed with 10 feet of 0.010 inch slot, two inch diameter PVC set at the bottom of the borehole. Solid PVC riser was installed to the ground surface. The wells were constructed with appropriate sand pack and seal and a protective roadbox or standpipe. A rock coring log for BR-1 and monitoring well construction diagrams are included in **Appendix A**.

For bedrock wells BR-4A, BR-5A, BR-6 and BR-7, an air hammer was used to penetrate the bedrock. A water bearing fracture was encountered in BR-4A at a depth of approximately 46 feet and the borehole was advanced to a total depth of 68 feet. For well BR-5A, a water bearing fracture was encountered in BR-5A at a depth of approximately 55 feet and the borehole was advanced to a total depth of 70 feet. For well BR-6, an apparent water bearing fracture was encountered at a depth of approximately 65 feet and the borehole was advanced to a total depth of 78.5 feet. For well BR-7, a water bearing fracture was encountered at a depth of approximately 52 feet and the borehole was advanced to a total depth of 60.5 feet. Both wells were installed with a 0.010-inch slotted screen consisting of two inch diameter PVC set at the bottom of the borehole with a solid PVC riser installed to the ground surface. A 30 foot well screen was installed in BR-4A and 20 foot well screens were installed in BR-5A, BR-6 and BR-7. The wells were constructed with appropriate sand pack and seal and a protective roadbox or standpipe. Monitoring well construction diagrams are included in **Appendix A**.

2.1.6 Groundwater Well Development

The newly installed overburden and bedrock wells were developed in accordance with the Sampling and Analysis Plan (KEMRON, 2005b). The wells were developed using a surge block and submersible pump. A low recharge rate was noted in both the overburden and bedrock with many of the wells pumping dry during development. The low volume of water within bedrock wells BR-1, BR-3, BR-4 and BR-5 would not allow for complete well development. Well development records are included in **Appendix A**.

2.1.7 Groundwater Sampling

In November 2006 all existing in service (M1, M3, M6, M7, M8, M9, M10, M11, M12 and M13) and newly installed wells (MW-14, MW-15, MW-16, BR-1, BR-2, BR-3 and BR-4), were sampled in accordance with the Sampling and Analysis Plan (KEMRON, 2005b). All wells were sampled using low-flow sampling protocols except for select bedrock wells. Bedrock wells BR-1, BR-3 and BR-4 did not obtain a volume of groundwater or recharge at a rate which allow for low-flow sampling. For these three bedrock wells, the standing water was removed from the well and well was allowed to recharge prior to sample collection. Samples were collected from the well using a disposable bailer. BR-5 did not contain enough groundwater for a sample to be collected. Samples from all overburden wells were collected and submitted for VOCs and ETPH. Groundwater samples from the bedrock wells were

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collected and submitted for VOCs. The groundwater samples were submitted to KEMRON for analysis. Groundwater sample field data records are included in **Appendix A**.

In March 2007 newly installed wells (MW-17, MW-18, BR-4A, and BR-5A) were sampled along with existing wells M8 and MW-16. The wells were also sampled in accordance with the Sampling and Analysis Plan (KEMRON, 2005b) and were sampled using low stress (low-flow) sampling protocols. Well MW-19 was dry and could not be sampled. Samples from the wells were collected and submitted to KEMRON for analysis of VOCs. Groundwater sample field data records are included in **Appendix A**.

In October 2007, the newly installed wells (MW-20, MW-21, BR-6, and BR-7) were sampled. These wells were sampled in accordance with the Sampling and Analysis Plan (KEMRON, 2005b) using low stress (low-flow) sampling protocols. Monitoring wells MW-19 and BR-4 were proposed to be sampled as part of this event; however, less than a foot of standing water was present in each and therefore the wells were not sampled. Collected samples were submitted to KEMRON for analysis of VOCs. Groundwater sample field data records are included in **Appendix A**.

2.1.8 Land Survey

All boring locations, newly installed wells and existing groundwater monitoring wells were surveyed by a CT licensed surveyor (Fuss and O'Neill of Manchester, CT). The boring locations and wells were surveyed for horizontal placement and CT state plane coordinates were determined. The elevation above mean sea level was determined for the top of casing on the newly installed and existing monitoring wells to an accuracy of 0.01 feet. The information collected from the survey was using to create groundwater contour maps and developed geologic cross-sections to better understand the surficial geology and hydrogeology of the site.

The wells installed in March and October 2007 were surveyed into the existing network using a survey transit and rod.

2.2 RI Results

The RI was conducted to evaluate potential sources of the TCE impact noted in groundwater in M8 and to attempt to delineate the extent of the TCE in groundwater. ETPH has also been detected in groundwater in M8.

Because the Site is located in an area with a GA groundwater classification, soil analytical results presented herein are evaluated against the RSR criteria applicable to GA areas. The analytical results are also being compared to both the residential and commercial/industrial criteria since the site is used for commercial uses but located in a predominately residential area. For soils, this includes the GA PMC, the Residential Direct Exposure Criteria (R DEC) and the Industrial/Commercial Direct Exposure Criteria (I/C DEC). Analytical results for groundwater are evaluated against the Federal MCLs.

The laboratory results were reviewed and validated in accordance with the Quality Assurance Project Plan (QAPP) (Kemron, 2005a). Copies of the validation reports are included in **Appendix B** and the laboratory reports are included in **Appendix C**.

2.2.1 Soil Sample Results

Soil samples were collected from the each of the direct-push soil borings (SB-1 through SB-10) and from MW-17. The soil samples from SB-1 through SB-5 were collected from the vicinity of M8. The soil

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samples from SB-6 through SB-9 were collected from the vicinity of the Former Maintenance/Missile Test and Assembly Building and the catch basin located adjacent to the former building. The soil sample from SB-10 was located adjacent to the Former Garage/Warhead Building and the Former Acid Neutralization Pit within the former building. The soil sample from MW-17 was located at the base of the outfall connected to the catch basin located adjacent to the Former Maintenance/Missile Test and Assembly Building. One soil sample was collected from each boring (SB-1 through SB-10) and analyzed for VOCs and ETPH. The soil sample from MW-17 was analyzed for VOCs.

The results of the soil samples analysis are presented in **Table 2-1**. The table includes only those analytes that were detected. TCE was detected in the soil samples from SB-2 through SB-5 but at concentrations well below applicable RSR criteria. The highest concentration of TCE was detected at a concentration of 12.5 micrograms per kilogram (ug/kg) which is well below the most stringent RSR criteria for this compound (GA PMC) of 100 ug/kg. Acetone and methylene chloride were also detected in select soil samples at trace concentrations; as discussed in the validation report in **Appendix B**, these analytes are typically attributable to laboratory contamination.

ETPH was detected in the soil samples from SB-9 and SB-10 but at concentrations well below RSR criteria.

2.2.2 Groundwater Sample Results

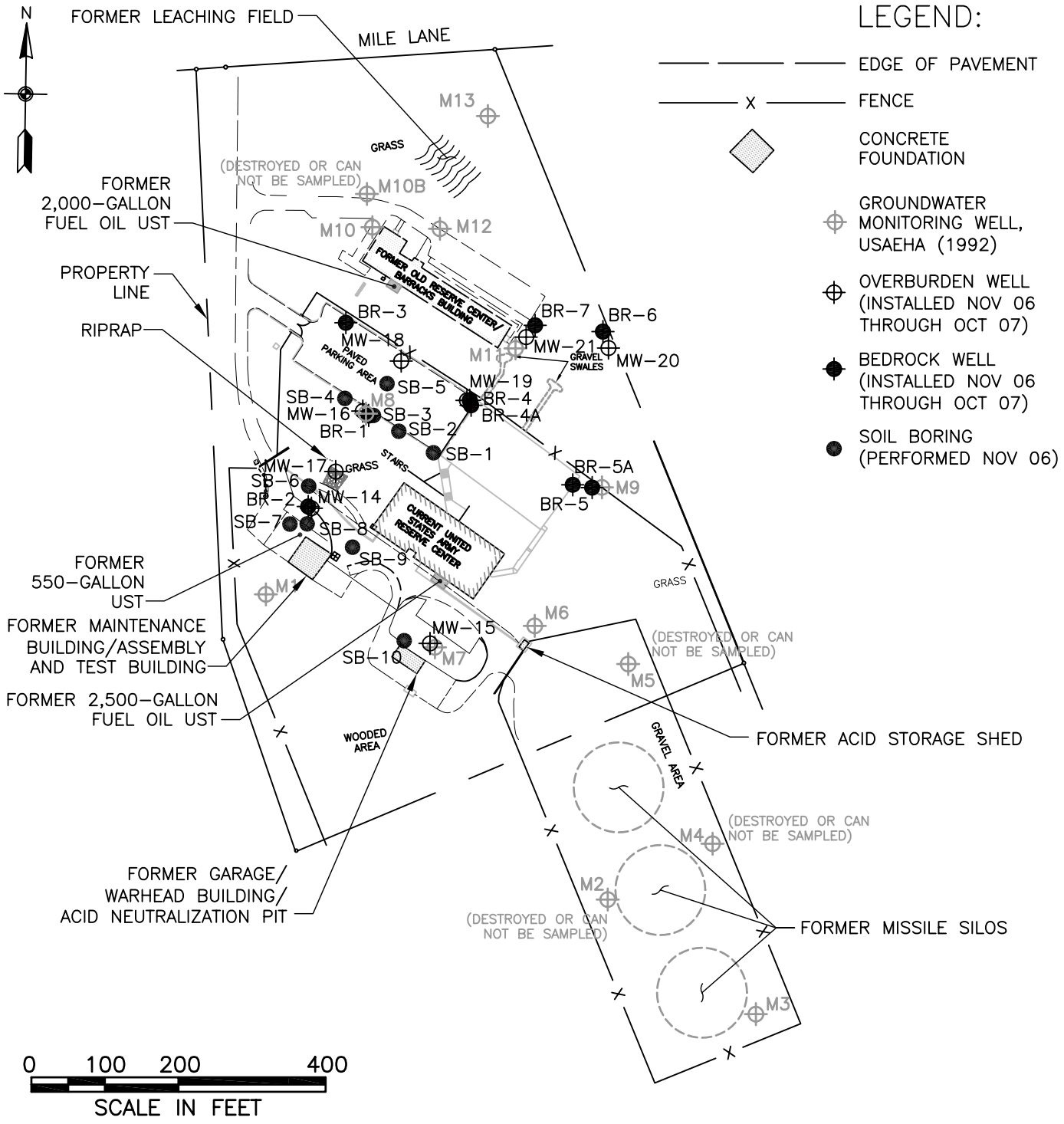
Groundwater samples were collected in November 2006 from the ten existing wells (M1, M3, M6, M7, M8, M9, M10, M11, M12 and M13), three of the newly installed overburden wells (MW-14, MW-15 and MW-16) and from four of the newly installed bedrock wells (BR-1, BR-2, BR-3 and BR-4). Samples from the nine overburden wells (M8, M9, M10, M11, M12, M13, MW-14, MW-15 and MW-16) were analyzed for both VOCs and ETPH. Samples from the nine bedrock wells (M1, M3, M6, M7, BR-1, BR-2, BR-3 and BR-4) were analyzed for VOCs only.

Groundwater samples were collected in March 2007 from wells M8, MW-16, MW-17, MW-18, BR-4A and BR-5A and groundwater samples were collected in October 2007 from wells MW-20, MW-21, BR-6 and BR-7. All of the samples were analyzed for VOCs only.

The results of the groundwater sample analysis are presented in **Table 2-2**. The table includes only those analytes that were detected. TCE was detected in the groundwater samples from M8, MW-16 and BR-4 at concentrations above the MCL. TCE was also detected in MW-18 and BR-1 but at concentrations below the MCL. Estimated concentrations (below the laboratories reporting limit) of TCE were also detected in M6, MW-14, MW-17, and BR-4A. Carbon tetrachloride was detected in M1 at a concentration above the MCL. Carbon tetrachloride was also detected in M8 and MW-16 but at a concentration below the MCL. Other select VOCs were detected at trace concentrations in select wells but at concentrations well below the MCLs.

ETPH was not detected in any of the groundwater samples except for MW-16. An estimated concentration of 178 mg/l was reported but appears to be a false positive. The false positive result is discussed further in the data validation report in **Appendix B**.

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DRAWING REFERENCE: PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: JBC 04/20/07
Checked/Date: JRY 04/20/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	kemron ENVIRONMENTAL SERVICES MACTEC	EXPLORATION LOCATIONS Project 3618-04-8110 Figure 2-1

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Table 2-1
Summary of Soil Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:			SB-1		SB-2		SB-3		SB-4		SB-4		SB-5		SB-6		SB-7		SB-8		SB-9		SB-10		MW-17	
	Sample Identification:			CT08-SBS0113		CT08-SBS0207		CT08-SBS0308		CT08-SBS0408		CT08-SBD0408		CT08-SBS0508		CT08-SBS0603		CT08-SBS0707		CT08-SBS0807		CT08-SBS0905		CT08-SBS1008		CT08-MWS1706	
	Sample Date:			11/07/06		11/07/06		11/07/06		11/07/06		11/07/06		11/07/06		11/07/06		11/09/06		11/09/06		11/09/06		11/09/06		03/05/07	
	Sample Depth:			13'		7'		8'		8'		8'		8'		3'		7'		7'		5'		8'		6'	
	CTDEP RSR Criteria																										
	GA PMC[1]	R DEC[2]	I/C DEC[3]	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (mg/kg)	**500**	**500**	**2,500**	11.50	U	11.4	U	11.5	U	12	U	11.7	U	11.9	U	11.3	U	12.2	U	11.6	U	11.2	J	10.8	J	--	
VOCs by EPA Method 8260B (ug/kg)																											
Acetone	**14,000**	**500,000**	**1,000,000**	13.2	U	12.4	J	13.9	J	8.41	J	13.1	U	12.6	UJ	12.6	J	11.7	U	10.7	U	11.3	U	11.9	U	38.9	
Methylene Chloride	**100**	**82,000**	**760,000**	6.6	U	1.45	J	2.54	J	5.49	U	6.54	U	1.90	J	5.4	U	5.87	U	5.37	U	5.67	U	5.95	U	4.87	U
Trichloroethene	**100**	**56,000**	**520,000**	6.6	U	8.61		12.5		6.56		6.78		10.2		5.4	U	3.32	J	5.37	U	5.67	U	5.95	U	4.87	U

Notes:

ETPH = Extractable Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
U = compound was not detected at concentrations greater than the associated quantitation limit
J = reported concentration is considered an estimated value
(1) GA PMC - Pollutant Mobility Criteria for Soil in GA Classified Areas (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(2) R DEC - Residential Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
(3) I/C DEC - Industrial/Commercial Direct Exposure Criteria for Soil (Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies).
Bold = Quantitation limit above RSR value
Shaded and **Bold** indicates exceedences of RSR criteria

Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	M1		M3		M6		M7		M8	
	Sample Identification:	MWS0103		MWS0303		MWS0603		MWS0703		MWS0803	
	Sample Date:	ll/28/06		ll/28/06		ll/29/06		ll/28/06		ll/27/06	
	Groundwater Depth:	12.11 ft		20.53 ft		15.97 ft		15.84 ft		4.40 ft	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	--		--		--		--		102	U
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R		R		R
2-Butanone	--		R		R		R		R		R
Carbon disulfide	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Carbon tetrachloride	**5**	**6.36**		1.00	U	1.00	U	1.00	U	3.87	
Chloroform	--	0.615	J	1.00	U	1.00	U	1.00	U	1.55	
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
cis-1,2-Dichloroethene	**70**	1.00	U	1.00	U	0.816	J	1.00	U	1.00	U
trans-1,2-Dichloroethene	**100**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Methylene chloride	--	5.00	U	5.00	U	0.888	J	5.00	U	5.00	U
Methyl tert butyl ether	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Toluene	**1,000**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	**200**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	**5**	1.00	U	1.00	U	0.255	J	1.00	U	**35.5**	
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

Notes:
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ug/l = micrograms per liter
U = compound was not detected at concentrations greater than the associated quantitation limit
J = reported concentration is considered an estimated value
R = result rejected
MCL = Maximum Contaminant Level
Bold = Quantitation limit above MCL
Shaded and **Bold** indicates exceedences of MCL

Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	M8		M8		M9		M10		M11	
	Sample Identification:	CT08-MWSM804		CT08-MWDM804		MWS0903		MWS1003		MWS1103	
	Sample Date:	03/12/07		03/12/07		11/29/06		11/27/06		11/27/06	
	Groundwater Depth:	8.22 ft		8.22 ft		7.22 ft		16.99 ft		5.85 ft	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	102	U	102	U	100	U	100	U	100	U
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R		R		R
2-Butanone	--	10.0	U	10.0	U		R		R		R
Carbon disulfide	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Carbon tetrachloride	**5**	3.61		3.56		1.00	U	1.00	U	1.00	U
Chloroform	--	1.49	J	1.00	UJ	1.00	U	1.00	U	1.00	U
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
cis-1,2-Dichloroethene	**70**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
trans-1,2-Dichloroethene	**100**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Methylene chloride	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Methyl tert butyl ether	--	0.619	J	0.619	J	5.00	U	5.00	U	5.00	U
Toluene	**1,000**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	**200**	0.290	J	0.280	J	1.00	U	1.00	U	1.00	U
Trichloroethene	**5**	**28.2**		**27.7**		1.00	U	1.00	U	1.00	U
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

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Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	M12		M13		MW-14		MW-15		MW-16	
	Sample Identification:	MWS1203		MWS1303		MWS1403		MWS1503		MWS1603	
	Sample Date:	11/27/06		11/29/06		11/28/06		11/28/06		11/27/06	
	Groundwater Depth:	14.92 ft		5.84 ft		7.55 ft		7.88 ft		4.35 ft	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	100	U	104	UJ	100	U	100	U	178	NJ
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R		R		R
2-Butanone	--		R		R		R		R		R
Carbon disulfide	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Carbon tetrachloride	**5**	1.00	U	1.00	U	0.742	J	1.00	U	4.05	
Chloroform	--	1.00	U	1.00	U	0.341	J	1.00	U	1.62	
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
cis-1,2-Dichloroethene	**70**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
trans-1,2-Dichloroethene	**100**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Methylene chloride	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Methyl tert butyl ether	--	5.00	U	5.00	U	5.00	U	5.00	U	0.656	J
Toluene	**1,000**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	**200**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	**5**	1.00	U	1.00	U	0.291	J	1.00	U	**32.4**	
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

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Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	MW-16		MW-16		MW-17		MW-18		MW-20	
	Sample Identification:	MWD1603		CT08-MWS1604		CT08-MWS1704		CT08-MWS1804		CT08-MWS2005	
	Sample Date:	11/27/06		03/12/07		03/12/07		03/12/07		10/29/07	
	Groundwater Depth:	4.35 ft		7.24 ft		6.45 ft		9.69 ft		20.09	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	100	U	--		--		--		--	
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R		R		R
2-Butanone	--		R	10.0	U	10.0	U	10.0	U	10.0	U
Carbon disulfide	--	1.00	U	1.00	U	1.00	U	1.00	U	1.58	
Carbon tetrachloride	**5**	3.94		3.92		1.00	U	0.910	J	1.00	U
Chloroform	--	1.68		1.63		0.724	J	0.297	J	1.00	U
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
cis-1,2-Dichloroethene	**70**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
trans-1,2-Dichloroethene	**100**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	--	1.00	U	1.00	U	1.00	U	0.532	J	1.00	U
Methylene chloride	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	UJ
Methyl tert butyl ether	--	0.671	J	0.578	J	5.00	U	5.00	U	5.00	U
Toluene	**1,000**	1.00	U	1.00	U	1.00	U	0.361	J	1.00	U
1,1,1-Trichloroethane	**200**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	**5**	**31.9**		**25.1**		0.343	J	3.59		1.00	U
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	0.268	J	1.00	U

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Bold = Quantitation limit above MCL
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Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	MW-21		BR-1		BR-2		BR-3		BR-4	
	Sample Identification:	CT08-MWS2105		BRS0103		BRS0203		BRS0303		BRS0403	
	Sample Date:	10/29/07		12/01/06		11/28/06		11/29/06		11/29/06	
	Groundwater Depth:	14.11		39.68 ft		14.60 ft		33.18 ft		34.09 ft	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	--		--		--		--		--	
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R	88.3	J	37.9	J
2-Butanone	--	10.0	U		R	10.0	U	12.3			R
Carbon disulfide	--	2.29		1.00	U	1.02		1.20		0.695	J
Carbon tetrachloride	**5**	1.00	U	0.673	J	1.00	U	1.00	U	1.00	U
Chloroform	--	1.00	U	1.52		1.00	U	4.58		1.00	U
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	0.604	J
cis-1,2-Dichloroethene	**70**	1.00	U	0.664	J	1.00	U	1.00	U	1.67	
trans-1,2-Dichloroethene	**100**	1.00	U	10.6		1.00	U	1.00	U	1.00	U
Ethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Methylene chloride	--	5.00	UJ	5.00	U	5.00	U	5.00	U	5.00	U
Methyl tert butyl ether	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Toluene	**1,000**	1.00	U	1.00	U	1.00	U	0.345	J	1.00	U
1,1,1-Trichloroethane	**200**	1.00	U	1.00	U	1.00	U	1.00	U	1.62	
Trichloroethene	**5**	1.00	U	2.09		1.00	U	1.00	U	**38.5**	
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

Notes:

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Table 2-2
Summary of Groundwater Analytical Results
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

	Sample Location:	BR-4A		BR-5A		BR-6		BR-6		BR-7	
	Sample Identification:	CT08-BRS4A04		CT08-BRS5A04		CT08-BRS0605		CT08-BRD0605		CT08-BRS0705	
	Sample Date:	03/12/07		03/13/07		10/29/07		10/29/07		10/29/07	
	Groundwater Depth:	45.61 ft		47.71 ft		32.05		32.05		37.14	
	MCL	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
ETPH (ug/l)	--	--		--		--		--		--	
VOCs by EPA Method 8260B (ug/l)											
Acetone	--		R		R		R		R		R
2-Butanone	--	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Carbon disulfide	--	1.18	U	1.00	U	1	U	1	U	1	U
Carbon tetrachloride	**5**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Chloroform	--	0.947	J	0.251	J	1.00	U	1.00	U	1.00	U
Chloromethane	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
cis-1,2-Dichloroethene	**70**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
trans-1,2-Dichloroethene	**100**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	--	0.456	J	1.00	U	1.00	U	1.00	U	1.00	U
Methylene chloride	--	5.00	U	5.00	U	5.00	UJ	5.00	UJ	5.00	UJ
Methyl tert butyl ether	--	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Toluene	**1,000**	0.261	J	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	**200**	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	**5**	0.340	J	1.00	U	1.00	U	1.00	U	1.00	U
1,3,5-Trimethylbenzene	--	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

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Section 3.0 Data Interpretation

The explorations conducted as part of this RI along with historic subsurface investigation provide an increased understanding of the subsurface geology and hydrogeology at the site. The combination of soil and groundwater data collected during this RI along with historic data and an improved understanding of subsurface conditions completes the delineation of the groundwater contamination, as described in this Section.

3.1 Geologic and Hydrogeologic Conditions

The explorations conducted during this RI confirm that the overburden consists of a poorly sorted mixture of sand, silt and clay with some cobbles/gravel. The RI provided a more accurate determination of the thickness of the overburden and depth to bedrock than what was previously understood. Geologic cross-sections were developed using the subsurface data and are presented as **Figures 3-1** through **3-5**. The data collected from this RI was also used to verify whether certain existing wells were screened in overburden or bedrock. The thickness of the overburden on-site varies from 18.5 to 25 feet bgs.

Groundwater monitoring wells BR-1, BR-3, BR-4 and BR-5 were installed to depths of approximately 35 feet within bedrock in November 2006. The bedrock observed in these borings was moderately fractured. After installation, the saturated thickness within the screened sections was limited to several feet and the wells provided only limited quantities of groundwater and were slow to recharge after sampling. Supplemental bedrock groundwater monitoring wells BR-4A and BR-5A were installed in March 2007 and BR-6 and BR-7 were installed in October 2007 to provide additional and more representative samples of bedrock groundwater. These wells were advanced deeper into the bedrock. Water bearing fractures were observed in the supplemental bedrock wells at depths between 46 and 65 feet. Based on the bedrock potentiometric surface observed in the supplemental bedrock wells it does not appear that the water within wells BR-1, BR-3, BR-4 and BR-5 is representative of the bedrock aquifer. Because a very limited quantity of groundwater is present in these shallow bedrock wells, there appears to be limited connection between the overburden groundwater and the bedrock aquifer.

An interpretation of the overburden groundwater flow direction was developed using the data collected as part of this RI along with previous investigations. Overburden groundwater flow direction was interpreted using groundwater level measurements from the overburden wells during the November 2006 and March and October 2007 sampling events. **Figures 3-6, 3-7** and **3-8** present these interpreted groundwater contours. Based on these groundwater contours, site overburden groundwater flows to the northeast. Monitoring well MW-21 groundwater elevation data was not used for contouring because the measured water level does not appear representative of the groundwater surface compared to groundwater levels observed in surrounding wells during the November 2007 sampling event and compared to groundwater contouring from prior sampling events completed in November 2006 and March 2007. Groundwater well details are included in **Table 3-1**.

Potentiometric bedrock contours were developed using measurement data from the confirmed bedrock aquifer wells (M1, M3, M6, M7, BR-2, BR-4A, BR-5A, BR-6 and BR-7). The interpreted contours were developed using groundwater level measurements recorded during the March and October 2007 sampling events. **Figures 3-9** and **3-10** present the contours and indicate that the bedrock groundwater flow direction across the site is also to the northeast.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

3.2 Nature and Distribution of Contamination

TCE has been detected historically and recently at an approximate concentration of 30 ug/l in groundwater samples collected from overburden monitoring wells M8 and MW-16. TCE has also been detected at an approximate concentration of 3.5 ug/l in groundwater samples collected from overburden monitoring well MW-18. MW-18 is located directly downgradient of monitoring wells M8/MW-16. TCE has not been detected in groundwater collected from overburden monitoring wells located further downgradient and crossgradient (M9, M10, M11, M12, M13, MW-20 and MW-21) indicating that the horizontal extent of groundwater contamination is limited and that downgradient extent has been bounded. These well locations and screened intervals are appropriately located as downgradient monitoring points based upon interpreted direction of groundwater flow and screen elevations.

TCE was detected at a concentration of 2.09 ug/L in groundwater from BR-1 in November 2006. TCE was also detected at an estimated concentration of 0.34J ug/L (below the laboratory reporting limit) in bedrock groundwater from monitoring well BR-4A. TCE was not detected in bedrock groundwater from monitoring wells BR-5A, BR-6 and BR-7. Based on this data, the bedrock impacts are extremely limited and at concentrations below the MCL of 5 ug/L for TCE. In general, a small plume of TCE impacted groundwater is located within the overburden aquifer and appears to extend from the M8/MW-16 area to the northeast just beyond MW-18. The interpreted extent of the plume is shown in section parallel to the direction of groundwater flow on cross-section A-A' (Figure 3-2).

TCE was detected at a concentration of 38.5 ug/L in groundwater from BR-4 in November 2006. Based on the potentiometric groundwater surface observed in adjacent bedrock well BR-4A and lack of recharge in BR-4, the sample collected from BR-4 does not appear representative of bedrock groundwater and may be more representative of overburden groundwater percolating downward (recharging) to the bedrock water table. TCE has not been detected in overburden wells (M11, MW-20 and MW-21) located downgradient of BR-4; therefore if the detected TCE concentration in BR-4 is representative of overburden groundwater quality, then the downgradient TCE extent in Site-08 groundwater terminates between BR-4 and MW-11.

Carbon tetrachloride was detected in November 2006 in MW-1 at a concentration of 6.36 ug/L which is above its MCL. MW-1 is a background well which is not located near an AOC and therefore the source of the carbon tetrachloride is unknown.

3.3 Contaminant Fate and Transport

The presumed timing of the release of TCE into the environment was during NIKE operation some time in the mid-1950's to mid-1960s. The low dissolved concentrations of TCE in the overburden groundwater, and the limited downgradient extent suggest that residual TCE mass in the aquifer would by now be largely retained as sorbed and diffused TCE within the aquifer matrix. The TCE in overburden groundwater is not co-located with cis-1,2 DCE, which suggests that attenuation by sequential dechlorination is not actively occurring. Downgradient concentrations are approximately one order of magnitude lower than highest upgradient TCE concentrations and are within the range expected by attenuation from advection, dispersion and dilution. As solutes travel through the aquifer they will be sorbed (and desorbed) from the aquifer matrix resulting in additional attenuation of dissolved concentrations of TCE downgradient groundwater.

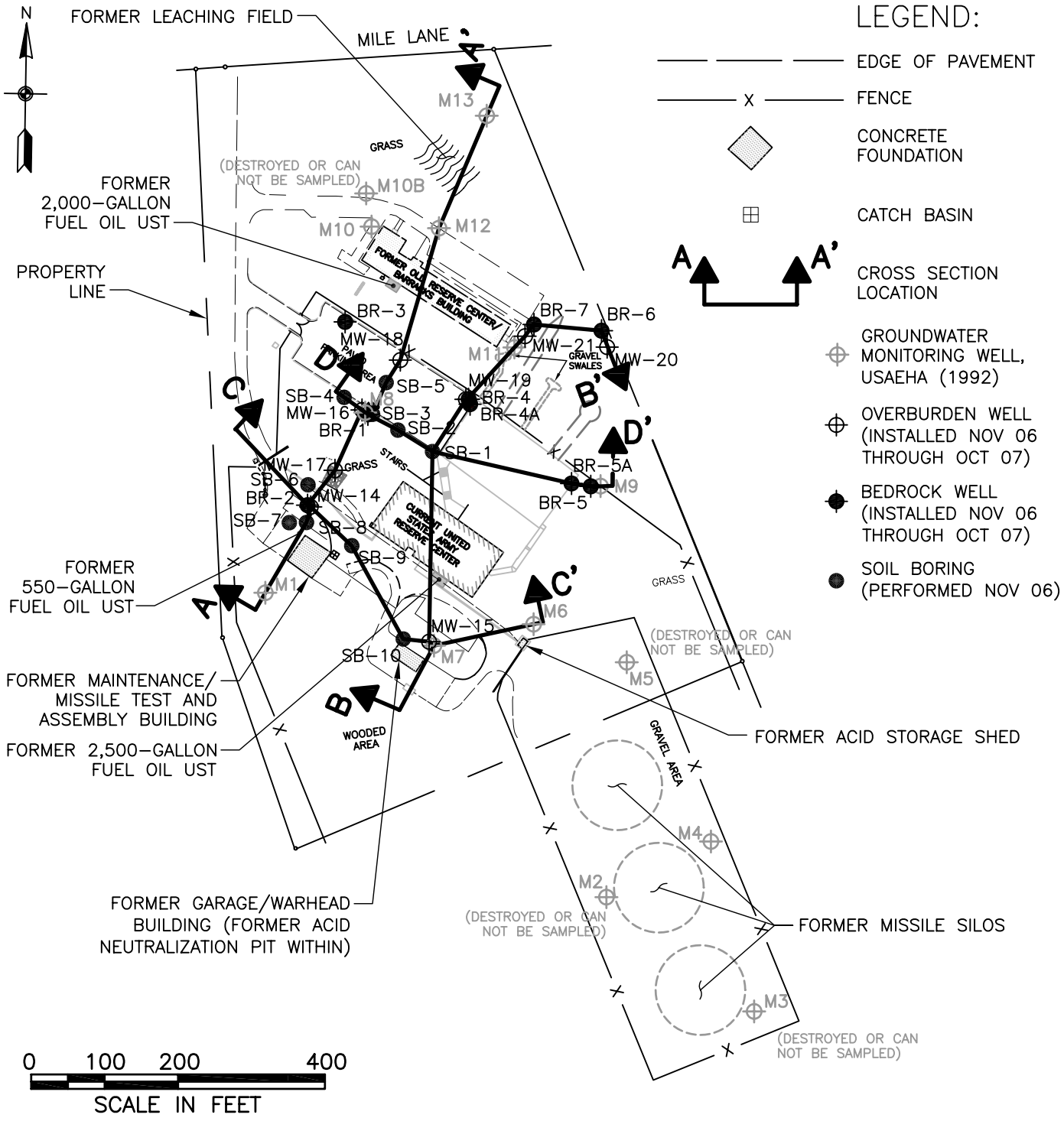
The groundwater plume is expected to remain stable in this configuration with no further downgradient migration. With time, the plume will be expected to shrink as dissolved TCE concentrations are reduced by advective dispersion and chemical diffusion.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

The bedrock wells are appropriately located to intercept contamination entering the bedrock groundwater system by recharge from overburden groundwater. The low concentrations of TCE detected in bedrock groundwater beneath the overburden groundwater plume indicate that bedrock aquifer experiences an appreciable mixing factor with overburden groundwater that recharges underlying bedrock groundwater.

Based on these observations, existing distribution and concentrations of dissolved TCE in overburden and bedrock groundwater, the TCE plume has not, and is not, expected to migrate to or beyond the site boundary, and as a result of data interpretation the nature and extent of groundwater contamination has been appropriately delineated.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)



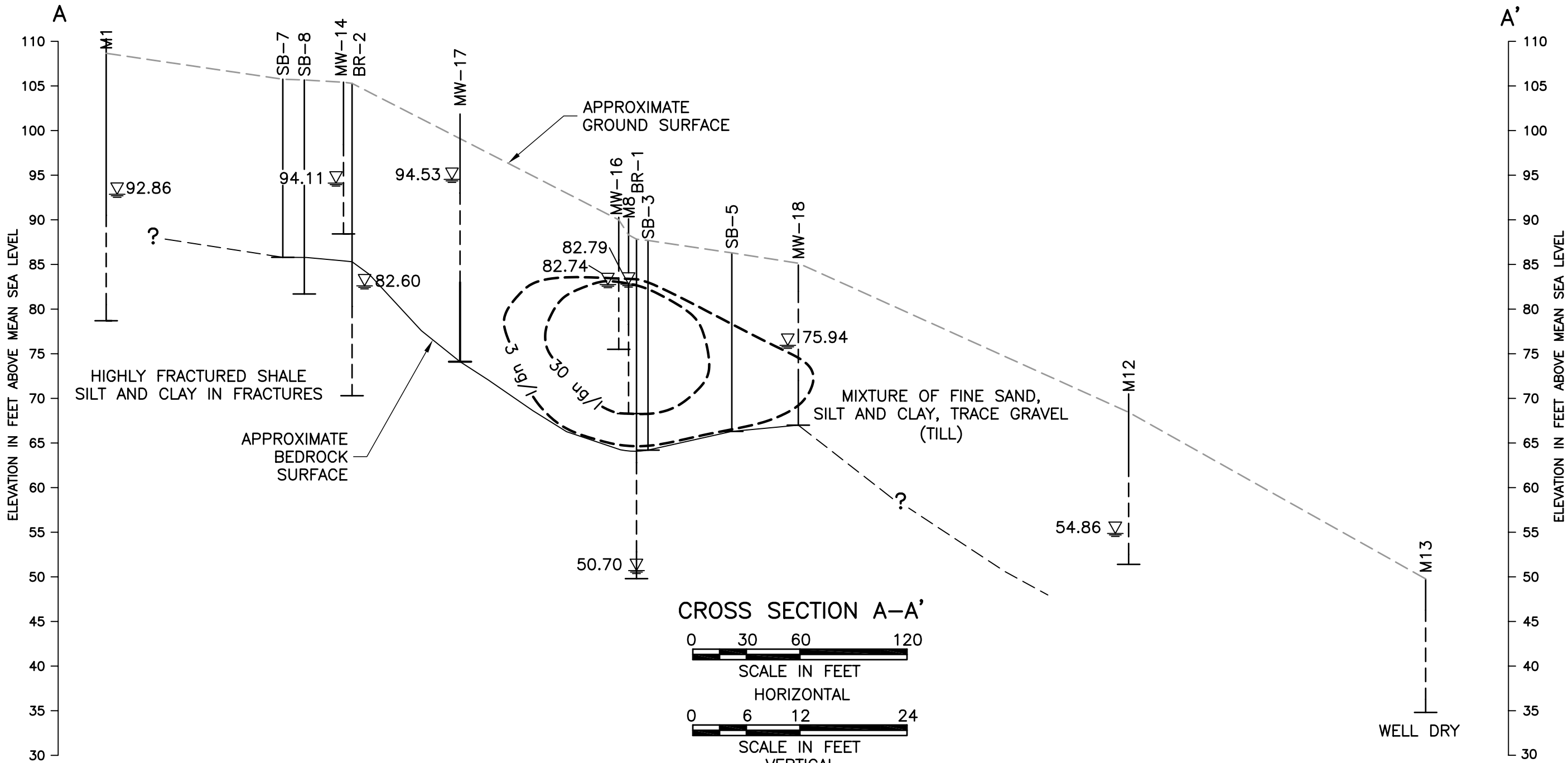
DRAWING REFERENCE: PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: JBC 05/07/07
Checked/Date: JRY 05/07/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	kemron ENVIRONMENTAL SERVICES MACTEC	Cross Section Locations Project 3618-04-8110 Figure 3-1

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CROSS SECTION A–A'

0 30 60 120
SCALE IN FEET
HORIZONTAL

0 6 12 24
SCALE IN FEET
VERTICAL

CROSS SECTIONS DEVELOPED FROM INFORMATION PROVIDED IN GEOHYDROLOGIC STUDY NO. 38–26–KL46–92, SITE INVESTIGATION, U.S. ARMY RESERVE CENTER – MIDDLETOWN, MIDDLETOWN, CONNECTICUT, 1–12 JUNE 1992; U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY

GROUNDWATER MEASUREMENTS TAKEN ON 10/29/07.

ISOPLETHS INDICATE INTERPRETED TCE CONCENTRATIONS.

LEGEND

45.45 ▽ GROUNDWATER ELEVATION

WELL SCREEN

Prepared/Date: DEL 05/17/07
Checked/Date: JRY 05/17/07

KEMRON ENVIRONMENTAL SERVICES

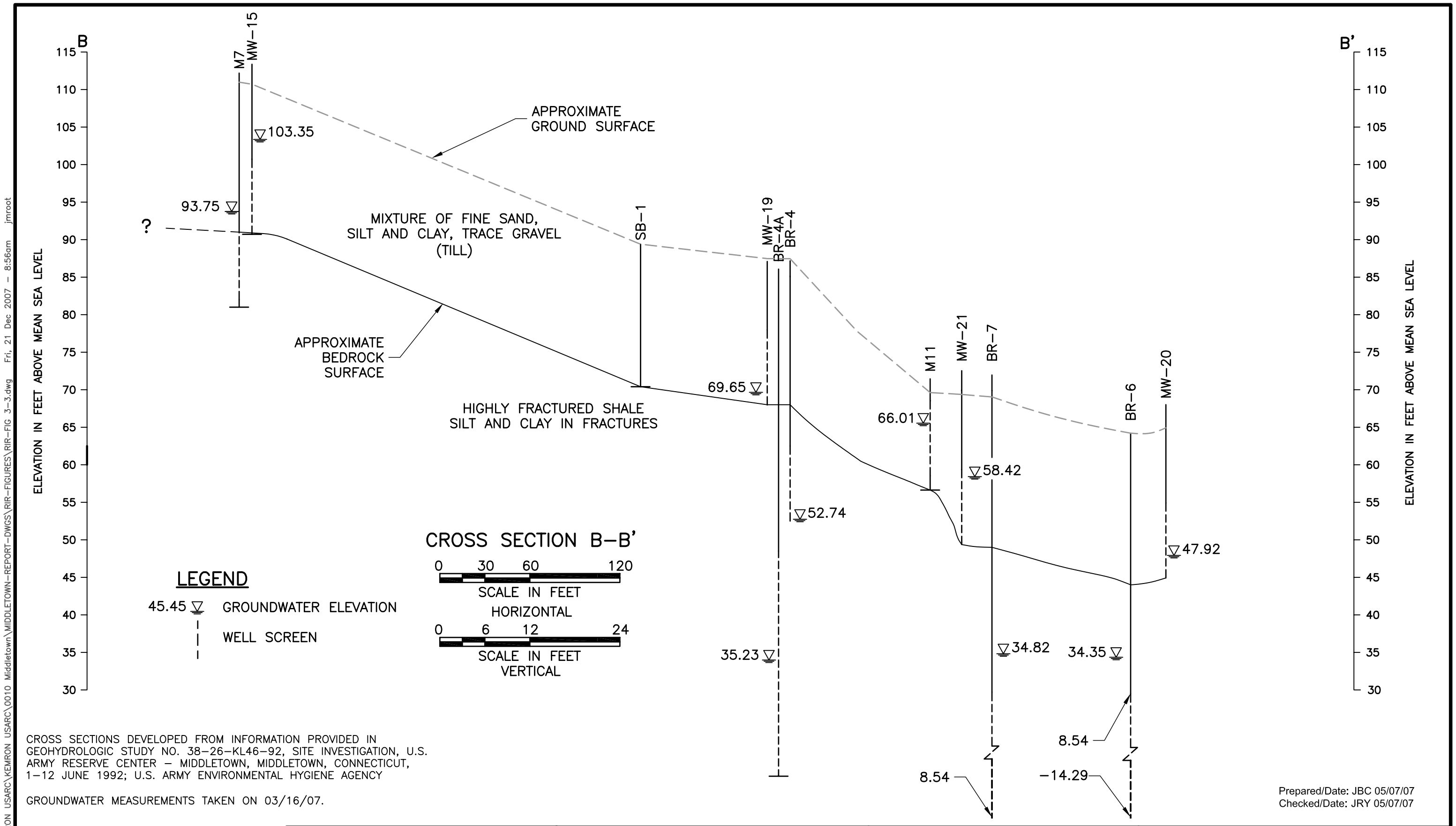
94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

MACTEC

Cross Section A-A'

Project 3618-04-8110
Figure 3-2

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GROUNDWATER MEASUREMENTS TAKEN ON 03/16/07.

Prepared/Date: JBC 05/07/07
Checked/Date: JRY 05/07/07

KEMRON ENVIRONMENTAL SERVICES

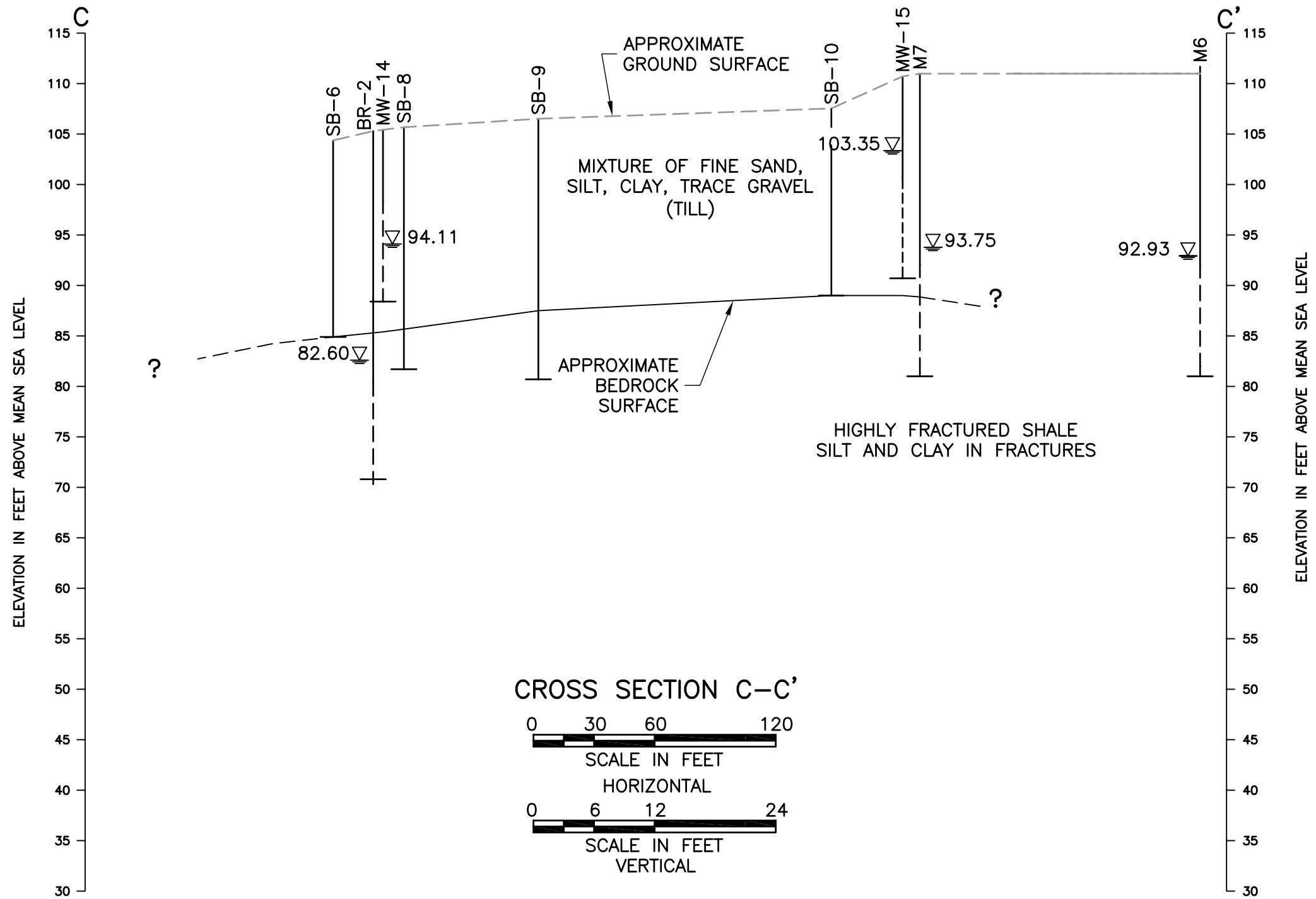
94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

MACTEC

Cross Section B-B'

Project 3618-04-8110
Figure 3-3

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CROSS SECTION C–C'

0 30 60 120
SCALE IN FEET
HORIZONTAL

0 6 12 24
SCALE IN FEET
VERTICAL

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GROUNDWATER MEASUREMENTS TAKEN ON 10/29/07.

LEGEND

45.45 ▽ GROUNDWATER ELEVATION

WELL SCREEN

Prepared/Date: JBC 05/07/07
Checked/Date: JRY 05/07/07

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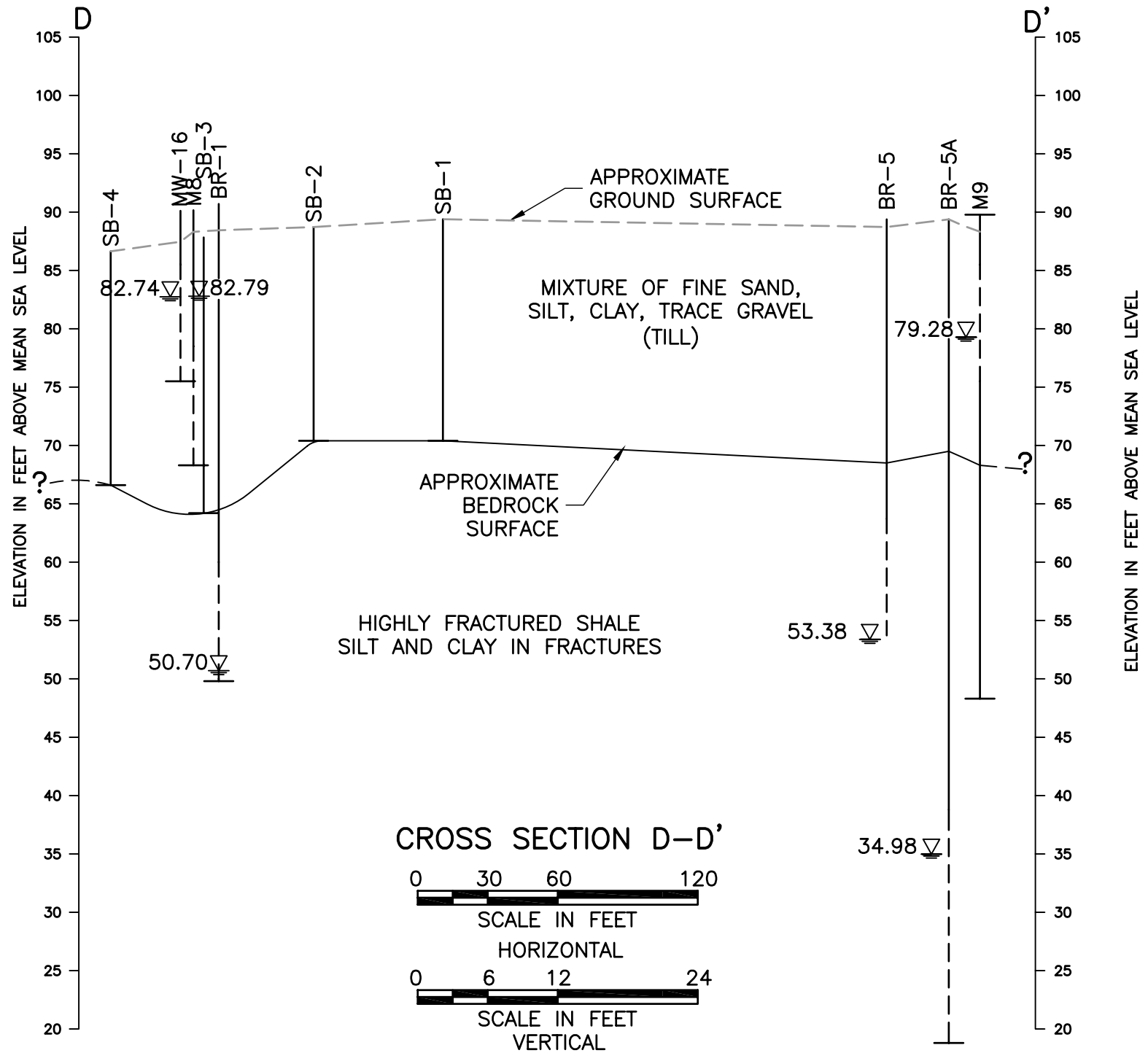
94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

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Cross Section C-C'

Project 3618-04-8110
Figure 3-4

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CROSS SECTION D–D'

0 30 60 120
SCALE IN FEET
HORIZONTAL

0 6 12 24
SCALE IN FEET
VERTICAL

CROSS SECTIONS DEVELOPED FROM INFORMATION PROVIDED IN GEOHYDROLOGIC STUDY NO. 38–26–KL46–92, SITE INVESTIGATION, U.S. ARMY RESERVE CENTER – MIDDLETOWN, MIDDLETOWN, CONNECTICUT, 1–12 JUNE 1992; U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY

GROUNDWATER MEASUREMENTS TAKEN ON 10/29/07.

LEGEND

45.45 ▽ GROUNDWATER ELEVATION

WELL SCREEN

Prepared/Date: JBC 05/08/07
Checked/Date: JRY 05/08/07

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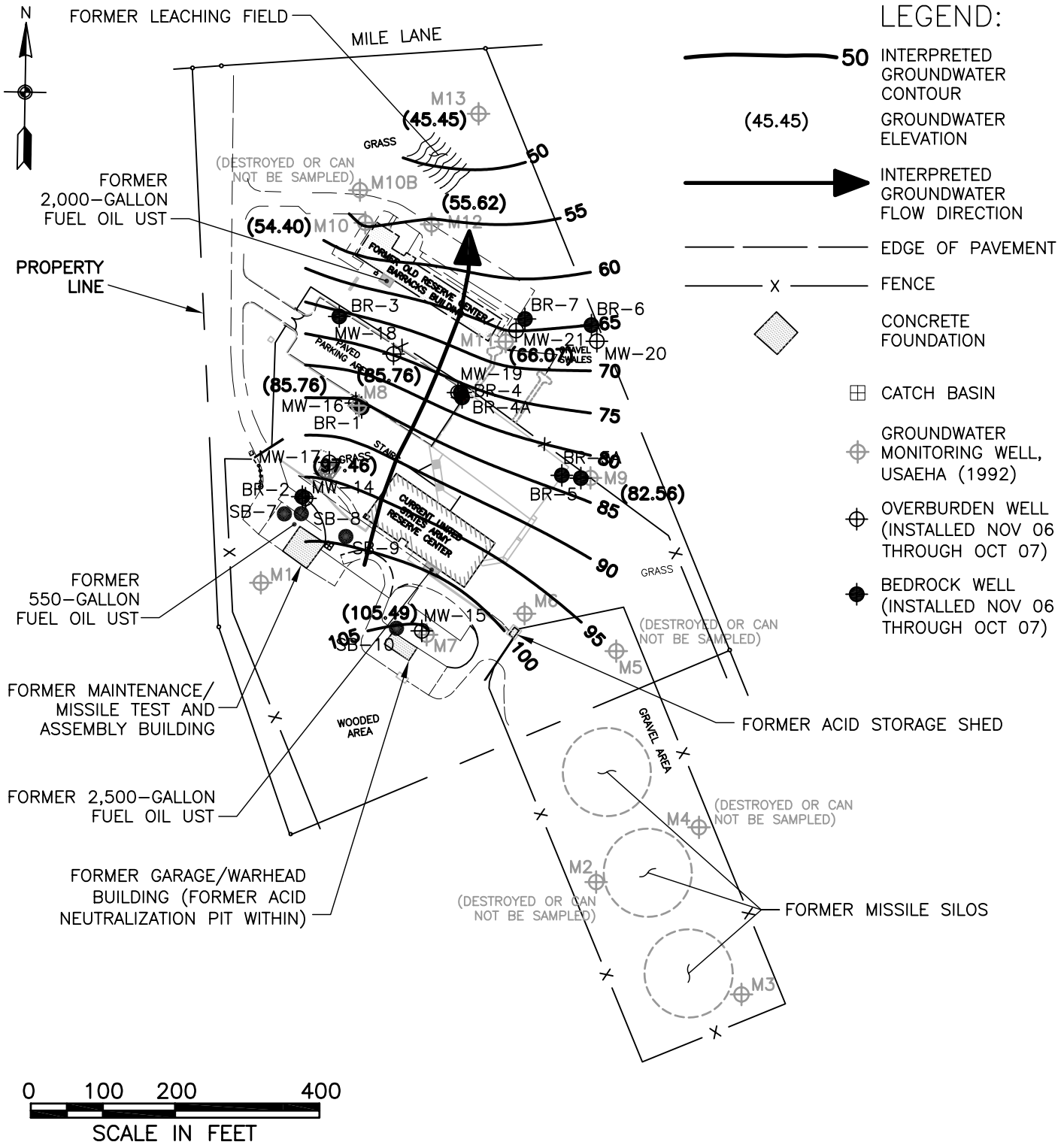
94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

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Cross Section D-D'

Project 3618-04-8110
Figure 3-5

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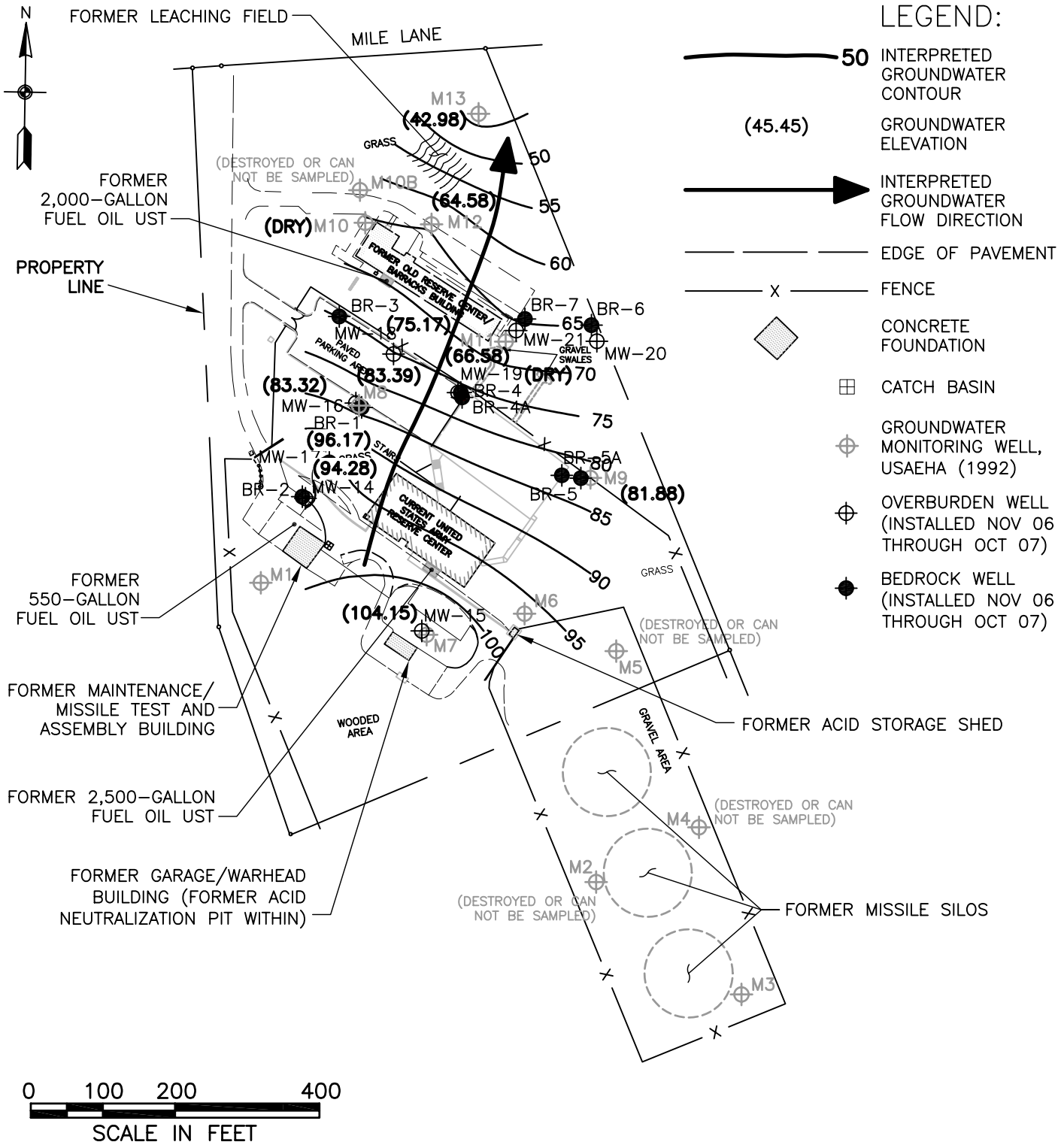
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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 05/17/07
Checked/Date: JRY 05/17/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Potentiometric Groundwater Contours Overburden Wells November 27,2006 Project 3618-04-8110 Figure 3-6

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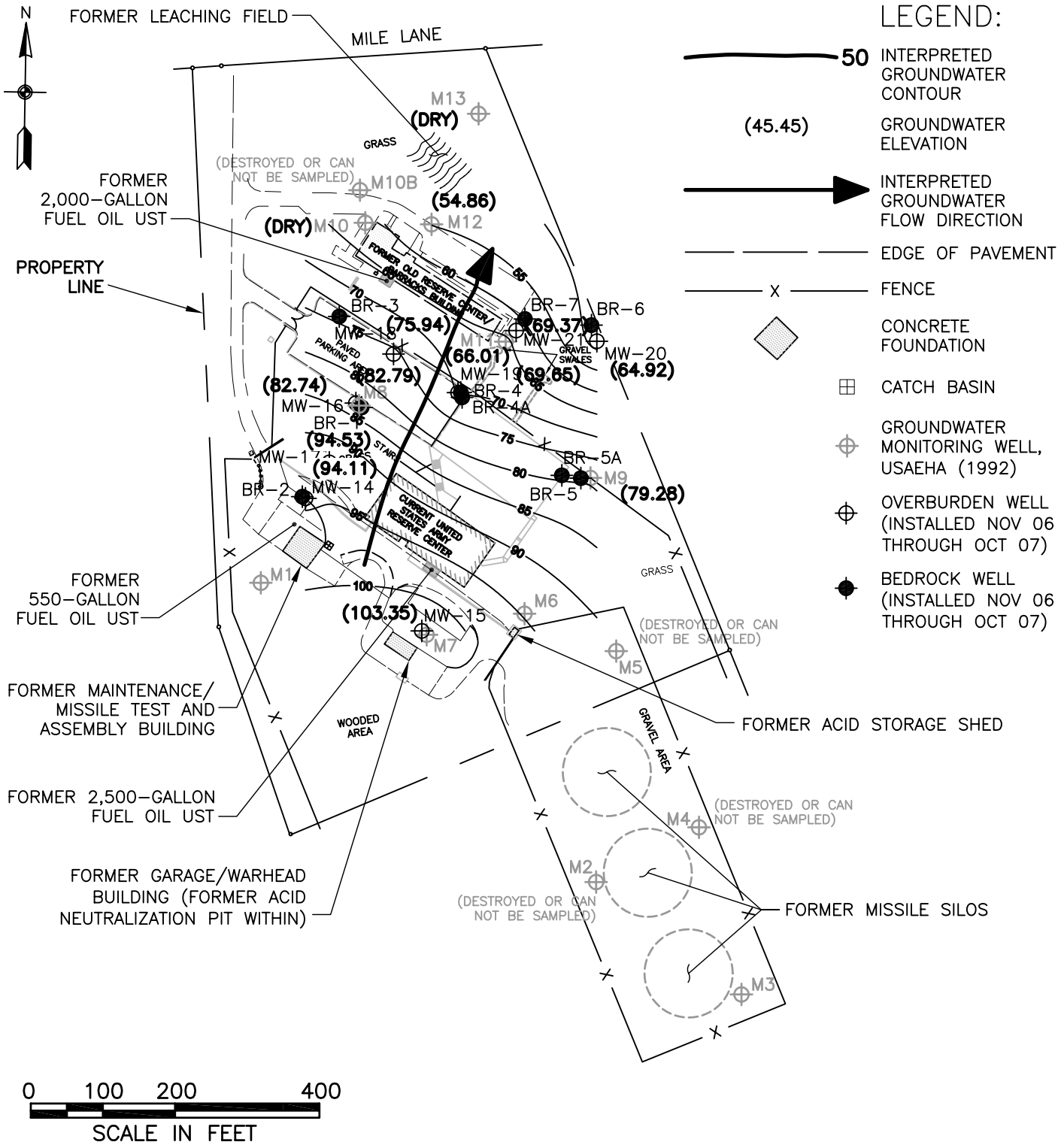
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Prepared/Date: DEL 05/17/07
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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Potentiometric Groundwater Contours Overburden Wells March 16, 2007 Project 3618-04-8110 Figure 3-7

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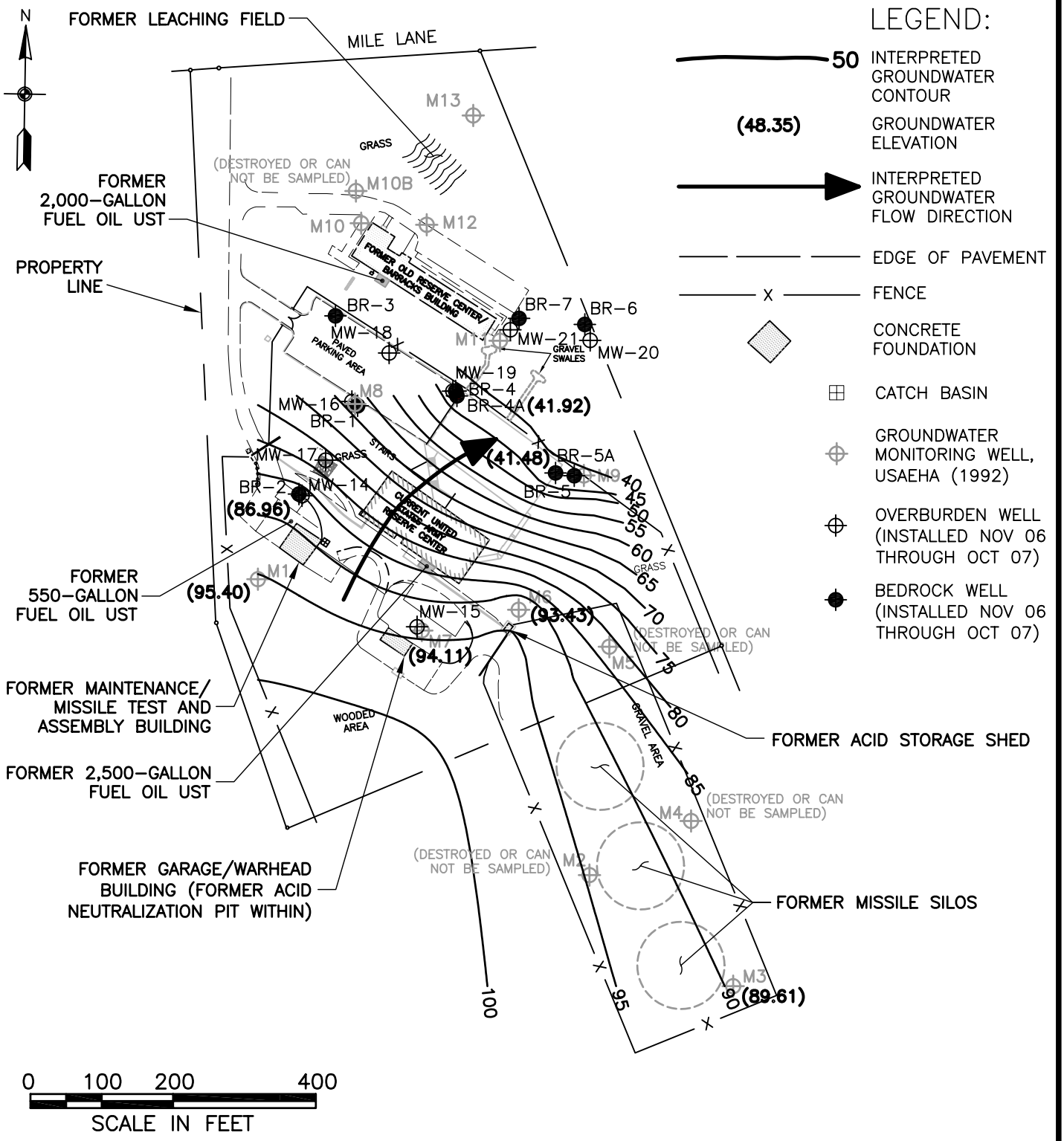
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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 05/17/07
Checked/Date: JRY 05/17/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Potentiometric Groundwater Contours Overburden Wells October 29, 2007 Project 3618-04-8110 Figure 3-8

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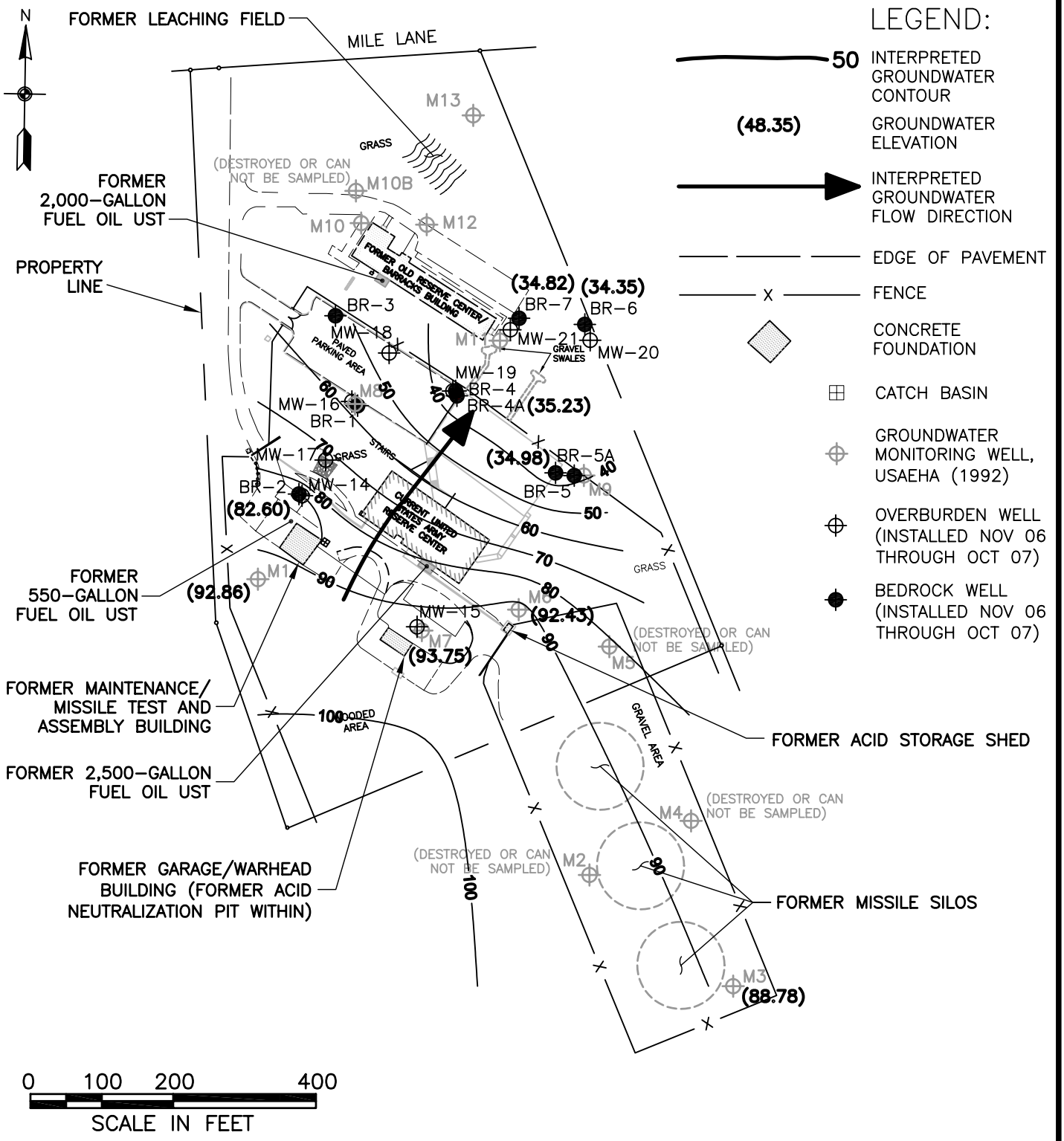
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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 05/17/07
Checked/Date: JRY 05/17/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Potentiometric Groundwater Contours Bedrock Wells March 16, 2007 Project 3618-04-8110 Figure 3-9

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ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: DEL 05/17/07
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94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	KEMRON ENVIRONMENTAL SERVICES / MACTEC	Potentiometric Groundwater Contours Bedrock Wells OCTOBER 29, 2007 Project 3618-04-8110 Figure 3-10

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Table 3-1
Groundwater Well and Soil Boring Details
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Well or Boring ID	Date Installed	Well Status	Well Type	Screened Interval (ft bgs)	Top of PVC Elevation (ft)	Depth-to-water (ft) 11/27/06	Water Table Elevation (ft) 11/27/06	Depth-to-water (ft) 03/16/07	Water Table Elevation (ft) 03/16/07	Depth-to-water (ft) 10/29/07	Water Table Elevation (ft) 10/29/07	Ground Surface Elevation (ft)	Approx. Depth to Bedrock (ft bgs)	Approx. Bedrock Elevation (ft)
M1	06/02/92	present	bedrock	18-28'	110.29	12.11	98.18	14.89	95.40	17.43	92.86	108.66	--	--
M2	06/02/92	out-of-service												
M3	06/03/92	present	bedrock	18-28'	111.47	20.53	90.94	21.86	89.61	22.69	88.78	109.42	--	--
M4	06/03/92	out-of-service												
M5	06/03/92	out-of-service												
M6	06/04/92	present	bedrock	18.5-28.5'	112.26	15.97	96.29	18.83	93.43	19.33	92.93	110.98	--	--
M7	06/04/92	present	bedrock	18.5-28.5'	112.14	15.84	96.30	18.03	94.11	18.39	93.75	110.98	18.5	92.5
M8	06/06/92	present	overburden	9.5-19.5'	90.16	4.40	85.76	6.77	83.39	7.37	82.79	88.31	24.0	64.5
M9	06/05/92	present	overburden	3.5-13.5'	89.78	7.22	82.56	7.90	81.88	10.50	79.28	88.32	20.0	68.5
M10	06/06/92	present	overburden	6-16'	71.39	16.99	54.40	dry	--	dry	--	69.66	--	--
M10B	06/06/92	out-of-service												
M11	06/06/92	present	overburden	1.5-11.5'	71.92	5.85	66.07	5.34	66.58	5.91	66.01	70.09	--	--
M12	06/06/92	present	overburden	6-16'	70.54	14.92	55.62	5.96	64.58	15.68	54.86	68.44	--	--
M13	06/10/92	present	overburden	3.5-13.5'	51.29	5.84	45.45	8.31	42.98	dry	--	49.77	--	--
MW-14	11/09/06	present	overburden	7-17'	105.01	7.55	97.46	10.73	94.28	10.90	94.11	105.42	20.0	85.5
MW-15	11/09/06	present	overburden	10-20'	113.37	7.88	105.49	9.22	104.15	10.02	103.35	110.71	18.5	92.0
MW-16	11/10/06	present	overburden	2-12'	90.11	4.35	85.76	6.79	83.32	7.37	82.74	87.46	24.0	63.5
MW-17	03/05/07	present	overburden	6-16'	101.85	--	--	5.68	96.17	7.32	94.53	--	25.0	--
MW-18	03/05/07	present	overburden	3-13'	84.93	--	--	9.76	75.17	8.99	75.94	85.14	18.0	67.0
MW-19	03/08/07	present	overburden	9.5-19.5'	87.09	--	--	dry	--	17.44	69.65	87.47	19.5	68.0
MW-20	10/09/07	present	overburden	10-20'	68.01	--	--	--	--	20.09	47.92	64.92	20.0	45.0
MW-21	10/11/07	present	overburden	10-20'	72.53	--	--	--	--	14.11	58.42	69.37	20.0	49.5
BR-1	11/06/06	present	bedrock	25-35'	90.70	39.68	51.02	39.98	50.72	40.00	50.70	87.83	24.0	64.0
BR-2	11/08/06	present	bedrock	25-35'	105.02	14.60	90.42	18.06	86.96	22.42	82.60	105.29	20.0	85.5
BR-3	11/16/06	present	bedrock	24-34'	81.53	33.18	48.35	33.71	47.82	33.67	47.86	81.97	19.0	63.0
BR-4	11/17/06	present	bedrock	25-35'	87.17	34.09	53.08	34.41	52.76	34.43	52.74	87.46	19.5	68.0
BR-4A	03/07/07	present	bedrock	38-68'	87.32	--	--	45.40	41.92	52.09	35.23	87.67	19.5	68.0
BR-5	11/17/06	present	bedrock	25-35'	91.60	37.72	53.88	35.97	55.63	38.22	53.38	88.72	20.0	68.5
BR-5A	03/08/07	present	bedrock	50-70'	88.99	--	--	47.51	41.48	54.01	34.98	89.38	20.0	69.5
BR-6	10/10/97	present	bedrock	58.5-78.5'	66.40	--	--	--	--	32.05	34.35	64.21	20.0	44.0
BR-7	10/12/07	present	bedrock	40.5-60.5'	71.96	--	--	--	--	37.14	34.82	69.04	20.0	49.0
SB-01	11/07/06	--	--	--	--			--	--	--	--	89.39	19.0	70.5
SB-02	11/07/06	--	--	--	--			--	--	--	--	88.44	18.0	70.5
SB-03	11/07/06	--	--	--	--			--	--	--	--	87.69	23.5	64.0
SB-04	11/07/06	--	--	--	--			--	--	--	--	86.64	20.0	66.5
SB-05	11/07/06	--	--	--	--			--	--	--	--	86.30	20.0	66.5
SB-06	11/07/06	--	--	--	--			--	--	--	--	104.37	19.5	85.0
SB-07	11/07/06	--	--	--	--			--	--	--	--	105.76	20.0	86.0
SB-08	11/09/06	--	--	--	--			--	--	--	--	105.67	24.0	81.5
SB-09	11/09/06	--	--	--	--			--	--	--	--	106.51	19.0	87.5
SB-10	11/09/06	--	--	--	--			--	--	--	--	107.53	18.5	89.0

Notes:
ft = feet
bgs = below ground surface

Section 4.0 Baseline Risk Assessment

This Baseline Risk Assessment for Site 08 has been preformed in accordance with CERCLA, the NCP, and applicable USEPA guidance. Section 4.1 presents the Human Health Risk Assessment (HHRA) and Section 4.2 provides an Ecological Risk Evaluation.

4.1 Human Health Risk Assessment

This section provides the technical approach and results for the HHRA performed in support of the RI for Site 08. The purpose of the risk assessment is to quantify the human health risks associated with potential exposures to site-related constituents under current and reasonably foreseeable future land use conditions, in the absence of any remedial actions.

The applicable legal requirement for the HHRA is CERCLA, as amended. The applicable regulatory requirement is the NCP, 40 CFR Part 300. The HHRA is performed using USEPA CERCLA guidance for risk assessment, including the following USEPA risk assessment guidance and directives:

- *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A)* (RAGS) (USEPA, 1989)
- *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (OSWER Directive 9285.6-03.;* USEPA, 1991)
- *Guidance for Data Usability in Risk Assessments* (USEPA, 1992)
- *Exposure Factors Handbook* (USEPA, 1997a)
- *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part D)* (RAGS) (USEPA, 2001)
- *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA, 2002a)
- *Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites* (USEPA, 2002b)
- *Human Health Toxicity Values in Superfund Risk Assessments (OSWER No. 9285.7-53, December 2003)*
- *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E)* (RAGS) (USEPA, 2004a)

The HHRA is organized into four sections (hazard identification, exposure assessment, toxicity assessment, and risk characterization), and includes supporting documentation for data sets used in the risk assessment, exposure point concentration (EPC) calculations, and modeling in Appendix D.

The hazard identification presents a summary of the analytical data that are used in the HHRA and the chemicals selected for evaluation in the risk assessment (i.e., the chemicals of potential concern [COPCs]). The exposure assessment provides information about the activities that may occur under the current and anticipated future land uses of the Site, the pathways by which people engaged in those activities could be exposed to COPCs at the Site, and quantifies the exposures associated with those pathways. The toxicity assessment provides information about the potential toxicity and dose-response profiles of the COPCs. The risk characterization combines the dose-response information and quantitative exposure estimates to provide quantitative estimates of risk for cancer and systemic toxic effects. In order to provide additional perspective for risk management decision-making, this section also contains an analysis of the variables that lend the greatest uncertainty and have the greatest potential

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effect on the quantitative risk estimates, including a comparison of site risks to risks associated with background conditions.

4.1.1 Hazard Identification

Site Description and Conceptual Site Model

Section 1.0 provides a detailed description of the Site. The USARC installation is located on a 23.7-acre parcel of land in a residential area of Middletown. The property currently consists of the USARC building and three former slab on grade foundations located on a multi-tiered hillside. Several paved parking areas and roadways are located on the property along with grass covered and wooded areas. The facility is surrounded by a chain-link fence, with gates. The property is used by the USARC as the 94th RRC and is staffed by military personnel performing administrative duties on a full-time basis.

Site 08 is defined as facility-wide groundwater (i.e., groundwater beneath the facility that has been affected by potential releases from the facility). Figure 1-1 shows the facility layout and property boundary. For the purposes of this RI, Site 08 facility-wide groundwater is defined as the area of the facility, bounded by the facility property boundary. The various investigations that been performed in support of the RI for Site 08 have included collection of groundwater samples from a series of monitoring wells around the installation and soil samples collected from the monitoring well borings. Figure 2-1 shows the monitoring well locations. This HHRA evaluates human health risks associated with potential exposures to groundwater, as well as soil that was collected during the installation of the groundwater monitoring wells.

The analytical data collected in support of the RI for Site 08 indicate that TCE is the primary constituent of concern. TCE has been detected in overburden and bedrock groundwater at concentrations ranging from less than 1 ug/L to 38.5 ug/L. Chloroform and carbon tetrachloride have also been detected in groundwater at concentrations up to 4 ug/L and 6 ug/L, respectively. Low levels of VOCs and metals have been detected in soil and groundwater, and three PAHs have also been detected at low concentrations in soil. The RI investigations have not located a source of TCE remaining in the soil at the facility.

Groundwater beneath the facility flows northeast. The VOCs detected in groundwater are generally located in the central portion of the facility. As documented in Section 2.0, there is no evidence to indicate that VOCs are migrating off the facility property. The facility and all downgradient properties within one-half mile of the Site are connected to public water supply. The only properties within one-half mile of the Site that are not on public water supply are located upgradient of the Site. Although no use of groundwater at or downgradient of the property is occurring, groundwater beneath and in the vicinity of the facility is classified as a potable groundwater resource by the State of Connecticut (Class GA water).

There are no direct exposures to groundwater under the current land use conditions because there are no uses of groundwater at the facility property and contaminated groundwater is not migrating off the facility property. However, volatile constituents in groundwater that is located within one-hundred feet (horizontally and vertically) of an occupied building are considered a potential source of vapors to indoor air (USEPA, 2002c). Specifically, it is possible that volatiles in groundwater may partition to soil gas, migrate within the soil column to the convective influence of a building, and then be drawn into the building where exposures to the VOCs in indoor air could occur. The existing USARC building, though occupied, is not located within 100 feet of any detected groundwater VOC contamination. In addition, VOCs have not been detected in the wells upgradient of the building (MW-15/M7). Therefore, there are no potentially complete exposure pathways to VOCs that may migrate to indoor air under the existing

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Site conditions (i.e., the vapor intrusion exposure pathway is incomplete). Vapor intrusion pathways beyond the facility property boundary are also incomplete because the VOC-contaminated groundwater is not migrating beyond the facility property boundary, and is not within 100 feet of the property boundary, as discussed in Section 3.0.

The soil samples collected during installation of the various monitoring wells at the facility property were generally collected from depths greater than one foot below ground surface. The majority of USARC activities at this facility are performed in the building, and personnel have minimal opportunity to contact soil. If soil contact occurred, it would be to surface soil (e.g., soil within the top six inches of ground surface), as there are no on-going or planned excavation activities that would potentially move deeper soils to the surface where they could be contacted. VOCs identified in soil were detected at such low concentrations that they would not constitute a vapor migration concern for outdoor air. Therefore, under the existing land use conditions, potential exposure pathways to soil would likely be incomplete, or at least very negligible.

The facility has been included for realignment on the 2005 list BRAC, indicting that future use may change. For the purposes of this risk assessment, it is assumed that the future use of the USARC property continues to be non-residential (i.e., military or commercial/industrial use). Under these conditions, it is assumed that exposure pathways to groundwater and indoor air would remain incomplete, and that potential exposures to soil would remain negligible. However, the HHRA evaluates these exposure pathways under the assumption that they are complete for commercial/industrial workers or military personnel in the future. Specifically, the HHRA evaluates:

- Potable use of groundwater by military or commercial/industrial workers at the facility. This evaluation addresses the fact that although drinking water is supplied by the City of Middletown, it is classified as GA by the State of Connecticut and, therefore, hypothetically could be used by occupants of the property;
- Indoor air exposures to VOCs by military or commercial/industrial workers at the facility. This evaluation addresses the possibility that the existing building is expanded or new buildings are constructed such that the vapor intrusion exposure pathway is potentially complete;
- Contact with soil by military or commercial/industrial workers at the facility. This evaluation addresses the possibility that activities at the property change such that outdoor workers or military personnel frequently contact soil by incidental ingestion, dermal contact, and dust inhalation exposure pathways.

Data Evaluation

The data evaluation portion of the Hazard Identification section: a) identifies the data available for use in HHRA, and justifies the selection or exclusion of particular data for use in the risk assessment; b) provides the rationale for the way data will be grouped for evaluation in the risk assessment; and c) documents the methods used to summarize data into statistical descriptors.

Data Sources and Data Quality

The RI and Risk Assessment for the Site are based on the data collected in support of the RI program. Data collected for the RI are selected for use in the HHRA using the criteria established by USEPA in "Guidance for Data Usability in Risk Assessment" (USEPA, 1992).

The data presented in this RI and selected for use in the HHRA are the product of laboratory analyses performed in accordance with USEPA methods and associated Quality Assurance/Quality Control

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(QA/QC) procedures, as described in the QAPP**.** Data are presented in Appendix C. Based on the data quality assessment (Section 2), data are of suitable quality for use in the risk assessment.

Data Used in HHRA

Soil samples used in the HHRA for Site 08 include:

- Nine soil samples collected at monitoring well locations in 1992, from depth intervals ranging between 1-6 inches bgs to 114-126 inches bgs. Soil samples were analyzed for VOCs, SVOCs, metals, and TPH. Among these samples, only metals and TPH were detected and only metals data were included in the summary statistics.
- Thirteen soil samples collected in 1993 and 1997 during underground storage tank closure activities, from depths of 7 ft bgs and 10 ft bgs. Soil samples were analyzed for VOCs, SVOCs, metals, PCBs, and TPH. Among these samples, TPH was detected in all samples, PAHs were only detected in two of the samples (LRS-1, LRS-2), and metals were only detected in one of the samples (BDSC009). Data for the PAHs in samples LRS-1 and LRS-2, and the metals in sample BDSC009, were included in the summary statistics, and data for petroleum hydrocarbons in all samples were included in the summary statistics
- Eleven soil samples collected at monitoring well locations in 2006 (ten soil samples) and 2007 (one soil sample) from depth intervals ranging between 3 and 13 ft bgs. Soil samples were analyzed for VOCs and ETPH. These data were included in the summary statistics.
- Additional soil samples were collected during other investigations (e.g., Environmental Baseline Study), but no constituents other than petroleum hydrocarbons were detected above reporting limits; therefore, only petroleum hydrocarbon data were included in the data sets evaluated in this HHRA.

The resulting soil data set includes 11 samples analyzed for VOCs, 2 samples analyzed for SVOCs, 10 samples analyzed for metals, and 37 samples analyzed for petroleum hydrocarbons. Soil sample locations are shown on Figure 2-1, and the soil data used in the risk assessment are presented in Appendix D.

Groundwater samples were collected at Site 08 from monitoring wells (Figure 2-1). The first round of data was collected in 1992, a second round was collected in 2005, and additional rounds were collected in February 2006, November 2006, March, 2007, and October 2007. The February 2006 sampling round included re-sampling of all of the original wells, plus additional wells installed in support of the Site 08 RI activities. Groundwater samples collected from the wells were analyzed for metals, VOCs, and ETPH. Re-sampling of these wells, as well as additional wells installed in support of the Site 08 RI activities, for VOCs and ETPH, occurred in November, 2006 and March 2007. Newly installed wells MW-20, MW-21, BR-6, and BR-7 were sampled in October 2007 for VOCs. The groundwater samples collected between February 2006 and March 2007 provide the most current and most comprehensive groundwater data set, and include detected VOC concentrations that are higher than those recorded in the August 2005 and previous sampling events. Therefore, the 2006 and 2007 groundwater data are selected for evaluation in the HHRA. No VOCs were detected in the groundwater samples collected from the wells installed in October 2007. Therefore, data for those wells were not included in groundwater data set used in the risk assessment. The groundwater data set includes up to three rounds of data from each of the following monitoring wells: Overburden wells M1, M3, M6, M7, M8, M9, M10, M11, M12, M13, MW-14, MW-15, MW-16, MW-17, MW-18, and bedrock wells BR-1, BR-2, BR-3, BR-4, BR-4A, and BR-5A. The groundwater data used in the risk assessment are presented in Appendix D.

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Data Summarization

The ultimate product of data evaluation and data summarization is a set of analytical data in a form that can be used in the quantitative risk assessment. Each data set developed for the risk assessment is summarized so as to provide the following statistical descriptors:

- The ratio of the number of samples in which the constituent is detected to the total number of samples (i.e., frequency of detection);
- Range of analytical quantitation limits;
- Range of detected concentrations;
- Data qualifiers associated with the minimum and maximum detected concentrations;
- Sample identifier associated with the maximum detected concentration; and
- Arithmetic mean concentration.

Data summaries for soil and groundwater are provided in Tables 4-1 and 4-2, respectively. The following procedures were applied when summarizing the analytical data for the HHRA:

- For samples in which a field duplicate was collected, the higher of the analytical result for each parameter between the original and field duplicate is selected for use in the risk assessment.
- Rejected data ("R" qualified results) were not used in the risk assessment.
- Results qualified as estimated ("J" qualified) were used in the risk assessment.
- For samples in which analyte concentrations are detected outside the calibration range, and the samples are diluted and reanalyzed, only the re-analysis results were used in the risk assessment.
- When calculating the arithmetic mean concentrations, one-half the value reported as the non-detect value (usually the analytical quantitation limit) was used for results reported as not-detected.

Chemicals of Potential Concern

COPCs are chemicals that may pose more than a *de minimis* health risk. A concentration-toxicity screening is used to reduce the chemicals evaluated in the risk assessment to only those that would potentially pose more than a *de minimis* health risk (USEPA, 1989). The procedure used to select COPCs for the HHRA is summarized as follows, and is consistent with USEPA methodology:

- A constituent is selected as a COPC in soil if the maximum detected concentration exceeds the USEPA Region IX Preliminary Remediation Goal (PRG) for residential soils (USEPA, 2004b), or the CTDEP R DEC (CTDEP, 1996).
- A constituent is selected as a COPC in groundwater if the maximum detected concentration exceeds the USEPA Region IX PRG for tap water (USEPA, 2004b), the CTDEP GWPC (CTDEP, 1996), or the Federal Maximum Contaminant Level (MCL) (USEPA, 2005).

The PRGs for soil are protective for direct contact (ingestion and dermal contact) exposures, as well as for inhalation of constituents that may be released to air, for residential land use conditions. The PRGs for groundwater are protective for residential potable use of the water. The PRGs are derived for a 1 in 1 million ($1x10^{-6}$) cancer risk level or a non-cancer hazard quotient (HQ) of 1. Consistent with USEPA Region I guidance, the PRGs based on non-carcinogenic effects are adjusted to represent a HQ of 0.1 for the purposes of COPC selection, except lead was based on an HQ of 1. The use of residential soil PRGs to select COPCs in soil represents a conservative approach since the Site is presently, and will continue to be, used only for non-residential purposes.

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The results of the COPC selection for each medium are provided in Tables 4-1 and 4-2. The following notes are used to denote the reasons for selection or exclusion of analytes as COPCs:

ASL: The concentration used for COPC screening (the maximum detected concentration) is greater than the risk-based PRG and/or Applicable or Relevant and Appropriate Requirement (ARAR); the analyte is therefore selected as a COPC.

BSL: The concentration used for COPC screening (the maximum detected concentration) is less than the risk-based PRG and/or ARAR; the analyte is therefore not selected as a COPC.

NSL: There is no screening value and/or ARAR available; the analyte is therefore selected as a COPC.

In surface soil, arsenic was the only constituent retained as a COPC. Arsenic was detected at a maximum concentration above the Region IX PRG value, but below the CTDEP RES-DEC RSR. In groundwater, three VOCs (carbon tetrachloride, chloroform, and TCE) and two metals (arsenic and barium) were retained as COPCs. Among these VOCs, only carbon tetrachloride and TCE were detected at concentrations greater than CTDEP GA GWPC and MCLs.

4.1.2 Exposure Assessment

The exposure assessment is conducted to evaluate the populations of humans that may potentially occur at the site, the mechanisms or exposure pathways by which those humans may be potentially exposed to contamination at the site, and the magnitude of exposure that may occur through the potential exposure pathways. This process involves three steps:

1) Characterization of the exposure setting in terms of physical characteristics, current and future uses of the site, and the populations that may be potentially exposed to COPCs under the current and future land uses;

2) Identification of potential exposure pathways and exposure points to which the populations may be exposed; and

3) Quantification of exposure to COPCs for each potentially complete pathway and exposure point.

Characterization of Exposure Setting and Potentially Exposed Populations

Under the existing land use conditions, the Site is located in a fenced, secured, military installation. Military personnel would be the only potentially exposed populations at the Site. Future use of this Site is assumed to be military or commercial/industrial. Under these land use conditions, military personnel and/or commercial/industrial workers (e.g., outdoor commercial/industrial workers, landscape workers, office workers, and indoor manufacturing workers) would be expected to be present at the Site.

Exposure Pathways and Exposure Points

Table 4-3 provides a summary of the potentially complete and incomplete exposure pathways to groundwater and soil associated with Site 08. As discussed in Section 4.1.1, there are no complete exposure pathways to groundwater under the existing land use conditions, and negligible exposure potential to soil under the existing land use conditions. The use of the facility is expected to remain

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military or commercial/industrial in the future. The HHRA incorporates the assumption that under a future commercial/industrial land use, groundwater beneath the facility could be consumed by workers as potable water, vapor intrusion from groundwater to indoor air could be complete if buildings are constructed over groundwater containing VOCs, and contact with soil could occur. The following exposure pathways are evaluated in the risk assessment:

- Ingestion of groundwater as drinking water by military personnel or commercial/industrial workers.
- Inhalation of vapors that may migrate to indoor air by military personnel or commercial/industrial workers.
- Incidental ingestion, dermal contact, and dust inhalation to COPCs in soil by military personnel or commercial/industrial workers.

Use of groundwater as a potable water source is not expected, since the facility is presently connected to the public water supply. In accordance with USEPA guidance (USEPA, 1991), potable use of groundwater at a commercial/industrial facility is characterized by assuming that workers drink the groundwater as tap water during work hours. In accordance with USEPA guidance (USEPA, 1989), each monitoring well is considered to be a separate exposure point for the purposes of evaluating consumption of groundwater. Since the monitoring wells are generally spaced at least 100 feet from each other, each monitoring well is also considered a separate point source of vapors that may migrate to indoor air, as it is unlikely that buildings constructed at the Site would be large enough to encompass areas represented by multiple wells.

Exposure to the COPCs in soil can occur through dermal contact with the soil (e.g., placing hands on the soil or when soil-derived dust becomes adhered to skin following active work on the soil), incidental ingestion of soil (e.g., through hand-mouth activity), and through inhalation of soil-derived dust (e.g., wind erosion or excavation of un-vegetated soil). No VOCs were retained as COPCs in soil. Therefore, inhalation of VOCs that may volatilize to air is not a complete pathway. There are no attributes associated with the Site that would indicate or suggest that contact with soil, if it were to occur, would occur preferentially in one area of the Site over another. In addition, concentrations of arsenic in Site soil (the only COPC in Site soil) are fairly consistent (ranging from 0.65 to 7.7 mg/kg). Therefore, soil samples from all soil sampling locations and soil sampling depths were grouped together in a single exposure point.

Exposure Scenarios

Exposure scenarios are used to quantitatively describe the COPC exposures that could theoretically occur for each land use and exposure pathway evaluated. The exposure scenarios are used in conjunction with EPCs to derive quantitative estimates of COPC intake. The ultimate goal of developing exposure scenarios, as defined in USEPA guidance, is to identify the combination of exposure parameters that results in the most intense level of exposure that may "reasonably" be expected to occur under the current and future site conditions (USEPA, 1989). Therefore, one exposure scenario is often selected to provide a conservative evaluation for the range of possible receptors and populations that could be exposed at the site. The resulting exposure scenarios are referred to as the Reasonable Maximum Exposure (RME) for each exposure pathway.

To characterize potential exposures and risks associated with groundwater and soil at this Site, a full-time commercial/industrial worker scenario is used. Although current and anticipated use of the property is by military personnel as opposed to commercial/industrial workers, the commercial/industrial worker scenario simulates potential exposure that would occur for someone who accessed or worked at the Site

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full-time over a long duration, and is therefore protective for military personnel who may have more limited occurrence at the Site.

Use of groundwater as tap water by commercial/industrial workers is characterized by assuming that workers ingest 1 liter of water per day, 250 days per year, over a 25-year period (USEPA, 1991). Exposure to VOCs that may migrate to indoor air is also characterized assuming that workers spend 8 hours per day indoors, 250 days per year, over a 25-year period (USEPA, 2002a). Exposure parameters and algorithms for groundwater are provided in Table 4-4.

To evaluate potential exposures to soil, the risk assessment considers an outdoor commercial/industrial worker scenario (USEPA, 2002a). The exposure parameters and intake algorithms are provided in Table 4-5, and are based on ingestion, dermal contact, and inhalation of soil-derived dust 8 hours per day, 225 days per year, over a 25 year period. Adding risks for potential exposures to indoor air and soil together provides an overestimate of risks, since it is not possible for the same worker to spend all of each work-day indoors *and* outdoors.

Exposure Point Concentrations

In accordance with USEPA guidance, RME EPCs for all media except groundwater that is used as potable water are based on the lesser of the 95 percent upper confident limit (UCL) on the arithmetic mean of the concentration, or the maximum detected concentration in the data set, for each exposure point (USEPA, 2002b). The 95 percent UCL value for arsenic in soil is calculated using the ProUCL software (V. 3.02). The ProUCL software tests the distribution of the data set for which the EPC is being derived (e.g., normal, lognormal, gamma), and then calculates a conservative and stable 95 percent UCL value in accordance with the framework described in "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites" (USEPA, 2002b). The 95% UCL calculations are documented in Appendix D. For groundwater, the maximum detected COPC concentrations among all wells and all rounds of sampling are used as the EPCs. The EPCs for metals are based on dissolved metals analyses. Since each monitoring well is a separate exposure point; use of the maximum detected concentration in groundwater (i.e., maximum concentration across all wells) as the EPC represents a health-protective approach because the maximum concentrations of various COPCs may be associated with separate wells. The EPCs for soil and groundwater are presented in Tables 4-6 and 4-7, respectively.

Indoor air EPCs were estimated from the groundwater EPCs using the Johnson-Ettinger model, as adapted by USEPA. This model is widely accepted as a screening-level model for estimating vapor intrusion into buildings, and has been adopted by USEPA for establishing vapor intrusion screening levels in groundwater and soil gas (USEPA, 2002c). The model is based on the premise that volatile COPCs partition from groundwater to soil gas, then migrate through soil pore space and are drawn through cracks in a foundation or building slab into the air within an overlying building, where receptors breathing the air might be located. The model used in this HHRA is the Groundwater Advanced Model (v. 3.1) published by USEPA. The groundwater model uses measured groundwater COPC concentrations with soil characteristics (e.g., porosity), chemical-specific parameters (e.g., Henry's Law constant), and building-specific parameters (e.g., building ventilation rate), to provide an estimate of indoor air concentrations.

Modeling was performed assuming that a slab-on-grade commercial or industrial building is constructed at the Site. The groundwater source concentrations uses in the modeling were the groundwater EPCs of the three volatile COPCs (i.e., maximum detected groundwater concentrations). The groundwater EPC for TCE of 38.5 ug/L is associated with a bedrock monitoring well (BR-4). Although the depth to groundwater at BR-4 (34 ft bgs) is within the 100 foot zone of influence for vapor intrusion (USEPA, 2002), the overburden groundwater in the vicinity of BR-4 would provide a more reasonable

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representation of the potential vapor source in groundwater. However, TCE concentrations in overburden monitoring wells are similar to the concentration measured in BR-4, ranging from 25 ug/L (MW-16) to 35 ug/L (M8). The following Site-specific input parameters to the model were used; all other input parameters are the USEPA default values:

- Depth of groundwater: 3 ft bgs (91 cm)
- Soil type: Sandy clay (type "SC")
- Indoor ceiling height: 8 feet (244 cm) (assumes office space ceiling height)
- Duration of exposure: 25 years (based on RME duration for commercial/industrial workers)

The output of the model is a building indoor air vapor concentration; calculations are provided in Appendix D. The following table summarizes the groundwater EPCs and indoor air EPCs. The indoor air EPCs are used with worker exposure parameters for indoor air (Table 4-4) to calculate indoor air inhalation risks in the risk calculations presented in Table 4-13.

COPC	Groundwater EPC (ug/L)	Indoor Air EPC (ug/m^3)
Carbon tetrachloride	6.36	0.054
Chloroform	4.58	0.014
Trichloroethene	38.5	0.17

Calculation of Intakes

COPC intakes via the ingestion, dermal contact, and inhalation exposure routes are calculated using the exposure parameters and EPCs identified previously. The quantified intakes for these exposure routes are combined with the appropriate dose-response data to quantify risks, as discussed in Section 4.1.4.

The equations used to calculate intake are those presented in USEPA guidance (USEPA, 1989; 2004a), and are shown in Tables 4-4 and 4-5. Exposures are quantified in the risk characterization calculation tables (Tables 4-12 and 4-13).

4.1.3 Toxicity Assessment

The objective of the toxicity assessment is to quantify the relationship between the intake, or dose, of COPCs and the likelihood that an adverse health effect may result from exposure to the COPCs. There are two major types of adverse health effects evaluated in the risk assessment: carcinogenic, and non-carcinogenic. Following USEPA guidance (USEPA, 1989), these two effects (carcinogenic and non-carcinogenic) are evaluated separately.

There are two types of dose-response values: cancer slope factor (CSF) values for carcinogens; and reference dose (RfD) values for non-carcinogens. For potentially carcinogenic COPCs, both types of values have been developed by USEPA because these COPCs may elicit both carcinogenic and non-carcinogenic (systemic) effects. In addition, because toxicity and/or carcinogenicity can depend on the route of exposure (i.e., oral or dermal), unique dose-response values have been developed for the oral and dermal exposure routes.

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Dose-Response Values for Carcinogenic Effects

For carcinogenic effects, USEPA uses a two-part evaluation in which the substance is first assigned a weight-of-evidence classification, and then a CSF or unit risk (UR) is calculated to reflect the carcinogenic potency.

Group A - Human Carcinogen. This category indicates there is sufficient evidence from epidemiological studies to support a causal association between an agent and human cancer.

Group B - Probable Human Carcinogen. This category generally indicates there is at least limited evidence from epidemiologic studies of carcinogenicity to humans (Group B1) or that, in the absence of data on humans, there is sufficient evidence of carcinogenicity in animals (Group B2).

Group C - Possible Human Carcinogen. This category indicates that there is limited evidence of carcinogenicity in animals in the absence of data on humans.

Group D - Not Classified. This category indicates that the evidence for carcinogenicity in animals is inadequate.

Group E - No Evidence of Carcinogenicity to Humans. This category indicates that there is evidence of noncarcinogenicity in at least two adequate animal tests in different species or in both epidemiologic and animal studies.

In the Guidelines for Carcinogenic Risk Assessment (USEPA, 2005), USEPA revised the approach to describing the carcinogenic potential of an agent from an alphanumeric system to a weight-of-evidence-based descriptive narrative. "Carcinogenic to Humans", "Likely to Be Carcinogenic to Humans", "Suggestive Evidence of Carcinogenic Potential", "Data Inadequate for an Assessment of Human Carcinogenic Potential", and "Not Likely to be Carcinogenic in Humans" are example descriptors that would be accompanied by a narrative that summarizes the basis of the descriptor. In the USEPA Integrated Risk Information System (IRIS), the weight of evidence classification for a given chemical may reflect either of the two classification schemes identified above.

The CSF or UR is an estimate of the upper 95 percent confidence limit of the slope of the dose-response curve extrapolated to low doses. CSF and UR values are typically calculated for chemicals in Groups A, B1, B2, and "Carcinogenic to humans" and "Likely to be carcinogenic to humans".

Dose-Response Values for Non-carcinogenic Effects

In contrast to carcinogens, non-carcinogens are believed to have threshold exposure levels below which adverse effects are not expected. USEPA has derived standards and guidelines based on acceptable levels of exposure for such compounds. Non-carcinogenic effects of concern on which many of the standards and guidelines are based include liver toxicity, reproductive effects, neurotoxicity, teratogenicity, and other chronic toxicities. Various criteria have been developed from experiments that can be used to estimate the dose-response relationship of non-carcinogens. Some of the same uncertainties involved in deriving cancer risk estimates (namely, selection of an appropriate data set and extrapolation of high-dose animal data to low-dose human exposure) are also involved in deriving non-carcinogenic dose-response criteria.

The RfD, expressed in units of mg/kg/day, is defined as an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive

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subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime (USEPA, 1989). When available, the RfD is the dose-response criterion most appropriate for quantitatively estimating non-carcinogenic effects.

The reference concentration (RfC), in units of mg/m^3, is analogous to the RfD and is developed through a similar process. However, unlike RfDs, which represent a dose (in mg/kg/day) at which adverse or deleterious effects are unlikely, RfCs represent air concentrations (in mg/m^3) at which adverse or deleterious effects are unlikely (i.e., an air concentration corresponding to a hazard index (HI) = 1.0). In this HHRA, inhalation RfCs are used to estimate the non-cancer risks associated with inhaling COPCs.

Adjustment for Dermal Exposure

CSFs and RfDs were developed to evaluate risk associated with the dermal contact exposure route. In accordance with USEPA guidance (USEPA, 2004a), dermal dose-response values are calculated from oral dose-response values using an oral absorption factor. The oral absorption factor represents the amount of substance that is absorbed from the gastrointestinal tract following oral administration of a substance. The absorbed dose represents the amount of substance that is potentially available for biological interaction; it is by this dose-response relationship that the toxicity of a dermally absorbed substance must be evaluated.

Thus, for potentially carcinogenic substances, the dermal dose-response value is calculated as follows:

$$SF_d = SF_o \ / \ Oral\ ABS$$

The dermal dose-response value for evaluating noncarcinogenic effects is calculated as follows:

$$RfD_d = RfD_o \ X \ Oral\ ABS$$

Chemical-specific oral absorption (ABS) values for are published by USEPA (USEPA, 2004a). In accordance with USEPA guidance (USEPA, 2004a), oral dose-response values are only adjusted using an oral ABS value if the COPC has an oral ABS value less than 50 percent. Otherwise, the oral dose-response value is used as the dermal dose-response value.

Sources of Dose-Response Values

The following hierarchy of sources, established by USEPA (USEPA, 2003), has been used to identify dose-response values for this risk assessment.

Tier 1- IRIS (http://www.epa.gov/iris/). In accordance with USEPA guidance, the main source of dose-response values is the USEPA IRIS, which is a database established by USEPA containing all validated data on many toxic substances found at hazardous waste Sites. This database, current as of April 2007, was used to identify the majority of dose-response values applied in this risk assessment.

Tier 2- NCEA's provisional peer reviewed toxicity values (PPRTVs) (http://hhpprtv.ornl.gov/). National Center for Environmental Assessment (NCEA) PPRTVs are developed by the Superfund Technical Support Center (STSC) for the USEPA Superfund program. STSC's reassessment of Health Effects Assessment Summary Tables (HEAST) toxicity values, as well as development of PPRTVs in response to Regional or Headquarters Superfund program requests, are consistent with Agency practices on toxicity value development, use the most recent scientific literature, and are supported by both internal and

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external peer review, providing a high level of confidence in the use of these values in the Superfund Program. The PPRTVs used in this risk assessment are current as of October 2006.

Tier 3 - Other toxicity values

- Cal EPA's toxicity values. Cal EPA develops toxicity values for both cancer and non-cancer effects. Cal EPA toxicity values are obtained on the Cal EPA website at http://www.oehha.ca.gov/risk/chemicalDB//index.asp. The Cal EPA toxicity values used in this risk assessment are current as of August 2005.

- ATSDR's Minimum Risk Levels (MRLs) address non-cancer effects only, and are available on the ATSDR website at http://www.atsdr.cdc.gov/mrls.html. MRL values for chronic exposure were used as chronic RfD values. The MRL values used in this risk assessment are current as of December, 2006.

- Toxicity values remaining in current versions of HEAST (USEPA, 1997b).

Dose-response values are presented in Tables 4-8 through 4-11. In accordance with the hierarchy of sources used to identify dose-response values, cancer slope factor, unit risk, and chronic oral RfD values for all COPCs except TCE are from IRIS (USEPA, 2007). Inhalation RfCs for all COPCs are based on ATSDR chronic MRLs or CALEPA RELs, since RfC values for the COPCs are not published in IRIS and PPRTVs are not available. USEPA NCEA publishes provisional dose-response values for TCE.

However, those values are not PPRTVs and, therefore, are not commensurate with the hierarchy of sources prescribed by USEPA. Consequently, the CSF and UR values for TCE are the values derived by CALEPA. A chronic oral RfD for TCE has not been published by any of the sources listed in the hierarchy of sources. Therefore, the chronic oral RfD for TCE is the value that was published in IRIS, but is now withdrawn.

4.1.4 Risk Characterization

The risk characterization integrates the exposure and toxicity information generated in previous sections to qualitatively or quantitatively evaluate the potential health risks associated with exposure to COPCs at the Site. Risk estimates are then evaluated through a comparison to risk management criteria.

Risk Characterization Methods

Quantitative estimates of both carcinogenic and non-carcinogenic risks are calculated for each complete exposure scenario selected for evaluation in the exposure assessment, in accordance with USEPA (1989) guidance. Methods of quantifying cancer and non-cancer risks, and summing total pathway risks, are discussed below.

Carcinogenic Risks. Cancer risks associated with exposure to each COPC are estimated by multiplying the exposure route-pathway specific intake (e.g., oral exposure to groundwater) by its exposure route-specific CSF (e.g., oral CSF). The calculated value is an excess lifetime cancer risk (ELCR) and represents an upper bound of the probability of an individual developing cancer over a lifetime as the result of exposure to a COPC.

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Non-carcinogenic Risks. Non-cancer risk estimates are calculated by dividing the COPC intake for each exposure pathway by the appropriate RfD. The result is called the HQ. The HI is the sum of the chemical-specific HQs for each exposure pathway.

A HI less than 1 indicates that non-carcinogenic toxic effects are unlikely to occur as a result of COPC exposure. HIs greater than 1 may be indicative of a possible non-carcinogenic toxic effect. As the HI increases, so does the likelihood that adverse effects might be associated with exposure. This determination is necessarily imprecise because the RfD is developed using uncertainty factors (uncertainty factors of 10 or greater are not uncommon) to be protective of human health. It is not at all certain, therefore, that an intake that exceeds the RfD would mean that adverse effects would be experienced.

Summary. Risks are summed across all COPCs for each exposure route and each exposure point. Risks across multiple exposure points and multiple exposure media are then summed to yield cumulative cancer and non-cancer risk estimates for the receptor.

Within the risk characterization for each receptor scenario, the relative significance of the risk for each pathway, exposure point, and receptor scenario is evaluated in terms of a comparison with acceptable risk levels established by USEPA. The USEPA guidelines, established in the NCP, indicate that the total excess lifetime cancer risk due to exposure to the chemicals at a site, by each complete exposure pathway, should not exceed a range of 1 in 1,000,000 ($1x10^{-6}$) to 1 in 10,000 ($1x10^{-4}$) (USEPA, 1990). Risks between $1x10^{-6}$ and $1x10^{-4}$ should be considered on a case-by-case basis during the risk management process. According to the NCP, for non-cancer effects, the acceptable risk is associated with chemical concentrations that people (including sensitive individuals such as children) can be exposed to with an adequate margin of safety without adverse effects occurring. This level is generally interpreted by USEPA to be a HI of 1 or less.

Risk Characterization Results

Risk calculations are presented in Tables 4-12 and 4-13 and a risk summary is provided in Table 4-14.

As indicated in Table 4-14, the cancer risks for exposure to soil ($2x10^{-6}$), vapor that may migrate from groundwater to indoor air ($1x10^{-7}$), and potable use of groundwater as tap water by commercial/industrial workers ($1x10^{-5}$) are each below or within the USEPA cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ and the cumulative risk among all exposure media ($1x10^{-5}$) is also within the USEPA cancer risk range. Non-cancer hazard index values for soil (0.01), indoor air (0.0002), and groundwater used as tap water (0.2) are each below the threshold value of a HI of 1, and the cumulative HI among all exposure media (0.2) is below a HI of 1.

Under current land use conditions, the only potentially complete exposure pathway would be to soil; however, potential exposures to soil would be negligible. The cancer and non-cancer risks calculated in this HHRA for full-time worker contact with soil provide a very conservative assessment of potential risks associated with potential exposures to soil under current land use conditions. The risk assessment results indicate that use of the facility for military or commercial/industrial activities that involve full-time worker exposure to soil, full-time worker exposure to vapors that may migrate from groundwater to indoor air, and full-time worker consumption of groundwater used as tap water would be associated with cancer risks within the USEPA cancer risk range and non-cancer HI values below a HI of 1. Therefore, the HHRA demonstrates that the cumulative cancer and non-cancer risks meet the USEPA risk management criteria.

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Uncertainty Analysis

This section identifies and discusses uncertainties in the risk assessment. These uncertainties are identified in order to place the results in a context or perspective. Unlike some other assessments, risk assessments rely not just on measured or certain facts, but also on assumptions and estimates, and also policy decisions, in the face of limited or non-existent data. Several types of uncertainties should be considered in any human health risk evaluation:

- uncertainties in the nature and extent of release of constituents;
- uncertainties associated with estimating the frequency, duration, and magnitude of possible exposure;
- uncertainties associated with assigning exposure parameters to a heterogeneous population that includes both men and women and young and old (e.g., body weight and ventilation rates);
- uncertainties in estimating carcinogenic slope factors and/or noncarcinogenic measures of toxicity (e.g., RfDs or RfCs); and
- uncertainties about possible synergistic or antagonistic chemical interactions of a chemical mixture.

Because some of these parameters are functions of the behavior patterns and personal habits of the exposed populations, no single value can be assumed to be representative of all possible exposure conditions. The standard of care for environmental risk assessments for addressing many of these uncertainties is to use upper-bound (90th or 95th percentile) estimates of input values, such as exposure parameters and toxicity values. Uncertainties that are specific to this risk assessment and that may affect the interpretation of the results or conclusions are discussed below.

- The existing and foreseeable use of the facility is as a military or commercial/industrial property. There are no complete exposure pathways to groundwater, and only negligible potential for exposure to soil under the existing land use conditions. It is unlikely that any increases in exposure to soil, or that any complete pathways to groundwater, will exist in the future. Consequently, the health risks calculated in this HHRA represent risks for exposures that are unlikely to occur at the facility. In addition, it should be recognized that even under hypothetical unrestricted (i.e., residential) land use conditions, the cancer and non-cancer risks associated with exposure to soil would not exceed USEPA risk management criteria, with a residential land use cancer risk of approximately $1x10^{-5}$ and a non-cancer HI of approximately 0.2.
- Groundwater beneath the facility is classified as GA by the State of Connecticut, indicating that it must be protected as a potable water aquifer. However, there are no uses of the groundwater at the facility or within one-half mile downgradient of the facility. The groundwater contamination on the facility property is localized, and there are no indications that it will migrate off the facility property. However, risks to a commercial/industrial worker who is assumed to ingest the contaminated groundwater beneath the property were evaluated in the HHRA to provide perspective on what the baseline risks would be for consumption of the groundwater on the facility property. As demonstrated, the cancer risk of $1x10^{-5}$ and non-cancer HI of 0.2 do not exceed USEPA risk management criteria. It should be recognized that the exposure assumptions used to evaluate drinking water use of groundwater by a commercial/industrial worker differ somewhat from the general exposure assumptions used to evaluate potable use of groundwater. Specifically, the commercial/industrial tap water use scenario considers consumption of 1 liter of water per day 250 days per for 25 years, whereas general exposure assumptions used to evaluate potable use of groundwater consider consumption of 2 liters of water per day, 350 days per year, for 30 years (USEPA, 1991). Nonetheless, even if the groundwater beneath the facility was

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evaluated using the general potable use exposure assumptions, the cancer risk would be only $3x10^{-5}$ and the HI only 0.6. These risks do not exceed USEPA risk management criteria.

Overall, given the application of conservative risk assessment methods and assumptions, the results and conclusions of the risk assessment represent a sound, defensible characterization of potential current and future risks to human health and public welfare.

4.2 Ecological Risk Evaluation

Ecological risks associated with Site 08 are negligible due to the limited habitat at the USARC and absence of exposure pathways to affected media. Specifically, the contaminants detected at Site 08 are primarily associated with subsurface soils and groundwater. Exposures of ecological receptors to subsurface soils are presumed to be negligible. Likewise, contaminated groundwater beneath the facility is not discharging to any surface water bodies, as discussed in Section 2.0. Therefore, there are no mechanisms by which ecological receptors could be exposed to groundwater. Therefore, it is unlikely that Site 08 would pose any significant risk to resident or migratory species.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

Table 4-1
Selection of Chemicals of Potential Concern - Soil
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

CAS Number	Chemical	Minimum (1) Concentration (Qualifier)	Maximum (1) Concentration (Qualifier)	Units	Sample ID of Maximum Concentration	Frequency of Detection	Range of Non Detects	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Potential ARAR/TBC Value (4)	Potential ARAR/TBC Source	Retain as COPC?	Rationale for Contaminant Deletion or Selection
	Volatile Organics													
67-64-1	Acetone	0.00841 J	0.0389	MG/KG	CT08-MWS1706	5 / 11	0.0107 - 0.0132	0.0389		1400 nc	500	RESDEC	No	BSL
75-09-2	Methylene chloride	0.00145 J	0.00254 J	MG/KG	CT08-SBS0308	3 / 11	0.0049 - 0.0066	0.00254		9.1 ca	82	RESDEC	No	BSL
79-01-6	Trichloroethene	0.00332 J	0.0125	MG/KG	CT08-SBS0308	5 / 11	0.0049 - 0.0066	0.0125		0.053 ca	56	RESDEC	No	BSL
	Semivolatile Organics													
91-20-3	Naphthalene	1.78	1.78	MG/KG	LRS-1	1 / 2	0.33 - 0.33	1.78		5.6 nc	1000	RESDEC	No	BSL
85-01-8	Phenanthrene	0.74	0.74	MG/KG	LRS-1	1 / 2	0.33 - 0.33	0.74		230 nc	1000	RESDEC	No	BSL
91-57-6	2-Methylnaphthalene	1.9	1.9	MG/KG	LRS-1	1 / 2	0.33 - 0.33	1.9		5.6 nc	474	RESDEC	No	BSL
	Metals													
7440-38-2	Arsenic	0.65	7.7	MG/KG	M7 60"-78"	10 / 10		7.7		0.39 ca	10	RESDEC	Yes	ASL
7440-39-3	Barium	26	180	MG/KG	M7 60"-78"	9 / 9		180		540 nc	4700	RESDEC	No	BSL
7440-43-9	Cadmium	0.26	0.28	MG/KG	M7 114"-126"	3 / 10	0.25 - 0.25	0.28		3.7 nc	34	RESDEC	No	BSL
7440-47-3	Chromium	6.5	24	MG/KG	M7 60"-78"	10 / 10		24		210 ca	100	RESDEC	No	BSL
7439-92-1	Lead	4.2	73.9	MG/KG	M1 4"-20"	10 / 10		73.9		400 nc	500	RESDEC	No	BSL
	Total Petroleum Hydrocarbons													
	Extractable Total Petroleum Hydrocarbo	22	103	MG/KG	M2 2"-8"	16 / 37	10 - 50	103			500	RESDEC	No	BSL

Notes:
(1) Minimum or maximum concentration detected in data set. Samples included in data set are identified in Appendix D.
(2) The concentration used for screening is the maximum detected concentration.
(3) Values are the Preliminary Remediation Goals (PRGs) obtained from USEPA Region IX dated October 2004.
Values used for screening are the residential soil PRGs for the lesser of cancer risks equal to 1E-06 or non-cancer risks equal to a hazard index of 0.1.
PRG for pyrene used for phenanthrene.
PRG for 2-methylnaphthalene based on value for naphthalene.
nc - PRG is based on a non-cancer hazard quotient of 0.1.
ca - PRG is based on an excess lifetime cancer risk of 1 in 1 million.
(4) The ARAR/TBC for soil are the Connecticut CTDEP RSR Direct Exposure Criteira for Residenital Soil (RES DEC).
(5) Analyte is selected as a COPC if the concentration used for screening exceeds the PRG or if no screening value is available.
BSL = Concentration used for screening is less than the screening toxicity value; the analyte was not selected as a COPC.
ASL = Concentration used for screening is greater than the screening toxicity value; the analyte was selected as a COPC.
NSL = No screening level available; the anlayte was selected as a COPC.

mg/Kg = milligrams per kilogram
COPC = chemical of potential concern
J - Value is estimated.

Table 4-2
Selection of Chemicals of Potential Concern - Groundwater
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

CAS Number	Chemical	Minimum (1) Concentration (Qualifier)	Maximum (1) Concentration (Qualifier)	Units	Sample ID of Maximum Concentration	Frequency of Detection	Range of Non Detects	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Potential ARAR/TBC Value (4)	Potential ARAR/TBC Source	Potential ARAR/TBC Value (4)	Potential ARAR/TBC Source	Retain as COPC?	Rationale for Contaminant Deletion or Selection
	Volatile Organics (mg/L)															
71-55-6	1,1,1-Trichloroethane	0.00029 J	0.00162	MG/L	BRS0403	2 / 32	0.001 - 0.001	0.00162		0.32 nc	0.2	MCL	0.2	GA GWPC	No	BSL
108-67-8	1,3,5-Trimethylbenzene	0.000268 J	0.000268 J	MG/L	CT08-MWS1804	1 / 32	0.001 - 0.001	0.000268		0.0012 nc			0.35	GA GWPC	No	BSL
78-93-3	2-Butanone	0.0123 J	0.0123 J	MG/L	BRS0303	1 / 7	0.01 - 0.01	0.0123		0.7 nc			0.4	GA GWPC	No	BSL
67-64-1	Acetone	0.00404 J	0.0883 J	MG/L	BRS0303	4 / 4	-	0.0883		0.55 nc			0.7	GA GWPC	No	BSL
75-15-0	Carbon disulfide	0.000695 J	0.0012	MG/L	BRS0303	3 / 32	0.001 - 0.0012	0.0012		0.1 nc			0.7	GA GWPC	No	BSL
56-23-5	Carbon tetrachloride	0.000673 J	0.00636	MG/L	MWS0103	9 / 32	0.001 - 0.001	0.00636		0.00017 ca*	0.005	MCL	0.005	GA GWPC	Yes	ASL
67-66-3	Chloroform	0.000251 J	0.00458	MG/L	BRS0303	13 / 32	0.001 - 0.001	0.00458		0.00017 ca			0.006	GA GWPC	Yes	ASL
74-87-3	Chloromethane	0.000604 J	0.000604 J	MG/L	BRS0403	1 / 32	0.001 - 0.001	0.000604		0.016 nc			0.0027	GA GWPC	No	BSL
156-59-2	Cis-1,2-Dichloroethene	0.000578 J	0.00167	MG/L	BRS0403	4 / 32	0.001 - 0.001	0.00167		0.0061 nc	0.07	MCL	0.07	GA GWPC	No	BSL
100-41-4	Ethyl benzene	0.000456 J	0.000532 J	MG/L	CT08-MWS1804	2 / 32	0.001 - 0.001	0.000532		0.13 nc	0.7	MCL	0.7	GA GWPC	No	BSL
1634-04-4	Methyl Tertbutyl Ether	0.000578 J	0.000656 J	MG/L	MWS1603	3 / 32	0.005 - 0.005	0.000656		0.011 ca			0.1	GA GWPC	No	BSL
108-88-3	Toluene	0.000261 J	0.000693 J	MG/L	CT08-GWS0715	5 / 32	0.001 - 0.001	0.000693		0.072 nc	1	MCL	1	GA GWPC	No	BSL
156-60-5	trans-1,2-Dichloroethene	0.0106	0.0106	MG/L	BRS0103	1 / 32	0.001 - 0.001	0.0106		0.012 nc	0.1	MCL	0.1	GA GWPC	No	BSL
79-01-6	Trichloroethene	0.000255 J	0.0385	MG/L	BRS0403	12 / 32	0.001 - 0.001	0.0385		0.000028 ca	0.005	MCL	0.005	GA GWPC	Yes	ASL
	Metals, Total (mg/L)															
7440-38-2	Arsenic	0.000316 J	0.00523 J	MG/L	CT08-GWS0819	6 / 8	0.001 - 0.001	0.00523		0.000045 ca	0.01	MCL	0.05	GA GWPC	Yes	ASL
7440-39-3	Barium	0.0278	0.35	MG/L	CT08-GWS0819	8 / 8	-	0.35		0.26 nc	2	MCL	1	GA GWPC	Yes	ASL
7782-49-2	Selenium	0.000648 J	0.00457	MG/L	CT08-GWS0325	6 / 8	0.001 - 0.001	0.00457		0.018 nc	0.05	MCL	0.05	GA GWPC	No	BSL
	Metals, Dissolved (mg/L)															
7440-38-2	Arsenic	0.000299 J	0.0011	MG/L	CT08-GWS0715	5 / 9	0.001 - 0.001	0.0011		0.000045 ca	0.01	MCL	0.05	GA GWPC	Yes	ASL
7440-39-3	Barium	0.0214	0.31	MG/L	CT08-GWS0819	9 / 9	-	0.31		0.26 nc	2	MCL	1	GA GWPC	Yes	ASL
7439-92-1	Lead	0.00304 J	0.00515	MG/L	CT08-GWS0819	2 / 9	0.005 - 0.005	0.00515			0.015	MCL	0.015	GA GWPC	No	BSL
7782-49-2	Selenium	0.000506 J	0.000949 J	MG/L	CT08-GWS0325	4 / 9	0.001 - 0.001	0.000949		0.018 nc	0.05	MCL	0.05	GA GWPC	No	BSL
	Petroleum Hydrocarbons (mg/L)															
HLA0101	Extractable Total Petroleum Hydrocarbons	0.0546 J	0.178 NJ	MG/L	MWS1603	4 / 18	0.1 - 0.118	0.178					0.5	GA GWPC	No	BSL

Notes:

(1) Minimum or maximum concentration detected in data set. Samples included in data set are identified in Appendix D.

(2) The concentration used for screening is the maximum detected concentration.

(3) Values are the Preliminary Remediation Goals (PRGs) obtained from USEPA Region 1X dated October 2004.

Values used for screening are the tap water PRGs for the lesser of cancer risks equal to 1E-06 or non-cancer risks equal to a hazard index of 0.1.

nc - PRG is based on a non-cancer hazard quotient of 0.1.

ca - PRG is based on an excess lifetime cancer risk of 1 in 1 million.

ca* - where nc PRG < 100X ca PRG.

(4) The ARAR/TBC for groundwater are the Federal MCLs and the Connecticut CTDEP RSR Groundwater Protection Criteria for Class GA Groundwater.

(5) Analyte is selected as a COPC if the concentration used for screening exceeds the PRG or if no screening value is available.

BSL = Concentration used for screening is less than the screening toxicity value; the analyte was not selected as a COPC.

ASL = Concentration used for screening is greater than the screening toxicity value; the analyte was selected as a COPC.

NSL = No screening level available; the anlayte was selected as a COPC.

mg/L = milligrams per liter

COPC = chemical of potential concern

J - Value is estimated.

Table 4-3
Selection of Exposure Pathways
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Scenario Timeframe	Medium	Exposure Medium	Exposure Points	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
CURRENT	Soil	Soil	Site 08	Area Resident / Trespasser	Adult	Dermal	None	Area residents and others do not have access to this area due to the secure nature of the military installation.
						Ingestion	None	
					Child	Dermal	None	
						Ingestion	None	
				Military Personnel	Adult	Dermal	Qualitative	Military personnel access the facility, but have limited contact with soil; evaluation of future exposures to soil is
						Ingestion	Qualitative	conservative for the current land use conditions.
		Air - Dust	Site 08	Area Resident / Trespasser	Adult	Inhalation	None	Area residents and others do not have access to this area due to the secure nature of the military installation.
					Child	Inhalation	None	
				Military Personnel	Adult	Inhalation	Qualitative	Military personnel access the facility, but have limited contact with soil; evaluation of future exposures to soil i
								conservative for the current land use conditions.
		Air - Vapors	Site 08	Area Resident / Trespasser	Adult	Inhalation	None	VOCs were not retained as COPCs in soil.
					Child	Inhalation	None	
				Military Personnel	Adult	Inhalation	None	
	Groundwater	Groundwater	Site 08	Area Resident	Adult	Dermal	None	Groundwater is not presently used for water supply. Water to facility and downgradient area is municipally-supplied.
						Ingestion	None	
				Military Personnel	Adult	Dermal	None	Groundwater is not presently used for water supply. Water to facility and downgradient area is municipally-supplied.
						Ingestion	None	
		Air - Vapors	Site 08	Area Resident / Trespasser	Adult	Inhalation	None	No occupied buildings within 100 feet of groundwater VOC contamination.
					Child	Inhalation	None	
				Military Personnel	Adult	Inhalation	None	
FUTURE	Soil	Soil	Site 08	Resident	Adult	Dermal	None	Future use is military/commercial-industrial; residential use will not occur.
						Ingestion	None	
					Child	Dermal	None	
						Ingestion	None	
				Recreational Visitor	Adult	Dermal	None	Future use is military/commercial-industrial; recreational use will not occur.
						Ingestion	None	
					Child	Dermal	None	
						Ingestion	None	
				Commercial/Industrial Worker	Adult	Dermal	Quantitative	Future use is military/commercial-industrial; contact with soil is assumed to occur.
						Ingestion	Quantitative	
				Construction worker	Adult	Dermal	Qualitative	Commercial/industrial worker scenario is protective for construction worker scenario.
						Ingestion	Qualitative	
		Air - Dust	Site 08	Resident	Adult	Inhalation	None	Future use is military/commercial-industrial; residential use will not occur.
					Child	Inhalation	None	
				Recreational Visitor	Adult	Inhalation	None	Future use is military/commercial-industrial; recreational use will not occu
					Child	Inhalation	None	
				Commercial/Industrial Worker	Adult	Inhalation	Quantitative	Future use is military/commercial-industrial; liberation of dust could occu
				Construction worker	Adult	Inhalation	Qualitative	Commercial/industrial worker scenario is protective for construction worker scenari
		Air - Vapors	Site 08	Resident	Adult	Inhalation	None	VOCs were not retained as COPCs.
					Child	Inhalation	None	
				Recreational Visitor	Adult	Inhalation	None	
					Child	Inhalation	None	
				Commercial/Industrial Worker	Adult	Inhalation	None	
				Construction worker	Adult	Inhalation	None	
	Groundwater	Groundwater	Site 08	Resident	Adult	Dermal	None	No migration of contaminated groundwater off the facility property is occurring or is expected to occur, and down-gradient areas are
						Ingestion	None	supplied with municipal water. Future use of property is military/commercial-industrial.
				Recreational Visitor	Adult	Dermal	None	Future use is military/commercial-industrial; recreational use will not occur.
						Ingestion	None	
					Child	Dermal	None	
						Ingestion	None	
				Commercial/Industrial Worker	Adult	Dermal	None	Future use is military/commercial-industrial and groundwater use is highly unlikely. Ingestion of groundwater as tap water at a commercia
						Ingestion	Quantitative	facility is evaluated to provide perspective on baseline risks associated with potable use of groundwater beneath property.
				Construction worker	Adult	Dermal	None	Commercial-industrial worker scenario is protective for construction worker scenario.
						Ingestion	Qualitative	
		Air - Vapors	Site 08	Resident	Adult	Inhalation	None	No migration of contaminated groundwater off the facility property is occurring or is expected to occu
					Child	Inhalation	None	Future use of property is military/commercial-industrial.
				Recreational Visitor	Adult	Inhalation	None	Future use is military/commercial-industrial; recreational use will not occu
					Child	Inhalation	None	
				Commercial/Industrial Worker	Adult	Inhalation	Quantitative	Vapor intrusion pathway could potentially be complete if occupied buildings were constructed over VOC-contaminated groundwat
				Construction worker	Adult	Inhalation	Qualitative	Commercial-industrial worker scenario is protective for construction worker scenari

Table 4-4
Values Used for Daily Intake Calculations Reasonable Maximum Exposure - Future Land Use Groundwater
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Scenario Timeframe: Future Land Use
Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Points	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation / Model Name
Ingestion	Commercial / Industrial Worker (Indoor or Outdoor)	Adult	Overburden and bedrock wells	CW-c	Chemical Concentration in Water	Maximum	mg/l	USEPA, 1989	CHEMICAL INTAKE-INGESTION (mg/kg-day)= CW-c x IR-W x FI x EF x ED x 1/BW x 1/AT
				IR-W	Ingestion Rate of Water	1	l/day	USEPA, 1991	
				FI	Fraction Ingested	1	unitless	Assumption	
				EF	Exposure Frequency	250	day/yr	USEPA, 1991	
				ED	Exposure Duration	25	yr	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	day	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	day	USEPA, 1989 / equal to ED	
Inhalation	Commercial / Industrial Worker (Indoor)	Adult	Indoor Air	CW-c	Chemical Concentration in Water	Maximum	mg/l	USEPA, 1989	CHEMICAL INTAKE-INGESTION (mg/kg-day)= CW-c x IR-W x FI x EF x ED x 1/BW x 1/AT
				CW-air	Chemical Concentration in Indoor Air	Modeled	ug/m^3	[a]	
				ET	Exposure Time	8	hour/day	USEPA, 2002	CHEMICAL EXPOSURE-INHALATION (ug/m^3)= CW-air x ET x EF x ED x 1/24 hr x 1/AT
				EF	Exposure Frequency	250	day/yr	USEPA, 2002	
				ED	Exposure Duration	25	yr	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25550	day	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	day	USEPA, 1989 / equal to ED	

Notes:
USEPA, 1989. "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A)"; Office of Emergency and Remedial Response; EPA-540/1-89/002 (interim final); Washington, D.C., December.
USEPA, 1991. Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual Supplemental Guidance "Standard Default Exposure Factors". OSWER 9285.6-03. March.
USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December.
[a] - Indoor air concentrations are modeled using the Johnson-Ettinger vapor intrusion model and the maximum groundwater concentration as the groundwater vapor source EPC. See D Appendix for modeling.
mg - milligrams
l - liter
yr - year
kg - kilograms
ug - micrograms
hr - hours

Table 4-5
Values Used for Daily Intake Calculations Reasonable Maximum Exposure - Future Land Use Soil
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Scenario Timeframe: Future Land Use
Medium: Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Points	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation / Model Name
Ingestion	Commercial / Industrial Worker Outdoor	Adult	Site 08	CS-c	Chemical Concentration in Soil	95% UCL	mg/kg	USEPA, 2002a	CHEMICAL INTAKE-INGESTION (mg/kg-day) = CS-c x IR-S x FI x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002b	
				FI	Fraction Ingested	1	unitless	Assumption	
				EF	Exposure Frequency	225	day/yr	USEPA, 2002b	
				ED	Exposure Duration	25	yr	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	day	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	day	USEPA, 1989 / equal to ED	
				CF1	Conversion Factor	1.E-06	kg/mg		
Dermal	Commercial / Industrial Worker Outdoor	Adult	Site 08	CS	Chemical Concentration in Soil	95% UCL	mg/kg	USEPA, 2002a	INTAKE-DERMAL (mg/kg-day) = DAevent x SA x EF x ED x EV x 1/BW x 1/AT
				DAevent	Dose Absorbed Per Event	chemical-specific	mg/cm^2-event	USEPA, 2004	
				SA	Skin Surface Area Available for Contact	3300	cm^2	USEPA, 2002b	
				EF	Exposure Frequency	225	day/yr	USEPA, 2002b	Where DAevent = CS x AF x ABSd x CF
				ED	Exposure Duration	25	yr	USEPA, 2002b	
				EV	Events per Day	1	event/day	USEPA, 2002b	
				AF	Adherence Factor	0.2	mg/cm^2-event	USEPA, 2002b	
				ABSd	Dermal Absorption Factor	0.03	unitless	USEPA, 2004	
				BW	Body Weight	70	kg	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	day	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	day	USEPA, 1989 / equal to ED	
				CF	Conversion Factor	1E-06	kg/mg		
Dust Inhalation	Commercial / Industrial Worker Outdoor	Adult	Site 08	CS-c	Chemical Concentration in Soil	95% UCL	mg/kg	USEPA, 2002a	CHEMICAL INTAKE-INHALATION (ug/m^3) = CAair x ED x EFx ET x 1/AT
				CAair-dust	Concentration in Air - Dust	95% UCL	ug/m^3	Modeled from soil	CAair-dust = CS-c x 1/PEF x 1000 ug/mg
				EF	Exposure Frequency - outdoor	225	day/yr	USEPA, 2002b	
				ED	Exposure Duration	25	yr	USEPA, 2002b	
				ET	Exposure Time	8	hr/day	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	day	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	day	USEPA, 1989 / equal to ED	
				PEF	Particulate Emission Factor	1.16E+09	m^3/kg	USEPA, 2002b [a]	

USEPA, 1989. "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A)"; Office of Emergency and Remedial Response; EPA-540/1-89/002 (interim final); Washington, D.C., December.
USEPA, 2002a. "Calculating UpperConfidence Limits for Exposure Point Concentrations at Hazardous Waste Sites". OSWER 9285.6-10. December.
USEPA, 2002b. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December.
USEPA, 2004. "Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.
[a] - Based on 1/2 acre source area with parameters for Hartford, CT
NA - Not Applicable

kg - kilograms; mg - milligrams; ug - micrograms; hr - hour
cm^2 - square centimeters; m^3 - cubic meters; yr - year; UCL - upper confidence limit

Table 4-6
Exposure Point Concentrations - Soil
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

					Exposure Point Concentration			
Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL (distribution)	Maximum Concentration (Qualifier)	EPC	Units	Statistic	Rationale
Metals								
Arsenic	mg/Kg	3.2	4.4 N [a]	7.7	4.4	mg/kg	95% UCL - N [a]	(2)

(1) Arithmetic mean is calculated using one half the detection limit for nondetects.
(2) UCL - The 95% UCL is used as the EPC because the calculated 95% UCL is less than the maximum detected concentration.
UCLs are calculated using ProUCL (V. 3.02); documentation of calculations is provided in Appendix D.

N - Normal Distribution
[a] Student's-t UCL

mg/Kg = milligrams per kilogram
EPC = Exposure Point Concentration
UCL = Upper Confidence Limit on the mean

Table 4-7
Exposure Point Concentrations - Groundwater
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

					Exposure Point Concentration			
Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL (distribution)	Maximum Concentration (Qualifier)	EPC	Units	Statistic	Rationale
Volatile Organics								
Carbon tetrachloride	mg/L	0.0012	NC	0.00636	0.00636	mg/L	Maximum	(2)
Chloroform	mg/L	0.00082	NC	0.00458	0.00458	mg/L	Maximum	(2)
Trichloroethene	mg/L	0.0064	NC	0.0385	0.0385	mg/L	Maximum	(2)
Metals, Dissolved								
Arsenic	mg/L	0.00060	NC	0.0011	0.0011	mg/L	Maximum	(2)
Barium	mg/L	0.15	NC	0.31	0.31	mg/L	Maximum	(2)

(1) Arithmetic mean is calculated using one half the detection limit for nondetects.
(2) The maximum detected concentration is used as the EPC.
mg/L = milligrams per liter
EPC = Exposure Point Concentration
UCL = Upper Confidence Limit on the mean
NC = Not Calculated

Table 4-8
Cancer Toxicity Data - Oral/Dermal
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral Cancer Slope Factor	
	Value	Units		Value	Units		Source(s)	Date(s)
VOLATILES								
Carbon Tetrachloride	1.3E-01	$(mg/kg/day)^{-1}$	100%	1.3E-01	$(mg/kg/day)^{-1}$	B2	IRIS	April, 2007
Chloroform	NA		100%	NA		Likely carcinogenic in humans	IRIS	April, 2007
Trichloroethene	1.3E-02	$(mg/kg/day)^{-1}$	100%	1.3E-02	$(mg/kg/day)^{-1}$	NA	CALEPA	August, 2005
INORGANICS/METALS								
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	95%	1.5E+00	$(mg/kg/day)^{-1}$	A	IRIS	April, 2007
Barium	NA			NA		D	IRIS	April, 2007

Notes:

In accordance with OSWER 9285.7-53, chronic RfDs are identified from the following heirarchy of sources:

Tier 1:
IRIS = Integrated Risk Information System: April, 2007

Tier 2:
PPRTV = Preliminary Peer-Reviewed Refe October, 2006 Obtained from Region III RBC Table

Tier 3:
HEAST= Health Effects Assessment Summ FY 1997 Verified using Region IX PRG and/or Region III RBC Table
CALEPA - California Environmental Prote August, 2005

In addition, provisional RfDs developed by NCEA are presented for informational purposes and to be used on a case-by-case basis:
NCEA = National Center for Environmenta October, 2006 Obtained from Region III RBC Table

Weight of Evidence:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen

mg = milligram
kg = kilogram
BW = body weight
ND = no data available

(1) Values obtained from RAGS Volume 1 (Part E, Supplemental Guidance for Dermal Risk Assessment, Interim Guidance) (EPA, 2004) Per this guidance, a value of 100% is used for analytes without published values.

(2) Adjusted Dermal SF = Oral SF / Oral to Dermal Adjustment Factor. Per RAGS Part E (USEPA, 2004), adjustments are only performed for chemicals that have an oral absorption efficiency of less than 50%.

Table 4-9
Cancer Toxicity Data - Inhalation
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation Cancer Slope Factor	
	Value	Units	Value	Units		Source(s)	Date(s)
VOLATILES							
Carbon Tetrachloride	1.50E-05	$(ug/m^3)^{-1}$	5.30E-02	$(mg/kg/day)^{-1}$	B2	IRIS	April, 2007
Chloroform	2.30E-05	$(ug/m^3)^{-1}$	8.10E-02	$(mg/kg/day)^{-1}$	Likely carcinogenic in humans	IRIS	April, 2007
Trichloroethene	2.00E-06	$(ug/m^3)^{-1}$	7.00E-03	$(mg/kg/day)^{-1}$	NA	CALEPA	August, 2005
INORGANICS/METALS							
Arsenic	4.30E-03	$(ug/m^3)^{-1}$	1.50E+01	$(mg/kg/day)^{-1}$	A	IRIS	April, 2007
Barium	NA		NA		D	IRIS	April, 2007

Notes:
In accordance with OSWER 9285.7-53, chronic RfDs are identified from the following heirarchy of sources:
Tier 1:
IRIS = Integrated Risk Information System: April, 2007
Tier 2:
PPRTV = Preliminary Peer-Reviewed Refe October, 2006 Obtained from Region III RBC Table
Tier 3:
HEAST= Health Effects Assessment Summ FY 1997 Verified using Region IX PRG and/or Region III RBC Table
CALEPA - California Environmental Prote August, 2005
In addition, provisional RfDs developed by NCEA are presented for informational purposes and to be used on a case-by-case basis:
NCEA = National Center for Environmenta October, 2006 Obtained from Region III RBC Table

(1) - Inhalation cancer dose-response values are typically published as unit risk values. Uni Weight of Evidence:
may be converted to slope factors using the following equation (HEAST, 1997):
Adjustment = 70 kg [adult body weight] * 1000 ug/mg [conversion factor] / 20 m3/day
and: Inhalation Slope Factor = Unit Risk * Adjustment

A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen

mg = milligram
ug = microgram
kg = kilogram
m^3 = cubic meter
BW = body weight
ND = no data available

Table 4-10
Non-Cancer Toxicity Data - Oral/Dermal
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Adjusted Dermal RfD (2)		Primary Target Organ or System / Critical Effect	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
VOLATILES										
Carbon Tetrachloride	chronic	7.0E-04	mg/kg/day	100%	7.0E-04	mg/kg/day	Liver; liver lesions	1,000/1	IRIS	April, 2007
	subchronic	7.0E-04	mg/kg/day	100%	7.0E-04	mg/kg/day	Liver; liver lesions	1,000/1	Chronic	
Chloroform	chronic	1.0E-02	mg/kg/day	100%	1.0E-02	mg/kg/day	Liver; fatty cyst formation in liver	100/1	IRIS	April, 2007
	subchronic	1.0E-01	mg/kg/day	100%	1.0E-01	mg/kg/day	Liver	100	MRL	December, 2006
Trichloroethene	chronic	6.0E-03	mg/kg/day	100%	6.0E-03	mg/kg/day	Liver and kidney		IRIS	Withdrawn
	subchronic	6.0E-03	mg/kg/day	100%	6.0E-03	mg/kg/day	Liver and kidney		Chronic	
INORGANICS/METALS										
Arsenic	chronic	3.0E-04	mg/kg/day	95%	3.0E-04	mg/kg/day	Skin; keratosis and hyperpigmentation	3/1	IRIS	April, 2007
	subchronic	3.0E-04	mg/kg/day	95%	3.0E-04	mg/kg/day	Skin; keratosis and hyperpigmentation	3/1	HEAST	FY 1997
Barium	chronic	2.0E-01	mg/kg/day	7%	1.4E-02	mg/kg/day	Kidney; nephropathy	300/1	IRIS	April, 2007
	subchronic	7.0E-01	mg/kg/day	7%	4.9E-02	mg/kg/day	Kidney	100	MRL	December, 2006

Notes:
In accordance with OSWER 9285.7-53, chronic RfDs are identified from the following heirarchy of sources:
Tier 1:
IRIS = Integrated Risk Information System: April, 2007
Tier 2:
PPRTV = Preliminary Peer-Reviewed Toxicity Value: September, 2004 Obtained from Region IX PRG Table
October, 2006 Obtained from Region III RBC Table
Tier 3:
HEAST= Health Effects Assessment Summary Tables: FY 1997 Verified using Region IX PRG and/or Region III RBC Table
MRL = Minimum Risk Level (ATSDR: chronic MRLs) December, 2006
In addition, provisional RfDs developed by NCEA are presented for informational purposes and to be used on a case-by-case basis:
NCEA = National Center for Environmental Assessmen September, 2004 Obtained from Region IX PRG Table
October, 2006 Obtained from Region III RBC Table

mg = milligram
kg = kilogram
surrogate - a value for a closely related chemical is used as the RfD
BW = body weight
chronic - the chronic value is used as the subchronic RfD
ND = no data available

Subchronic RfDs are obtained from:
- ATSDR: Intermitent MRLs
- HEAST: subchronic RfDs (from HEAST FY 1997)
- Equal to chronic RfDs when values are not published in HEAST or by ATSDR

(1) Values obtained from RAGS Volume 1 (Part E, Supplemental Guidance for Dermal Risk Assessment, Interim Guidance) (EPA, 2004)
Per this guidance, a value of 100% is used for analytes without published values.
(2) Adjusted Dermal RfD = Oral RfD x Oral to Dermal Adjustment Factor. Per RAGS Part E (USEPA, 2004), adjustments are only performed for chemicals that have an oral absorption efficiency of less than 50%.

Table 4-11
Non-Cancer Toxicity Data - Inhalation
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC (1)		Extrapolated RfD (1)		Primary Target Organ or System / Critical Effect	Combined Uncertainty/Modifying Factors	RfC: Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s)
VOLATILES									
Carbon Tetrachloride	chronic	1.8E-01	mg/m3	5.0E-02	mg/kg/day	Liver	30	MRL	December, 2006
	subchronic	1.8E-01	mg/m3	5.0E-02	mg/kg/day	Liver	30	MRL	December, 2006
Chloroform	chronic	1.0E-01	mg/m3	2.9E-02	mg/kg/day	Liver	300	MRL	December, 2006
	subchronic	2.5E-01	mg/m3	7.1E-02	mg/kg/day	Liver	100	MRL	December, 2006
Trichloroethene	chronic	6.0E-01	mg/m3	1.7E-01	mg/kg/day	Nervous system		REL	February, 2005
	subchronic	6.0E-01	mg/m3	1.7E-01	mg/kg/day	Nervous system		Chronic	
INORGANICS/METALS									
Arsenic	chronic	3.0E-05	mg/m3	8.6E-06	mg/kg/day	Developmental; cardiovascular; CNS		REL	February, 2005
	subchronic	ND		ND					
Barium	chronic	5.0E-04	mg/m3	1.4E-04	mg/kg/day	Developmental; fetotoxicity	1,000	HEAST	FY 1997
	subchronic	5.0E-03	mg/m3	1.4E-03	mg/kg/day	Developmental; fetotoxicity	100	HEAST	FY 1997

Notes:

In accordance with OSWER 9285.7-53, chronic RfDs are identified from the following heirarchy of sources:

Tier 1:

IRIS = Integrated Risk Information System: April, 2007

Tier 2:

PPRTV = Preliminary Peer-Reviewed Toxicity Value: September, 2004 Obtained from Region IX PRG Table
October, 2006 Obtained from Region III RBC Table

Tier 3:

HEAST= Health Effects Assessment Summary Tables: FY 1997 Verified using Region IX PRG and/or Region III RBC Table
MRL = Minimum Risk Level (ATSDR: chronic MRLs): December, 2006
REL - CALEPA February, 2005

In addition, provisional RfDs developed by NCEA are presented for informational purposes and to be used on a case-by-case basis:

NCEA = National Center for Environmental Assessment: September, 2004 Obtained from Region IX PRG Table
October, 2006 Obtained from Region III RBC Table

Subchronic RfDs are obtained from:
- ATSDR: Intermitent MRLs
- HEAST: subchronic RfDs (from HEAST FY 1997)
- Equal to chronic RfDs when values are not published in HEAST or by ATSDR

chronic - the chronic value is used as the subchronic RfD

mg = milligram
kg = kilogram
ug - microgram
m^3 - cubic meter
BW = body weight

(1) - Inhalation non-cancer dose-response values are typically published as RfC values. RfC values may be converted to RfDs using the following equation (HEAST, 1997):
RfD (mg/kg-d) = RfC (mg/m^3) x 20 m^3/d / 70 kg, unless otherwise indicated

For RfDs obtained from NCEA (published in USEPA Region III RBC Table), it is assumed that the value has been converted from a RfC value. Therefore, the RfD is converted back to a RfC value as follows: RfC (mg/m^3) = RfD (mg/kg/day) x 70 kg / 20 m^3/day

Values for petroleum fractions are provided for informational purposes, and are developed by MADEP.

Table 4-12
Calculation Of Chemical Cancer Risks And Non-Cancer Hazards -- Reasonable Maximum Exposure- Current/Future- Commercial / Industrial Worker- Adult
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

SCENARIO TIMEFRAME: CURRENT/FUTURE
RECEPTOR POPULATION: COMMERCIAL/ INDUSTRIAL WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
GROUNDWATER TOTAL											**0.E+00**					**0.E+00**
SOIL	SOIL	SITE	INGESTION	Arsenic	4.4	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.9E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-06					1.E-02
			DERMAL	Arsenic	4.4	mg/kg	2.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.7E-07 -- --	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								4.E-07					3.E-03
		EXPOSURE POINT TOTAL									2.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-02
	AIR	DUST AT SITE	DUST INHALATION	Arsenic	4.4	mg/kg	2.8E-07	ug/m3	4.3E-03	(ug/m3)-1	1.E-09	7.8E-07	ug/m3	3.0E-02	ug/m3	3.E-05
			EXPOSURE ROUTE TOTAL								1.E-09					3.E-05
		EXPOSURE POINT TOTAL									1.E-09					3.E-05
	EXPOSURE MEDIUM TOTAL										1.E-09					3.E-05
SOIL TOTAL											**2.E-06**					**2.E-02**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**2.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-02**

Notes:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Table 4-13
Calculation Of Chemical Cancer Risks And Non-Cancer Hazards -- Reasonable Maximum Exposure- Current/Future- Commercial/Industrial Worker- Adult
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

SCENARIO TIMEFRAME: CURRENT/FUTURE
RECEPTOR POPULATION: COMMERCIAL/INDUSTRIAL WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
GROUND WATER	GROUND WATER	AQUIFER USED AS TAP WATER	INGESTION	Carbon tetrachloride	0.00636	mg/l	2.2E-05	mg/kg/day	1.3E-01	(mg/kg/day)-1	3.E-06	6.2E-05	mg/kg/day	7.0E-04	mg/kg/day	9.E-02
				Chloroform	0.00458	mg/l	1.6E-05	mg/kg/day	NA			4.5E-05	mg/kg/day	1.0E-02	mg/kg/day	4.E-03
				Trichloroethene	0.0385	mg/l	1.3E-04	mg/kg/day	1.3E-02	(mg/kg/day)-1	2.E-06	3.8E-04	mg/kg/day	6.0E-03	mg/kg/day	6.E-02
				Arsenic	0.0011	mg/l	3.8E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	0.31	mg/l	NC		NC			3.0E-03	mg/kg/day	2.0E-01	mg/kg/day	2.E-02
		EXPOSURE POINT TOTAL									1.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					2.E-01
	AIR	PLUME - INDOOR AIR	INDOOR VAPOR INHALATION	Carbon tetrachloride	0.00636	mg/l	4.4E-03	ug/m3	1.5E-05	(ug/m3)-1	7.E-08	1.2E-02	ug/m3	1.8E+02	ug/m3	7.E-05
				Chloroform	0.00458	mg/l	1.1E-03	ug/m3	2.3E-05	(ug/m3)-1	3.E-08	3.2E-03	ug/m3	1.0E+02	ug/m3	3.E-05
				Trichloroethene	0.0385	mg/l	1.4E-02	ug/m3	2.0E-06	(ug/m3)-1	3.E-08	3.9E-02	ug/m3	6.0E+02	ug/m3	7.E-05
			EXPOSURE ROUTE TOTAL								1.E-07					2.E-04
		EXPOSURE POINT TOTAL									1.E-07					2.E-04
	EXPOSURE MEDIUM TOTAL										1.E-07					2.E-04
GROUNDWATER TOTAL											**1.E-05**					**2.E-01**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-05**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-01**

Notes:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Table 4-14
Risk Summary
Site 08 - Groundwater

U.S. Army Reserve Center, Middletown, Connecticut
MACTEC Engineering and Consulting, Inc.

Exposure Scenario	Exposure Medium and Exposure Point	Receptor	Exposure Route	C/I WORKER HI	C/I WORKER ELCR
Direct Contact with and Dust Inhalation of Soil	All soil	Adult Worker	Ingestion	0.01	2E-06
			Dermal	0.003	4E-07
			Dust inhalation	0.00003	1E-09
			Total Soil	**0.01**	**2E-06**
			Total Receptor Risk - Soil	**0.01**	**2E-06**
Vapor Intrusion from Groundwater	Groundwater Overburden and Bedrock	Adult Worker	Inhalation	0.0002	1E-07
			Total Vapor Inhalation	**0.0002**	**1E-07**
			Total Receptor Risk - Vapor Inhalation	**0.0002**	**1E-07**
Potable Use of Groundwater	Groundwater Overburden and Bedrock	Adult Worker - Potable Use	Ingestion	0.2	1E-05
			Total Groundwater Ingestion	**0.2**	**1E-05**
			Total Receptor Risk - Groundwater Potable Use	**0.2**	**1E-05**
			Total Receptor Risk - Groundwater, Vapor, and Soil	**0.2**	**1E-05**

Section 5.0 Conclusions and Recommendations

This RI Report for Site 08 - Groundwater at the USARC documents the results of investigation activities at the Site, presents the human health risk assessment and ecological risk evaluation, and provides recommendations to achieve site closure under CERCLA for Site 08.

5.1 Conclusions

The facility consists of a 23.7-acre parcel of land which is currently used as a USARC facility. The property currently consists of the USARC building and three former slab on grade foundations located on a multi-tiered hillside. The property was historically used as a NIKE missile launching facility, furnished with three launch silos.

Groundwater contamination, specifically TCE, has historically been noted at well location M8 on the property. This RI was performed to attempt to determine the source of the TCE, its extent, and the potential impacts to human health and the environment.

AOCs which could be potential source areas of the TCE were determined and soil borings were performed adjacent to or downgradient of the AOCs. Soil sampling and analysis were performed adjacent or downgradient of four AOCs and a source area for the TCE was not determined.

Overburden wells and bedrock wells were installed at select locations to determine the extent of the TCE groundwater plume. It was determined that a small plume of TCE impacted groundwater is located within the overburden aquifer and appears to extend from the M8/MW-16 area to the northeast just beyond MW-18 and potentially to BR-4 and just beyond it . Concentrations of TCE in wells M8 and MW-16 exceed the MCL with a similar concentration detected in BR-4. MCLs are used only as screening values for the site data. The horizontal extent of groundwater contamination is limited and the downgradient extent has been bounded. The well locations and screened intervals are appropriately located as downgradient monitoring points based upon interpreted direction of groundwater flow and screen elevations.

The low dissolved concentrations of TCE in the overburden groundwater, and the limited downgradient extent suggest that residual TCE mass in the aquifer would be largely retained as sorbed and diffused TCE within the aquifer matrix. The groundwater plume is expected to remain stable in this configuration with no further downgradient migration. With time, the plume will be expected to shrink as dissolved TCE concentrations are reduced by advective dispersion and chemical diffusion.

Based on data obtained from this RI and the existing distribution and concentrations of dissolved TCE in overburden and bedrock groundwater, the TCE plume has not, and is not, expected to migrate to or beyond the site boundary, and as a result of data interpretation, the nature and extent of groundwater contamination has been appropriately delineated.

A HHRA was performed in accordance with CERCLA, the NCP, and applicable USEPA guidance to evaluate potential risks to receptors. The HHRA was based on current and reasonably foreseeable future land use, which has been identified as non-residential (i.e., military or industrial/commercial). The HHRA evaluated receptor exposure to soil, groundwater, and vapor intrusion from groundwater.

Arsenic was the only COPC for soil that was retained for evaluation in the risk assessment. The COPCs identified for groundwater were carbon tetrachloride, chloroform, TCE, arsenic, and barium. The risk characterization for the commercial/industrial worker resulted in an ELCR of $2x10^{-6}$ for soil, $1x10^{-7}$ for

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vapors that may migrate from groundwater to indoor air, and $1x10^{-5}$ for potable use of groundwater, with a cumulative ELCR among all exposure media of $1x10^{-5}$. All of these values are within the USEPA cancer risk range of $1x10^{-4}$ to $1x10^{-6}$. The non-cancer HI values were 0.01 for soil, 0.0002 for indoor air, and 0.2 for potable use of groundwater, with a cumulative non-cancer HI among all exposure media of 0.2. All of these values are below the USEPA non-cancer threshold value of 1.

Therefore, the HHRA, performed in accordance with CERCLA, the NCP, and applicable USEPA guidance, concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use.

Ecological risks associated with Site 08 are negligible due to the limited habitat at the USARC and absence of exposure pathways to affected media. Specifically, the contaminants detected at Site 08 are primarily associated with subsurface soils and groundwater. Exposures of ecological receptors to subsurface soils are presumed to be negligible. Likewise, contaminated groundwater beneath the facility is not discharging to any surface water bodies. Therefore, there are no mechanisms by which ecological receptors could be exposed to groundwater.

Therefore, it is unlikely that Site 08 would pose any significant risk to resident or migratory species.

5.2 Recommendations

Based on the above conclusions, No Action under CERCLA is recommended for Site 08 - Groundwater at the USARC facility in Middletown, Connecticut.

Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

Section 6.0 References

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Data contained on this sheet shall not be disclosed without prior approval from KEMRON Environmental Services, Inc. (Proprietary)

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END OF REPORT

ARMY STAFFING FORM For use of this form, see DA Memo 25-52; the proponent agency is AASA	1. TRACKING NUMBER	2. TODAY'S DATE 20080728	3. SUSPENSE DATE *(YYYYMMDD)* 20080801
4. OFFICE SYMBOL IMAE-CDW	5. SUBJECT Decision Document (DD) recommending No Action (NA) for Site-08 Groundwater at Middletown, Connecticut, 94th RRC.		

6.	ROUTING: *(ECC USE ONLY)*	Initial	Date
	SA		
	CSA		
	USA		
	VCSA		
	AASA		
	DAS		
	SMA		
	DUSA		
	VDAS		

ECC POC Richard R. Mendoza (309-782-1871) **DIR, ECC**

COMMENTS:

7. EXECUTIVE SUMMARY / ACTION MEMORANDUM

Key Points

- The attached DD documents the determination that NA is necessary in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
- NA is a result of no unacceptable risk to receptors based on current and reasonably anticipated future land use as set forth in CERCLA.
- No additional funding is required to support this effort.

Ref: Origin: ECC: Please email any comments by the suspense date listed above.

Encl: TAB A: Final Decision Document for Site 08, Groundwater at Middletown, CT.

1. Purpose: To obtain the Commander, U. S. Army Environmental Command (USAEC) signature on the Decision Document at TAB A.

2. Discussion:

1. The property was originally developed as a NIKE missile launching facility. The property is currently owned by the USAR 94th Regional Readiness Command (RRC) and is used as a USAR Center. The site was listed during the 2005 BRAC for realignment. The three launch silos were closed by the USACE in 1988 and Site Investigations by USAEHA determined no contamination was found to be originating from the missile silos and four other identified areas of concern. Several underground storage tanks (USTs) were successfully closed in the 1990's at the Site.
2. A Groundwater Monitoring Report (Kemron,2006) and follow-up Remedial Investigation (RI) identified carbon tetrachloride and TCE in several wells from unknown sources above the MCLs, which were used as screening criteria for data evaluation.
3. A Final Remedial Investigation Report (Kemron, 2008) identified nature and extent of the contamination and concluded that No Action under CERCLA is appropriate for Site-08 because the area does not pose an unacceptable risk to human health and ecological receptors based on reasonably foreseeable land use as determined from the results of a Human Health Risk Assessment (HHRA) and Ecological Risk Evaluation.
4. A Technical Memorandum (Kemron, 2007) was prepared that presented a risk characterization conducted to determine if health risks associated with unrestricted (residential) land use exposures exists to ascertain the need for land use controls (LUCs). No risks associated with residential land use for soil or groundwater exposures were identified and subsequently no LUCs are necessary.
5. Historically the Connecticut Department of Environmental Protection (CTDEP) has been unresponsive to document review requests. However, CTDEP comments on the RI were received on June 18, 2008 and responses were submitted to CTDEP on June 30, 2008. No public comments were received during the 30-day public comment period which ended on June 23, 2008. For completeness, a responsiveness summary was added to the DD which included CTDEP comments and Army responses to those comments. CTDEP earlier comments from 2006 and 2007 during meetings at their offices indicated an unwillingness to accept the Army's Lead Agency Authority under CERCLA. The Army is confident that all requirements IAW CERCLA have been met at Site-08.
6. The Army will proceed under CERCLA Authority
7. RRC has not signed any IRP documentation as the RRC views the IRP as administered by USAEC.

3. **Recommendation**: That the Commander U. S. Army Environmental Command approve this action and sign the Final Decision Document at TAB A.

APPROVED____ DISAPPROVED____ NOTED____ SEE ME____ COMMENT____

8. LEAD AGENCY STAFF COORDINATION			TRACKING NUMBER:
TITLE	INITIAL	TYPED OR PRINTED NAME	DATE
Br Chief	RAS	Robert Snyder	7/29/08
Div Chief	JDD	James D. Daniel	7/28/08
OC Chief	DFP	LTC Don F. Pollack	7/24/08
Dep/TD	RJC	Randall J. Cerar	7/29/08
Cdr/Dir		COL Maria R. Gervais	
DACSIM			
ACSIM			
ACTION OFFICER: *(Name/Position/Phone Number/E-mail)*	FOR	Richard R. Mendoza, 309-782-1871 Robert Snyder	7/28/08
FILE LOCATION:			
SACO's NAME: *(Name/Position/Phone Number/E-mail)*			

RECOMMENDATION FOR STAFF PRINCIPAL:

9. STAFF COORDINATION

CONCUR	NON-CONCUR	AGENCY	NAME (TITLE, LAST NAME)	PHONE (XXX)XXX-XXXX	DATE *(YYYYMMDD)*	REMARKS
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10. ECC REMARKS: ☐ RETURNED REQUESTING ADDITIONAL INFORMATION/CLARIFICATION

NO ACTION DECISION DOCUMENT
SITE 08 - GROUNDWATER
MIDDLETOWN, CONNECTICUT USARC
JULY 2008

DECLARATION OF THE DECISION DOCUMENT

SITE NAME AND LOCATION

The U.S. Army Reserve Center (USARC) is located in Middletown, Connecticut. This decision document addresses Site 08 - Groundwater at the USARC.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy for Site 08 - Groundwater at the USARC in Middletown, Connecticut. The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the conclusions and recommendations presented in the Final Remedial Investigation (RI) Report for Site 08 (KEMRON, 2008), which is part of the Administrative Record file for Site 08.

The Connecticut Department of Environmental Protection (CTDEP) provided review comments on the Draft Final RI Report. The CTDEP comments and the Army's responses to those comments are provided in Attachment A - Responsiveness Summary.

DESCRIPTION OF THE SELECTED REMEDY

The U.S. Army, as the lead agency, has determined that No Action under CERCLA is appropriate for Site 08 - Groundwater because there is no unacceptable risk to receptors based on current and reasonably foreseeable future land use.

STATUTORY DETERMINATIONS

The U.S. Army, as the lead agency, has determined that no remedial action is appropriate for Site 08 to ensure protection of human health and the environment. Please note that none of the CERCLA §121 statutory determinations are discussed herein because a no-action remedy is being selected.

DECLARATION

The U.S. Army, as the lead agency, has determined that No Action under CERCLA is appropriate for Site 08 to ensure protection of human health and the environment for the current and foreseeable future use of the property.

Maria R. Gervais

Maria R. Gervais
Colonel, CM
Commanding, U.S. Army Environmental Command

4 August 2008
Date

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The U.S. Army Reserve Center (USARC) is located in Middletown, Connecticut (Figure 1). The facility consists of a 23.7-acre parcel of land that was used from the mid 1950s to the early 1960s as a Nike missile launching facility, furnished with three launch silos. The launch silos were closed by the New England District of the Army Corps of Engineers (NEDACE) in 1988.

In the early 1960s the facility was converted to a USARC facility and has been operated as such since. Three buildings (former reserve center building, former maintenance building and former garage) were demolished in the late 1990's; their concrete slab foundations remain. The current USARC building was constructed prior to demolishment of the former reserve center building.

The property currently consists of the USARC building and three former slab on grade foundations located on a multi-tiered hillside. Several paved parking areas and roadways are located on the property along with grass covered and wooded areas (Figure 2).

The site was listed during the 2005 Base Realignment and Closure (BRAC) process to be realigned. This decision document addresses Site 08 - Groundwater at the USARC.

The U.S. Army, as the lead agency, is conducting response actions at Site 08 in accordance with the Defense Environmental Restoration Program (DERP), which requires that these activities be conducted in accordance with CERCLA and the NCP. Although the U.S. Army is conducting activities at Site 08 in accordance with CERCLA, the USARC is not included on the National Priorities List (NPL) nor has the U.S. Environmental Protection Agency (USEPA) included the facility in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS).

2.0 SITE HISTORY AND RESPONSE ACTIVITIES

Various environmental investigations have been conducted at the USARC between 1990 and 2007. The results of these investigations are documented in the Final RI Report (KEMRON, 2008), submitted to the CTDEP on May 20, 2008.

2.1 Limited Subsurface Investigation, 1990

A subsurface investigation was conducted to investigate the possibility of petroleum migration in soils and groundwater caused by a former leaking 2,000-gallon fuel oil underground storage tank (UST) which was located along the southwestern side of the former reserve center / barracks building. The UST was removed and several perforations were noted on its sides and bottom. During removal of the UST, petroleum contaminated soils were encountered around the perimeter of the tank and the surrounding impacted soils were removed (approx. 100 cubic yards) to a depth of approximately 7 ft, where groundwater started entering the excavation.

Three soil borings (CHI-1 through CHI-3) were performed in the vicinity of the UST excavation and surrounding the Former Reserve Center / Barracks Building and were subsequently completed as monitoring wells.

As a result of subsequent site investigation, it was concluded that petroleum contamination noted during the tank removal was not widespread and did not appear to impact groundwater on the site.

2.2 Geohydrologic Study No. 38-26-KL46-92 Site Investigation, 1992

The US Army Environmental Hygiene Agency (USAEHA) conducted a limited site investigation to examine the potentially impacted environmental media. Five main areas of concern (AOC) were identified:

- **Three Nike Missile Silos** - Three Nike missile silos were located on the southern portion of the property. The silos were closed by the NEDACE. The silos were pumped dry and were filled with a sand slurry and debris from the walls of the silos. No samples were taken during the closure.
- **Acid Neutralization Pit** - An acid neutralization pit was located underneath the former garage. Typically at Nike sites, these pits were used for the disposal of waste liquids and solids. These wastes may have included used oil, lubricants and/or solvents.
- **2,000-gallon UST** - A 2,000-gallon UST used for the storage of fuel oil was located behind the old reserve center and was removed in 1990.
- **Material Storage (e.g., solvents)** - Materials were stored on the property during the construction of family housing. The materials were reportedly stored on the south side of the property.
- **Septic Tank and Leaching Field** - A septic tank and leaching field system was operated on-site until the site was connected to the sanitary sewer system.

As part of the limited site investigation, 14 monitoring wells (M1 through M10, M10B and M11 through M13) were installed.

The USAEHA concluded that no contamination was found to be originating from the former Nike silos, former acid neutralization pit, former heating oil UST associated with the former reserve center, and former septic tank and leaching fields.

2.3 Underground Storage Tank Closure, 1994

Closure of a 2,500-gallon UST was conducted. The 2,500-gallon UST was located along the southwestern side of the current reserve center building. The UST was removed in November of 1993 and according to the report appeared to be free of holes or corrosion. The subsurface was evaluated from within and below the area of the removed tank for the possibility of soil impacted by petroleum products. Contaminated soil was encountered and a total of 63.65 tons were removed and disposed. Volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and semi-volatile organics (SVOCs) were reported at either non-detect levels or below Connecticut Remediation Standard Regulations (RSR) criteria with the exception of 2-methylnaphthalene which was detected at a concentration above the Pollutant Mobility Criteria for GA areas (GA PMC) in LRS-1. The tank excavation was backfilled in January of 1994 with clean backfill.

2.4 Final Underground Storage Tank Closure Report, 1997

A 550-gallon double-walled fiberglass UST was removed. The UST was located along the northeast side of the maintenance/missile assembly and test building. Approximately 20 gallons of oily water was removed from the tank, and the UST was removed in August 1996. The UST was originally used for the storage of fuel oil but was abandoned when the building was converted to gas for heating. The report concluded that no evidence of a release from the tank or associated piping occurred.

2.5 Environmental Baseline Study, 1998

The Environmental Baseline Study included a summary of previous environmental related activities and completion of asbestos and lead paint inspections and sampling in support of proposed demolition of several on-site buildings. Soil sampling was also conducted though the floor of the former garage/warhead building and former maintenance/missile assembly and test building. The soil samples, two per building, were collected from soils directly below the concrete flooring and were analyzed for VOCs, SVOCs, TPH, polychlorinated biphenyls (PCBs), and synthetic precipitation leaching procedure (SPLP) RCRA 8 metals. Reported concentrations were below applicable RSR criteria.

2.6 Draft Groundwater Monitoring Report, 2006

Groundwater samples were collected from existing remaining accessible monitoring wells in August 2005 and February 2006. The groundwater sampling program was completed to obtain current groundwater quality data on-site since the last round of groundwater data was collected in 1992.

Analytical results from the groundwater sampling events suggested that groundwater has been impacted by past site activities. The detection of carbon tetrachloride, chloroform, and TCE in M8 in February 2006 is consistent with the results of prior (pre-2005) investigations, although the reported concentrations were somewhat higher in 1992.

On March 2, 2007 a Site Conceptual Model Technical Memorandum was submitted to the CTDEP. The Technical Memorandum presented a history of the USARC facility, a description of historical environmental site studies, and a recommendation for future explorations that became the basis for the Remedial Investigation. The Army discussed the Site Conceptual Model with the CTDEP at a meeting held on March 15, 2007.

3.0 COMMUNITY PARTICIPATION

The Final RI Report for Site 08 (KEMRON, 2008) was placed in the Administrative Record and made available for public review at the Russell Library in Middletown, Connecticut. Additionally, a Public Notice was published in the Hartford Courant on May 23, 2008 to provide notice that the Final RI Report was available for public review and to announce the Public Comment Period (May 23 to June 23, 2008) during which the public was given the opportunity to provide comments on the Army's recommendation of No Action under CERCLA for Site 08.

The CTDEP provided review comments on the Draft Final RI Report during the Public Comment Period. The CTDEP comments and the Army's responses to those comments are provided in Attachment A - Responsiveness Summary.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

Based on the conclusions presented in the Final RI Report (KEMRON, 2008), the U.S. Army, as the lead agency, has determined that No Action under CERCLA is appropriate for Site 08 because the site does not pose an unacceptable risk to human health and ecological receptors.

5.0 SITE CHARACTERISTICS

RI activities were conducted at Site 08 during 2006 and 2007. The investigation activities included the collection and analyses of soil and groundwater samples. A detailed discussion of the site characteristics and contamination assessment are presented in Sections 1.0 through 3.0 of the Final RI Report (KEMRON, 2008). A summary of the RI results is presented in this section.

Groundwater contamination, specifically trichloroethylene (TCE), has historically been detected at well location M8 at the USARC facility. Overburden and bedrock monitoring wells were installed at select locations to evaluate the extent of the TCE groundwater plume. TCE was detected at three monitoring locations (M8, MW-16, and BR-4) at concentrations above the maximum contaminant level (MCL), which was used as screening criteria during data evaluation. Carbon tetrachloride was detected in monitoring well M1 in 2006 at a concentration just above the MCL and historically approximately at or slightly below the MCL in the overburden groundwater. M1 is up-gradient of the TCE-impacted area and the source of the carbon tetrachloride detection is unknown based on known historical usage of the property.

The low concentrations of TCE dissolved in the overburden groundwater and the limited downgradient extent suggest that the mass of TCE is limited and the extent of groundwater contamination above the MCL is stable. Despite considerable effort, a release point of TCE has not been identified. However, the nature and extent of TCE contamination are appropriately delineated and contamination is not expected to migrate. The stable concentrations of TCE and absence of detected degradation products (e.g. cis-1, 2 DCE) indicate that sequential dechlorination is not actively occurring. The bedrock wells are in appropriate downgradient locations to reflect any significant amount of contaminated overburden groundwater that might be recharging the bedrock aquifer. The low concentrations of TCE detected initially in bedrock groundwater well BR-4 is attributed to cross-contamination associated with well installation.

The data collected during the RI were used to complete a Human Health Risk Assessment (HHRA) and an Ecological Risk Evaluation for Site 08 in accordance with CERCLA, the NCP, and applicable USEPA guidance. The results of the risk assessments are summarized in Section 7.0 of this Decision Document.

6.0 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The current land use of the facility is as an active USAR installation. The U.S. Army has identified that the reasonably foreseeable future land use for the property is anticipated to remain military and/or industrial/commercial (i.e., non-residential).

Groundwater beneath and downgradient of the USARC facility is classified as a potable groundwater resource by the State of Connecticut (Class GA groundwater). However, the facility and downgradient properties within one-half mile of the Site are connected to public water supply. The only properties within one-half mile of the Site that are not on public water supply are located upgradient of the Site.

6.1 Land Use Controls

A Technical Memorandum (KEMRON, 2007) was prepared that presents a risk characterization conducted to determine if health risks associated with unrestricted (residential) land use exposures would exceed the USEPA cancer risk range or a hazard index of 1. This information is used to determine if land

use controls (LUCs) are required for the Site. Although exceedances of the MCL were detected, the results of the risk characterization indicate that cancer risks for residential land use due to observed concentrations of chemical constituents in soil and groundwater are within the USEPA cancer risk range of $1x10^{-6}$ to $1x10^{-4}$, and the hazard index is below the threshold value of 1. The cumulative risks for combined exposure media are a cancer risk of $5x10^{-5}$ and a HI of 0.8. Therefore, LUCs are not required for this Site.

If the Army transfers the property to a non-federal entity, as a condition of transfer, the Army may require an Environmental Land Use Restriction unless contaminants are below the levels established by Connecticut's Remediation Standard Regulations.

7.0 SITE RISKS

A HHRA and Ecological Risk Evaluation were performed using the RI data collected for Site 08. The risk assessments were performed in accordance with CERCLA, the NCP, and applicable USEPA guidance. A detailed discussion of the HHRA and Ecological Risk Evaluation are presented in Section 4.0 of the Final RI Report (KEMRON, 2008). A summary of the risk assessments is presented in the following paragraphs.

7.1 Human Health Risk Assessment

The HHRA was conducted to quantify health risks associated with exposure to chemicals in soil, groundwater, and vapor intrusion from groundwater based on current and reasonably foreseeable future land use, which has been identified by the U.S. Army as industrial/commercial.

The only constituent of potential concern (COPC) in soil identified in the HHRA is arsenic. In groundwater, carbon tetrachloride, chloroform, TCE, arsenic, and barium are identified as COPCs in the HHRA.

The risk characterization results for commercial/industrial worker exposure to Site media identified that the excess lifetime cancer risk (ELCR) for soil ($2x10^{-6}$), vapor that migrate from groundwater to indoor air ($1x10^{-7}$), and potable use of groundwater as tap water by industrial/commercial workers ($1x10^{-5}$) are each below or within the USEPA cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ as defined in the NCP, 40 CFR 300.430(e)(2)(i)(A)(2). The cumulative ELCR among all exposure media ($1x10^{-5}$) is also within the USEPA cancer risk range. The non-cancer hazard index values for soil (0.01), indoor air (0.0002), and groundwater used as tap water (0.2) are each below the USEPA threshold value of 1. The cumulative non-cancer risk among all exposure media (0.2) is also below the USEPA threshold value of 1.

Therefore, the HHRA concluded that there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use.

7.2 Ecological Risk Evaluation

Ecological risks associated with Site 08 are negligible due to the limited habitat at the USAR facility and absence of exposure pathways to affected media. Specifically, the contaminants detected are primarily associated with subsurface soil and groundwater. Exposures of ecological receptors to subsurface soils are presumed to be negligible. Likewise, contaminated groundwater beneath the USARC facility is not

discharging to any surface water bodies. Therefore, there are no mechanisms by which ecological receptors could be exposed to groundwater.

Therefore, it is unlikely that Site 08 would pose any significant risk to resident or migratory species.

8.0 DOCUMENTATION OF SIGNIFICANT CHANGES

Based on the conclusions presented in the Final RI Report (KEMRON, 2008), the U.S. Army, as the lead agency, has determined that No Action under CERCLA is appropriate for Site 08 because the site does not pose an unacceptable risk to human health and ecological receptors.

No significant changes have been made to the selected no-action remedy as presented in the Final RI Report (KEMRON, 2008).

Attachment A

Responsiveness Summary

Response to Comments on the Draft Final Remedial Investigation Report
Site 08 - Groundwater; U.S. Army Reserve Center, Middletown, CT
Contract No. W911SO-04-F0017

Reference: ***E-mail correspondence from Mr. David Ringquist (CTDEP) to Mr. Mark Stelmack (MACTEC); dated June 18, 2008; Middletown USARC Site 08 Groundwater – Draft Final Remedial Investigation Report (May 2008)***

General Comment from CTDEP:

Understand that this was a quick review and does not reflect every aspect of our expectations for the standard of care to be exercised by environmental professionals responsible for performing environmental site investigations. I suggest that you read Connecticut's Site Characterization Guidance Document, dated September 2007, and the CTDEP Remediation Standard Regulations for a more complete understanding of CTDEP's requirements.

General Response from the U.S. Army Environmental Command:

In establishing the Defense Environmental Restoration Program (10 U.S.C. §§ 2701-2708 and 2810), Congress directed that Department of Defense environmental cleanup efforts be consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Additionally, CERCLA itself requires that cleanup efforts at federal facilities be conducted under CERCLA (42 U.S.C. § 9620). Due to these reasons, and in order to have a common framework for managing a national cleanup program, the Army uses CERCLA as the primary legislative authority for managing cleanup of its sites.

Under CERCLA Section 121, the Army must attain all state applicable or relevant and appropriate requirements (ARARs) for remedial actions required under CERCLA Sections 104 and 106. If a site is determined to be "no action" because it poses no current or potential unacceptable risk to human health or the environment based on the reasonably foreseeable land use, as a matter of law, there can be no ARARs to comply with. If a remedial action is required, only those state standards the state identifies in a timely manner and are more stringent than federal requirements may be ARARs. Because CERCLA remedial actions are exempt from permitting requirements, the Army may comply with only the substantive portions of ARARs. Administrative and procedural requirements are not ARARs.

For those reasons, the Army does not intend to follow the Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations for Site 08 – Groundwater at the U.S. Army Reserve Center (USARC) in Middletown, CT. The Draft Final Remedial Investigation (RI) Report for Site 08 concluded "there is no unacceptable risk to receptors based on current or reasonably foreseeable future land use." Thus, because there is no remedial action under CERCLA Sections 104 or 106, ARARs are not applicable. Moreover, even if remediation was necessary, the Army could only comply with those aspects of the CTDEP Remediation Standard Regulations that are identified as ARARs. The Army cannot follow the procedural requirements of the CTDEP Remediation Standard Regulations.

In following CERCLA, the Army will continue to provide you with copies of documents for your review. The Army appreciates technical review comments from your agency and we encourage your participation in the process. In the event your agency does not wish to review the CERCLA documents, please provide either a written letter or email acknowledgement of your decision. The Army is willing to provide the agency with a 30 day review period, but if the agency informs the Army it is not willing to review the documents, the Army will proceed under our CERCLA authority.

Specific CTDEP Comments

1. A "bird's view" look at the property, from a satellite photograph, shows that apparently all buildings have been demolished and therefore some of our comments lose their meaning regarding any remediation of the buildings, potential exposure routes and associated impacts to air and soils. The report only mentions that some of the buildings would be demolished.

Army Response: Comment noted.

2. The investigation did not define the source of TCE contamination, as pointed out in the conclusions of the report, four potential sources of contamination were investigated by soil borings downgradient of the four AOC's, and still a source area for the TCE was not determined.

Army Response: Comment noted.

3. The investigation report did not include a Conceptual Site Model.

Army Response: The Conceptual Site Model Technical Memorandum was submitted to the CTDEP on March 2, 2007 and discussed at a meeting held at the CTDEP office on March 15, 2007. No written comments from CTDEP were received. Additionally, pertinent information regarding the Conceptual Site Model is presented in Sections 3 and 4 of the Final Remedial Investigation (RI) Report, which was prepared in accordance with CERCLA and the NCP. These sections include a discussion of geologic and hydrogeologic conditions, nature and distribution of contamination, types of contaminants, affected media, contaminant fate and transport, potential migration pathways, and potential receptors. Although the Conceptual Site Model information is presented in the Final RI Report, the information is not presented in the format suggested by the CTDEP Site Characterization Guidance Document.

4. The site is adjacent and upgradient to at least 20 residences, however, a domestic well survey has not been proposed to evaluate the potential risk from drinking contaminated groundwater. The groundwater class is GA. The report on Table 4-3 mentions that the downgradient area is municipally-supplied, nevertheless there is no documentation to verify that claim.

Army Response: A well survey was completed in July 2006. Properties within a ½-mile radius of the USARC were evaluated to determine if they were served by private water supply wells. Water connection records were reviewed that were supplied by the City of Middletown Department of Water and Sewer Department. These records were compared to physical addresses within the ½-mile radius of the USARC. Only 21 of 310 developed parcels located within ½-mile of the Site are not connected to public water and therefore appear to be supplied by private wells. None of these properties were located adjacent to or downgradient of the USARC with respect to groundwater flow (i.e., north-northeast). These parcels are located along Ridgewood Road and Poplar Road, which are to the west and southwest of the USARC (i.e., upgradient and/or cross gradient of the USARC).

5. This facility, even though it contaminated the site's groundwater with TCE, it never used the manifest form to dispose of their hazardous waste. Two temporary Generator ID numbers were issued to them in

2001 and in 2006, however they were never used. The temp. ID's related to the disposal of 1 drum of hazardous waste, 2 drums of decontamination decon water and fluorescent lamps.

Army Response: Please note that investigation activities have not identified a source of the TCE that has been detected at the facility. Additionally, historic usage of TCE at the facility, which occurred prior to the 94th RRC obtaining ownership of the property in the 1990s, is unknown.

The temporary Generator ID number (CTP000029151) issued in 2006 was used to manifest investigation derived waste generated during the CERCLA remedial investigation. Manifest records are being researched at the 94th RRC and the 94th RRC will provide additional information regarding this comment in a separate response to be submitted by the 94th RRC directly to the CTDEP.

6. The groundwater conducted at the site does not have 4 consecutive sampling quarters to adequately describe seasonal variations in contaminants concentrations.

Army Response: Groundwater sampling at the USARC has been completed in June 1992, August 2005, February 2006, November 2006, March 2007, and October 2007. Although four consecutive quarters have not been completed as identified in the CTDEP Remediation Standard Regulations (RSRs), the sampling events appear to provide good coverage over the seasons and the data should provide indication of seasonal variation. The Army has determined that site groundwater has been adequately characterized for the purpose of the remedial investigation, which has been conducted in accordance with CERCLA.

7. A determination of background concentration in the upgradient groundwater is not presented in the report. Because the groundwater class is GA, the groundwater has to be compared to background concentrations.

Army Response: The RI Report was prepared in accordance with CERCLA and the NCP. In accordance with CERCLA, the potential need for remediation of site media is based on the results of the risk assessment, not a comparison to published cleanup standards or background concentrations. Therefore, an evaluation of background conditions for site media is not necessary. The Army has determined that Site-08 has been adequately characterized for the purpose of the remedial investigation, which has been conducted in accordance with CERCLA.

8. The report does not include justification for having only 2 sampling locations to determine the lateral and vertical extent of contamination at the former garage and former acid neutralization pit.

Army Response: Five explorations were completed during evaluation of the Former Garage/Warhead Building/Former Acid Neutralization Pit Area of Concern (AOC). The results of sample locations S1 and S2, completed through the floor of the former building in 1998, are discussed in Subsection 1.6.5 of the RI Report. A soil boring and monitoring well were completed at location M7 in 1992, and the results are discussed in Subsections 1.6.2 and 1.6.6 of the RI Report. Two locations (SB-10 and MW-15) were completed as part of the RI in 2006, and the results are discussed in Subsections 2.2.1 and 2.2.2. Based on the sampling completed, a release from this AOC has not occurred.

9. The report does not include a decontamination and demolition plan for the proposed buildings to be demolished. The demolition plan must have had an air sampling and monitoring plan and protective measures to control and safeguard the health of the people living at the vicinity of the site.

Army Response: There will be no demolition plan developed for the facility until a new location for the USARC is chosen and a new facility constructed. Discussions are currently underway with the City of Middletown to select a new site location for the USARC.

10. TCE concentrations above the GWPC and the residential Groundwater Volatilization Criteria still remain at the site, as acknowledged in the report in section 1.6.6, page 7, bottom paragraph, from data collected from the February 2006 sampling event.

Army Response: The Army notes that the criteria cited in the comment are provided in the CTDEP RSRs. No Action under CERCLA is appropriate for Middletown Site-08 because the site does not pose an unacceptable risk to human health or the environment based on the reasonably foreseeable land use. If it is determined that a remedial action under CERCLA Sections 104 and 106 is not required for a site because it does not pose an unacceptable risk to human health or the environment based on the reasonably foreseeable land use, ARARs are not evaluated.

11. The report concludes, on page 78, that the residual TCE mass in the aquifer would be largely retained as sorbed and diffused TCE within the aquifer matrix, and that TCE concentrations will be reduced by advective dispersion and chemical diffusion. The report does not present a demonstration of such conclusions.

Army Response: The fate and behavior of chlorinated solvents in porous and fractured porous media has been studied and well documented in literature by numerous investigators since the early 1990s (i.e., Johnson, Cherry and Pankov, 1989, Parker, McWhorter and Cherry, 1997 as examples). The water-carbon partitioning coefficient (Koc) for TCE, (126 ml/g), indicates that TCE sorbs moderately to soil organic carbon present within the saturated soil matrix. The importance of sorption of organic compounds to soil organic carbon, even at low total organic carbon (toc) concentrations in controlling contaminant behavior, is widely recognized. The concentrations of dissolved TCE in the aquifer are low relative to the water solubility of TCE, indicating that a substantial residual mass of TCE in the aquifer is not present, and that dissolved concentrations in the aquifer pore waters are a function of equilibrium between TCE partitioned to the soil phase and water phase. The initial mass of TCE released into the soil migrated to the water table and has diffused and sorbed to the soil. As TCE partitions from the soil to the water phase it is removed from the initial point of release by advective groundwater transport. As groundwater moves, the combined affect of advection and dispersion and further sorption/desorption along the flow path will result in decreasing TCE concentrations down gradient. The existence of these well-accepted processes in the fate and transport of organic pollutants preclude the need to provide additional specific demonstration or proof.

References

Johnson, R, Cherry, J, Pankow, J., 1989. Diffusive contaminant transport in natural clay: A field example and implications for clay lined waste disposal sites. Environmental Science and Technology Volume 23, No. 3, pages 340-349.

Parker, B., McWhorter, D., and Cherry, J., 1997. Diffusive loss of non-aqueous phase organic solvents from idealized fracture networks in geologic media. Groundwater Vol 35 No.6, pages 1077-1088.

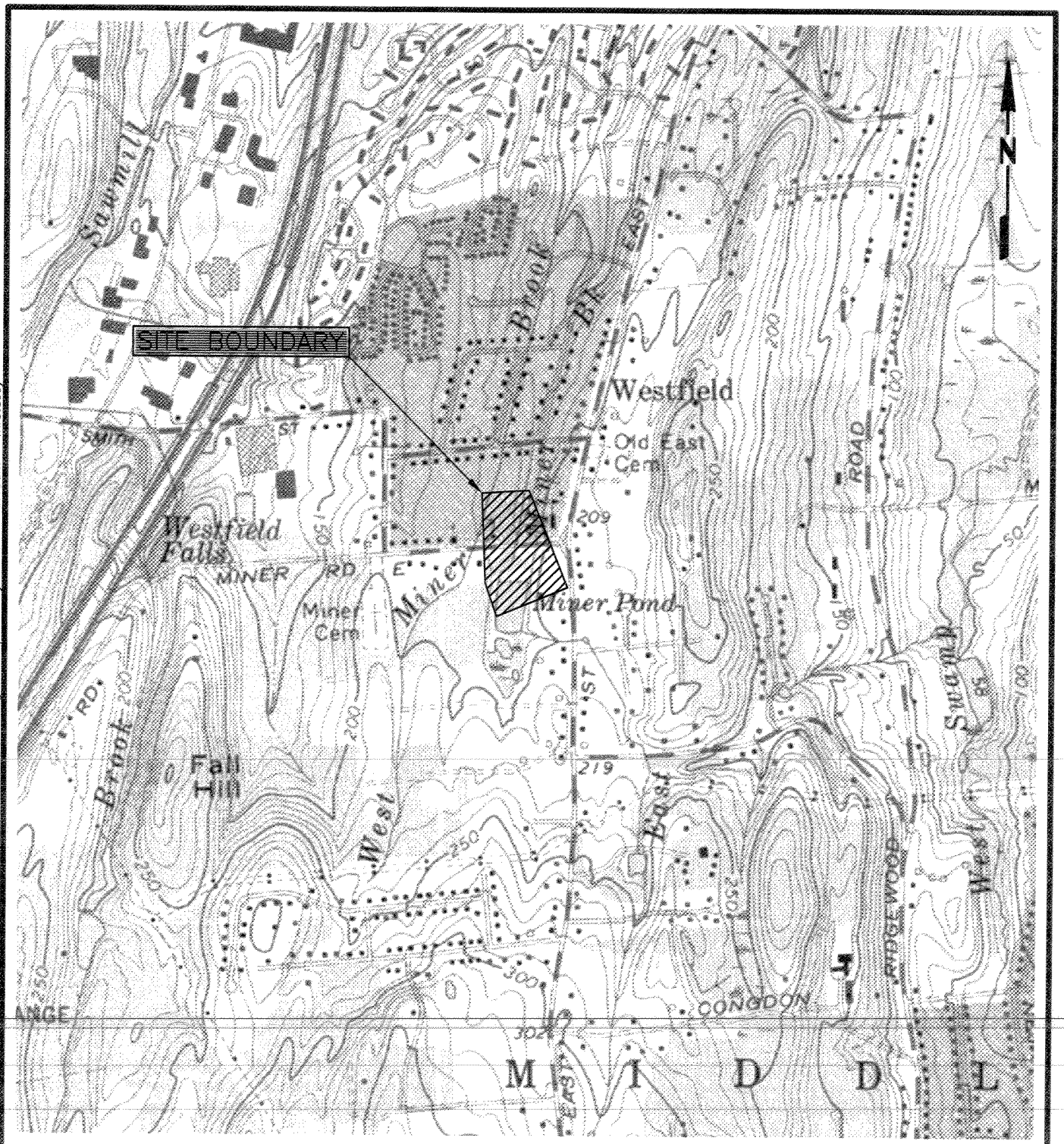
12. The report dismisses any ecological impact caused by this site. However, there is a wetland located downgradient less than 200 feet from the site that should be evaluated from the ecological risk standpoint. The report mentions that the site has a limited habitat, without providing any list of species that live there. There is a Brook running along the west side that though not permanent should also be looked at. At least a screening level ecological risk assessment should be provided.

Army Response: The contaminants detected at Site-08 are primarily associated with subsurface soil and groundwater. The RI Report concludes that concentrations of trichloroethylene (TCE) in groundwater have not, and are not, expected to migrate to or beyond the USARC boundary. Contaminated groundwater beneath the facility is not discharging to any surface water bodies and there are no mechanisms by which ecological receptors could be exposed to groundwater. Therefore, further evaluation of potential risks to ecological receptors associated with Site-08 is not necessary.

Figures

Figure 1 **Locus Map**

Figure 2 **Exploration Locations**



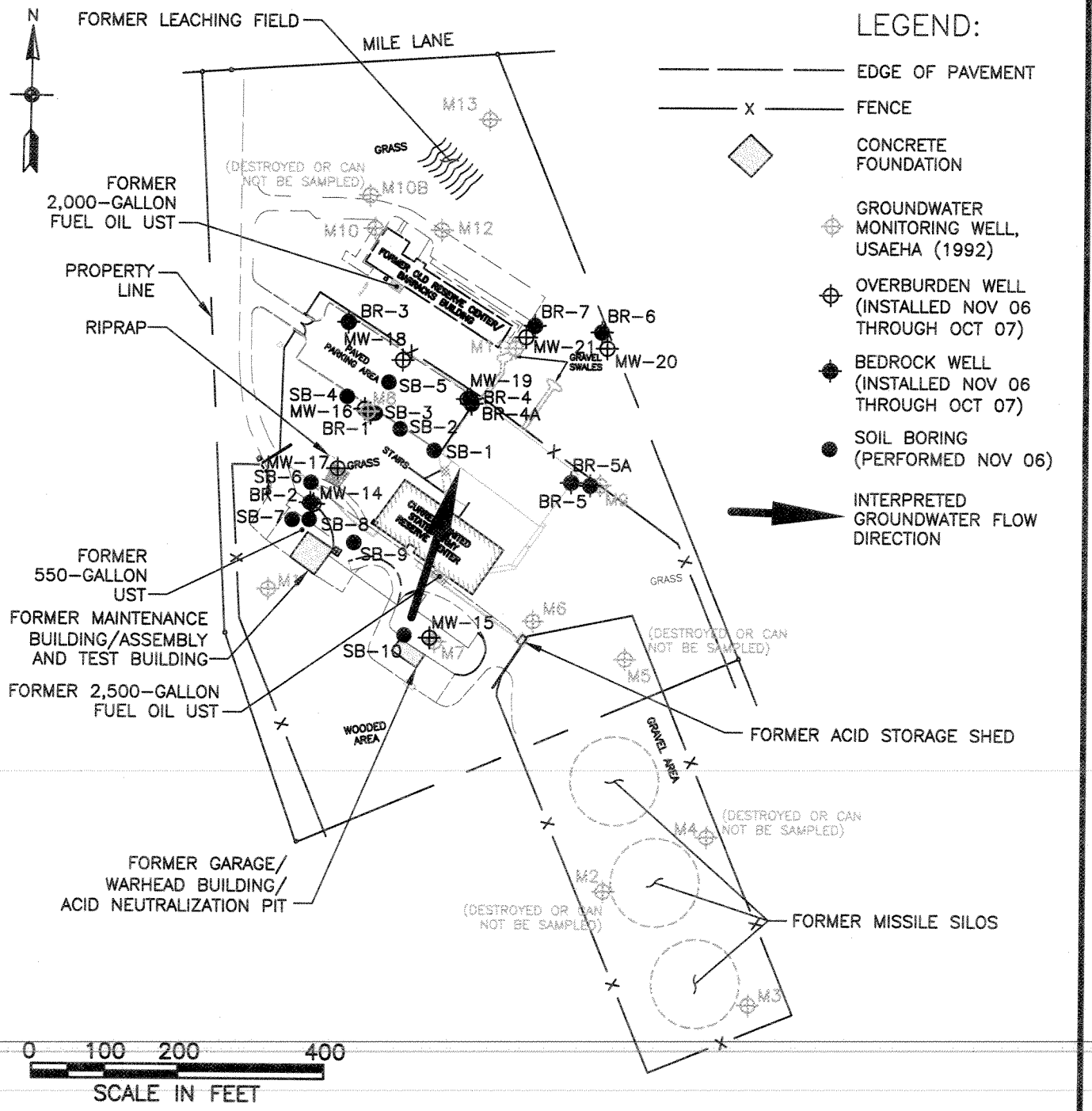
SOURCE:
USGS – MIDDLETOWN, CT
1965 – REVISED 1992

0 600 1200 2400
SCALE IN FEET

Prepared/Date: MRS 05/14/08
Checked/Date: APP 05/14/08

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	Project 3618048110.05	LOCUS MAP Figure 1

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DRAWING REFERENCE: PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: JBC 04/20/07
Checked/Date: JRY 04/20/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	Project 3618048110.05	EXPLORATION LOCATIONS Figure 2

M:\Projects\KEMRON USARC\0010 Middletown\MIDDLETOWN-REPORT-DWGS\DD-FIGURE 2 MIDDLETOWN.dwg Wed, 14 May 2008 - 2:12pm mrstacey

END OF REPORT

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Prepared for:
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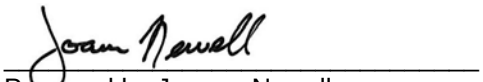
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March 2009
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Appendix B – Analytical Data

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1.0 Introduction

At the request of the Environmental Office of the U.S. Army Reserve 94th Regional Readiness Command (94th RRC), Stell Environmental Enterprises, Inc. (SEE) and AECOM, Inc. (AECOM) conducted a sampling and analysis program at the Middletown United States Army Reserve Center (USARC) Facility CT 005, located at 499 Mile Lane in Middletown, Connecticut. Shortly after awarding the contract to SEE and AECOM, the 94th RRC began a transition into the 99th Regional Support Command – East (99th RSC East) and all contacts listed in the Scope of Work as part of the 94th RRC are currently considered part of the 99th RSC East. The purpose of the subsurface investigation was to assess potential environmental impacts around a vehicle wash rack and its associated oil/water separator and where it connects to the sanitary sewer system line. This work was done in accordance with the Statement of Work dated June 23, 2008 (Contract Number W9126G-06-D-0037, Task Order Number 0013).

2.0 Site Description

The subject property is located at 499 Mile Lane in Middletown, Connecticut. Currently the facility is unoccupied; however, the property is improved with one main USARC office building. Several 1950-Era buildings were demolished in 1999. One of them was a Maintenance Building with a concrete pad and the wash rack unit remain on-site. The remainder of the property consists of paved parking areas and a large grassy area north and northeast of the main building.

The Area of Concern (AOC) includes the former concrete vehicle wash rack area, which consists of a catch basin, an oil/water separator (OWS), a sanitary sewer manhole connected to the OWS and the grassy area adjacent to the wash rack. It was noted during the initial site visit, that the concrete wash pad was in fair to poor condition, with large damaged areas, numerous cracks containing grass, and overall deterioration. The wash pad area consists of a 20 x 35 foot concrete pad approximately 12 inches thick. No oil staining was noted on the surface of the concrete wash pad.

Based on a site reconnaissance and records review, a two-foot diameter brick lined catch basin is located in the center of the concrete wash pad. At the time of the site inspection, the catch basin was noted to be full of debris, consisting primarily of sand. A four-inch cast iron pipe was partially visible leading toward the OWS. The overall interior construction of the catch basin could not be inspected thoroughly because of the significant amount of debris inside the catch basin. Some loose bricks and mortar were noted at the top of the catch basin where it meets the underside of the concrete wash pad.

The catch basin drains to the OWS and at the time of the site inspection, water was observed inside the OWS. According to previous reports, the OWS chamber was constructed of pre-cast concrete consisting of one chamber separated by wooded baffles. Subsequently, the OWS drains to a ten foot deep brick-lined sanitary sewer manhole. The sanitary sewer manhole was noted to be in good condition, with no evidence of loose bricks or mortar. No sheen or odor was observed in the water from the OWS during the site reconnaissance. Furthermore, it was observed that the concrete wash pad was positioned in a manner that majority of the runoff from the pad flowed into the catch basin. Historic utility plans of the facility which were provided by the 99th indicate that the sanitary sewer manhole is connected to municipal sewer located along Mile Lane.

The area directly west-southwest of the wash pad is paved leading toward the former building. An area of concern located west-northwest from the pad and approximately 10 feet in diameter where the asphalt pavement was broken and removed was identified to be investigated. This area was investigated due to the close proximity to the wash pad and lack of competent pavement. One soil boring was installed through the middle of this grassy area and a second boring was installed downgradient.

3.0 Previous Environmental Reports

3.1.1 Final Remedial Investigation Report, KEMRON Environmental Services, May 2008

A Final Remedial Investigation Report, prepared by KEMRON Environmental Services (KEMRON) of Atlanta, Georgia, summarized the results of the subsurface investigation conducted at the facility between November 2006 and October 2007. The report indicated that the property was historically used as a NIKE missile launching facility that was improved with three launch silos.

Historically, TCE groundwater contamination has been observed at the site in well M8, which is located approximately 150 feet north of the Wash Rack AOC that is the subject of this investigation. As a result, KEMRON installed overburden and bedrock monitoring wells to delineate the extent of the TCE plume. Three soil borings were installed in close proximity to the Wash Rack AOC. TCE and ETPH were present; however the concentrations were well below Remediation Standard Regulation (RSR) Criteria. Estimated concentrations (below the laboratories reporting limit) of TCE were detected in two overburden wells located immediately north of the Wash Rack AOC.

Based on the analytical data, KEMRON determined that the extent of the TCE impacted groundwater included a limited area located approximately 150 feet north of and topographically down-gradient from the AOC that is the subject of this investigation. Furthermore, KEMRON determined that the TCE groundwater plume was not expected to migrate down-gradient and that concentrations of TCE within the plume should decrease over time. KEMRON determined that the groundwater flow was toward the north, northeast based on groundwater elevations measured during their investigation.

In addition, KEMRON conducted a human health risk assessment in accordance with CERCLA, the NCP, and the applicable USEPA guidance. Based on the risk assessment, KEMRON concluded that there is no unacceptable risk to receptors based on current and foreseeable use. Additionally, exposures of ecological receptors to subsurface soils were presumed to be negligible and groundwater beneath the facility was not discharging to surface water bodies.

4.0 Field Sampling

The following field activities were completed as part of the subsurface investigation. These activities were preceded by the necessary planning and preparation, including the establishment of a site-specific Health and Safety plan for the project.

4.1 Subsurface Investigation

On August 22, 2008, a site visit was performed with representatives of the 99th RSC East to select sample locations, pre-mark the site for DIGSAFE and inspect AOCs. The AOCs for this investigation were identified as the wash rack area, which includes a concrete pad and catch basin, an OWS, and a sanitary sewer manhole connected to the OWS.

On September 28, 2008, a subsurface investigation was conducted to evaluate the potential for any releases to the environment from the wash pad. A drilling subcontractor, Aquifer Drilling Technologies, Inc. (ADT) of Bloomfield, Connecticut was used to advance seven soil borings (SB-1 through SB-7). Two of the seven soil borings (SB-1 and SB-5) were completed as temporary monitoring wells (MW-SB-1 and MW-SB-5).

Soil borings SB-1, SB-2, and SB-3 were advanced in the vicinity of the wash rack catch basin. Soil boring SB-4 was advanced next to the OWS/sediment trap. Soil boring SB-5 was advanced down-gradient from the sanitary sewer manhole. Soil boring SB-6 was advanced in the grassy area next to the wash rack and boring SB-7 was advanced down-gradient from the grassy area.

Soil borings were advanced using a GeoProbe to a maximum depth of fifteen feet below surface grade (BSG). During soil boring advancement, soil samples were obtained using a five-foot long disposable acetate liner in the macro core sampler. Soil samples were characterized by a scientist and inspected for evidence of impacts. Field measurements of total volatile organic vapors in each soil sample were conducted using the jar headspace method using an Ion Science Phocheck 1000 photoionization detector (PID). Headspace readings were below instrument detection limits in all boring except boring SB-1, where a high PID reading of 213 parts-per-million (ppm) was detected from zero to five feet BSG. Soil sample depths were determined based on the highest PID reading or evidence of impacted soils. In the borings that did not exhibit elevated PID reading or other evidence of impacts, soil samples were collected for analysis from below the AOC (i.e. the bottom of the OWS).

Refer to Appendix A for a copy of the boring logs for further information on soil boring completion, well construction, PID screening results, and Figure 1, the Site Plan, for boring locations and other pertinent information.

In addition to the soil borings, a sediment sample was collected from inside the catch basin. The sample exhibited a PID reading of 2,500 ppm.

Soil samples were collected from boring SB-1 from zero to five feet BSG due to the elevated PID reading. Based on the lack of headspace readings, soil samples were collected at a depth of approximately five to six feet BSG from borings SB-2, SB-3, SB-4, SB-6, and SB-7 (corresponds to the depth of bottom of the catch basin and OWS and submitted for analysis. The soil sample from boring SB-5 was collected from approximately six feet BSG, where black staining was observed.

Soil samples were stored on ice in the field and delivered via courier under proper chain of custody to Alpha Analytical, Inc. (Alpha Analytical) of Westborough, Massachusetts. Alpha Analytical holds Army: USACE certification and Connecticut: CT (PH-0574) certification for soil and groundwater testing methods. All soil samples were submitted for analysis of volatile organic compounds (VOCs) by Environmental Protection

Agency (EPA) SW-846 Method 8260B, total extractable petroleum hydrocarbons (ETPH) by the CT EPH method, and Resource Conservation and Recovery Act (RCRA 8) Metals by EPA SW-846 Methods 6010B and 7471A. In addition, the sample collected from the catch basin (SED-1) and samples collected from borings SB-1, SB-4, and SB-7 were analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA SWA-846 Method 8270C, 13 Priority Metals by EPA SW-846 Methods 6010B and 7471A, polychlorinated biphenyls (PCBs) by EPA SW-846 by Method 8082 and organochlorine pesticides (OCPs) by EPA SW-846 Method 8081.

Soil analytical results are summarized in Table 1 and laboratory analytical results and chain of custody documentation are included as Appendix B. Soil analytical results are discussed in Section 5.1.

4.2 Groundwater Investigation

On September 28, 2008, groundwater samples were collected from the temporary wells MW-SB1 and MW-SB5. In addition, a groundwater sample was collected from the existing monitoring well MW-14, located downgradient of the wash rack and the temporary well MW-SB1. Groundwater samples were collected using a peristaltic pump and dedicated disposable tubing. Due to minimal recharge, only a limited number of analyses were conducted on the sample collected from temporary well MW-SB1. Groundwater samples collected from wells MW-14, MW-SB1, and MW-SB5 were analyzed for VOCs by EPA Method 8260B and CT EPH. In addition, groundwater samples collected from wells MW-14 and MW-SB5 were analyzed for PAHs by EPA Method 8270C, RCRA 8 and PP13 Metals by EPA Methods 6010B and 7470A, and pesticides by EPA Method 8081A. Groundwater samples submitted for metals analysis were field filtered with a 0.45 micron filter prior to submission to Alpha Analytical. Groundwater samples were stored on ice in the field and delivered via courier under proper chain of custody to Alpha Analytical.

Groundwater analytical results are summarized in Table 2 and laboratory analytical results and chain of custody documentation are included as Appendix C. Groundwater analytical results are discussed in Section 5.2.

5.0 Quality Control Review

5.1 Soil and Groundwater QA/QC

A quality assurance/quality control (QA/QC) review of the soil and groundwater analytical data (LO812889) was performed. This QA/QC review concluded that the laboratory analyses were performed acceptably, and that all data in the referenced job numbers are valid and usable with the qualifications as recommended in the data validation report. The qualifications recommended in the data validation report are shown on Tables 1 and 2. For a more detailed summary of the soil and groundwater QA/QC refer o Appendix D, the Validation Report.

6.0 Results

6.1 Soil Analytical Results

Soil analytical results indicated that concentrations of total arsenic were detected in the soil sample collected from boring SB-7 at a concentration of 23 milligrams-per-kilogram (mg/kg), which exceeds the Residential and Industrial/Commercial Direct Exposure Criteria (RDEC and ICDEC). No other compounds of concern were detected above RSR Criteria. Several metals, VOCs, ETPH, PAHs, and pesticides were present at concentrations below RSR Criteria in one or more soil samples.

Concentrations of arsenic, barium, beryllium, chromium, lead, nickel, and zinc were greater than 20 times the GA Pollutant Mobility Criteria (PMC) in one ore more samples. In order to compare directly to the GA PMC, the CT RSR requires metals to be analyzed following either a toxicity characteristic leaching procedure (TCLP) or synthetic precipitation leaching procedure (SPLP) extraction. However, it is not always necessary to analyze every sample by the SPLP or TCLP methods; because it is possible to predict whether a sample analyzed without TCLP or SPLP extraction (e.g. analyzed for "total" metals) could exceed the GA PMC by a preliminary comparison using an approach commonly referred to as the "20-Rule". The 20-rule compares each total metal analyte detected to its applicable GA PMC multiplied by 20. This factor is derived from the 20:1 liquid-to-solid ratio employed in the SPLP extraction and provides a comparison to the potential SPLP or TCLP result if 100% of the concentration of total metal detected were to be extracted from the sample. In practice, TCLP and SPLP extraction does not leach 100% of the available total metal and therefore, the 20-rule provides a conservative estimate of a TCLP or SPLP results relative to the GA PMC. Therefore, the "20-rule" can be applied to total metals data analyzed without an extraction to determine if SPLP or TCLP extraction should be performed for direct comparison to the GA PMC.

Example:

The GA PMC for beryllium is 0.004 mg/L. Sample SB-1 contained a total beryllium concentration of 0.71 mg/kg. Since this data is not directly comparable to the GA PMC of 0.004 mg/L, the GA PMC is multiplied by 20, yielding a 20-rule GA PMC for total beryllium data of 0.08 mg/kg. Since the concentration of beryllium in sample SB-1 is greater than 0.08 mg/kg, the sample has the potential to exceed the GA PMC.

Further analysis via the SPLP or TCLP method would be required to confirm if the concentration exceeds the GA PMC. However, the reported values of these metals in soil, with the exception of arsenic in sample SB-7, were relatively consistent in all samples with no large variations of concentration in samples near source areas or those further away. In our opinion, the concentrations are naturally occurring elements common to parent bedrock material in the northeast, with the exception of the arsenic concentration in sample SB-7. Refer to Table 1 for a summary of the soil analytical data and Appendix B for the soil laboratory data.

6.2 Groundwater Analytical Results

Groundwater analytical results indicated that concentrations of chloroform were detected in the groundwater sample collected from temporary well MW-SB5 at a concentration of 8.7 micrograms-per liter (µg/l) which exceeds the applicable Groundwater Protection Criteria (GWPC). No other compounds were detected above RSR Criteria. Concentrations of barium and several VOCs were detected below standards in one or more wells. Refer to Table 2 for summary of the groundwater analytical data and Appendix B for a copy of the groundwater laboratory report data.

7.0 Conclusions and Recommendations

Based on the information presented in this subsurface investigation report prepared for the Middletown USARC, located at 499 Mile Lane in Middletown, Connecticut, the following conclusions and recommendations are presented:

- A site investigation was conducted, consisting of seven soil borings, two of which were completed as temporary monitoring wells, to evaluate the potential for a release to the environment from the former concrete vehicle wash rack, catch basin, OWS, and sanitary sewer manhole.

- No compounds of concern were detected above the applicable standards in the sediment sample collected from the on-site catch basin.

- Total arsenic was detected in the soil from boring SB-7 at a concentration of 23 mg/kg, which exceeded the applicable RDEC and ICDEC. No other compounds detected in soil exceeded RSR Criteria.

- Concentrations of arsenic, barium, beryllium, chromium, lead, nickel, and zinc were greater than 20 times the GA PMC in one or more soil samples. Further analysis via the SPLP or TCLP method would be required to confirm if the concentrations exceeded the GA PMC. However, the reported values of these metals in soil, with the exception of arsenic in sample SB-7, were relatively consistent in all samples with no large variations of concentration in samples near source areas of those further away. In our opinion, the concentrations are within ranges for naturally occurring elements common to parent bedrock material, with the exception of arsenic in sample SB-7.

- Chloroform was detected in the groundwater sample collected from temporary monitoring well MW-SB5 at a concentration of 8.7 ug/l, which exceeds the GWPC. No other compounds detected in groundwater exceed RSR Criteria.

- Previous environmental reports submitted for the facility indicated concentrations of TCE were present above RSR Criteria in an area approximately 150 feet north of the wash rack investigation area. The elevated TCE concentrations were addressed in the Kemron Report. Analytical data from this investigation did not indicate concentrations of TCE in groundwater above RSR Criteria in the wash rack AOC.

- Based on the analytical data, it is our opinion that a release exceeding the applicable standards associated with the sanitary sewer manhole and the grassy area adjacent to the wash rack has occurred. Additional investigation to delineate the extent of impacts is recommended

8.0 References

Connecticut Department of Environmental Protection, Remedial Standard Regulations, (22a-133k-1, et-seq.), January 30, 1996.

CT DEP, 1991. Transfer Act Site Assessment Guidance Document. Connecticut Department of Environmental Protection. June 1989, Revised November 1991.

CT DEP, 2007. Final Site Characterization Guidance. Connecticut Department of Environmental Protection. September 1, 2007

KEMRON Environmental Services, Inc., 2008. 94th Regional Readiness Command U.S. Army Reserve Center, Middletown, CT Final Remedial Investigation Report Site 08 – Groundwater Contract #W911SO 04-F0017. May 20, 2008.

Weston Solution, Inc., 2008. Final Federal Facility Site Inspection Review Memorandum for U.S. Army Reserve Center Property Middletown, Connecticut. September 4, 2008.

Figure

FILENAME: CT005.DWG



SOURCE:
SITE PLAN
PROVIDED BY: 94th REGIONAL READINESS COMMAND

SHEET NUMBER:	FIGURE NUMBER:
1	1

WASH RACK
99th REGIONAL SUPPORT COMMAND EAST
MIDDLETOWN, USARC (CT005)
499 MILE LANE
MIDDLETOWN, CT

SCALE:	DATE:	PROJECT NUMBER:
1"=120'	4/09	12187-004-500

AECOM
ENSR CORPORATION
2 TECHNOLOGY PARK DRIVE
WESTFORD, MASSACHUSETTS 01886
PHONE: (978) 589-3000
FAX: (978) 589-3100
WEB: HTTP://WWW.ENSR.AECOM.COM

DESIGNED BY:	REVISIONS			
X	NO.:	DESCRIPTION:	DATE:	BY:
DRAWN BY:				
K.P.B.				
CHECKED BY:				
X				
APPROVED BY:				
X				

Tables

Table 1
Summary of Soil Analytical Results
Facility CT005 - Wash Rack AOC
Middletown USARC
499 Mile Lane
Middletown, CT

August 28, 2008

LOCATION					SED-1		SB-1		SB-2		SB-3		SB-4		SB-5		SB-6		SB-7	
	Res DEC	IC DEC	GA PMC	Units																
Detected Contaminants																				
Total Metals																				
Arsenic, Total	**10**	**10**	**0.2*#**	**mg/kg**	3*		3.6*		3.5*		3.5*		4.2*		3.9*		4.2*		**23***	
Barium, Total	**4,700**	**140,000**	**20***	**mg/kg**	69*		56*		62*		73*		100*		90*		62*		13	
Beryllium, Total	**2**	**2**	**0.08***	**mg/kg**	0.52*		0.71*		NA		NA		0.90*		NA		NA		0.41*	
Chromium, Total	**100**	**100**	**1***	**mg/kg**	19*		20*		21*		20*		20*		22*		23*		6.7*	
Copper, Total	**2,500**	**76,000**	**26***	**mg/kg**	25		23		NA		NA		30*		NA		NA		5.6	
Lead, Total	**500**	**1,000**	**0.3***	**mg/kg**	33*		7.9*		7.8*		8.4*		9.1*		8.8*		7.9*		140*	
Nickel, Total	**1,400**	**7,500**	**2***	**mg/kg**	12*		16*		NA		NA		20*		NA		NA		4.4*	
Zinc, Total	**20,000**	**610,000**	**100***	**mg/kg**	100*		44		NA		NA		51		NA		NA		39	
Volatile Organics Compounds																				
2-Butanone	**500**	**1,000**	**8**	**mg/kg**	0.0074	U	0.0081	U	0.0068	U	0.0064	U	0.007	U	0.0079	U	0.017		0.0068	U
Acetone	**500**	**1,000**	**14**	**mg/kg**	0.0074	U	0.0081	U	0.021		0.0064	U	0.007	U	0.0079	U	0.0088		0.018	
Carbon Disulfide	**500**	**1,000**	**14**	**mg/kg**	0.037	UJ	0.040	UJ	0.034	UJ	0.032	UJ	0.035	UJ	0.039	UJ	0.035	UJ	0.034	UJ
Trichloroethene	**56**	**520**	**0.1**	**mg/kg**	0.00074	U	0.00081	U	0.00068	U	0.00064	U	0.0007	U	0.00079	U	0.00085		0.00068	U
Polynuclear Aromatic Hydrocarbons																				
Benzo(a)pyrene	**1**	**1**	**1**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.033		NA		NA		0.015	U
Benzo(b)fluoranthene	**1**	**7.8**	**1**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.032		NA		NA		0.015	U
Benzo(ghi)perylene	**1,000**	**2,500**	**4.2**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.032		NA		NA		0.015	U
Benzo(k)fluoranthene	**8.4**	**78**	**1**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.029		NA		NA		0.015	U
Fluoranthene	**1,000**	**2,500**	**5.6**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.040		NA		NA		0.015	U
Indeno(1,2,3-cd)Pyrene	**1**	**7.8**	**1**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.036		NA		NA		0.015	U
Phenanthrene	**1,000**	**2,500**	**4**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.015	U	NA		NA		0.015	U
Pyrene	**1,000**	**2,500**	**4**	**mg/kg**	0.310	U	0.015	U	NA		NA		0.039		NA		NA		0.015	U
Polychlorinated Biphenyls																				
	1	**10**	**0.0005**	**mg/kg**	ND		ND		NA		NA		ND		NA		NA		ND	
Organochlorine Pesticides																				
4,4'-DDD	**2.6**	**24**	**NS**	**mg/kg**	0.0124		0.00379	U	NA		NA		0.00374	U	NA		NA		0.00383	U
4,4'-DDE	**1.8**	**17**	**NS**	**mg/kg**	0.00575		0.00379	U	NA		NA		0.00374	U	NA		NA		0.00383	U
4,4'-DDT	**1.8**	**17**	**NS**	**mg/kg**	0.00816		0.00379	U	NA		NA		0.00374	U	NA		NA		0.00383	U
Extractable Total Petroleum Hydrocarbons																				
ETPH-CT	**500**	**2,500**	**500**	**mg/kg**	170		15	U	15	U	15	U	15	U	15	U	16	U	15	U

Notes:
Res DEC - Residential Direct Exposure Criteria
IC DEC - Industrial/Commercial Direct Exposure Criteria
GA PMC - GA Pollutant Mobility Criteria
mg/kg - milligrams per kilogram
ND - Not detected
NS - No standard
U - Below detection limits
UJ - The "non-detect" Reporting Detection Limits reported should be considered quantitative estimates that may be biased low.
Codified criterion for arsenic Groundwater Protection Criteria (GWPC) is 50 ug/l, but the revised Drinking Water Action Level is 10 ug/l, which also revises the GA PMC from 0.05 mg/kg to 0.01 mg/kg and the GB PMC from 0.5 mg/kg to 0.1 mg/kg, to be protective of human health.
* - GA PMC multiplied by 20 for metals only to allow comparison to total metals data, marked concentrations exceed GA PMC multiplied by 20.
Bold concentrations exceed Res DEC
Shaded concentrations exceed IC DEC

Table 2
Summary of Groundwater Analytical Results - Wash Rack
Facility CT005 - Wash Rack AOC
Middletown USARC
499 Mile Lane
Middletown, CT

August 28, 2008 to August 29, 2008

LOCATION						**MW-SB1**		**MW-14**		**MW-SB5**	
SAMPLING DATE						**8/29/08**		**8/29/08**		**8/28/08**	
	GWPC	**Res VC**	**IC VC**	**SWPC**	**Units**						
Detected Contaminants											
Dissolved Metals											
Barium, Dissolved	**1,000**	**NS**	**NS**	**NS**	**ug/l**	NA		111		92	
Volatile Organics Compounds											
Acetone	**700**	**50,000**	**50,000**	**NS**	**ug/l**	24		5	U	5	U
Benzene	**1**	**130**	**310**	**710**	**ug/l**	0.56		0.5	U	0.5	U
Chloroform	**6**	**26**	**62**	**14,100**	**ug/l**	0.75	U	0.75	U	**8.7**	
Ethylbenzene	**700**	**2,700**	**36,000**	**580,000**	**ug/l**	0.74		0.5	U	0.5	U
o-Xylene	**530**	**8,700**	**48,000**	**NS**	**ug/l**	1.2		1	U	1	U
p/m-Xylene	**530**	**8,700**	**48,000**	**NS**	**ug/l**	2.6		1	U	1	U
Toluene	**1,000**	**7,100**	**41,000**	**4,000,000**	**ug/l**	5.2		0.75	U	1.6	
Trichloroethene	**5**	**27**	**67**	**2,340**	**ug/l**	0.5	U	0.5	U	2.7	
Polynuclear Aromatic Hydrocarbons											
All below detection limits	**NS**	**NS**	**NS**	**NS**	**ug/l**	NA		ND		ND	
Organochlorine Pesticides											
All below detection limits	**NS**	**NS**	**NS**	**NS**	**ug/l**	NA		ND	UJ	ND	
Extractable Total Petroleum Hydrocarbons											
All below detection limits	**100**	**NS**	**NS**	**NS**	**ug/l**	ND		ND		ND	

Notes:
GWPC - Groundwater Protection Criteria
Res VC - Residential Volatilization Criteria
IC VC - Industrial Commerical Volatilization Criteria
SWPC - Surface Water Protection Criteria
ug/l - micrograms per liter
NA - Not analyzed
ND - Not detected
NS - No standard
U - Below detection limit
UJ - The “non-detect” Reporting Detection Limits reported should be considered quantitative estimates that may be biased low.

END OF REPORT

Prepared for:
99th Regional Support Command - East
11 Saratoga Blvd.
Devens, MA 01434

Leach field and Former Building Foundation Subsurface Investigation
Middletown United States Army Reserve Center
Middletown, Connecticut

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May 2009

Under contract to:
U.S. Army Corps of Engineers
Fort Worth District
Fort Worth, TX

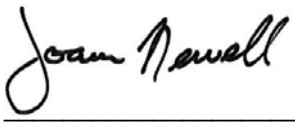
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Stell Environmental Enterprises, Inc. ...The Difference!

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Prepared for:
99th Regional Support Command - East
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Leach field and Former Building Foundation Subsurface Investigation
Middletown United States Army Reserve Center
Middletown, Connecticut



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Appendix A – Boring Logs

Appendix B – Analytical Data

Appendix C – Data Validation Report

1.0 Introduction

At the request of the Environmental Office of the U.S. Army Reserve 94th Regional Readiness Command (94th RRC), Stell Environmental Enterprises, Inc. (SEE) and ENSR Corporation (ENSR) conducted a sampling and analysis program at the Middletown United States Army Reserve Center CT005, located at 499 Mile Lane, Middletown, Connecticut. Shortly after awarding the contract to SEE and ENSR, the 94th RRC began a transition into the 99th Regional Support Command - East (99th RSC East) and all contacts listed in the Scope of Work as part of the 94th RRC are currently considered part of the 99th RSC East. The purpose of the subsurface investigation was to assess potential environmental impacts around the former building foundation and leach field. This work was done in accordance with the Statement of Work dated June 23, 2008 (Contract Number W9126G-06-D-0037, Task Order Number 0013).

2.0 Site Description

The subject property is located at 499 Mile Lane in Middletown, Connecticut. The facility is occupied by the concrete foundation of a former building, paved access areas and grassy areas. The remainder of the property consists of paved parking areas, the USARC Building, and a large grassy area to the north.

The Area of Concern (AOCs) for this investigation were identified as the perimeter of the former building foundation (due to potential historic pesticide applications), a heating oil underground storage tank (UST) formerly located south of the building, and a leach field located down-gradient of the former building.

Based on the site reconnaissance, the former building was demolished leaving behind only the concrete slab flooring. It appears that the former building was constructed of cinder block. Some of these cinder blocks had noticeable deterioration and cracking. Some of the mortar in between the blocks had also been deteriorated making some of the cinder blocks loose. The concrete slab foundation was in fair to poor shape, with some cracks noted in the southwestern portion of the building. The southwestern portion of the former building had several interior cinder block walls. The only remnants of these of wall partitions are the actual cinder blocks in the concrete slab flooring. Grass was noted growing inside the hollow cinder blocks. Also several floor and bathroom drains were found in the concrete floor. No oil staining was observed on the surface of the concrete slab.

The area outside of the boiler room where the former heating oil UST was located is completely covered by grass. There were no signs of stressed vegetation or oil staining on the grass or on the surface of the concrete slab floor. No oil staining was noted on the surface of the concrete slab flooring.

The area directly north of the former building is occupied by a large mounded leach field. This area is completely covered by grass. The field team did not observe any stressed vegetation in this area. The overall regional topography slopes steeply to the north, indicating that the groundwater is expected to flow in this direction.

Several existing monitoring wells were observed in the vicinity of the former building. These wells were installed as part of a separate environmental investigation and were not sampled as part of this investigation.

The Site is located in an area with a “GA” groundwater classification, which is defined by CTDEP as an area where groundwater is presumed to be suitable for human consumption without prior treatment, therefore, the GAPMC applies to soil data at the Site.

3.0 Previous Reports

3.1.1 Final Remedial Investigation Report, KEMRON Environmental Services, May 2008

A Final Remedial Investigation Report, prepared by KEMRON Environmental Services (KEMRON) of Atlanta, Georgia, summarized the results of the subsurface investigation conducted at the facility between November 2006 and October 2007. The report indicated that the property was historically used as a NIKE missile launching facility that was improved with three launch silos.

The report also summarized the removal of a 2,000-gallon UST by Clean Harbors Environmental Engineering, Inc. (CHEE). The UST was located along the southwestern side of the former building that is the subject of this investigation. Upon removal of the UST, several perforations were noted on the sides and bottom and petroleum contaminated soils were encountered around the perimeter of the UST. Approximately 100 cubic yards of soil, up to a depth of approximately 7 feet, were removed. Groundwater began entering the excavation at approximately 7 feet. Three soil borings, completed as monitoring wells were advanced in the vicinity of the UST excavation. Soil and groundwater samples were collected from the borings/monitoring wells for analysis of total petroleum hydrocarbons (TPH) by Environmental Protection Agency (EPA) Method 418.1 and /or volatile organic compounds (VOCs) by EPA Method 8240. TPH and VOCs were not detected in the soil samples. The VOCs 1,1-Dichloroethane (1,1-DCA) and 1,1,1-trichloroethane (1,1,1-TCA) were detected below the applicable RSR Groundwater Protection Criteria (GWPC) in one or more wells.

Historically, TCE groundwater contamination was observed at the site in well M8, which is located over 150 feet south of the AOCs for this investigation. As a result, KEMRON installed overburden and bedrock monitoring wells to delineate the extent of the TCE plume. Ten soil borings were advanced at the site. No compounds were detected in soil above RSR Criteria. Numerous monitoring wells were sampled as part of the investigation. Based on the analytical data, KEMRON determined that the extent of the TCE impacted groundwater included a limited area located approximately 75 feet south of the AOC that is the subject of this investigation. Furthermore, KEMRON determined that the TCE groundwater plume was not expected to migrate down-gradient and that concentrations of TCE within the plume should decrease over time. KEMRON determined that the groundwater flow was toward the north, northeast based on groundwater elevations measured during their investigation.

In addition, KEMRON conducted a human health risk assessment in accordance with CERCLA, the NCP, and the applicable USEPA guidance. Based on the risk assessment, KEMRON concluded that there is no unacceptable risk to receptors based on current and foreseeable use. Additionally, exposures of ecological receptors to subsurface soils were presumed to be negligible and groundwater beneath the facility was not discharging to surface water bodies.

4.0 Field Sampling

The following field activities were completed as part of the subsurface investigation. These activities were preceded by the necessary planning and preparation, including the establishment of a site-specific Health and Safety plan for the project.

4.1 Subsurface Investigation

On August 22, 2008, a site visit was performed with representatives of the 99th RSC East to select sample locations, pre-mark the site for DIGSAFE and inspect Areas of Concern (AOCs). The AOCs for this investigation were identified as the perimeter of the former building foundation (due to historic pesticide applications), a heating oil UST formerly located south of the building, and a leach field located down-gradient of the former building.

On August 29, 2008, a subsurface investigation was conducted to evaluate the potential for releases around the perimeter of the former building. A drilling subcontractor, Aquifer Drilling & Testing, Inc. (ADT) of Bloomfield, Connecticut, was used to advance nine soil borings (LS-SB1, and CP-SB1 through CP-SB8). In an attempt to obtain a representative groundwater sample, soil borings LS-SB1, CP-SB2, and CP-SB6 as temporary monitoring wells. All three wells were dry; therefore, no groundwater samples were collected as part of this investigation.

Soil boring LS-SB1 was advanced down-gradient of the leach field. Soil borings CP-SB1, CP-SB6, and CP-SB8 were advanced along the northeastern side of the foundation. Soil boring CP-SB2 was advanced down-gradient of the former UST. Soil boring CP-SB3 was advanced down-gradient of the former boiler room, through the foundation. Soil boring CP-SB4 was advanced upgradient of the former UST. Soil boring CP-SB5 was advanced along the southeastern side of the foundation. Soil boring CP-SB7 was advanced through the southern portion of the foundation.

Soil borings were advanced using a GeoProbe to a maximum depth of 20 feet below surface grade (BSG). During soil boring advancement, soil samples were obtained using a five-foot long disposable acetate liner in the macro core sampler. Soil samples were characterized by a scientist and inspected for evidence of impacts. Field measurements of total volatile organic vapors in each soil sample were conducted using the jar headspace method using a photoionization detector (PID) MiniRae 2000. Headspace readings were below instrument detection limits in all borings except boring LS-SB1, where a high PID reading of 74.1 parts-per-million (ppm) was detected from zero to five feet BSG.

On September 29, 2008, the field team returned to the site to collect shallower soil samples from boring locations CP-SB1, CP-SB2, CP-SB5, CP-SB6, and CP-SB8. The samples were collected from a depth of six to twelve inches with a stainless steel hand auger to evaluate the potential for pesticides in the shallow subsurface. The hand auger was decontaminated with Alconox between sample locations. Refer to Appendix A for a copy of the boring logs for further information on boring completion, well construction, PID screening results, and Figure 1, the Site Plan, for boring locations and other pertinent information.

Soil sample depths were determined based on the highest PID readings. In the borings that did not exhibit elevated PID readings, or other evidence of impacts, soil samples were collected for analysis from below the AOC (i.e. the bottom of the leaching gallery or piping).

Soil samples were stored on ice in the field and delivered via courier under proper chain of custody to Alpha Analytical, Inc. (Alpha Analytical) of Westborough, Massachusetts. Alpha Analytical holds Army: USACE certification for soil and groundwater testing methods. All soil samples were submitted for analysis of organochlorine pesticides (OCPs) by EPA SW-846 Method 8081. Samples LS-SB1-S-1, LS-SB1-S-4, and

CP-SB1 through CP-SB8 were also analyzed for VOCs by Environmental Protection Agency (EPA) SW-846 Method 8260B. Samples CP-SB2, CP-SB3, and CP-SB8 were also analyzed for Resource Conservation and Recovery Act (RCRA 8) metals and 13 Priority Pollutant (PP13) Metals by EPA SW-846 methods 6010B and 7471A. Samples LS-SB1-S-1, LS-SB1-S-4, and CP-SB1 through CP-SB4 were also analyzed for total extractable petroleum hydrocarbons (ETPH) by the CT EPH method. Lastly, soil boring CP-SB2 was also analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA SW-846 Method 8270C.

Soil analytical results are summarized in Table 1 and the laboratory analytical reports and chain of custody documentation are included as Appendix B. Soil analytical results are discussed in Section 5.1.

4.2 Groundwater Investigation

In an attempt to obtain a representative groundwater sample, soil borings LS-SB1, CP-SB2, and CP-SB6 as temporary monitoring wells. All three wells were dry; therefore, no groundwater samples were collected as part of this investigation.

5.0 Quality Control Review

5.1 Soil QA/QC

A quality assurance/quality control (QA/QC) review of the soil analytical data (Alpha Report #L0812889 and #L0814495) was performed. This QA/QC review concluded that the laboratory analyses were performed acceptably, and all data in the referenced job numbers are valid and usable with qualifications as recommended in the data validation report. The qualifications recommended in the data validation report are shown on Table 1. For a more detailed summary of the soil QA/QC refer to Appendix C, the Validation Report.

6.0 Results

6.1 Soil Analytical Results

No compounds of concern were detected above the Connecticut Remediation Standard Regulation (RSR) Criteria. Several metals, ETPH, PAHs, and pesticides were present at concentrations below RSR Criteria in one or more soil samples.

Concentrations of arsenic, barium, beryllium, chromium, copper, lead, and nickel were greater than 20 times the GA Pollutant Mobility Criteria (PMC) in one ore more samples. In order to compare directly to the GA PMC, the CT RSR requires metals to be analyzed following either a toxicity characteristic leaching procedure (TCLP) or synthetic precipitation leaching procedure (SPLP) extraction. However, it is not always necessary to analyze every sample by the SPLP or TCLP methods; because it is possible to predict whether a sample analyzed without TCLP or SPLP extraction (e.g. analyzed for "total" metals) could exceed the GA PMC by a preliminary comparison using an approach commonly referred to as the "20-Rule". The 20-rule compares each total metal analyte detected to its applicable GA PMC multiplied by 20. This factor is derived from the 20:1 liquid-to-solid ratio employed in the SPLP extraction and provides a comparison to the potential SPLP or TCLP result if 100% of the concentration of total metal detected were to be extracted from the sample. In practice, TCLP and SPLP extraction does not leach 100% of the available total metal and therefore, the 20-rule provides a conservative estimate of a TCLP or SPLP results relative to the GA PMC. Therefore, the "20-rule" can be applied to total metals data analyzed without an extraction to determine if SPLP or TCLP extraction should be performed for direct comparison to the GA PMC.

Example:

The GA PMC for beryllium is 0.004 mg/L. Sample CP-SB2 contained a total beryllium concentration of 1.0 mg/kg. Since this data is not directly comparable to the GA PMC of 0.004 mg/L, the GA PMC is multiplied by 20, yielding a 20-rule GA PMC for total beryllium data of 0.08 mg/kg. Since the concentration of beryllium in sample CP-SB2 is greater than 0.08 mg/kg, the sample has the potential to exceed the GA PMC.

Further analysis via the SPLP or TCLP method would be required to confirm if the concentration exceeds the GA PMC. However, the reported values of these metals in soil were relatively consistent in all samples with no large variations of concentration in samples near source areas or those further away. In our opinion, the concentrations are naturally occurring elements common to parent bedrock material in the northeast. Refer to Table 1 for a summary of the soil analytical data and Appendix B for the soil laboratory data.

6.2 Groundwater Analytical Results

Groundwater samples were not collected as part of this investigation.

7.0 Conclusions and Recommendations

Based on the information presented in this subsurface investigation report prepared for the Middletown United States Army Reserve Center CT005, located at 499 Mile Lane, Middletown, Connecticut, the following conclusions and recommendations are presented:

- A site investigation was conducted, consisting of nine soil borings and five hand auger soil samples to evaluate the potential for releases to the environment from former building foundation (due to historic pesticide applications), a heating oil UST formerly located south of the building, and a leach field located down-gradient of the former building.

- Three of the soil borings advanced at the site were completed as temporary flush mounted monitoring wells; however the wells were dry and no groundwater samples were collected for analysis.

- No compounds of concern were detected above Connecticut RSR Criteria, including TCE, which has been established as a compound of concern at the site. Several metals, ETPH, PAHs, and pesticides were present at concentrations below RSR Criteria in one or more soil samples.

- Concentrations of arsenic, barium, beryllium, chromium, copper, lead, and nickel were greater than 20 times the GA PMC in one ore more samples. Further analysis via the SPLP or TCLP method would be required to confirm if the concentration exceeds the GA PMC. However, the reported values of these metals in soil were relatively consistent in all samples with no large variations of concentration in samples near source areas or those further away. In our opinion, the concentrations are within ranges for naturally occurring elements common to parent bedrock material in the northeast.

- Based on the analytical data, it is our opinion that a release exceeding applicable standards associated with the former building foundation, heating oil UST, and leach field has not occurred; therefore, no further investigation is warranted at this time.

8.0 References

Connecticut Department of Environmental Protection, Remedial Standard Regulations, (22a-133k-1, et-seq.), January 30, 1996.

CT DEP, 1991. Transfer Act Site Assessment Guidance Document. Connecticut Department of Environmental Protection. June 1989, Revised November 1991.

CT DEP, 2007. Final Site Characterization Guidance. Connecticut Department of Environmental Protection. September 1, 2007

KEMRON Environmental Services, Inc., 2008. 94th Regional Readiness Command U.S. Army Reserve Center, Middletown, CT Final Remedial Investigation Report Site 08 – Groundwater Contract #W911SO 04-F0017. May 20, 2008.

Figure

FILENAME: CT005.DWG



SOURCE:
SITE PLAN
PROVIDED BY: 94th REGIONAL READINESS COMMAND

SHEET NUMBER:	FIGURE NUMBER:
1	1

LEACHFIELD
99th REGIONAL SUPPORT COMMAND EAST
MIDDLETOWN, USARC (CT005)
499 MILE LANE
MIDDLETOWN, CT

SCALE:	DATE:	PROJECT NUMBER:
1"=120'	5/09	12187-004-500

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X	NO.:	DESCRIPTION:	DATE:	BY:
DRAWN BY:				
K.P.B.				
CHECKED BY:				
X				
APPROVED BY:				
X				

Tables

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Table 1
Summary of Soil Analytical Results
Facility CT005 - Leachfield & Former Building AOC
Middletown USARC
499 Mile Lane
Middletown, CT

August 29 and September 29, 2008

LOCATION					LS-SB1-S1		LS-SB1-S4		CP-SB1		CP-SB1		CP-SB2		CP-SB2		CP-SB3		CP-SB4		CP-SB5		CP-SB5		CP-SB6		CP-SB6		CP-SB7		CP-SB8		CP-SB8	
				Date	8/29/2008		8/29/2008		8/29/2008		9/29/2008		8/29/2008		9/29/2008		8/29/2008		8/29/2008		8/29/2008		9/29/2008		8/29/2008		9/29/2008		8/29/2008		8/29/2008		9/29/2008	
	Res DEC	IC DEC	GA PMC	Units																														
Detected Contaminants																																		
Total Metals																																		
Arsenic, Total	**10**	**10**	**0.2***	**mg/kg**	NA		NA		NA		NA		4.5*		NA		3*		NA		NA		NA		NA		NA		NA		3.2*		NA	
Barium, Total	**4,700**	**140,000**	**20***	**mg/kg**	NA		NA		NA		NA		120*		NA		86*		NA		NA		NA		NA		NA		NA		95*		NA	
Beryllium, Total	**2**	**2**	**0.08***	**mg/kg**	NA		NA		NA		NA		1.0*		NA		0.90*		NA		NA		NA		NA		NA		NA		0.74*		NA	
Chromium, Total	**100**	**100**	**1***	**mg/kg**	NA		NA		NA		NA		22*		NA		20*		NA		NA		NA		NA		NA		NA		17*		NA	
Copper, Total	**2,500**	**76,000**	**26***	**mg/kg**	NA		NA		NA		NA		25		NA		47*		NA		NA		NA		NA		NA		NA		32*		NA	
Lead, Total	**500**	**1,000**	**0.3***	**mg/kg**	NA		NA		NA		NA		11*		NA		8.4*		NA		NA		NA		NA		NA		NA		8.0*		NA	
Nickel, Total	**1,400**	**7,500**	**2***	**mg/kg**	NA		NA		NA		NA		25*		NA		20*		NA		NA		NA		NA		NA		NA		25*		NA	
Zinc, Total	**20,000**	**610,000**	**100***	**mg/kg**	NA		NA		NA		NA		59		NA		51		NA		NA		NA		NA		NA		NA		51		NA	
Volatile Organics Compunds																																		
Carbon Disulfide	**500**	**1,000**	**14**	**mg/kg**	0.051	U	0.036	UJ	0.033	UJ	NA		2.5	U	NA		0.039	UJ	0.032	UJ	0.034	UJ	NA		0.034	UJ	NA		0.035	UJ	0.033	UJ	NA	
Polynuclear Aromatic Hydrocarbons																																		
Benzo(a)pyrene	**1**	**1**	**1**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	**1**	**7.8**	**1**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzo(ghi)perylene	**1,000**	**2,500**	**4.2**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	**8.4**	**78**	**1**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoranthene	**1,000**	**2,500**	**5.6**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)Pyrene	**1**	**7.8**	**1**	**mg/kg**	NA		NA		NA		NA		0.016	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Phenanthrene	**1,000**	**2,500**	**4**	**mg/kg**	NA		NA		NA		NA		0.051		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Pyrene	**1,000**	**2,500**	**4**	**mg/kg**	NA		NA		NA		NA		0.037		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Organochlorine Pesticides																																		
4,4'-DDD	**2.6**	**24**	**NS**	**mg/kg**	0.00397	U	0.0037	U	0.00397	U	0.0129	J	0.00397	U	0.0103	J	0.00397	U	0.00933		0.00388	U	0.0124	J	0.00379	U	0.0181	J	0.00383	U	0.00388	U	0.00917	J
4,4'-DDE	**1.8**	**17**	**NS**	**mg/kg**	0.00397	U	0.0037	U	0.0158		0.312	J	0.00397	U	0.0218	J	0.00397	U	0.00392	U	0.0062		0.422	J	0.0138		0.188	J	0.00383	U	0.0314		0.1	J
4,4'-DDT	**1.8**	**17**	**NS**	**mg/kg**	0.00397	U	0.0037	U	0.00623		0.136	J	0.00397	U	0.148	J	0.00397	U	0.0149		0.00388	U	0.140	J	0.00519		0.0654	J	0.00383	U	0.00891		0.0354	J
Extractable Total Petroleum Hydrocarbons																																		
ETPH-CT	**500**	**2,500**	**500**	**mg/kg**	16	U	15	U	16	U	NA		16	U	NA		16	U	30		NA		NA		NA		NA		NA		NA		NA	

Notes:
Res DEC - Residential Direct Exposure Criteria
IC DEC - Industrial/Commercial Direct Exposure Criteria
GA PMC - GA Pollutant Mobility Criteria
mg/kg - milligrams per kilogram
ND - Not detected
NS - No standard
NA - Not Analyzed
J - Estimated Concentration
U - Below detection limits
UJ - The "non-detect" Reporting Detection Limits reported should be considered quantitative estimates that may be biased low.
* - GA PMC multiplied by 20 for metals only to allow comparison to total metals data, marked concentrations exceed GA PMC multiplied by 20.

END OF REPORT

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Well Abandonment Summary

94th Regional Readiness Command
US Army Reserve Centers (USARC)
Contract # W911SO-04-F0017

August 11, 2009

Groundwater monitoring wells were abandoned at USARC facilities located in Connecticut, Massachusetts and Rhode Island. The wells were abandoned at the three facilities listed below:

- Middletown USARC- 499 Mile Lane, Middletown, Connecticut
- LT. John Ferra USARC - 72 North Street, Danvers, Massachusetts
- Fort Nathaniel Greene - 970 Point Judith Road (Route 108), Narragansett, Rhode Island

Site locus maps which indicate the facility locations are included as **Figures 1 through 3**. Site layout maps which depict site features and locations of the now abandoned wells are included as **Figures 4 through 6.** A total of 39 groundwater wells were abandoned between the three facilities. A summary of the wells which were abandoned is included on **Table 1**.

The well abandonments were performed in general conformance with applicable state regulations. The groundwater monitoring wells at the Middletown USARC facility were abandoned in general conformance with the Well Drilling Code, Regulations of Connecticut State Agencies (RCSA) 25-128-33 through 25-129-2 regulations. The wells were abandoned by tremie grouting the well interior to grade followed by terminating the well casing at least 4 feet below the ground surface. The area was restored to match its surroundings. Verification of well abandonment forms prepared by the drilling subcontractor are attached as **Appendix A**.

The wells at the LT. John Ferra USARC in Massachusetts were abandoned in general conformance with the Commonwealth of Massachusetts Department of Environmental Protection (MADEP) Standard References for Monitoring Wells Small Diameter Driven Well Supplement. The wells were abandoned by removing the well casing and tremie grouting the borehole. The area was restored to match its surroundings. Well completion reports prepared by the drilling subcontractor are attached as **Appendix B**.

The monitoring wells at Fort Nathaniel Greene in Rhode Island were abandoned in general conformance with the Rhode Island Department of Environmental Management (RIDEM) Rules and Regulations of Groundwater Quality. The wells were abandoned by removing the well casing and tremie grouting the borehole. The area was restored to match its surroundings.

Photographs of the well locations following completion of the well abandonment is included as **Appendix C**.

Location coordinates of the former groundwater monitoring wells are included on **Table 2.**

FIGURES



SOURCE:
USGS – MIDDLETOWN, CT
1965 – REVISED 1992

0 600 1200 2400
SCALE IN FEET

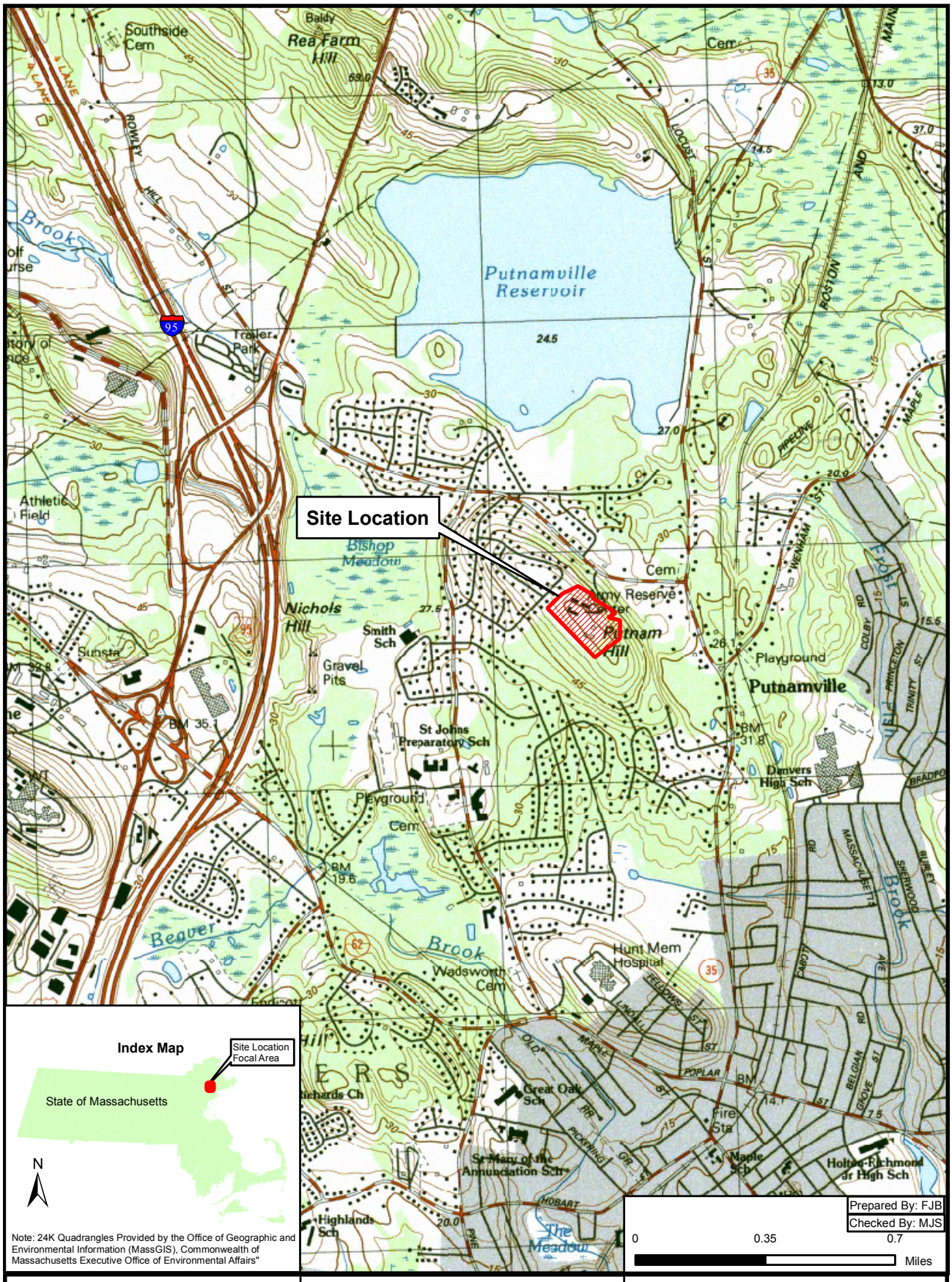
Prepared/Date: MRS 08/01/2006
Checked/Date: JRY 08/01/2006

94th Regional Readiness Command
US Army Reserve Center
Middletown, Connecticut

KEMRON ENVIRONMENTAL SERVICES MACTEC

LOCUS MAP
Project 3618-04-8110
Figure 1

M:\Projects\KEMRON_USARC\WELL-ABANDONMENT-SUMMARY\FIG1-Figure 1-1.dwg Mon, 20 Jul 2009 - 11:42am rhholman



94th Regional Readiness Command
Lt. John A. Ferra USARC
Danvers, Massachusetts

KEMRON ENVIRONMENTAL SERVICES MACTEC

Locus Map FIGURE 2

GFPR Contract #W911S0-04-F0017



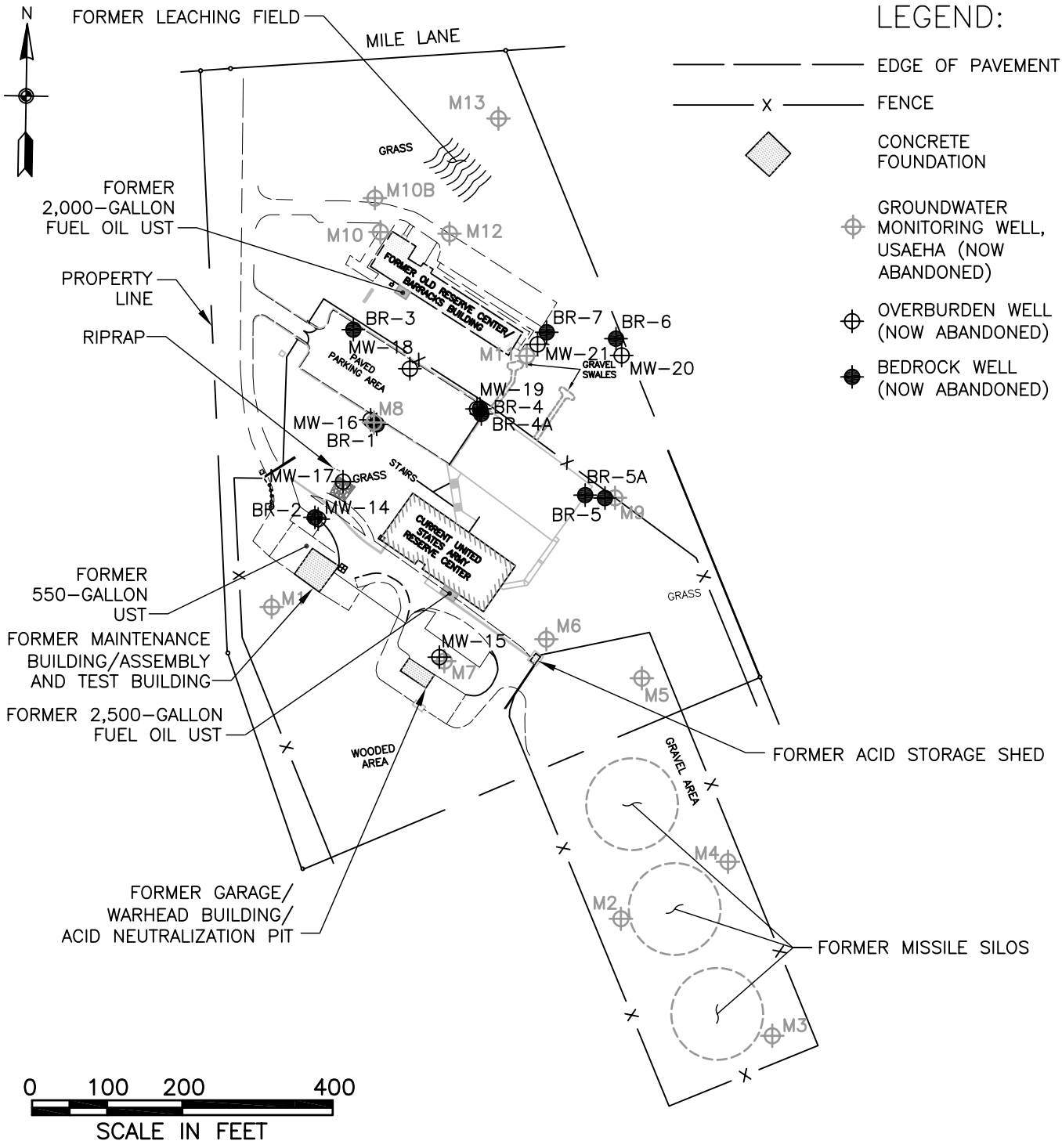
94th Regional Readiness Command
Fort Nathaniel Greene
Narragansett, Rhode Island

KEMRON ENVIRONMENTAL SERVICES MACTEC

Locus Map FIGURE 3

GFPR Contract #W911S0-04-F00017

Document: P:\Projects\kemron usarc\GIS\Map Documents\Locus_8x11p_RhodeIsland.mxd



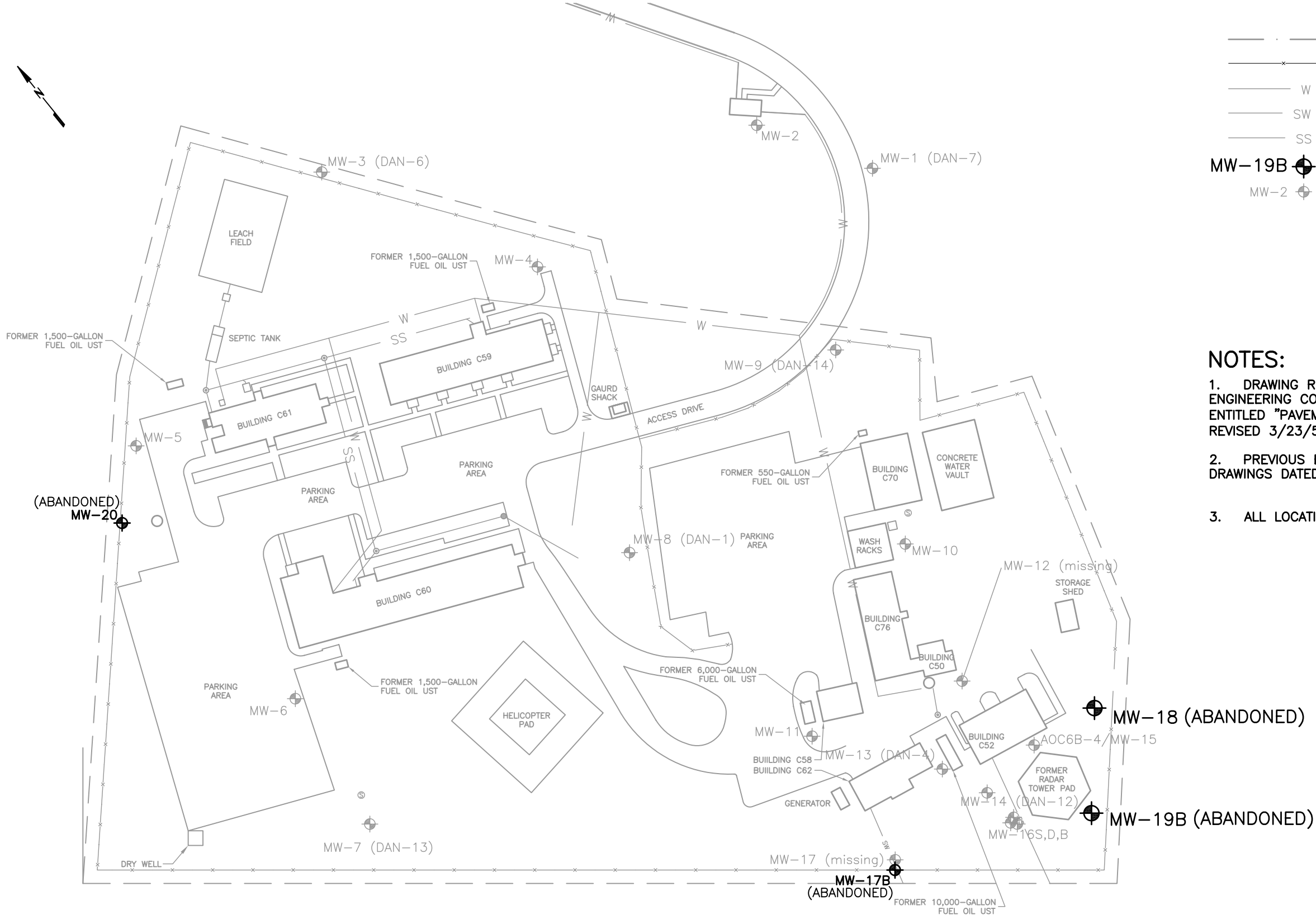
DRAWING REFERENCE: PLAN PREPARED BY THE DEPARTMENT OF THE ARMY, ENTITLED "150 MEMBER UNITED STATES ARMY RESERVE MIDDLETOWN, CT; SITE LAYOUT PLAN" DATED 31 OCT 1984, ORIGINAL SCALE: 1"=40'.

ENVIRONMENTAL INVESTIGATION PERFORMED IN SUPPORT OF CLOSURE OF DSERTS SITE 08 "GROUNDWATER" UNDER CONTRACT NO. W911SO-04-F0017.

Prepared/Date: JBC 04/20/07
Checked/Date: JRY 04/20/07

94th Regional Readiness Command US Army Reserve Center Middletown, Connecticut	kemron ENVIRONMENTAL SERVICES MACTEC	EXPLORATION LOCATIONS Project 3618-04-8110 Figure 4

M:\Projects\KEMRON_USARC\WELL-ABANDONMENT-SUMMARY\FIG4-RIR-B101.dwg Mon, 20 Jul 2009 - 1:19pm rhholman



LEGEND:

- PROPERTY BOUNDARY
- FENCE
- W — WATER
- SW — STORM DRAIN
- SS — SEWER
- MW-19B — MONITORING WELL (NOW ABANDONED)
- MW-2 — EXISTING MONITORING WELL

NOTES:

1. DRAWING REFERENCE: PLAN PREPARED BY THE CRANDALL ENGINEERING COMPANY AND THE U.S. ARMY CORPS OF ENGINEERS, ENTITLED "PAVEMENT AND GRADING PLAN," DATED JUNE 1956 AND REVISED 3/23/58 (AS-BUILT), ORIGINAL SCALE: 1"=40'.

2. PREVIOUS EXPLORATION LOCATIONS FROM VARIOUS NOBIS DRAWINGS DATED OCTOBER 2000 AND JULY 2003.

3. ALL LOCATIONS ARE APPROXIMATE.

Prepared/Date: ARM 05/18/06
Checked/Date: DEH 05/18/06

0 40 80 160
SCALE IN FEET

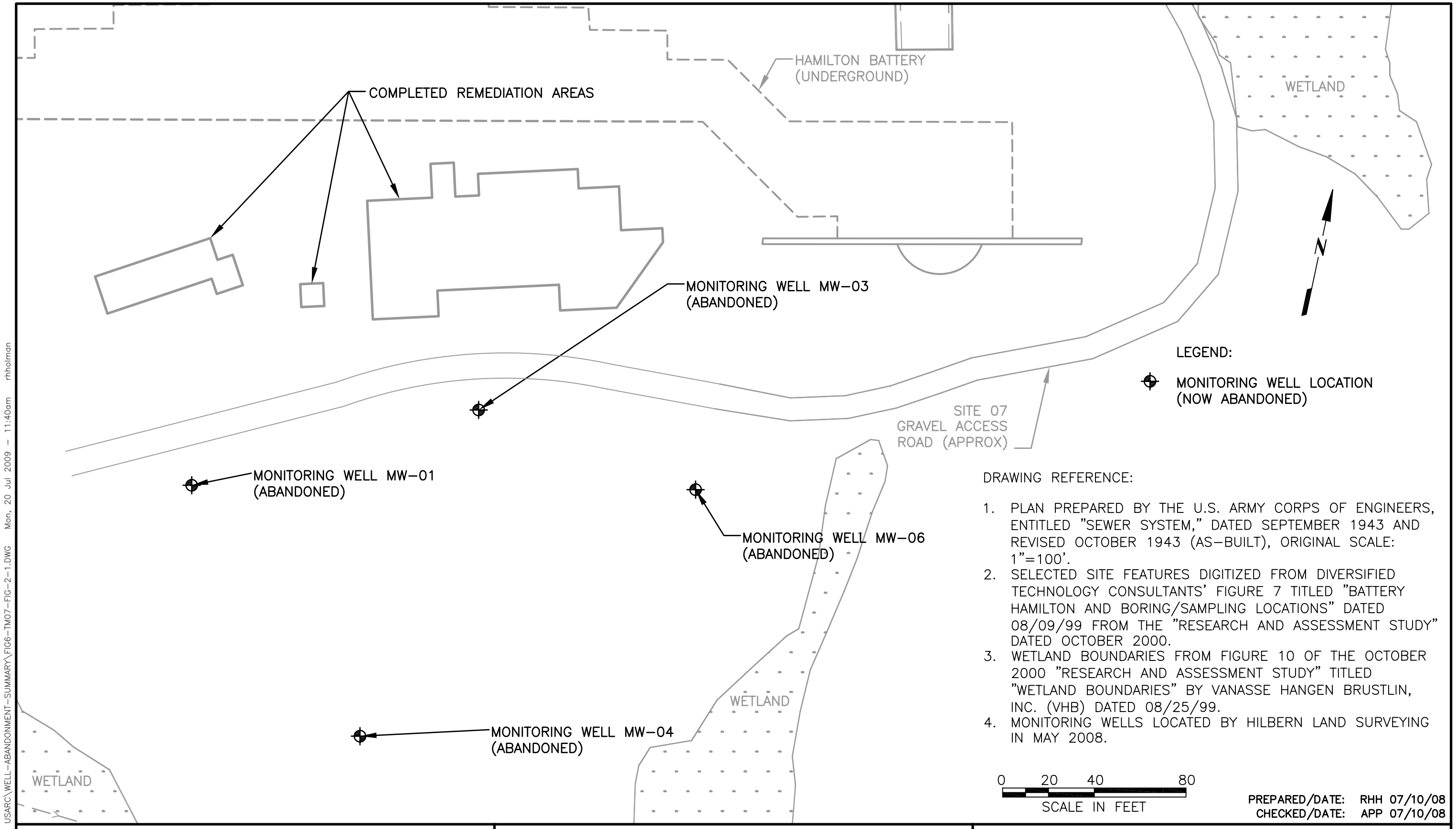
KEMRON ENVIRONMENTAL SERVICES

94TH REGIONAL READINESS COMMAND
LT. JOHN FERRA USARC
DANVERS, MASSACHUSETTS

MACTEC

MACTEC SAMPLING LOCATIONS
PROJECT 3618048113.04
PROJECT 3618048114.04
PROJECT 3618058037.024
FIGURE 5

M:\Projects\KEMRON USARC\WELL-ABANDONMENT-SUMMARY\FIG5-SAP-B102.dwg Mon, 20 Jul 2009 - 11:44am rhholman



DRAWING REFERENCE:

1. PLAN PREPARED BY THE U.S. ARMY CORPS OF ENGINEERS, ENTITLED "SEWER SYSTEM," DATED SEPTEMBER 1943 AND REVISED OCTOBER 1943 (AS–BUILT), ORIGINAL SCALE: 1"=100'.
2. SELECTED SITE FEATURES DIGITIZED FROM DIVERSIFIED TECHNOLOGY CONSULTANTS' FIGURE 7 TITLED "BATTERY HAMILTON AND BORING/SAMPLING LOCATIONS" DATED 08/09/99 FROM THE "RESEARCH AND ASSESSMENT STUDY" DATED OCTOBER 2000.
3. WETLAND BOUNDARIES FROM FIGURE 10 OF THE OCTOBER 2000 "RESEARCH AND ASSESSMENT STUDY" TITLED "WETLAND BOUNDARIES" BY VANASSE HANGEN BRUSTLIN, INC. (VHB) DATED 08/25/99.
4. MONITORING WELLS LOCATED BY HILBERN LAND SURVEYING IN MAY 2008.

0 20 40 80
SCALE IN FEET

PREPARED/DATE: RHH 07/10/08
CHECKED/DATE: APP 07/10/08

94TH REGIONAL READINESS COMMAND
FORT NATHANIEL GREENE
U.S. ARMY RESERVE CENTER
NARRAGANSETT, RHODE ISLAND

KEMRON ENVIRONMENTAL SERVICES

MACTEC

MONITORING WELL LOCATIONS
SITE 07 – ABANDONED RIFLE RANGE

FIGURE 6

M:\Projects\KEMRON USARC\WELL-ABANDONMENT-SUMMARY\FIG6-TM07-FIG-2-1.DWG Mon, 20 Jul 2009 - 11:40am rhholman

TABLES

TABLE 1
WELL DETAILS
USARC Facilities in Middletown, CT, Danvers, MA and Narragansett, RI (Fort Greene)

Facility	Well ID	Well Diameter	Well Depth (feet)	Well Type	Date of Abandonment
Middletown USARC	M1	2 inch	28	Bedrock	07/10/09
Middletown USARC	M2	2 inch	25	Bedrock	07/10/09
Middletown USARC	M3	2 inch	28	Bedrock	07/10/09
Middletown USARC	M4	2 inch	28	Bedrock	07/10/09
Middletown USARC	M5	2 inch	28	Bedrock	07/10/09
Middletown USARC	M6	2 inch	29	Bedrock	07/10/09
Middletown USARC	M7	2 inch	29	Bedrock	07/10/09
Middletown USARC	M8	2 inch	20	Overburden	07/09/09
Middletown USARC	M9	2 inch	14	Overburden	07/09/09
Middletown USARC	M10	2 inch	16	Overburden	07/08/09
Middletown USARC	M10B	2 inch	19	Overburden	07/08/09
Middletown USARC	M11	2 inch	12	Overburden	07/08/09
Middletown USARC	M12	2 inch	16	Overburden	07/08/09
Middletown USARC	M13	2 inch	14	Overburden	07/08/09
Middletown USARC	MW-14	2 inch	17	Overburden	07/10/09
Middletown USARC	MW-15	2 inch	20	Overburden	07/10/09
Middletown USARC	MW-16	2 inch	12	Overburden	07/09/09
Middletown USARC	MW-17	2 inch	16	Overburden	07/10/09
Middletown USARC	MW-18	2 inch	13	Overburden	07/09/09
Middletown USARC	MW-19	2 inch	20	Overburden	07/09/09
Middletown USARC	MW-20	2 inch	20	Overburden	07/08/09
Middletown USARC	MW-21	2 inch	20	Overburden	07/08/09
Middletown USARC	BR-1	2 inch	35	Bedrock	07/09/09
Middletown USARC	BR-2	2 inch	35	Bedrock	07/10/09
Middletown USARC	BR-3	2 inch	34	Bedrock	07/09/09
Middletown USARC	BR-4	2 inch	35	Bedrock	07/09/09
Middletown USARC	BR4A	2 inch	68	Bedrock	07/09/09
Middletown USARC	BR-5	2 inch	35	Bedrock	07/09/09
Middletown USARC	BR-5A	2 inch	70	Bedrock	07/09/09
Middletown USARC	BR-6	2 inch	79	Bedrock	07/08/09
Middletown USARC	BR-7	2 inch	61	Bedrock	07/08/09
Danvers USARC	MW-17B	1 inch	13	Overburden	07/06/09
Danvers USARC	MW-18	1 inch	12	Overburden	07/06/09
Danvers USARC	MW-19B	1 inch	12	Overburden	07/06/09
Danvers USARC	MW-20	1 inch	15	Overburden	07/06/09
Fort Greene, Narragansett, RI	MW-01	2 inch	20	Overburden	07/07/09
Fort Greene, Narragansett, RI	MW-03	2 inch	16	Overburden	07/07/09
Fort Greene, Narragansett, RI	MW-04	2 inch	18	Overburden	07/07/09
Fort Greene, Narragansett, RI	MW-06	2 inch	16	Overburden	07/07/09

TABLE 2
Location Coordinates of Former Groundwater Monitoring Wells
USARC Facilities in Middletown, CT, Danvers, MA and Narragansett, RI (Fort Greene)

Site	North	West	Well ID	Coordinate System
Danvers, MA	42° 35.252	70° 56.672	MW-17B	Latitude/Longitude
Danvers, MA	42° 35.245	70° 56.640	MW-18	Latitude/Longitude
Danvers, MA	42° 35.236	70° 56.647	MW-19B	Latitude/Longitude
Danvers, MA	42° 35.337	70° 56.752	MW-20	Latitude/Longitude

Site	Northing (ft)	Easting (ft)	Well ID	Coordinate System
Fort Greene, RI	108520.95	332638.36	MW-01	State Plane NAD 83
Fort Greene, RI	108571.66	332765.01	MW-03	State Plane NAD 83
Fort Greene, RI	108412.38	332750.97	MW-04	State Plane NAD 83
Fort Greene, RI	108542.57	332857.21	MW-06	State Plane NAD 83

Site	North	West	Well ID	Coordinate System
Fort Greene, RI	41.3811706	71.4834022	MW-01	Latitude/Longitude
Fort Greene, RI	41.3813097	71.4829407	MW-03	Latitude/Longitude
Fort Greene, RI	41.3808725	71.4829919	MW-04	Latitude/Longitude
Fort Greene, RI	41.3812298	71.4826047	MW-06	Latitude/Longitude

Site	Northing (ft)	Easting (ft)	Well ID	Coordinate System
Middletown, CT	772311.37	1017341.93	MW-14	State Plane NAD 83
Middletown, CT	772127.78	1017503.15	MW-15	State Plane NAD 83
Middletown, CT	772443.38	1017411.85	MW-16	State Plane NAD 83
Middletown, CT	772361.28	1017375.01	MW-17	State Plane NAD 83
Middletown, CT	772511.37	1017464.01	MW-18	State Plane NAD 83
Middletown, CT	772457.91	1017553.36	MW-19	State Plane NAD 83
Middletown, CT	772529.16	1017745.63	MW-20	State Plane NAD 83
Middletown, CT	772543.89	1017633.80	MW-21	State Plane NAD 83
Middletown, CT	772437.50	1017419.83	BR-1	State Plane NAD 83
Middletown, CT	772313.70	1017337.70	BR-2	State Plane NAD 83
Middletown, CT	772563.47	1017388.79	BR-3	State Plane NAD 83
Middletown, CT	772458.09	1017557.06	BR-4	State Plane NAD 83
Middletown, CT	772451.35	1017558.94	BR-4A	State Plane NAD 83
Middletown, CT	772339.49	1017723.37	BR-5	State Plane NAD 83
Middletown, CT	772343.35	1017697.10	BR-5A	State Plane NAD 83
Middletown, CT	772551.37	1017738.06	BR-6	State Plane NAD 83
Middletown, CT	772559.92	1017646.00	BR-7	State Plane NAD 83
Middletown, CT	772194.40	1017280.18	M1	State Plane NAD 83
Middletown, CT	771779.87	1017744.62	M2	State Plane NAD 83
Middletown, CT	771624.11	1017945.90	M3	State Plane NAD 83
Middletown, CT	771855.68	1017887.02	M4	State Plane NAD 83
Middletown, CT	772099.84	1017772.41	M5	State Plane NAD 83
Middletown, CT	772151.65	1017645.44	M6	State Plane NAD 83
Middletown, CT	772122.40	1017509.78	M7	State Plane NAD 83
Middletown, CT	772439.89	1017416.11	M8	State Plane NAD 83
Middletown, CT	772339.74	1017736.72	M9	State Plane NAD 83
Middletown, CT	772693.22	1017424.86	M10	State Plane NAD 83
Middletown, CT	772738.42	1017417.49	M10B	State Plane NAD 83
Middletown, CT	772528.64	1017619.27	M11	State Plane NAD 83
Middletown, CT	772691.13	1017516.61	M12	State Plane NAD 83
Middletown, CT	772844.25	1017581.74	M13	State Plane NAD 83

APPENDIX A

CONNECTICUT VERIFICATION OF WELL ABANDONMENT FORMS

WELL ABANDONMENT, VERIFICATION OF WORK COMPLETED

Procedures Followed: All procedures used to abandon a well shall follow regulations established under Section 25-128-56 and 25-128-57 of the State of Connecticut Well Drilling Board (see attachment). These regulations require that a registered well drilling contractor perform the work.

Well Information

TOWN: **Middletown, CT**

Name of Owner: **United States Army**

Address: **499 Mile Lane, Middletown, CT**

Location of well (if different from above): _____

Type of well (drilled, point, dug, etc.): **Drilled Monitoring Wells**

Depth of well: **Vary in depth from 12-79'**

Diameter of well: **All wells constructed with 2" PVC**

Length of casing: **Casing varied in length from 2-69'**

Work details and other information

Name of registered well driller performing work: **Marques Larabie of Aquifer, Drilling & Testing, Inc.**

Registered well driller's license #: **WND.0000156-W4**

Materials used: Amount of sand: **N/A**

Amount and type of grout: **Portland/Bentonite Grout**

Description of work completed: **Abandoned 31 Two Inch PVC monitoring wells by tremmie grouting from the bottom to top and cutting off PVC approximately 4' below the ground surface. Wells abandoned include:**

M1 (28'), M2 (25'), M3 (28'), M4 (28'), M5 (28'), M6 (29'), M7 (29'), M8 (20'), M9 (14'), M10 (16'), M10B (19'), M11 (12'), M12 (16'), M13 (14'), MW-14 (17'), MW-15 (20'), MW-16 (12'), MW-17 (16'), MW-18 (13'), MW-19 (20'), MW-20 (20'), MW-21 (20'), BR-1 (35'), BR-2 (35'), BR-3 (34'), BR-4 (35'), BR4A (68'), BR-5 (35'), BR-5A (70'), BR-6 (79') and BR-7 (61').

Date work completed: **July 8th-July 10th 2009**

Signed: _____

APPENDIX B

MASSACHUSETTS WELL COMPLETION REPORTS

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Massachusetts Department of Conservation and Recreation
Office of Water Resources

160220

TYPE OR PRINT ONLY

Well Completion Report

1. WELL LOCATION GPS (Required) North 42° 35.252 West 70° 56.672

Address at Well Location: 72 North St
Subdivision Name:
City/Town: Danvers, MA
Assessors Map ____ Assessors Lot #: ____
Board of Health permit obtained: Yes ☐ Not Required ☒

Property Owner/Client: USAR / Mactec
Mailing Address: 1090 Elm St.
City/Town: Rocky Hill, CT 06067
NOTE: Assessors Map and Lot # mandatory if no street address available
Permit Number ____ Date Issued ____

2. WORK PERFORMED: DC

3. WELL TYPE: MONT

4. DRILLING METHOD

Overburden	Bedrock
D P	☐ ☐

6. CASING

From (ft)	To (ft)	Type	Thickness	Diameter
		☐☐☐		
		☐☐☐		
		☐☐☐		

7. SCREEN

From (ft)	To (ft)	Type	Slot Size	Diameter
		☐☐☐	. ___	
		☐☐☐	. ___	
		☐☐☐	. ___	

8. ANNULAR SEAL/FILTER PACK/ABANDONMENT MTL.

From (ft)	To (ft)	Material Description	Purpose
0	13	C B	F L
		☐☐	☐☐
		☐☐	☐☐
		☐☐	☐☐

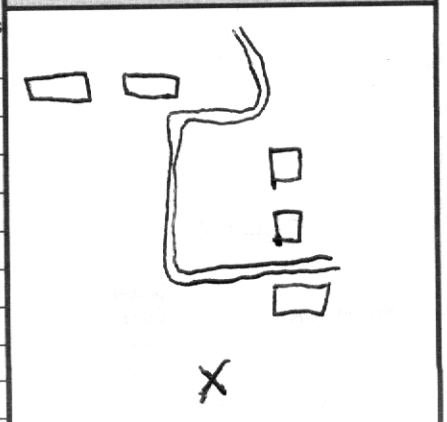
5. WELL LOG — OVERBURDEN LITHOLOGY

From (ft)	To (ft)	Code	Color	Comment	Water Bearing Zone	Loss or Addition of Fluid	Drop in Drill Stem	Extra Fast or Slow Drill Rate
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S

WELL LOG — BEDROCK LITHOLOGY

From (ft)	To (ft)	Code	Comment	Water Bearing Zone	Drop in Drill Stem	Extra Large Chips	Extra Fast or Slow Drill Rate	Visible Rust Staining	Loss or Addition of Fluid	# of Fractures per foot
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	

9. SITE SKETCH



10. WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield (GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time to Recover (hrs & min)	Recovery (Ft. BGS)
			:		:	
			:		:	

11. STATIC WATER LEVEL (ALL WELLS)

Date Measured	Depth Below Ground Surface (ft)

12. PERMANENT PUMP (IF AVAILABLE)

Pump Description ☐☐☐☐ Horsepower ____
Pump Intake Depth ____ (ft) Nominal Pump Capacity ____ (gpm)

13. ADDITIONAL WELL INFORMATION

Developed Y / N Fracture Enhancement Y / N
Disinfected Y / N Surface Seal Type ☐☐☐
Total Well Depth ____ Depth to Bedrock ____

14. COMMENTS Abandoned 1" PVC Well #17B

15. WELL DRILLER'S STATEMENT

This well was drilled, altered, and/or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge.

Driller: Meggues Lerchin Supervising Driller Signature: ____ Registration #: 9117M
Firm: Aquifer Drilling & Testing Date Complete: 7-6-09 Big Permit #: P15185

COMMONWEALTH OF MASSACHUSETTS

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Massachusetts Department of Conservation and Recreation
Office of Water Resources

160222

TYPE OR PRINT ONLY

Well Completion Report

1. WELL LOCATION GPS (Required) North 42° 35.245 West 70° 56.640

Address at Well Location: 72 North St.
Subdivision Name:
City/Town: Danvers MA
Assessors Map ____ Assessors Lot #: ____

Property Owner/Client: USAB/Mactec
Mailing Address: 1090 Elm St
City/Town: Rocky Hill, CT 06067
NOTE: Assessors Map and Lot # mandatory if no street address available

Board of Health permit obtained: Yes ☐ Not Required ☒ Permit Number ____ Date Issued ____

2. WORK PERFORMED: D C

3. WELL TYPE: M A N T

4. DRILLING METHOD

Overburden	Bedrock
D D	☐ ☐

6. CASING

From (ft)	To (ft)	Type	Thickness	Diameter
		☐☐☐		
		☐☐☐		
		☐☐☐		

7. SCREEN

From (ft)	To (ft)	Type	Slot Size	Diameter
		☐☐☐	. ___	
		☐☐☐	. ___	
		☐☐☐	. ___	

8. ANNULAR SEAL/FILTER PACK/ABANDONMENT MTL.

From (ft)	To (ft)	Material Description	Purpose
0	12	C B	F L
		☐☐	☐☐
		☐☐	☐☐
		☐☐	☐☐

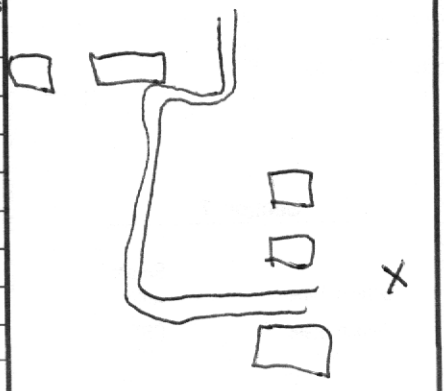
5. WELL LOG — OVERBURDEN LITHOLOGY

From (ft)	To (ft)	Code	Color	Comment	Water Bearing Zone	Loss or Addition of Fluid	Drop in Drill Stem	Extra Fast or Slow Drill Rate
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S

WELL LOG — BEDROCK LITHOLOGY

From (ft)	To (ft)	Code	Comment	Water Bearing Zone	Drop in Drill Stem	Extra Large Chips	Extra Fast or Slow Drill Rate	Visible Rust Staining	Loss or Addition of Fluid	# of Fractures per foot
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	

9. SITE SKETCH



10. WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield (GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time to Recover (hrs & min)	Recovery (Ft. BGS)
			:		:	
			:		:	

11. STATIC WATER LEVEL (ALL WELLS)

Date Measured	Depth Below Ground Surface (ft)

12. PERMANENT PUMP (IF AVAILABLE)

Pump Description ☐☐☐☐ Horsepower ____
Pump Intake Depth ____ (ft) Nominal Pump Capacity ____ (gpm)

13. ADDITIONAL WELL INFORMATION

Developed Y / N Fracture Enhancement Y / N
Disinfected Y / N Surface Seal Type ☐☐☐
Total Well Depth ____ Depth to Bedrock ____

14. COMMENTS Abandond 1" PVC well #18

15. WELL DRILLER'S STATEMENT

This well was drilled, altered, and/or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge.

Driller: Marques Lorbiri Supervising Driller Signature: ____ Registration #: 9 1 7 M

Date Complete: 7-6-05 Big Permit #: 1 9 5 1 5 1

DOCUMENT FAILED DIGITAL QUALITY CONTROL STANDARDS

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Massachusetts Department of Conservation and Recreation
Office of Water Resources

160221

TYPE OR PRINT ONLY

Well Completion Report

1. WELL LOCATION GPS (Required) North 42° 35.236 West 70° 56.647

Address at Well Location: 72 N. Street
Property Owner/Client: VSAR / Mactec
Subdivision Name:
Mailing Address: 100 Elm St
City/Town: Danvers, MA
City/Town: Rocky Hill, CT 06067
Assessors Map ____ Assessors Lot #: ____ NOTE: Assessors Map and Lot # mandatory if no street address available
Board of Health permit obtained: Yes ☐ Not Required ☒ Permit Number ____ Date Issued ____

2. WORK PERFORMED D C

3. WELL TYPE Mon I

4. DRILLING METHOD

Overburden	Bedrock
D P	☐ ☐

6. CASING

From (ft)	To (ft)	Type	Thickness	Diameter
		☐☐☐		
		☐☐☐		
		☐☐☐		

5. WELL LOG — OVERBURDEN LITHOLOGY

From (ft)	To (ft)	Code	Color	Comment	Water Bearing Zone	Loss or Addition of Fluid	Drop in Drill Stem	Extra Fast or Slow Drill Rate
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S

7. SCREEN

From (ft)	To (ft)	Type	Slot Size	Diameter
		☐☐☐	. _ _ _	
		☐☐☐	. _ _ _	
		☐☐☐	. _ _ _	

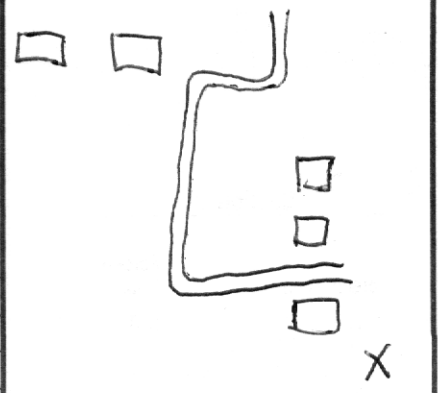
8. ANNULAR SEAL/FILTER PACK/ABANDONMENT MTL.

From (ft)	To (ft)	Material Description	Purpose
0	12	C B	F 4
		☐☐	☐☐
		☐☐	☐☐
		☐☐	☐☐

WELL LOG — BEDROCK LITHOLOGY

From (ft)	To (ft)	Code	Comment	Water Bearing Zone	Drop in Drill Stem	Extra Large Chips	Extra Fast or Slow Drill Rate	Visible Rust Staining	Loss or Addition of Fluid	# of Fractures per foot
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	

9. SITE SKETCH



10. WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield (GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time to Recover (hrs & min)	Recovery (Ft. BGS)
			:		:	
			:		:	

11. STATIC WATER LEVEL (ALL WELLS)

Date Measured	Depth Below Ground Surface (ft)

12. PERMANENT PUMP (IF AVAILABLE)

Pump Description ☐☐☐☐ Horsepower ____
Pump Intake Depth ____ (ft) Nominal Pump Capacity ____ (gpm)

13. ADDITIONAL WELL INFORMATION

Developed Y / N Fracture Enhancement Y / N
Disinfected Y / N Surface Seal Type ☐☐☐
Total Well Depth ____ Depth to Bedrock ____

14. COMMENTS Abandoned 1" PVC Well #19B

15. WELL DRILLER'S STATEMENT This well was drilled, altered, and/or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge.

Driller: Marcus Lovasic Supervising Driller Signature: ____ Registration #: 1911 7M
Firm: Aquifer Drilling & Testing Date Complete: 2-6-06 Rig Permit #: 015151

COMMONWEALTH OF MASSACHUSETTS

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Massachusetts Department of Conservation and Recreation
Office of Water Resources

160223

TYPE OR PRINT ONLY

Well Completion Report

1. WELL LOCATION GPS (Required) North 42° 35.337 West 72° 56.752

Address at Well Location: 72 North st
Subdivision Name:
City/Town: Deerfield, MA
Assessors Map ____ Assessors Lot #: ____

Property Owner/Client: USAR/Mactec
Mailing Address: 1090 Elm st
City/Town: Rocky Hill, CT 06067
NOTE: Assessors Map and Lot # mandatory if no street address available

Board of Health permit obtained: Yes ☐ Not Required ☒ Permit Number ____ Date Issued ____

2. WORK PERFORMED: Q C

3. WELL TYPE: man T

4. DRILLING METHOD

Overburden	Bedrock
D P	☐ ☐

6. CASING

From (ft)	To (ft)	Type	Thickness	Diameter
		☐☐☐		
		☐☐☐		
		☐☐☐		

7. SCREEN

From (ft)	To (ft)	Type	Slot Size	Diameter
		☐☐☐	. ___	
		☐☐☐	. ___	
		☐☐☐	. ___	

8. ANNULAR SEAL/FILTER PACK/ABANDONMENT MTL.

From (ft)	To (ft)	Material Description	Purpose
0	15	C B	R L
		☐☐	☐☐
		☐☐	☐☐
		☐☐	☐☐

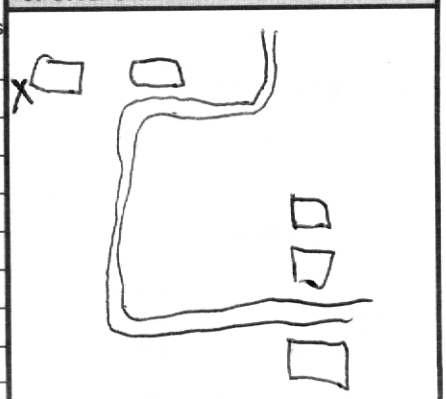
5. WELL LOG — OVERBURDEN LITHOLOGY

From (ft)	To (ft)	Code	Color	Comment	Water Bearing Zone	Loss or Addition of Fluid	Drop in Drill Stem	Extra Fast or Slow Drill Rate
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S
						Y / N	Y / N	F / S

WELL LOG — BEDROCK LITHOLOGY

From (ft)	To (ft)	Code	Comment	Water Bearing Zone	Drop in Drill Stem	Extra Large Chips	Extra Fast or Slow Drill Rate	Visible Rust Staining	Loss or Addition of Fluid	# of Fractures per foot
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	
					Y / N	Y / N	F / S	Y / N	Y / N	

9. SITE SKETCH



10. WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield (GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time to Recover (hrs & min)	Recovery (Ft. BGS)
			:		:	
			:		:	

11. STATIC WATER LEVEL (ALL WELLS)

Date Measured	Depth Below Ground Surface (ft)

12. PERMANENT PUMP (IF AVAILABLE)

Pump Description ☐☐☐☐ Horsepower ____
Pump Intake Depth ____ (ft) Nominal Pump Capacity ____ (gpm)

13. ADDITIONAL WELL INFORMATION

Developed Y / N Fracture Enhancement Y / N
Disinfected Y / N Surface Seal Type ☐☐☐
Total Well Depth ____ Depth to Bedrock ____

14. COMMENTS Abandon 1" PVC well #20

15. WELL DRILLER'S STATEMENT

This well was drilled, altered, and/or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge.

Driller: Marques Lebsis
Supervising Driller Signature: ____
Registration #: 9173
Firm: Aquifer Drilling & Testing
Date Complete: 7-6-05
Rig Permit #: 19151

CONFIDENTIAL FACILITY DOCUMENTS

APPENDIX C

PHOTOGRAPHS



Middletown - Photograph No. 1 - Former Location of M1



Middletown - Photograph No. 2 - Former Location of M2



Middletown - Photograph No. 3 - Former Location of M3



Middletown - Photograph No. 4 - Former Location of M4



Middletown - Photograph No. 5 - Former Location of M5



Middletown - Photograph No. 6 - Former Location of M6



Middletown - Photograph No. 7 - Former Location of M7



Middletown - Photograph No. 8 - Former Location of M8



Middletown - Photograph No. 9 - Former Location of M9



Middletown - Photograph No. 10 - Former Location of M10



Middletown - Photograph No. 11 - Former Location of M10B



Middletown - Photograph No. 12 - Former Location of M11



Middletown - Photograph No. 13 - Former Location of M12



Middletown - Photograph No. 14 - Former Location of M13



Middletown - Photograph No. 15 - Former Location of MW-14



Middletown - Photograph No. 16 - Former Location of MW-15



Middletown - Photograph No. 17 - Former Location of MW-16



Middletown - Photograph No. 18 - Former Location of MW-17



Middletown - Photograph No. 19 - Former Location of MW-18



Middletown - Photograph No. 20 - Former Location of MW-19



Middletown - Photograph No. 21 - Former Location of MW-20



Middletown - Photograph No. 22 - Former Location of MW-21



Middletown - Photograph No. 23 - Former Location of BR-1



Middletown - Photograph No. 24 - Former Location of BR-2



Middletown - Photograph No. 25 - Former Location of BR-3



Middletown - Photograph No. 26 - Former Location of BR-4



Middletown - Photograph No. 27 - Former Location of BR-4A



Middletown - Photograph No. 28 - Former Location of BR-5



Middletown - Photograph No. 29 - Former Location of BR-5A



Middletown - Photograph No. 30 - Former Location of BR-6



Middletown - Photograph No. 31 - Former Location of BR-7



Danvers - Photograph No. 32 - Former Location of MW-17B



Danvers - Photograph No. 33 - Former Location of MW-18



Danvers - Photograph No. 34 - Former Location of MW-19B



Danvers - Photograph No. 35 - Former Location of MW-20



Fort Greene - Photograph No. 36 - Former Location of MW-01



Fort Greene - Photograph No. 37 - Former Location of MW-03



Fort Greene - Photograph No. 38 - Former Location of MW-04



Fort Greene - Photograph No. 39 - Former Location of MW-06

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APPENDIX E

Resume of Environmental Professional

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MICHAEL P. DICKINSON, PG, REPA, CES
Senior Hydrogeologist/Environmental Property Assessor

EDUCATION

University of Georgia, Athens, Georgia
Bachelor of Science in Geology - 1992
Graduate Level Coursework in Hydrogeology - 1993

PROFESSIONAL REGISTRATION

Registered Professional Geologist, TN - 1998
Registered Environmental Property Assessor, REPA #6023 – 2004
Certified Environmental Scientist, CES #8374 - 2009
ISO-14001 Certified, Currently performing audits to obtain lead auditor certification
OSHA - 40-hour Hazardous Waste Health and Safety Certified - 1996
OSHA - 8-hour Refresher Training - 2009
OSHA - Supervisory Training - 1994

PROFESSIONAL HISTORY

XCEL Engineering, Inc., Senior Environmental Property Assessor, April 2009 to present
Engineering & Environment, Inc., Senior Hydrogeologist, 2003 to April 2009
Atlanta Environmental Management, Inc., Project Geologist, 1994 - 2003
HydroVision, Inc., Field Hydrogeologist, 1993 - 1994
Applied Engineering & Science, Inc, Field Hydrogeologist, 1993 - 1994

EXPERIENCE

XCEL Engineering, Inc., Oak Ridge, Tennessee. Mr. Dickinson acts as the Senior Environmental Property Assessor, performing All Appropriate Inquiry (AAI) compliant Environmental Condition of Property (ECP) Reports for the US Army Reserve Command. He is involved in the BRAC closure process, producing all due diligence documentation for each property. This includes drafting Finding of Suitability to transfer (FOST) reports, Record of Environmental Consideration (REC) documentation, Disposal Reports, Record on Non Applicability (RONA), and assessing the property for potential Phase II requirements.

Engineering & Environment, Inc., Atlanta, Georgia. Mr. Dickinson worked as a contractor for the Installation Management Command - Army Reserve Office (IMCOM-ARO) and was responsible for managing/producing Phase I and Phase II Environmental Baseline Surveys (EBSs) for Army Reserve properties - U.S. and Puerto Rico. He was responsible for managing the Tier 1 Real Property Exchange (RPX) program, including collection of EBS data and production of reports. Mr. Dickinson was also highly involved in the NEPA process including development of Finding of Suitability to transfer (FOST) reports and Record of Environmental Consideration (REC) documentation.

Atlanta Environmental Management, Inc., Atlanta, Georgia. As a Senior Hydrogeologist, Mr. Dickinson was involved in all aspects of environmental consulting and environmental compliance, creating environmental solutions for government and private industry clients.

Specifically, he was responsible for managing and producing reports, including Phase I, Phase II ESAs, CAP - Part A, CAP - Part B, sampling and analysis plans, workplans, corrective action plans, and site safety and health plans.

HydroVision, Inc., Atlanta, Georgia. Mr. Dickinson was responsible for conducting field investigations, including soil, groundwater, sludge, and surface water sample collection. He was also involved in the technical review of documents and interpretation of hydrogeologic data.

Applied Engineering & Science, Inc., Atlanta, Georgia. Mr. Dickinson performed various field activities such as soil, groundwater, sludge, and surface water sampling, as well as soil gas surveys. One of his duties included calibration and inventory of all field equipment.

AFFILIATIONS

State of Tennessee Department of Commerce and Insurance
National Registry of Environmental Professionals
ANSI-RAB National Accreditation Program
HAZWOPER