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August 29, 2006

Mr. John S. Nohrstedt
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
Attn: CEHNC-FS-IS
4820 University Square
Huntsville, Alabama 35816-1822

Subject: **Submittal of Final Record of Decision for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63); Contract DACA87-02-D-0005, Delivery Order 28 Seneca Army Depot Activity; File No. 1017A**

Dear Mr. Nohrstedt:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Final Record of Decision (ROD) for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63 located at the Seneca Army Depot Activity in Romulus, New York.

The work was performed in accordance with the Scope of Work (SOW) for Delivery Order 28 under Contract DACA87-02-D-0005.

Parsons appreciates the opportunity to provide the Army with this document. Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino
Project Manager

Enclosures

cc: Mr. S. Absolom, SEDA
Mr. R. Battaglia, CENAN
Mr. K. Hoddinott, USACHPPM (PROV)
Mr. C. Boes, USAEC

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August 29, 2006

Mr. Julio F. Vazquez, Project Manager
U.S. Environmental Protection Agency, Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Mr. Kuldeep K. Gupta, P.E.
NYSDEC
Division of Environmental Remediation
Remedial Bureau A, Section C
625 Broadway
Albany, NY 12233-7015

Mr. Mark Sergott
Bureau of Environmental Exposure Investigation, Room 300
New York State Department of Health
547 River Street, Flanigan Square
Troy, NY 12180

Subject: **Submittal of Final Record of Decision for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63)**
Seneca Army Depot Activity; NYS ID#8-50-006; CERCLIS ID# NY0213820830

Dear Mr. Vazquez/Mr. Gupta/Mr. Sergott:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Final Record of Decision (ROD) for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63 located at the Seneca Army Depot Activity in Romulus, New York.

Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino
Project Manager

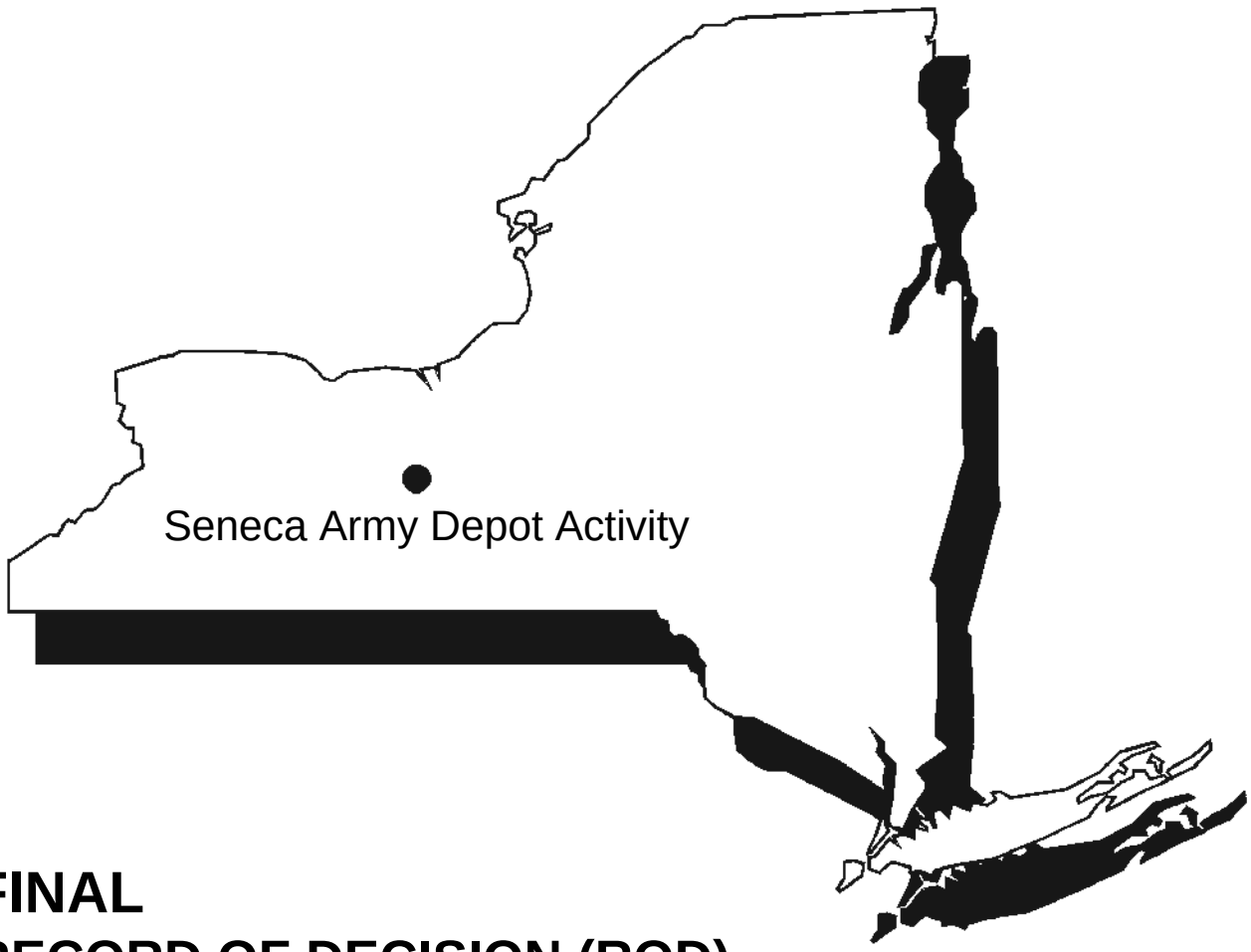
Enclosures

cc: Mr. J. Nohrstedt, CEHNC
Mr. S. Absolom, SEDA
Mr. K. Hoddinott, USACHPPM (PROV)
Mr. C. Boes, USAEC
Mr. R. Battaglia, CENAN
Mr. J. Fellinger, USEPA Contractor

US Army, Engineering & Support Center
Huntsville, AL

00354

Seneca Army Depot Activity
Romulus, NY



FINAL
RECORD OF DECISION (ROD)
NO ACTION / NO FURTHER ACTION
FOR SWMUs SEAD-58 and SEAD-63
SENECA ARMY DEPOT ACTIVITY (SEDA)

EPA Site ID# NY0213820830
NY Site ID# 8-50-006
CONTRACT NO. DACA87-02-D-0005
DELIVERY ORDER NO. 0028

PARSONS
August 2006

FINAL

RECORD OF DECISION
FOR
DEBRIS AREA NEAR BOOSTER STATION 2131 (SEAD-58) AND
MISCELLANEOUS COMPONENTS BURIAL SITE (SEAD-63)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared for:

SENECA ARMY DEPOT ACTIVITY
5786 STATE ROUTE 96
ROMULUS, NEW YORK 14541

and

UNITED STATES ARMY CORPS OF ENGINEERS
4820 UNIVERSITY SQUARE
HUNTSVILLE, ALABAMA 35816

Prepared By:

PARSONS
150 Federal Street, 4th Floor
Boston, Massachusetts 02110

Contract Number: DACA87-02-D-0005
Delivery Order: 0028
USEPA Site ID: NY0213820830; NY Site ID: 8-50-006 **August 2006**

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ACRONYMS AND ABBREVIATIONS

AOC(s)	Area(s) of Concern
AWQS	Ambient Water Quality Standard
BRAC	Base Realignment and Closure
BTEQ	Benzo(a)pyrene Toxicity Equivalents
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLP	Contract Laboratory Protocol
COPC	Contaminant of Potential Concern
cy	cubic yards or cubic yard (based on context)
EE/CA	Engineering Evaluation/Cost Analysis
EPC	Exposure Point Concentration
EQ	Ecological Quotient
ESI	Expanded Site Investigation
FFA	Federal Facilities Agreement
ft.	feet
GA	NYSDEC ground water classification for a source that is suitable for drinking water
HI	Hazard Index
LRA	Seneca Army Depot Local Redevelopment Authority
mg	milligrams
mg/L	milligrams per liter
mg/Kg	milligrams per kilogram
mL	milliliters
mrem/yr	milliRems per year
NCP	National Contingency Plan or National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NTCRA	Non-Time Critical Removal Action
NTU	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
ppb	parts per billion or part per billion (based on context)
ppm	parts per million or part per million (based on context)
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RESRAD	residual radioactive
RfD	Reference Dose
RI	Remedial Investigation

ACRONYMS AND ABBREVIATIONS
(Continued)

ROD	Record of Decision
SEAD	Former acronym for the Seneca Army Depot used to designate SWMU numbers
SEDA	Seneca Army Depot Activity
SCIDA	Seneca County Industrial Development Agency
sf	square feet
SF	Slope Factor
SOW	Statement of Work
SVOCs	Semivolatile Organic Compound(s)
SWMU	Solid Waste Management Unit
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCL	Target Compound List
TSDF	Treatment, Storage, and Disposal Facility
µg/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency
VOC(s)	Volatile Organic Compound(s)

1.0 DECLARATION OF THE RECORD OF DECISION

Site Name and Location

Seneca Army Depot Activity
CERCLIS ID# NY0213820830
NY Site ID: 8-50-006;
Romulus, Seneca County, New York

One No Action and one No Further Action Sites:

Debris Area near Booster Station 2131 (SEAD-58) – No Action.

Miscellaneous Components Burial Site (SEAD-63) – No Further Action.

Statement of Basis and Purpose

This decision document presents the U.S. Army's (Army's) and the U.S. Environmental Protection Agency's (USEPA's) selected remedy for SEAD-58 and SEAD-63, located at the former Seneca Army Depot Activity (SEDA or the Depot) in the Towns of Varick and Romulus, New York. The decision was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, 42 U.S.C. §9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. The Base Realignment and Closure (BRAC) Environmental Coordinator, the Chief, Alpha Branch, Army BRAC Division, and USEPA Region II have been delegated the authority to approve this Record of Decision (ROD). The New York State Department of Environmental Conservation (NYSDEC) has concurred with the selected remedy.

This ROD is based on the Administrative Record that has been developed in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Seneca Army Depot Activity, 5786 State Route 96, Building 123, Romulus, NY 14541. The Administrative Record Index identifies each of the items considered during the selection of the remedial action. This index is included in **Appendix A**.

Description of the Selected Remedy

Based on the findings of the investigations and activities completed at the former solid waste management units (SWMUs), the Army has selected No Action (NA) as the remedy for SEAD-58, Debris Area near Booster Station 2131, and No Further Action (NFA) as the remedy for SEAD-63, Miscellaneous Components Burial Site, where a Removal Action was performed. These selections are based on the Army's proposal that these sites do not pose a significant threat to human health or the environment.

State Concurrence

NYSDEC forwarded to USEPA a letter of concurrence regarding the selection of a remedial action in the future. This letter of concurrence has been placed in **Appendix B**.

Declaration

The selected remedies (NA and NFA) are protective of human health and the environment, comply with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and are cost effective. The remedy uses permanent solutions. Insofar as contamination does not remain at the SWMUs at concentrations above levels that provide for unrestricted use and unlimited exposure, institutional controls and five-year reviews are not necessary.

The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

_____ _____

STEPHEN M. ABSOLOM Date
BRAC Environmental Coordinator

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The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

_____ _____

THOMAS E. LEDERIE Date
Chief, Alpha Branch
Army BRAC Division

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The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

_____ _____

GEORGE PAVLOU Date
Director, Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II

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2.0 SITE NAME, LOCATION AND DESCRIPTION

SEDA previously was a 10,587-acre military facility located in the Towns of Varick and Romulus in Seneca County, New York, which was owned by the United States Government and operated by the Department of the Army between 1941 and 2000. A location map for SEDA is provided as **Figure 2-1**. As shown in **Figure 2-1**, SEDA is located between Seneca Lake and Cayuga Lake. **Figure 2-1** also shows that SEDA is bordered by New York State Highway 96 to the east and New York State Highway 96A to the west. The center of the Town of Romulus lies to the north of the former Depot's main entrance off Route 96, while Sampson State Park lies to the west and southwest of the Depot. Most of the remaining area surrounding the former Depot consists of sparsely populated farmland. **Figure 2-2** shows the location of SEAD-58 and SEAD-63 at SEDA.

2.1 SEAD-58: Debris Area Near Booster Station 2131

The Debris Area near Booster Station 2131 (SEAD-58), shown in **Figure 2-3**, is located in the west-central portion of the Depot, approximately 325 feet (ft.) northeast of Booster Station 2131. The site has two distinct areas separated by a drainage swale that runs east-west. The larger area, located about 50 ft. north of the drainage swale, is circular and measures approximately 300 ft. in diameter. The smaller area measures approximately 125 ft. by 175 ft. in size and is located just south of the drainage swale.

Topography in the area is very flat with evidence of stressed vegetation and many exposed root systems with underlying growth. The drainage swale makes vehicular access to the south area difficult. A rock wall lines the south side of the swale and is about 2 ft. in height. A small stream runs east-west, south of the smaller area.

The Booster Station 2131 is a pump house used to pump drinking water from the Seneca Lake to the on-site reservoir. Interviews with former SEDA personnel at the time when the "SWMU Classification Report, *Final*" (Parsons, 1994) was prepared indicated that unknown debris and wastes were dumped in this area. These rumors suggested that 4,4'-DDT, a contact insecticide, may have been included in the materials disposed at SEAD-58. The Army has not been able to identify any other information or written record substantiating the rumor of the disposal of 4,4'-DDT at SEAD-58.

2.2 SEAD-63: Miscellaneous Components Burial Site

SEAD-63, shown in **Figure 2-3**, is approximately 480 ft. by 300 ft. in size and is bounded by paved roads on the north, south, and west and by open grassland to the east. The area is undeveloped with vegetation covering much of the ground. In 2004 a removal action was carried out; impacted soil and buried objects were removed, and the area was backfilled with clean soil and returned to the original grade. The topography of SEAD-63 is generally flat with a slight westward slope. Drainage ditches are located adjacent to Patrol Road and the east-west trending roads that bound the site to the north (i.e.,

Service Road 3) and south (unnamed road). A light ground depression, sloping south to north, is located in the northeastern quadrant of the area. Reeder Creek is located south of SEAD-63, flowing west before turning northward and running west of the site with the closest point of the creek approximately 1,500 ft. southwest of the site.

Prior to 2004, the area was mostly undeveloped except for a grass-covered bunker in the southeast corner and an elevated former machine-gun turret constructed of soil in the northwest corner. A noticeable feature within the area was a crushed shale road that entered from Patrol Road and led to a crushed shale pad that measured about 100 ft. by 100 ft. In general, the western half of the area was less vegetated than the eastern side and appeared to have been physically worn by vehicular traffic.

SEAD-63 was used between the 1950s and 1980s as a disposal area for classified parts. During this period, multiple disposal pits were excavated along a north-south line measuring approximately 200 ft. in length. The individual pits measured between 10 ft. and 30 ft. in length and were likely to have been excavated down to the surface of the underlying weathered shale bedrock. SEDA personnel associated with the SWMU prior to the termination of SEDA's military mission identified the types of materials disposed at this site as metal parts. The "SWMU Classification Report, *Final*" (Parsons, 1994) states that "inert materials" were buried within the disposal pits.

3.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The SEDA previously occupied approximately 10,600 acres of land located in the Towns of Varick and Romulus in Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and approximately 2000, when the SEDA military mission ceased. The SEDA's historic military mission included receipt, storage, distribution, maintenance, and demilitarization of conventional ammunition, explosives and special weapons. In addition, administrative and plant operational facilities were also established in support of the Depot's mission. Waste management was integrated with the SEDA management mission. Management of waste materials produced from these operations has been completed in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA).

The USEPA nominated the Depot for inclusion on the National Priorities List (NPL) as a Federal Facility on July 14, 1989; SEDA was officially listed on the NPL on August 30, 1990. Once the SEDA was listed, the Army, USEPA, and NYSDEC identified 57 SWMUs where historic data or information suggested, or evidence existed to support, that hazardous substances or hazardous wastes had been handled and may have possibly been released and migrated into the environment. Each of these sites was identified in the "Federal Facilities Agreement" (USEPA, Army, and NYSDEC, 1993) signed by the three parties in 1993. This list was subsequently expanded to include 72 sites when the Army completed the "SWMU Classification Report, *Final*" (Parsons, 1994), which was required under the terms of the FFA. The SEDA was a Generator and a Treatment, Storage and Disposal Facility (TSDF) and thus subject to regulation under RCRA. Under this permit system, corrective action is required at all SWMUs, if warranted.

Remedial goals are the same for CERCLA and RCRA; thus when the 72 SWMUs were classified in the "SWMU Classification Report, *Final*" (Parsons, 1994), the Army recommended that they be listed either as No Action sites or Areas of Concern (AOCs). SWMUs listed as AOCs in the "SWMU Classification Report, *Final*" (Parsons, 1994) were then scheduled for further investigations based upon data and potential risks to the environment.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) Base Realignment and Closure (BRAC) process. With the SEDA's inclusion on the BRAC list, the Army's emphasis expanded from expediting necessary investigations and remedial actions at prioritized sites to include the conveyance of non-affected portions of the Depot to the surrounding community for their reuse for non-military purposes (i.e., industrial, municipal, and residential). To address employment and economic impacts associated with the SEDA's closure, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to prepare a plan for redevelopment of the SEDA property. Following a comprehensive planning process, a *Reuse Plan and Implementation Strategy for Seneca Army Depot* was completed and adopted by the LRA on

October 8, 1996. The Seneca County Board of Supervisors subsequently approved this *Reuse Plan* on October 22, 1996. The designated reuse of the Depot was revised in 2005 by Seneca County Industrial Development Agency (SCIDA) and the current future use model for land at the Depot is reflected in **Figure 3-1**.

Originally, the LRA proposed Conservation/Recreation as the future land use for both SEAD-58 and SEAD-63. As shown in **Figure 3-1**, the current future land use for SEAD-58 is designated as Development Reserve and the current future land use for SEAD-63 is designated as Institutional Training. Both the Development Reserve and the Institutional Training classification suggest that the areas will be used in a manner consistent with light industrial areas.

Since SEDA's inclusion in the DoD's BRAC program, approximately 8,000 acres of land within the former Depot have been released to the community. An additional 250 acres of land was transferred to the U.S. Coast Guard for continued operation of a LORAN Station.

When the "SWMU Classification Report, *Final*" (Parsons, 1994) was issued, SEAD-58 was classified as a Moderately Low Priority AOC, and SEAD-63 was classified as a Low Priority AOC. An Expanded Site Investigation (ESI) was completed at SEAD-58 in 1994 and the ESI report was submitted in 1995. Based on the data collected during the ESI, a mini-risk assessment was performed for SEAD-58 in 2002.

An ESI was also performed at SEAD-63 in 1994. Based on the conclusions of the ESI, a Remedial Investigation/Feasibility Study (RI/FS) was recommended for SEAD-63, and a portion of the field activities associated with the RI were performed in 1997. Based on the results from the investigations, the Army recommended conducting a Non-Time Critical Removal Action (NTCRA) to eliminate impacted soil and remove buried debris at SEAD-63. The Army's decision was documented in the Action Memorandum and an Engineering Evaluation/Cost Analysis (EE/CA) which is entitled the "Action Memorandum for the Miscellaneous Components Burial Site (SEAD-63), *Final"* (Parsons, 2001).

The NTCRA was performed in 2004 by Plexus Scientific Corporation; impacted soil and buried debris was excavated and disposed off-site at a licensed landfill. The results of the NTCRA were reported in "Final Removal Action Completion Report, Non-Time Critical Removal Action Miscellaneous Components Burial Site (SEAD-63)" (Plexus, 2005). Subsequent to its review of the final completion report, the USEPA required a post-excavation round of groundwater sampling for metal contaminants at SEAD-63. The Army performed and reported the results of this work to the USEPA in July of 2006. Results of the additional groundwater sampling are discussed in Section 6, below. Based on the results of the additional groundwater sampling, the USEPA accepted the Army's determination that the groundwater found at SEAD-63 was not affected by historic activities performed at the site.

Within this ROD, the Army is recommending NA at SEAD-58 and NFA at SEAD-63 as the final step in the CERCLA process required for these sites. Since the listing of SEDA on the NPL in 1990, the Army has worked to develop and prepare the information and data needed to support determinations of what remedial actions are needed at each of the identified SWMUs to ensure that site conditions are protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practical, and are cost effective. Data and information developed and evaluated by the Army that serve as the basis for the final recommendations for SEAD-58 and SEAD-63 are summarized in this ROD. More complete presentations of the data and information that form the basis of the Army's final recommendations for these sites are provided in the Completion Reports submitted per requirements of the FFA listed in the Administrative Record provided as **Appendix A**. This ROD is submitted to fulfill the requirements of the FFA for the Seneca Army Depot Activity.

4.0 COMMUNITY PARTICIPATION

The Army relies on public input to ensure that community concerns are considered in selecting an effective remedy for each Superfund site. To this end, the Completion Reports (e.g., Action Memorandum, ESI report, Removal Action reports, etc.), the Proposed Plan, and associated supporting documentation have been made available to the public during a public comment period, which began on March 6, 2006 and concluded on April 6, 2006. Copies of the Completion Reports, the Proposed Plan, the ROD, and supporting documentation are available at the following repository:

Seneca Army Depot Activity
Building 123
5786 State Route 96
Romulus, NY 14541
(607) 869-1309
Hours are Monday -Thursday 8:30 am to 4:30 pm

During the public comment period, a public meeting was held at Building 123, Seneca Army Depot Activity on April 3, 2006 at 9 a.m. to present the findings and conclusions of the site investigations and remedial actions, to elaborate further on the reasons for recommending the preferred remedial option, and to receive public comments. Comments received at the public meeting, as well as written comments, are documented in the Responsiveness Summary Section of the ROD, **Appendix C**.

In addition, coordination with Native American stakeholders regarding this ROD and the Proposed Plan has been consistent with the programmatic agreements between the State Historic Preservation Office, recognized Native American Tribes, and the Advisory Council for Historic Preservation.

During the BRAC process, monthly presentations were given to the LRA regarding the progress of the sites included in this ROD, as well as other investigations related to the closure of SEDA. In addition, the SEDA Restoration Advisory Board (RAB) was established to facilitate the exchange of information between SEDA and the community. RAB members include the representatives from the Army, USEPA, NYSDEC, and the community.

5.0 SCOPE AND ROLE

The Army has selected NA as the remedy for SEAD-58, the Debris Area near Booster Station 2131, and NFA as the remedy for SEAD-63, the Miscellaneous Components Burial Site, which are addressed in this ROD. The selected remedies at these SWMUs are based on the Army's determination that no residual waste remains at these SWMUs that poses a significant threat to human health or the environment for the foreseeable future use of the property..

6.0 SITE CHARACTERISTICS

6.1 SEAD-58: Debris Area near Booster Station 2131

An ESI of SEAD-58 was performed in 1994. Data collected during the ESI served as the basis of a mini risk assessment that was performed to assess potential risks to likely receptors at the site. Complete analytical results from the ESI and the results of the mini risk assessment are presented in "Decision Document – Mini Risk Assessment SEAD 9, 27, 28, 32, 33, 34, 43, 44A, 44B, 52, 56, 58, 62, 64A, 64B, 64C, 64D, 66, 68, 69, 70, and 120B, *Final*" (Parsons, 2002). A brief summary of the investigation performed is presented below.

Eighteen soil samples, four groundwater samples, and six surface water and sediment samples were collected at SEAD-58 and submitted for chemical analysis during the ESI. All of the samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, and cyanide according to the NYSDEC Contract Laboratory Protocol (CLP) Statement of Work (SOW). The analysis of samples for NYSDEC CLP pesticides/polychlorinated biphenyls includes determination of 4,4'-DDT, which was rumored to be disposed at SEAD-58.

A summary of the soil, groundwater, surface water, and sediment results can be found in **Tables 6-1** through **6-4**. The compound 4,4'-DDT had been rumored to have been disposed at SEAD-58. This was a principal reason why this site was originally identified. 4,4'-DDT, however, was not detected in any sample collected during the ESI.

Soil

Eighteen soil samples were collected and analyzed from SEAD-58. Arsenic, copper, magnesium, sodium, and zinc exceeded their respective NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 cleanup objective level values once, while potassium exceeded its TAGM value three times, as shown in **Table 6-1**. The arsenic, copper, sodium, and zinc levels were only slightly greater than their respective TAGM values. Magnesium was detected in sample TP58-1-1 at a depth of 2.5 ft. and at a level that was 1.5 times the TAGM.

Groundwater

Aluminum, iron, and manganese exceeded their respective NYSDEC Class GA Groundwater Standard or USEPA Secondary Drinking Water Regulation (non-enforceable guideline) values in all four of the groundwater samples collected at SEAD-58 (**Table 6-2**). The maximum concentrations of these four metals were detected at MW58-3, which is the furthest downgradient well.

Surface Water

Aluminum and iron were detected at concentrations that exceeded the NYSDEC Ambient Water Quality Standard (AWQS) for Class C surface water (**Table 6-3**) in one or more of the six surface water samples collected at SEAD-58. The aluminum criterion was exceeded in five of the six samples though the only exceedance of significance, 421 µg/L, which was detected at sample location SW58-4-1. The one iron exceedance was detected at this same sample location.

Sediment

Cadmium, chromium, copper, iron, manganese, nickel, and zinc were detected at concentrations that exceeded the NYSDEC Lowest Effective Level criteria (**Table 6-4**) in one of more of the six sediment samples collected from SEAD-58. Cadmium, chromium, and zinc were detected in one sample each at levels slightly greater than their respective criteria. The manganese criterion was exceeded in three of the six samples by less than twice the criteria. Copper and nickel exceeded their criteria in all six samples, though the greatest exceedance for each was slightly more than twice the criterion. Iron was detected at concentrations greater than its criteria in all six samples, though the greatest exceedance was slightly less than 1.5 times the criteria.

6.2 SEAD-63: Miscellaneous Components Burial Site

Work performed at SEAD-63 included a NTCRA in 2004, an ESI in 1994, and an RI in 1997. The NTCRA activities included excavation of impacted soil and buried debris, confirmatory sampling and analysis of soil and groundwater, and backfilling excavated areas with clean soil. The RI activities included sampling and analysis of sediment and surface water, as well as completing a radiological survey. Activities performed during the ESI included test pit excavation and sampling and chemical analysis of soil, groundwater, surface water, and sediment. Data from the ESI and RI were used as the basis of a mini risk assessment that was conducted in 2001 and 2002.

Non-Time Critical Removal Action - 2004

The Army acknowledged that the presence of buried objects at SEAD-63, including some buried components that may have been classified or sensitive, was of potential concern because their nature was unknown. The uncertainty of the nature of the buried material and their potential sensitivity provided the basis for the Army's removal action in 2004. The goal of the proposed NTCRA was to mitigate the source of heavy metals and possible radionuclides through the removal of debris and soils, thereby reducing the chance of further contamination of soils and groundwater at SEAD-63.

Results of the RI, ESI, and the mini risk assessment were combined and presented in an EE/CA as part of an Action Memorandum, which documented the basis of the Army's recommended NTCRA.

Results of the removal action are presented below. Complete analytical results from the NTCRA are presented in "Non-Time Critical Removal Action Miscellaneous Components Burial Site (SEAD-63)," (Plexus, 2005).

The NTCRA was conducted to remove buried debris (mainly military components) and to address cadmium exceedances identified within the burial pits at SEAD-63. As part of the removal action:

- groundwater samples were collected at three overburden monitoring wells on-site;
- debris and fill material were excavated from the burial pits and segregated into three waste streams [classified military parts, four-inch plus material (rock and debris), and four-inch minus material (fill)];
- confirmatory samples were collected and analyzed to ensure that project cleanup goals were achieved;
- excavated material was field screened, sampled and analyzed, and the resulting data were compared to chemical and physical RCRA hazardous waste criteria as well as background radiological levels;
- the site was backfilled and regraded; and
- more than 5,100 tons of solid waste were transported to the Ontario County Landfill for disposal.

Figure 6-1 shows the extent of the excavations performed at SEAD-63, and shows the locations from which final confirmatory soil samples were collected. The largest of the excavations shown on this figure encompasses the area where all of the historic disposal pits were located. This excavation was terminated once native materials or bedrock were encountered.

Soil

The SEAD-63 burial pits were excavated until either native soil or bedrock was observed, as determined by visual inspection. The excavated debris and soil totaling over 5,131 tons were segregated into 4-inch plus (~987 tons) or 4-inch minus (~4,144 tons) material. No radiological sources were identified, and on-site radiological screening and laboratory analyses of the excavated and segregated materials confirmed its classification as non-radioactive, non-RCRA hazardous solid waste.

After the excavation and removal activities were completed, confirmatory soil samples were collected from the perimeter and bottom of the excavation and were analyzed for cadmium. Samples were collected at a rate of one sample per 900 square feet (sf) at the bottom of the excavation and one sample per 30 linear ft. along the excavation sidewalls. Results were compared to the site cleanup goal of 2.3 mg/Kg of cadmium. Confirmatory soil sample results were below the defined site cleanup goal.

All excavated pits were backfilled to original grade with clean soil from SEDA after results were obtained from the laboratory to confirm that the cleanup goal had been achieved. A summary of the confirmatory soil results obtained during the NTCRA is presented in **Table 6-5**.

Groundwater

The three existing overburden monitoring wells located at SEAD-63 were resampled during the NTCRA. Low–flow sampling techniques were used during the NTCRA to minimize suspended solids in the groundwater. The groundwater samples were submitted to the laboratory for radioactivity analysis and compared to NYSDEC AWQS criteria; one sample upgradient of SEAD-63 was collected as background, or reference point. The groundwater analytical results were below groundwater quality criteria and the background results for radioactivity. It was concluded that groundwater is not impacted by site activities and does not require further monitoring.

Based on USEPA comments and requests, the Army also collected samples of groundwater samples from the SEAD-63 site wells in July 2006, and analyzed these samples for metals only. Low-flow purging and sampling techniques and procedures were used to minimize the levels of turbidity in the collected samples. The results of this additional sampling and analysis are presented in **Table 6-6**, where they are compared with state and federal groundwater / water quality standards and guidelines; with the groundwater quality data collected from SEAD-63 during the ESI; and, with Depot-wide background groundwater quality data. Review of this data indicate that while the local groundwater quality found at SEAD-63 exhibits instances where individual chemicals (e.g., aluminum, iron, manganese, and sodium) are detected at levels above state or federal groundwater quality standards or guidelines levels, it is generally consistent with or better than the background groundwater quality found throughout the Depot.

Site Investigations (ESI and RI) – 1994 and 1997

Complete analytical results from the ESI and RI are presented in the EE/CA for SEAD-63 in the "Action Memorandum for the Miscellaneous Components Burial Site (SEAD-63), *Final"* (Parsons, 2001).

Soil

Twelve test pits were excavated at SEAD-63 as part of the ESI in 1994. The excavated material from the test pits included miscellaneous military components and was continuously screened for organic vapors and radioactivity. No readings above background levels were observed during the excavations. The soil analysis results from the test pits indicated that soils were impacted by cadmium in several areas at SEAD-63 (**Table 6-7**). Cadmium concentrations in three test pit samples exceeded the associated TAGM cleanup objective value of 2.3 mg/Kg, with a maximum concentration of 24

mg/Kg. Mercury was detected in one test pit sample (TP63-3) at a concentration of 0.49 mg/Kg, exceeding the TAGM cleanup value of 0.1 mg/Kg. The average concentrations of both cadmium and mercury in SEAD-63 soils exceeded twice the average background concentration for the Depot.

Groundwater

Three monitoring wells were installed and sampled at SEAD-63 during the ESI. Radioactivity analysis results indicated that the groundwater at MW63-3 (located hydraulically downgradient of the disposal pits) may be impacted by gross alpha and gross beta radiation. The level of gross alpha radiation in this well was an order of magnitude above the NYSDEC AWQS Class GA and federal drinking water criteria.

In addition, gross alpha radiation levels exceeded the NYSDEC AWQS in MW63-1, the background location for the purpose of the ESI. Gross beta radiation levels detected in the groundwater samples collected from groundwater monitoring wells MW63-3 and MW63-1 may have been similarly impacted, though the elevated gross beta radiation levels may have been due to the high nephelometric turbidity units (NTUs) found in the groundwater samples. The NYSDEC AWQS for gross beta radiation was not exceeded.

Other constituents detected above their respective criteria values included phenol, iron, manganese, and sodium (**Table 6-8**). Concentrations measured for iron and manganese detected in the SEAD-63 groundwater were generally consistent with their concentrations found at SEDA-specific background wells.

Surface Water/Sediment

Four surface water and sediment samples were collected during the ESI and 18 surface water and sediment samples were collected during the RI.

Results of the investigations indicated that surface water at SEAD-63 has been impacted by SVOCs (**Table 6-9**). Two SVOCs were detected at levels exceeding the NYSDEC AWQS for Class C surface water. One PCB, Aroclor-1260, was detected in three samples at concentrations exceeding its AWQS value of 0.0001 µg/L with a maximum detection of 0.75 µg/L. Two pesticides, heptachlor and heptachlor epoxide, exceeded their respective AWQS values once. In addition, five metals were detected above their respective NYSDEC AWQS Class C surface water.

Radionuclides present in background surface water locations were detected at SEAD-63. In addition, Co-60, Ra-226, Th-230, and U-233/234 were also detected in surface water at SEAD-63. The maximum and average values of the radionuclides detected at SEAD-63 were greater than the maximum and average concentrations found in the background. Gross alpha and gross beta levels

were significantly greater at SEAD-63 in at least one surface water location (SW63-2) than at background locations; however, the elevated levels at SW63-2 are believed to be associated with the high turbidity of this sample. Statistical comparison of the SEAD-63 and background data sets indicates that Ac-227, Ra-222, tritium, U-235, and U-238 were elevated above background.

Sediment sample results indicated that sediments at SEAD-63 had been impacted by polycyclic aromatic hydrocarbons (PAHs) and pesticides at concentrations above their respective NYSDEC guidance values (**Table 6-10**). In addition, eight metals were detected at concentrations greater than their respective Lowest Effect Level guidance values.

All radionuclides detected at SEAD-63, except for Pb-210, were consistent with radionuclides found in background sediment samples. Although the maximum values detected in the SEAD-63 samples exceeded the maximum values of the background samples, average values were comparable. In comparison to the NYSDEC TAGM Cleanup Guideline for Soils Contaminated with Radioactive Material (NYSDEC, 1993), radionuclides distinguishable from background in the sediment do not exhibit a dose equivalent greater than the ten milliRems per year (mrem/yr) cleanup guideline based on residual radioactive (RESRAD) modeling.

Radiological Survey

A radiological survey was conducted at SEAD-63 as part of the 1997 RI. The survey was conducted using an AN/PDR-77 Radiac Set and measured total counts per minute of low energy gamma radiation from the grounds of SEAD-63. Fifty percent of the grounds were covered by the survey as outlined in the RI Project Scoping Plan for SEAD-63. The results of this survey did not indicate that there were any hot spot areas within the grounds of SEAD-63 that required further investigation or an upgrade in classification.

7.0 SUMMARY OF SITE RISKS

Mini risk assessments were conducted at SEAD-58 and SEAD-63 to estimate the risks associated with current and future site conditions. The mini risk assessments estimated the human health and ecological risk that could result from each site if no remedial action were taken.

Human Health Risk Assessment

The reasonable maximum human exposure to chemicals was evaluated. The human health risk assessment methodology is shown in **Figure 7-1**. A four-step process was used for assessing site-related human health risks for a reasonable maximum exposure scenario:

- *Hazard Identification* - identified the contaminants of concern based on several factors such as toxicity, frequency of occurrence, and concentration. This is covered in the Data Collection and Evaluation Box in **Figure 7-1**.

- *Exposure Assessment* - estimated the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed. The exposure assessment methodology is shown in **Figure 7-2**.

- *Toxicity Assessment* - determined the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response).

- *Risk Characterization* - summarized and combined the outputs of the exposure and toxicity assessments to provide a quantitative assessment of the related risks (for example, one-in-a-million excess cancer risk).

The risk analysis performed for SEAD-63 was performed in 2001 and 2002. The risk analysis performed for SEAD-58 was completed in 2002. As such, the receptors evaluated in the risk assessments were selected based on the intended future land use assigned to the area by the LRA at that time. Both SWMUs are located in the portion of the former Depot that was previously (between 1996 – 2005) designated for Conservation/Recreation uses. The SCIDA revised its planned future land use for the Depot in 2005 and the new future land uses for SEAD-58 and SEAD-63 are Development Reserve and Institutional Training, respectively. The current planned future land use at the Depot is displayed in **Figure 3-1**.

Conservation/Recreation land use requires the application of more stringent cleanup levels than does either the Development Reserve or the Institutional Training uses, which are suggestive of more commercialized/industrialized land use applications. Similarly, the receptors and exposure

assumptions used under the former Conservation/Recreation use scenario are more restrictive and stringent, and are considered more conservative than are the receptors and exposure assumptions normally evaluated for industrialized/commercialized use scenarios. Nevertheless, since the results of the original risk assessments indicate that the sites are suitable for release as Conservation/Recreation property, these results can be used to support the Army's recommendation that the SEAD-58 and SEAD-63 sites can be released for use as Development Reserve and Institutional Training sites, respectively. The following receptors for the Conservation/Recreation scenario were evaluated:

1. Future park worker,
2. Future recreational visitor (child), and
3. Future construction worker.

The mini risk assessments addressed the potential risks to human health by identifying several potential exposure pathways by which the public may be exposed to contaminant releases at the site under current and future land use scenarios. **Figures 7-3** show the exposure pathways considered for the Conservation/Recreation scenario.

The exposure pathways evaluated also reflect the SCIDA's prior projected future use (i.e., Conservation/Recreation) for each area. The following exposure pathways were considered:

1. Inhalation of particulate matter in ambient air (all future receptors);
2. Ingestion and dermal contact to on-site surface soils (all future receptors);
3. Ingestion and dermal contact to on-site surface and subsurface soils (future on-site construction worker);
4. Dermal contact to surface water while wading (future park worker and recreational visitor child); and,
5. Dermal contact to sediment (future park worker and recreational visitor - child).

In addition, risks to residential receptors (i.e., adult resident, child resident and lifetime resident) were evaluated for SEAD-63. The following exposure pathways were evaluated for these receptors:

1. Inhalation of particulate matter in ambient air;
2. Ingestion and dermal contact to on-site surface soils;
3. Ingestion of groundwater (daily);
4. Dermal contact to groundwater;
5. Dermal contact to surface water; and,
6. Dermal contact to sediment

Under current USEPA guidelines, the likelihood of carcinogenic and non-carcinogenic effects due to exposure to site-related contaminants are considered separately. Non-carcinogenic risks were

assessed by calculation of a Hazard Index (HI), which is an expression of the chronic daily intake of a contaminant divided by its safe or Reference Dose (RfD). A HI that exceeds 1.0 indicates the potential for non-carcinogenic effects to occur. Carcinogenic risks were evaluated using a cancer Slope Factor (SF), which is a measure of the cancer-causing potential of a chemical. Slope Factors are multiplied by daily intake estimates to generate an upper-bound estimate of excess lifetime cancer risk. For known or suspected carcinogens, USEPA has established an acceptable cancer risk range of 10^{-4} to 10^{-6} (one-in-ten thousand to one-in-one million).

Ecological Risk Assessment

The reasonable maximum environmental exposure was evaluated in a mini risk assessment for SEAD-58 (Parsons, 2002) and SEAD-63 (Parsons, 2001). A four-step process was used for assessing site-related ecological risks for a reasonable maximum exposure scenario:

- *Characterization of the Unit and the Ecological Communities it May Affect*—Includes ecological conditions observed at the unit, site habitat characterization, wildlife resources that are present in the area, and ecological resource values to wildlife and to humans. Ecological receptors identified at this step for the above sites include deer mouse, short-tailed shrew, American robin, and morning dove (SEAD-63 only).

- *Exposure Assessment*—Describes chemicals of potential concern (COPCs), EPC, and exposure assessments. COPC distribution at the site and its uptake through various pathways are also discussed in this section. Daily intakes of COPCs through environmental media are quantified as well.

- *Toxicity Assessment*—Assesses ecological effects that potentially may result from receptor exposure to COPCs. Evaluates potential toxicity of each COPC in each medium and defines toxicity benchmark values that will be used to calculate the ecological quotient (EQ).

- *Risk Characterization*—Integrates the results of the preceding assessment elements. It estimates risk with respect to the assessment endpoints, based on the predicted exposure to and toxicity of each COPC.

Ecological risk was presented in terms of an EQ, which is derived from the results of the exposure quantification and the toxicity assessment for each COPC. The EQs are based on relevant measurement endpoints and are indicative of the potential for each chemical to pose an ecological risk to receptors. Step 2 of the screening-level exposure estimate and risk calculation in "Ecological Risk Assessment Guidance for Superfund (ERAGS): Process for Designing and Conducting Ecological Risk Assessments" (USEPA, 1997) suggests that EQs less than or equal to 1 present no probable risk. EQs between 1 and 10 present a small potential for environmental effects, EQs between 10 and 100

present a significant potential that effects could result from greater exposure, and EQs greater than 100 indicate the highest potential for expected effects.

The following sections present a summary of human health and ecological risks posed by contaminants at the Sites.

7.1 SEAD-58

A mini risk assessment was conducted to estimate the risks associated with current and future site conditions. A mini risk assessment is a conservative, screening risk assessment tool used to assess the human health and ecological risk that could result from the site if no remedial action were taken. Maximum site concentrations were used as the exposure point concentrations (EPCs). Due to the conservative nature of the mini risk assessment, it is likely that a more traditional risk assessment would estimate lower risks.

The mini risk completed for SEAD-58 was performed in 2002, and considered receptors expected to use the site based on its planned future use documented then, which was Conservation/Recreation land. In 2005, the SCIDA revised its planned future use to Development Reserve, which would require a less rigorous cleanup as recontamination is more likely to occur due to future operations. Nevertheless, since the 2002 risk assessment results indicate that the site is suitable for release anticipating a more restrictive future use, the 2002 results are used to support the Army's recommendation that the site is suitable for a NA determination.

The receptors used in the 2002 risk assessment were a park worker, a recreational visitor – child, and a construction worker. The following exposure pathways were evaluated: inhalation of dust, ingestion of soil, and dermal contact to soil, surface water, and sediment.

The total cancer risk from all exposure routes was below the USEPA acceptable level for all three receptors. The total non-cancer HI from all exposure routes was less than 1.0 for all three receptors. A summary of the mini risk assessment results can be found in **Table 7-1** at the end of this report.

An ecological risk assessment was conducted with SEAD-58. All COPCs had EQs less than 1 for all receptors except for the American Robin exposed to bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant and therefore the detected concentrations may not necessarily be associated with site conditions. The average bis(2-ethylhexyl)phthalate concentration at SEAD-58 does not pose significant risk to potential ecological receptors. Based on the above discussion, it was concluded that SEAD-58 would not pose significant risk to potential ecological receptors; thus, no significant ecological risks were identified at SEAD-58. The complete assessment can be found in "Decision Document for Various "No Action" Sites- Mini Risk Assessments, *Final*" {Parsons, 2002).

Based on the results of the mini risk assessment, no remedial action is necessary to ensure protection of human health or the environment.

7.2 SEAD-63

A risk analysis was completed for SEAD-63 in 2001 and 2002, and considered receptors expected to use the site based on its planned use documented then, which was Conservation/Recreational land. In 2005, the SCIDA revised its planned future use at SEAD-63 to Institutional Training, which would require a less rigorous cleanup as recontamination is more likely to occur due to future operations. Nevertheless, since the prior risk assessment results indicate that the site is suitable for release anticipating a more restrictive use; these results are used to support the Army's recommendation that the site is suitable for a NFA recommendation.

The receptors evaluated in the 2001/2002 risk assessment were a park worker, a recreational visitor – child, and a construction worker. The following exposure pathways were evaluated: inhalation of dust; ingestion of soil; dermal contact to soil, groundwater, surface water, and sediment; and ingestion of groundwater.

The results of the SEAD-63 risk assessment are shown in **Table 7-2**. All non-cancer risks were less than 1.0, with HIs for the park worker, recreational visitor – child, and construction worker of 0.2, 0.4, and 0.3, respectively. Cancer risks for the three receptors were within USEPA acceptable range of 10^{-4} to 10^{-6}. Cancer risk values for the park worker, recreational visitor – child, and construction worker were $5x10^{-5}$, $8x10^{-5}$, and $8x10^{-8}$, respectively. Each of these is within the USEPA recommended range of acceptable risk.

For comparison purposes, risk to a future resident was also evaluated. The non-cancer risk to a resident adult was less than 1, while the non-cancer risk to a resident child had a HI of 2.0. The total lifetime cancer risk for a resident was $1x10^{-4}$, which is at the upper limit of USEPA's normal acceptance range (10^{-4} to 10^{-6}). A summary of the risk assessment results is presented in **Table 7-2** of this report.

The predominant contributor to the resident child's elevated HI is manganese through ingestion of groundwater. However, the concentration of manganese contained in the groundwater in the vicinity of SEAD-63, and that which was used for the mini-risk calculations, is consistent with SEDA-specific background groundwater quality for this compound as is shown in the data presented in **Table 6-6**, which was discussed above in Section 6.2.

The elevated lifetime resident's cancer risk at SEAD-63 results primarily from the presence of PAHs in surface water samples collected from the drainage ditches and culverts surrounding the site during

the ESI. Generally, PAHs are not very soluble in surface water, so their presence in the surface water samples collected during the ESI is presumed to result from their association with entrained soil particles and particulates carried by storm-event run-off flow into the man-made drainage culverts and infiltration galleries that surround the site. Once carried into the drainage ditches and infiltration galleries, the Army presumes that the soil particles are deposited with the surface soil and sediment that underlie the ditches and culverts. As sediments or surface soil, the probable contribution of the PAHs to the lifetime resident's cancer risk is significantly reduced, as is indicated resident's lifetime dermal exposure to sediment (i.e., $4x10^{-6}$) and soil ($1x10^{-8}$) or the ingestion of soil ($3x10^{-7}$).

The drainage ditches and infiltration galleries located closest to SEAD-63, where the ESI surface water and sediment samples were collected were excavated and the sediment removed as part of the removal action. These culverts and ditches were also graded to promote surface water drainage away from the site. Storm-event surface water flow will continue to be intermittent around SEAD-63. However, the Army believes that the resident's lifetime cancer risk at the site is best characterized by the exposure to site soils or sediment because these are less variable, and not associated with PAHs in surface water.

An ecological risk assessment was completed at SEAD-63 in 2001, and hazard quotients (HQs) calculated for seven SVOCs indicated that potential risks may exist for selected mammalian and avian species. A closer review of these data indicated that the potential threats were due to isolated hot spots of SVOC-impacted soil located in the drainage ditches, which could be addressed during the proposed removal action. A NTCRA at SEAD-63 was performed by Plexus Scientific Corporation in 2004, which included the removal of the top 6-inches of soil in the drainage ditches. The removal of impacted soil from the ditches eliminated the potential risk to the environment identified in the mini risk assessment.

The purpose of the NTCRA performed at SEAD-63 was to mitigate the source of heavy metals and possible radionuclides through the removal of debris and soils, thereby reducing the chance of further degradation of soils and groundwater at the site. Although site conditions prior to the NTCRA did not pose a human health risk based on the results of a mini-risk assessment, the presence of buried objects, such as drums, was of concern, since the nature of the drum contents was unknown. Furthermore, some buried components deposited at SEAD-63 may have contained classified or sensitive material that would need to be examined by appropriate military personnel for evaluation and declassification. The uncertainty of the nature of the buried components and the sensitivity of the materials that may have remained in the disposal area was considered justification for performing the removal action at the site. While removal and control of the military items buried at the site was the primary focus of the removal action, soil contamination present at the site surrounding these items was also addressed by the action. Additionally, elevated levels of polycyclic aromatic hydrocarbons (PAHs) in soils and sediments were addressed through isolated hot spot removals. Based upon the

results from the NTCRA the source of any potential ecological risk was removed from SEAD-63, and thus, no further remedial action is necessary to ensure protection of human health or the environment.

8.0 SELECTED REMEDY

Based on the results of the investigations and mini risk assessments completed for the sites, the Army has selected NA at SEAD-58 and NFA at SEAD-63.

8.1 No Action Site

Based on the findings of the investigation and mini risk assessment completed for SEAD-58, the Army has selected NA as the remedy for SEAD-58. This selection is based on the Army's determination that SEAD-58 does not pose a significant threat to human health or the environment.

8.2 No Further Action Site

Based on the findings of the investigations and the completion of the Removal Action, the Army has selected NFA as the remedy for SEAD-63. This selection is based on the Army's determination that SEAD-63 does not pose a significant threat to human health or the environment.

9.0 DOCUMENTATION OF SIGNIFICANT CHANGES

(Reserved).

10.0 STATE ROLE

(Reserved).

TABLE 6-1
Summary of Soil Analytical Results - SEAD-58
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC TAGM 4046 [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Methylene chloride	ug/Kg	64	17%	100	0	3	18
SVOCs							
Bis(2-Ethylhexyl)phthalate	ug/Kg	260	72%	50,000	0	13	18
Chrysene	ug/Kg	18	6%	400	0	1	18
Di-n-octylphthalate	ug/Kg	81	6%	50,000	0	1	18
Fluoranthene	ug/Kg	26	11%	50,000	0	2	18
Pyrene	ug/Kg	22	11%	50,000	0	2	18
Pesticides/PCBs							
Endosulfan I	ug/Kg	1.3	6%	900	0	1	18
Metals							
Aluminum	mg/Kg	19,100	100%	19,300	0	18	18
Antimony	mg/Kg	0.36	11%	5.9	0	2	18
Arsenic	mg/Kg	9	100%	8.2	1	18	18
Barium	mg/Kg	111	100%	300	0	18	18
Beryllium	mg/Kg	0.85	100%	1.1	0	18	18
Cadmium	mg/Kg	0.92	100%	2.3	0	18	18
Calcium	mg/Kg	106,000	100%	121,000	0	18	18
Chromium	mg/Kg	28.6	100%	29.6	0	18	18
Cobalt	mg/Kg	15.8	100%	30	0	18	18
Copper	mg/Kg	33.4	100%	33	1	18	18
Iron	mg/Kg	32,300	100%	36,500	0	18	18
Lead	mg/Kg	22.5	67%	24.8	0	12	18
Magnesium	mg/Kg	34,100	100%	21,500	1	18	18
Manganese	mg/Kg	959	100%	1,060	0	18	18
Mercury	mg/Kg	0.07	83%	0.1	0	15	18
Nickel	mg/Kg	44.8	100%	49	0	18	18
Potassium	mg/Kg	3,230	100%	2,380	3	18	18
Selenium	mg/Kg	1	22%	2	0	4	18
Sodium	mg/Kg	189	94%	172	1	17	18
Vanadium	mg/Kg	29.5	100%	150	0	18	18
Zinc	mg/Kg	117	100%	110	1	18	18

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046, Revised January 24, 1994, which are a To Be Considered (TBC) criteria.

TABLE 6-2
Summary of Groundwater Analytical Results - SEAD-58
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	Criteria Level [2]		Number of Exceedances	Number of Detects	Number of Analyses
Metals								
Aluminum	ug/L	7,160	100%	50	(a)	4	4	4
Arsenic	ug/L	2.1	25%	3		0	1	4
Barium	ug/L	235	100%	1,000		0	4	4
Beryllium	ug/L	0.41	50%	4	(b)	0	2	4
Calcium	ug/L	171,000	100%		(c)	0	4	4
Chromium	ug/L	12.3	100%	50		0	4	4
Cobalt	ug/L	9.2	75%		(c)	0	3	4
Copper	ug/L	9	100%	200		0	4	4
Iron	ug/L	14,500	100%	300		4	4	4
Lead	ug/L	4.4	75%	25		0	3	4
Magnesium	ug/L	29,800	100%		(c)	0	4	4
Manganese	ug/L	677	100%	50	(a)	4	4	4
Mercury	ug/L	0.04	25%	0.7		0	1	4
Nickel	ug/L	20.5	100%	100		0	4	4
Potassium	ug/L	6,150	100%		(c)	0	4	4
Sodium	ug/L	7,180	100%	20,000		0	4	4
Vanadium	ug/L	10.8	100%		(c)	0	4	4
Zinc	ug/L	37.2	100%	300		0	4	4

Notes:

(1) Only compounds that were detected were included in this list of parameters.

(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004).

a) US EPA Secondary Drinking Water Regulation, non-enforceable (EPA 822-B-00-001, Summer 2000)

b) US EPA Maximum Contaminant Limit announced 10/31/01. Source http://www.epa.gov/safewater/arsenic.html

c) No standard

TABLE 6-3
Summary of Surface Water Analytical Results - SEAD-58
Record of Desicion for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC AWQS Class C [2]	Number of Exceedances	Number of Detects	Number of Analyses
Metals							
Aluminum	ug/L	421	100%	100	5	6	6
Barium	ug/L	36.5	100%	NS	0	6	6
Calcium	ug/L	82,000	100%	NS	0	6	6
Chromium	ug/L	0.75	67%	140	0	4	6
Copper	ug/L	3.8	100%	17.36	0	6	6
Iron	ug/L	598	100%	300	1	6	6
Lead	ug/L	1.1	17%	8.7	0	1	6
Magnesium	ug/L	11,700	100%	NS	0	6	6
Manganese	ug/L	74.4	100%	NS	0	6	6
Mercury	ug/L	0.06	67%	0.77	0	4	6
Nickel	ug/L	2.6	67%	100.16	0	4	6
Potassium	ug/L	2,610	100%	NS	0	6	6
Sodium	ug/L	13,400	100%	NS	0	6	6
Thallium	ug/L	2.7	33%	8	0	2	6
Vanadium	ug/L	0.9	17%	14	0	1	6
Zinc	ug/L	10.6	100%	159.6	0	6	6

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004), Class C Surface Water.
Hardness dependent values assumed a hardness of 217 mg/L.
NS = No standard

TABLE 6-4
Summary of Sediment Analytical Results - SEAD-58
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC Lowest Effective Level [2]	Number of Exceedances	Number of Detects	Number of Analyses
SVOCs							
4-Methylphenol	ug/Kg	120	17%		0	1	6
Anthracene	ug/Kg	30	17%		0	1	6
Benzo(a)anthracene	ug/Kg	92	50%		0	3	6
Benzo(a)pyrene	ug/Kg	110	67%		0	4	6
Benzo(b)fluoranthene	ug/Kg	130	67%		0	4	6
Benzo(ghi)perylene	ug/Kg	110	50%		0	3	6
Benzo(k)fluoranthene	ug/Kg	100	67%		0	4	6
Bis(2-Ethylhexyl)phthalate	ug/Kg	100	67%		0	4	6
Chrysene	ug/Kg	110	67%		0	4	6
Di-n-butylphthalate	ug/Kg	130	50%		0	3	6
Dibenz(a,h)anthracene	ug/Kg	63	33%		0	2	6
Fluoranthene	ug/Kg	180	100%		0	6	6
Indeno(1,2,3-cd)pyrene	ug/Kg	110	67%		0	4	6
Phenanthrene	ug/Kg	120	100%		0	6	6
Phenol	ug/Kg	36	17%		0	1	6
Pyrene	ug/Kg	210	100%		0	6	6
Metals							
Aluminum	mg/Kg	20,100	100%		0	6	6
Antimony	mg/Kg	0.37	50%	2	0	3	6
Arsenic	mg/Kg	5.9	100%	6	0	6	6
Barium	mg/Kg	142	100%		0	6	6
Beryllium	mg/Kg	0.98	100%		0	6	6
Cadmium	mg/Kg	0.7	100%	0.6	1	6	6
Calcium	mg/Kg	70,500	100%		0	6	6
Chromium	mg/Kg	28.2	100%	26	1	6	6
Cobalt	mg/Kg	11.6	100%		0	6	6
Copper	mg/Kg	37	100%	16	6	6	6
Iron	mg/Kg	29,300	100%	20,000	6	6	6
Lead	mg/Kg	28.8	100%	31	0	6	6
Magnesium	mg/Kg	12,100	100%		0	6	6
Manganese	mg/Kg	735	100%	460	3	6	6
Mercury	mg/Kg	0.12	100%	0.15	0	6	6
Nickel	mg/Kg	33.5	100%	16	6	6	6
Potassium	mg/Kg	3,170	100%		0	6	6
Selenium	mg/Kg	0.89	83%		0	5	6
Sodium	mg/Kg	134	17%		0	1	6
Thallium	mg/Kg	0.55	33%		0	2	6
Vanadium	mg/Kg	33.7	100%		0	6	6
Zinc	mg/Kg	131	100%	120	1	6	6

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Technical Guidance for Screening Contaminated Sediments - January 1999

Table 6-5
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Inorganics (%-dry weight):											
Percent Moisture	N/A	N/A	29	N/A	17.7	28.8	18.3	21.5	17.1	28.8	
Metals (mg/Kg-dry weight):											
Aluminum	SB	19,200	29	**4**	15790	22100	13900	14800	14747	22,100	
Antimony	SB	5.9	29	**9**	5.9	6.8	5.9	6.0	5.8	6.8	
Arsenic	75 or SB	8.24	29	**1**	5.9	11.2	5.7	7.9	5.8	11	
Barium	300 or SB	117.75	29	**8**	115	223	96	118	104	223	
Beryllium	0.16 or SB	1.1	29	**2**	0.8	1.6	0.7	0.8	0.8	1.6	
Cadmium	1 or SB	2.3	29	0	0.4	0.7	0.4	0.8	0.3	0.8	
Calcium	SB	120500	29	0	16414	101000	8440	24200	20413	101,000	
Chromium	10 or SB	29.325	29	**5**	26	35	24	26	25	35	
Cobalt	30 or SB	19.05	29	0	12	20	12	13	12	20	
Copper	25 or SB	29.588	29	**16**	32	82	32	38	32	82	
Iron	2000 or SB	35550	29	**3**	29220	39500	27920	31400	28314	39,500	
Lead	SB	21.48	29	**4**	17	57	16	19	17	57	
Magnesium	SB	21500	29	1	9115	59900	5756	6200	8617	59,900	
Manganese	SB	1056	29	**3**	586	1900	542	843	560	1,900	
Mercury		0.095	29	**1**	0.0	0.2	0.0	0.0	0.0	0.2	
Nickel	13 or SB	48.88	29	**6**	41	71	43	48	41	71	
Potassium	SB	2342.5	29	**3**	1857	3230	1644	2060	1721	3,230	
Selenium	2 or SB	2	29	0	0.9	1.5	0.4	0.5	0.8	1.5	
Silver	SB	0.8	29	**7**	0.5	2.1	1.7	2.1	0.7	2.1	
Sodium	SB	170.25	29	**3**	82	186	93	155	93	207	
Thallium	SB	0.668	29	*29*	1.5	1.7	1.5	1.5	1.5	1.7	
Vanadium	150 or SB	31.9	29	**3**	27	35	24	28	25	35	
Zinc	20 or SB	108.95	29	**3**	81	120	86	102	81	120	
Polychlorinated biphenyls (µg/Kg-dry weight):											
Aroclor 1016	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1221	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1232	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1242	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1248	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1254	1000 or 10000**	176	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1260	1000 or 10000**	176	29	0	30.1	35	30.2	32	29.8	35	u
Pesticides (µg/Kg-dry weight):											
4,4´-DDD	2900	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
4,4´-DDE	2100	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
4,4´-DDT	2100	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Aldrin	41	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
alpha-BHC	110	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
alpha-Chlordane	540***	90	29	0	1.0	1.1	1.0	1	1.0	1.1	u
beta-BHC	200	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
delta-BHC	300	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Dieldrin	44	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endosulfan I	900	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Endosulfan II	900	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endosulfan sulfate	1000	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin	100	19	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin aldehyde		2	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin ketone	N/A	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
gamma-BHC	60	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
gamma-Chlordane	540	90	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Heptachlor	100	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Heptachlor epoxide	20	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Methoxychlor	Total VOCs < 10 mg/Kg	90	29	0	9.6	11	9.6	10	9.5	11	u
Technical Chlordane	540***		29	0	30.1	35	30.2	32	29.9	35	u
Toxaphene		176	29	0	30.1	35	30.2	32	29.9	35	u

Table 6-5
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Semi-Volatile Organic Compounds (µg/Kg-dry weight):											
1,2,4-Trichlorobenzene			29	0	299	340	300	310	297	340	u
1,2-Dichlorobenzene			29	0	299	340	300	310	297	340	u
1,2-Diphenylhydrazine (as Azobenzene)			29	0	299	340	300	310	297	340	u
1,3-Dichlorobenzene			29	0	299	340	300	310	297	340	u
1,4-Dichlorobenzene			29	0	299	340	300	310	297	340	u
2,4,5-Trichlorophenol	100		29	0	299	340	300	310	297	340	u
2,4,6-Trichlorophenol			29	0	299	340	300	310	297	340	u
2,4-Dichlorophenol	400		29	0	299	340	300	310	297	340	u
2,4-Dimethylphenol			29	0	299	340	300	310	297	340	u
2,4-Dinitrophenol	200 or MDL		29	0	597	690	600	620	592	690	u
2,4-Dinitrotoluene		65	29	0	299	340	300	310	297	340	u
2,6-Dinitrotoluene	1000	65	29	0	299	340	300	310	297	340	u
2-Chloronaphthalene			29	0	299	340	300	310	297	340	u
2-Chlorophenol	800		29	0	299	340	300	310	297	340	u
2-Methylnaphthalene	36400		29	0	299	340	300	310	297	340	u
2-Methylphenol	100 or MDL		29	0	299	340	300	310	297	340	u
2-Nitroaniline	430 or MDL		29	0	597	690	600	620	592	690	u
2-Nitrophenol	330 or MDL		29	0	299	340	300	310	297	340	u
3,3´-Dichlorobenzidine	N/A		29	0	299	340	300	310	297	340	u
3-Nitroaniline	500 or MDL		29	0	597	690	600	620	592	690	u
4,6-Dinitro-2-methylphenol			29	0	597	690	600	620	592	690	u
4-Bromophenyl phenyl ether			29	0	299	340	300	310	297	340	u
4-Chloro-3-methylphenol	240 or MDL		29	0	597	690	600	620	592	690	u
4-Chloroaniline	220 or MDL		29	0	299	340	300	310	297	340	u
4-Chlorophenyl phenyl ether			29	0	299	340	300	310	297	340	u
4-Methylphenol	900		29	0	299	340	300	310	297	340	u
4-Nitroaniline			29	0	597	690	600	620	592	690	u
4-Nitrophenol	100 or MDL		29	0	597	690	600	620	592	690	u
Acenaphthene	50000****		29	0	299	340	300	310	297	340	u
Acenaphthylene	41000****		29	0	299	340	300	310	297	340	u
Anthracene	50000****		29	0	299	340	300	310	297	340	u
Benz(a)anthracene	224 or MDL		29	0	299	340	300	310	297	340	u
Benzo(a)pyrene	61 or MDL		29	0	299	340	300	310	297	340	u
Benzo(b)fluoranthene	1100		29	0	299	340	300	310	297	340	u
Benzo(g,h,i)perylene	50000****		29	0	299	340	300	310	297	340	u
Benzo(k)fluoranthene	1100		29	0	299	340	300	310	297	340	u
Benzoic acid	2700		29	0	597	690	600	620	592	690	u
Benzyl alcohol			29	0	597	690	600	620	592	690	u
Bis(2-chloroethoxy)methane			29	0	299	340	300	310	297	340	u
Bis(2-chloroethyl)ether			29	0	299	340	300	310	297	340	u
Bis(2-chloroisopropyl)ether			29	0	299	340	300	310	297	340	u
Bis(2-ethylhexyl)phthalate	50000****		29	0	287	340	300	310	289	340	u
Butyl benzyl phthalate	50000****		29	0	299	340	300	310	297	340	u
Carbazole			29	0	299	340	300	310	297	340	u
Chrysene	400		29	0	299	340	300	310	297	340	u
Dibenz(a,h)anthracene	14 or MDL		29	0	299	340	300	310	297	340	u
Dibenzofuran	6200		29	0	299	340	300	310	297	340	u
Diethyl phthalate	7100		29	0	299	340	300	310	297	340	u
Dimethyl phthalate	2000		29	0	299	340	300	310	297	340	u
Di-n-butyl phthalate	8100		29	0	299	340	300	310	297	340	u
Di-n-octyl phthalate	50000****		29	0	299	340	300	310	297	340	u
Fluoranthene	50000****		29	0	299	340	300	310	297	340	u
Fluorene	50000****		29	0	299	340	300	310	297	340	u
Hexachlorobenzene	410		29	0	299	340	300	310	297	340	u
Hexachlorobutadiene			29	0	299	340	300	310	297	340	u
Hexachlorocyclopentadiene			29	0	299	340	300	310	297	340	u

Table 6-5
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Hexachloroethane			29	0	299	340	300	310	297	340	u
Indeno(1,2,3-cd)pyrene	3200		29	0	299	340	300	310	297	340	u
Isophorone	4400		29	0	299	340	300	310	297	340	u
Naphthalene	13000	366	29	0	299	340	300	310	297	340	u
Nitrobenzene	200 or MDL	368	29	0	299	340	300	310	297	340	u
N-Nitrosodi-n-propylamine		366	29	0	299	340	300	310	297	340	u
N-Nitrosodiphenylamine		366	29	0	299	340	300	310	297	340	u
Pentachlorophenol	1000 or MDL	1758	29	0	597	690	600	620	592	690	u
Phenanthrene	50000****	368	29	0	299	340	300	310	297	340	u
Phenol	30 or MDL	366	29	0	299	340	300	310	297	340	u
Pyrene	50000****	372	29	0	299	340	300	310	297	340	u
Volatile Organic Compounds (VOCs) (µg/Kg-dry weight):											
1,1,1,2-Tetrachloroethane	600		29	0	27.8	36	27.8	32	27.1	36	u
1,1,1-Trichloroethane	800	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1,2,2-Tetrachloroethane	600	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1,2-Trichloroethane		7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloroethane	200	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloroethene	400	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloropropene			29	0	27.8	36	27.8	32	27.1	36	u
1,2,3-Trichlorobenzene			29	0	27.8	36	27.8	32	27.1	36	u
1,2,3-Trichloropropane	400		29	0	27.8	36	27.8	32	27.1	36	u
1,2,4-Trichlorobenzene	3400		29	0	27.8	36	27.8	32	27.1	36	u
1,2,4-Trimethylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dibromo-3-chloropropane			29	0	138.5	180	136	160	134.8	180	u
1,2-Dibromoethane			29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichlorobenzene	7900		29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichloroethane	100	7	29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichloropropane		7	29	0	27.8	36	27.8	32	27.1	36	u
1,3,5-Trimethylbenzene		65	29	0	27.8	36	27.8	32	27.1	36	u
1,3-Dichlorobenzene	1600		29	0	27.8	36	27.8	32	27.1	36	u
1,3-Dichloropropane	300		29	0	27.8	36	27.8	32	27.1	36	u
1,4-Dichlorobenzene	8500		29	0	27.8	36	27.8	32	27.1	36	u
2,2-Dichloropropane			29	0	27.8	36	27.8	32	27.1	36	u
2-Butanone	300	7	29	0	138.5	180	136	160	134.8	180	u
2-Chlorotoluene			29	0	27.8	36	27.8	32	27.1	36	u
2-Hexanone			29	0	278	360	278	320	271.4	360	u
4-Chlorotoluene			29	0	27.8	36	27.8	32	27.1	36	u
4-Isopropyltoluene			29	0	27.8	36	27.8	32	27.1	36	u
4-Methyl-2-pentanone	1000		29	0	278	360	278	320	271.4	360	u
Acetone	200	22	29	0	138.5	180	136	160	134.8	180	u
Benzene	60	7	29	0	27.8	36	27.8	32	27.1	36	u
Bromobenzene			29	0	27.8	36	27.8	32	27.1	36	u
Bromochloromethane		7	29	0	27.8	36	27.8	32	27.1	36	u
Bromodichloromethane			29	0	27.8	36	27.8	32	27.1	36	u
Bromoform		7	29	0	55.45	72	55.4	64	54.1	72	u
Bromomethane			29	0	55.45	72	55.4	64	54.1	72	u
Carbon disulfide	2700	7	29	0	55.45	72	55.4	64	54.1	72	u
Carbon tetrachloride	600	7	29	0	27.8	36	27.8	32	27.1	36	u
Chlorobenzene	1700	7	29	0	27.8	36	27.8	32	27.1	36	u
Chloroethane	1900	7	29	0	55.45	72	55.4	64	54.1	72	u
Chloroform	300	7	29	0	27.8	36	27.8	32	27.1	36	u
Chloromethane			29	0	55.45	72	55.4	64	54.1	72	u
cis-1,2-Dichloroethene		7*****	29	0	27.8	36	27.8	32	27.1	36	u
cis-1,3-Dichloropropene		7	29	0	27.8	36	27.8	32	27.1	36	u
Dibromochloromethane	N/A	7	29	0	27.8	36	27.8	32	27.1	36	u
Dibromomethane			29	0	27.8	36	27.8	32	27.1	36	u
Dichlorodifluoromethane			29	0	55.45	72	55.4	64	54.1	72	u
Ethylbenzene	5500	7	29	0	27.8	36	27.8	32	27.1	36	u
Freon-113	6000		29	0	27.8	36	27.8	32	27.1	36	u
Hexachlorobutadiene			29	0	55.45	72	55.4	64	54.1	72	u

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Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Isopropylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
m,p-Xylene	1200*	7*	29	0	27.8	36	27.8	32	27.1	36	u
Methyl tert-butyl ether		6	29	0	27.8	36	27.8	32	27.1	36	u
Methylene chloride	100	7	29	0	53.15	72	55.4	64	52.6	72	u
Naphthalene			29	0	55.45	72	55.4	64	54.1	72	u
n-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
n-Propylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
o-Xylene	1200*	7*	29	0	27.8	36	27.8	32	27.1	36	u
sec-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
Styrene		7	29	0	27.8	36	27.8	32	27.1	36	u
tert-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
Tetrachloroethene	1400	7	29	0	27.8	36	27.8	32	27.1	36	u
Toluene	1500	7	29	0	27.8	36	27.8	32	27.1	36	u
trans-1,2-Dichloroethene	300	7*****	29	0	27.8	36	27.8	32	27.1	36	u
trans-1,3-Dichloropropene		7	29	0	27.8	36	27.8	32	27.1	36	u
Trichloroethene	700	7	29	0	27.8	36	27.8	32	27.1	36	u
Trichlorofluoromethane			29	0	55.45	72	55.4	64	54.1	72	u
Vinyl chloride	200	7	29	0	27.8	36	27.8	32	27.1	36	u

NOTES:

5.80 - Blue-colored value indicates exceedance of the higher of New York State Department of Environmental Conservation (NYSDEC) TAGM soil cleanup goal or Seneca Army Depot Activity (SEDA) background

1.4 - Gray-shading indicates Practical Quantitation Limit (PQL) exceeds cleanup goal

* NYSDEC TAGM soil cleanup goal for total (m,p,o)-Xylenes is 1,200 µg/Kg
** 1,000 µg/Kg for surface soil, 10,000 µg/Kg for subsurface soil
*** NYSDEC TAGM soil cleanup goal for total Chlordane is 540 µg/Kg
**** Value indicated, and total SVOCs <500,000 µg/Kg
***** Value for total 1,2-dicchloroethenes

"**MDL**" means Minimum Detection Limit
"**TAGM**" means Technical and Administrative Guidance Memorandum #4046 - Determination of Soil Cleanup Objectives and Cleanup Goals (NYSDEC)
"**µg/Kg**" means micrograms/Kilogram
"**mg/Kg**" means milligrams/Kilogram
"**SB**" means Site Background
"**N/A**" means Not Applicable (NYSDEC TAGM criterion)
"**J**" is a Quality Control (QC) qualifier indicating detection below PQL
"**u**" is a QC qualifier indicating the compound was Not Detected, or ND, at or above the MDL
"**R**" is a QC qualifier tagged by the Data Validator indicating a Relative Percent Difference (RPD) outside accepted recovery limits

Table 6-6

SEAD-63 Groundwater Quality Compared to SEDA Sitewide Background Groundwater Quality and State / Federal Groundwater Quality Standards and Guidelines

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-63 MW63-1 GRNDWTR MW63-1 7/11/1994 SA ESI	SEAD-63 MW63-1 GRNDWTR 632004 7/7/2006 SA	SEAD-63 MW63-2 GRNDWTR MW63-2 7/11/1994 SA ESI	SEAD-63 MW63-2 GRNDWTR 632002 7/6/2007 SA	SEAD-63 MW63-3 GRNDWTR MW63-3 7/11/1994 SA ESI	SEAD-63 MW63-3 GRNDWTR 632000 7/6/2006 SA	SEAD-63 MW63-3 GRNDWTR 632001 7/6/2006 DU
Parameter	**Units**	**SEAD-63 Maximum Concentration**	**Background Groundwater Maximum Concentration**	**Results Exceeding Background Groundwater Maximum Concentration**	**Background Groundwater Average Concentration**	**Results Exceeding Background Groundwater Average Concentration**	**Action Level Type [1]**	**Action Level**	**Results Exceeding Action Levels**	Value (Q)[2]	Value (Q)[3]	Value (Q)[2]	Value (Q)[3]	Value (Q)[2]	Value (Q)[3]	Value (Q)[3]
Aluminum	UG/L	747	42400	0	2730	0	SEC	50	7	**747**	**128 B**	**376**	**130 B**	**743**	**188 B**	**128 B**
Antimony	UG/L	ND	52.7	0	8.2	0	GA	3	0	1.3 U	4 U	1.3 U	4 U	1.3 U	4 U	4 U
Arsenic	UG/L	ND	10	0	1.7	0	MCL	10	0	2 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U
Barium	UG/L	83	337	0	78.2	1	GA	1000	0	72.6 J	65.4	71.2 J	76	83 J	60.1	59.4
Beryllium	UG/L	0.88	2.2	0	0.21	4	MCL	4	0	0.1 U	0.83 B	0.1 U	0.78 B	0.1 U	0.88 B	0.8 B
Cadmium	UG/L	ND	1.45	0	0.5	0	GA	5	0	0.2 U	0.28 U	0.2 U	0.28 U	0.2 U	0.28 U	0.28 U
Calcium	UG/L	295000	181000	3	116000	5			0	89400	82700	132000	141000	295000	187000	182000
Chromium	UG/L	1.1	69.4	0	4.7	0	GA	50	0	1.1 J	0.18 U	0.91 J	0.22 B	1.1 J	0.84 B	0.25 B
Cobalt	UG/L	6.2	34.6	0	3.7	2			0	6.2 J	0.48 B	2.4 J	1.6 B	6.2 J	0.43 U	0.43 U
Copper	UG/L	2.6	32.5	0	3.3	0	GA	200	0	2.1 J	0.69 U	1.4 J	0.69 U	2.6 J	2.1 B	2.5 B
Cyanide	UG/L	5		0		0			0	5 U		5 U		5 U		
Iron	UG/L	1260	69400	0	4480	0	GA	300	3	**1260**	142	**603**	113	**1020**	112	84.4
Lead	UG/L	3.3	34.8	0	2.5	0	MCL	15	0	1.1 J	1.8 U	0.89 U	1.8 U	0.9 U	2.7 B	3.3 B
Magnesium	UG/L	54600	58200	0	28600	3			0	16400	14700	20000	20500	54600	31400	30600
Manganese	UG/L	1670	1120	1	224	4	GA	300	4	**548**	58.4	**1070**	**1670**	**408**	69.6	65.4
Mercury	UG/L	0.11	0.1	0	0.04	0	GA	0.7	0	0.04 U	0.11 U	0.04 U	0.11 U	0.04 U	0.11 U	0.11 U
Nickel	UG/L	10.6	99.8	0	7.3	2	GA	100	0	9.7 J	0.98 U	4.3 J	1.6 B	10.6 J	2.2 B	2.6 B
Potassium	UG/L	5340	10200	0	3830	2			0	3870 J	1160	2360 J	2010	5340	1440	1380
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	2.7 U	5 U	2.7 U	5 U	2.7 U	5 U	5 U
Silver	UG/L	2.7	4.5	0	1	4	GA	50	0	0.5 U	1.5 B	0.5 U	2 B	0.5 U	1.3 B	2.7 B
Sodium	UG/L	146000	59400	3	14600	3	GA	20000	3	5710	5620	5860	7030	**146000**	**74600**	**75000**
Thallium	UG/L	4.5	4.7	0	1.5	0	MCL	2	0	1.9 U	4.5 U	1.9 U	4.5 U	1.9 U	4.5 U	4.5 U
Vanadium	UG/L	1.5	70.8	0	5.2	0			0	1.5 J	0.51 U	0.81 J	0.51 U	1.5 J	0.51 U	0.51 U
Zinc	UG/L	13.5	143	0	23.1	0	SEC	5000	0	7.1 J	5.7 B	6.2 J	4.2 B	11.6 J	13.5	8.1 B
Iron and Manganese	UG/L	1808	70520	0	4704	0	GA	500	4	**1808**	200.4	**1673**	**1783**	**1428**	181.6	149.8

Notes:
(1) GA = New York State GA Groundwater Standards
MCL = Federal Maximum Contaminant Level
SEC = Federal Secondary Drinking Water Regulation guidance values
(2) Data validated in accordance with Region II procedures
(3) Data validated by laboratory only.

Shaded and bolded data exceed groundwater quality standard / guideline identified.

Data Qualifiers

<Null>	Compound detected at concentration reported.
J	Compound positively identified at the estimated concentration reported.
U	Compound not detected at concentration indicated.
B	Compound was detected in the blank as well as in the sample.

TABLE 6-7
Summary of ESI Soil Analytical Results - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC TAGM 4046 [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Acetone	ug/Kg	160	8%	200	0	1	12
Benzene	ug/Kg	4	17%	60	0	2	12
Methyl ethyl ketone	ug/Kg	46	8%	300	0	1	12
Toluene	ug/Kg	23	17%	1,500	0	2	12
Total Xylenes	ug/Kg	14	17%	1,200	0	2	12
SVOCs							
Benzo(a)anthracene	ug/Kg	30	8%	224	0	1	12
Benzo(a)pyrene	ug/Kg	45	17%	61	0	2	12
Benzo(b)fluoranthene	ug/Kg	38	17%	1,100	0	2	12
Benzo(ghi)perylene	ug/Kg	31	8%	50,000	0	1	12
Benzo(k)fluoranthene	ug/Kg	43	17%	1,100	0	2	12
Bis(2-Ethylhexyl)phthalate	ug/Kg	1,100	92%	50,000	0	11	12
Chrysene	ug/Kg	31	17%	400	0	2	12
Di-n-butylphthalate	ug/Kg	87	8%	8,100	0	1	12
Dibenz(a,h)anthracene	ug/Kg	28	8%	14	1	1	12
Fluoranthene	ug/Kg	63	17%	50,000	0	2	12
Indeno(1,2,3-cd)pyrene	ug/Kg	37	8%	3,200	0	1	12
Phenanthrene	ug/Kg	31	8%	50,000	0	1	12
Pesticides/PCBs							
4,4'-DDD	ug/Kg	2	8%	2,900	0	1	12
4,4'-DDE	ug/Kg	4.4	17%	2,100	0	2	12
4,4'-DDT	ug/Kg	3.3	8%	2,100	0	1	12
Metals							
Aluminum	mg/Kg	18,000	100%	19,300	0	12	12
Antimony	mg/Kg	0.29	17%	5.9	0	2	12
Arsenic	mg/Kg	6.1	100%	8.2	0	12	12
Barium	mg/Kg	115	100%	300	0	12	12
Beryllium	mg/Kg	0.8	100%	1.1	0	12	12
Cadmium	mg/Kg	24	100%	2.3	3	12	12
Calcium	mg/Kg	41,500	100%	121,000	0	12	12
Chromium	mg/Kg	43.5	100%	29.6	2	12	12
Cobalt	mg/Kg	14.4	100%	30	0	12	12
Copper	mg/Kg	49.6	100%	33	6	12	12
Iron	mg/Kg	34,300	100%	36,500	0	12	12
Lead	mg/Kg	38.3	100%	24.8	3	12	12
Magnesium	mg/Kg	9,400	100%	21,500	0	12	12
Manganese	mg/Kg	728	100%	1,060	0	12	12
Mercury	mg/Kg	0.49	92%	0.1	1	11	12
Nickel	mg/Kg	48.4	100%	49	0	12	12
Potassium	mg/Kg	2,160	100%	2,380	0	12	12
Selenium	mg/Kg	1.6	100%	2	0	12	12
Sodium	mg/Kg	132	83%	172	0	10	12
Thallium	mg/Kg	0.51	33%	0.7	0	4	12
Vanadium	mg/Kg	28.4	100%	150	0	12	12
Zinc	mg/Kg	108	100%	110	0	12	12

Notes:

(1) Only compounds that were detected were included in this list of parameters. All soil samples were collected during the 1994 ESI at SEAD-63.

(2) NYSDEC Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046, Revised January 24, 1994, which are a To Be Considered (TBC) criteria.

TABLE 6-8
Summary of ESI Groundwater Analytical Results - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	Criteria Level [2]	Number of Exceedances	Number of Detects	Number of Analyses
SVOCs							
Phenol	ug/L	2	33%	1	1	1	3
Metals							
Aluminum	ug/L	747	100%	NS	0	3	3
Barium	ug/L	83	100%	1,000	0	3	3
Calcium	ug/L	295,000	100%	NS	0	3	3
Chromium	ug/L	1.1	100%	50	0	3	3
Cobalt	ug/L	6.2	100%	NS	0	3	3
Copper	ug/L	2.6	100%	200	0	3	3
Iron	ug/L	1,260	100%	300	3	3	3
Lead	ug/L	1.1	33%	25	0	1	3
Magnesium	ug/L	54,600	100%	NS	0	3	3
Manganese	ug/L	1,070	100%	300	3	3	3
Nickel	ug/L	10.6	100%	NS	0	3	3
Potassium	ug/L	5,340	100%	NS	0	3	3
Sodium	ug/L	146,000	100%	20,000	1	3	3
Vanadium	ug/L	1.5	100%	NS	0	3	3
Zinc	ug/L	11.6	100%	300	0	3	3

Notes:
(1) Only compounds that were detected were included in this list of parameters.
All groundwater samples were collected during the 1994 ESI at SEAD-63.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004).
NS = No standard

TABLE 6-9
Summary of ESI and RI Surface Water Analytical Results - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC AWQS Class C [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Chloroform	ug/L	0.8	9%	NS	0	2	22
Toluene	ug/L	1	5%	NS	0	1	22
SVOCs							
4-Methylphenol	ug/L	0.22	5%	NS	0	1	22
Benzo[a]pyrene	ug/L	1	5%	NS	0	1	22
Benzo[b]fluoranthene	ug/L	0.9	5%	NS	0	1	22
Benzo[ghi]perylene	ug/L	0.8	5%	NS	0	1	22
Benzo[k]fluoranthene	ug/L	1	5%	NS	0	1	22
Bis(2-Ethylhexyl)phthalate	ug/L	68	9%	0.6	2	2	22
Butylbenzylphthalate	ug/L	0.23	36%	NS	0	8	22
Di-n-butylphthalate	ug/L	0.15	59%	NS	0	13	22
Dibenz[a,h]anthracene	ug/L	0.8	5%	NS	0	1	22
Diethyl phthalate	ug/L	0.29	27%	NS	0	6	22
Fluoranthene	ug/L	0.7	9%	NS	0	2	22
Indeno[1,2,3-cd]pyrene	ug/L	0.9	5%	NS	0	1	22
Pentachlorophenol	ug/L	1	5%	0.4	1	1	22
Phenanthrene	ug/L	0.057	5%	NS	0	1	22
Phenol	ug/L	0.8	9%	5	0	2	22
Pyrene	ug/L	0.5	9%	NS	0	2	22
Pesticides/PCBs							
Aroclor-1260	ug/L	0.75	14%	0.0001	3	3	22
Endosulfan sulfate	ug/L	0.014	5%	NS	0	1	22
Endrin ketone	ug/L	0.046	23%	NS	0	5	22
Heptachlor	ug/L	0.0036	5%	0.001	1	1	22
Heptachlor epoxide	ug/L	0.003	5%	0.001	1	1	22
Metals							
Aluminum	ug/L	3,630	68%	100	10	15	22
Arsenic	ug/L	3.8	5%	190	0	1	22
Barium	ug/L	91.4	100%	NS	0	22	22
Beryllium	ug/L	0.19	27%	1.1110	0	6	22
Cadmium	ug/L	0.78	9%	1.8628	0	2	22
Calcium	ug/L	220,000	100%	NS	0	22	22
Chromium	ug/L	5.6	23%	347.2701	0	5	22
Cobalt	ug/L	7.2	18%	5	1	4	22
Copper	ug/L	7.9	32%	20.2877	0	7	22
Iron	ug/L	9,050	73%	300	7	16	22
Lead	ug/L	20	9%	7.1638	1	2	22
Magnesium	ug/L	33,700	100%	NS	0	22	22
Manganese	ug/L	2,300	100%	NS	0	22	22
Mercury	ug/L	0.1	14%	NS	0	3	22
Nickel	ug/L	18.8	41%	154.4886	0	9	22
Potassium	ug/L	11,600	100%	NS	0	22	22
Silver	ug/L	0.89	9%	0.1	2	2	22
Sodium	ug/L	59,300	100%	NS	0	22	22
Thallium	ug/L	1.9	5%	8	0	1	22
Vanadium	ug/L	8.9	18%	14	0	4	22
Zinc	ug/L	99	100%	141.3798	0	22	22

Notes:
(1) Only compounds that were detected were included in this list of parameters.
Four surface water samples were collected during the 1994 ESI and 18 surface water samples were collected during the 1997 RI.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004), Class C Surface Water.
Hardness dependent values assumed a hardness of 217 mg/L.
NS = No standard

TABLE 6-10
Summary of ESI and RI Sediment Analytical Results - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC Sediment Criteria [2]		Number of Exceedances	Number of Detects	Number of Analyses
VOCs								
Acetone	ug/Kg	150	41%			0	9	22
Methyl ethyl ketone	ug/Kg	35	9%			0	2	22
Toluene	ug/Kg	14	5%	1,656	(b)	0	1	22
SVOCs								
2-Methylnaphthalene	ug/Kg	14	9%	1,149	(b)	0	2	22
Acenaphthene	ug/Kg	80	14%	4,732	(b)	0	3	22
Acenaphthylene	ug/Kg	82	14%			0	3	22
Anthracene	ug/Kg	250	41%	3,617	(b)	0	9	22
Benzo(a)anthracene	ug/Kg	1,800	95%	44	(a)	12	21	22
Benzo(a)pyrene	ug/Kg	2,900	95%	44	(a)	13	21	22
Benzo(b)fluoranthene	ug/Kg	5,300	95%	44	(a)	14	21	22
Benzo(ghi)perylene	ug/Kg	2,700	95%			0	21	22
Benzo(k)fluoranthene	ug/Kg	570	68%	44	(a)	10	15	22
Bis(2-Ethylhexyl)phthalate	ug/Kg	110	55%	6,743	(b)	0	12	22
Butylbenzylphthalate	ug/Kg	22	23%			0	5	22
Carbazole	ug/Kg	430	45%			0	10	22
Chrysene	ug/Kg	2,300	95%	44	(a)	13	21	22
Di-n-butylphthalate	ug/Kg	19	45%			0	10	22
Di-n-octylphthalate	ug/Kg	19	5%			0	1	22
Dibenz(a,h)anthracene	ug/Kg	1,200	50%			0	11	22
Dibenzofuran	ug/Kg	36	9%			0	2	22
Diethyl phthalate	ug/Kg	92	36%			0	8	22
Fluoranthene	ug/Kg	4,100	95%	34,476	(b)	0	21	22
Fluorene	ug/Kg	110	14%	270	(b)	0	3	22
Indeno(1,2,3-cd)pyrene	ug/Kg	2,500	95%	44	(a)	10	21	22
Naphthalene	ug/Kg	23	9%	1,014	(b)	0	2	22
Phenanthrene	ug/Kg	1,400	100%	4,056	(b)	0	22	22
Phenol	ug/Kg	11	5%	17	(b)	0	1	22
Pyrene	ug/Kg	3,200	95%	32,482	(b)	0	21	22
Pesticides/PCBs								
4,4'-DDD	ug/Kg	3.9	5%	0.338	(a)	1	1	22
4,4'-DDE	ug/Kg	9.2	14%	0.338	(a)	3	3	22
4,4'-DDT	ug/Kg	8.3	9%	0.338	(a)	2	2	22
Aroclor-1260	ug/Kg	44	5%	0.02704	(a)	1	1	22
Endosulfan I	ug/Kg	7.5	9%	1.014	(b)	2	2	22
Endosulfan sulfate	ug/Kg	12	9%			0	2	22
Endrin ketone	ug/Kg	9.4	5%			0	1	22
Metals								
Aluminum	mg/Kg	16,700	100%			0	22	22
Arsenic	mg/Kg	6.8	100%	6	(c)	1	22	22
Barium	mg/Kg	107	100%			0	22	22
Beryllium	mg/Kg	0.8	100%			0	22	22
Cadmium	mg/Kg	0.83	18%	0.6	(c)	2	4	22
Calcium	mg/Kg	211,000	100%			0	22	22
Chromium	mg/Kg	24.4	100%	26	(c)	0	22	22
Cobalt	mg/Kg	14.4	100%			0	22	22
Copper	mg/Kg	42.6	100%	16	(c)	19	22	22
Cyanide	mg/Kg	2.1	5%			0	1	22
Iron	mg/Kg	29,700	100%	20,000	(c)	9	22	22
Lead	mg/Kg	46.2	100%	31	(c)	5	18	18
Magnesium	mg/Kg	16,100	100%			0	22	22
Manganese	mg/Kg	995	100%	460	(c)	9	22	22
Mercury	mg/Kg	0.13	27%	0.15	(c)	0	6	22
Nickel	mg/Kg	44.2	100%	16	(c)	20	22	22
Potassium	mg/Kg	2,570	100%			0	22	22
Selenium	mg/Kg	2.1	27%			0	6	22
Sodium	mg/Kg	578	82%			0	18	22
Thallium	mg/Kg	2.3	14%			0	3	22
Vanadium	mg/Kg	28	100%			0	22	22
Zinc	mg/Kg	534	100%	120	(c)	5	22	22

Notes:
(1) Only compounds that were detected were included in this list of parameters.
All sediment samples were collected during the 1994 ESI and 1997 RI at SEAD-63.
(2) NYSDEC Technical Guidance for Screening Contaminated Sediments - January 1999
a) Human Health Bioaccumulation Criteria
b) Benthic Aquatic Life Chronic Toxicity Criteria
c) Lowest Effect Level

TABLE 7-1
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-58
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
PARK WORKER	Inhalation of Dust in Ambient Air	7E-11	4E-14
	Ingestion of Soil	1E-05	9E-10
	Dermal Contact to Soil	NQ	NQ
	Dermal Contact to Surface Water	2E-04	NQ
	Dermal Contact to Sediment	5E-04	6E-08
	TOTAL RECEPTOR RISK	*8E-04*	*6E-08*
RECREATIONAL VISITOR (CHILD)	Inhalation of Dust in Ambient Air	3E-11	3E-15
	Ingestion of Soil	7E-06	1E-10
	Dermal Contact to Soil	NQ	NQ
	Dermal Contact to Surface Water	9E-04	NQ
	Dermal Contact to Sediment	2E-03	5E-08
	TOTAL RECEPTOR RISK	*3E-03*	*5E-08*
CONSTRUCTION WORKER	Inhalation of Dust in Ambient Air	1E-09	2E-14
	Ingestion of Soil	9E-05	3E-10
	Dermal Contact to Soil	NQ	NQ
	TOTAL RECEPTOR RISK	*9E-05*	*3E-10*

NQ - Not quanitfied due to lack of toxicity data.

TABLE 7-2
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
PARK WORKER	Inhalation of Dust in Ambient Air	7E-07	1E-09
	Ingestion of Soil	1E-03	5E-08
	Dermal Contact to Soil	4E-04	8E-08
	Ingestion of Groundwater	1E-01	NQ
	Dermal Contact to Surface Water	4E-03	5E-05
	Dermal Contact to Sediment	1E-03	1E-06
	TOTAL RECEPTOR RISK	*2E-01*	*5E-05*
RECREATIONAL VISITOR (CHILD)	Inhalation of Dust Ambient Air	1E-06	5E-10
	Ingestion of Soil	4E-03	4E-08
	Dermal Contact to Soil	4E-04	2E-08
	Ingestion of Groundwater	3E-01	NQ
	Dermal Contact to Groundwater	5E-02	NQ
	Dermal Contact to Surface Water	4E-02	8E-05
	Dermal Contact to Sediment	1E-02	3E-06
	TOTAL RECEPTOR RISK	*4E-01*	*8E-05*
CONSTRUCTION WORKER	Inhalation of Dust in Ambient Air	9E-05	3E-08
	Ingestion of Soil	2E-01	4E-08
	Dermal Contact to Soil	2E-02	1E-08
	TOTAL RECEPTOR RISK	*3E-01*	*9E-08*

NQ - Not quanitfied due to lack of toxicity data.

TABLE 7-2
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-63
Record of Decision for NA/NFA Sites
Seneca Army Depot Activity

RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
ADULT RESIDENT (Hazard Index)	Inhalation of Dust Ambient Air	3E-06	
	Ingestion of Soil	2E-03	
	Dermal Contact to Soil	3E-04	
	Ingestion of Groundwater	6E-01	See risk below
	Dermal Contact to Groundwater	1E-01	
	Dermal Contact to Surface Water	5E-03	
	Dermal Contact to Sediment	1E-03	
	TOTAL RECEPTOR RISK	*7E-01*	
CHILD RESIDENT (Hazard Index)	Inhalation of Dust Ambient Air	7E-06	
	Ingestion of Soil	2E-02	
	Dermal Contact to Soil	2E-03	
	Ingestion of Groundwater	1E+00	See risk below
	Dermal Contact to Groundwater	2E-01	
	Dermal Contact to Surface Water	4E-02	
	Dermal Contact to Sediment	1E-02	
	TOTAL RECEPTOR RISK	*2E+00*	
RESIDENT (Total Lifetime Cancer Risk)	Inhalation of Dust Ambient Air		8E-09
	Ingestion of Soil		3E-07
	Dermal Contact to Soil		1E-08
	Ingestion of Groundwater	See risk above	NQ
	Dermal Contact to Groundwater		NQ
	Dermal Contact to Surface Water		1E-04
	Dermal Contact to Sediment		4E-06
	TOTAL RECEPTOR RISK		*1E-04*

NQ - Not quanitfied due to lack of toxicity data.

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

RECORD OF DECISION
NA and NFA SEADs 58 and 63

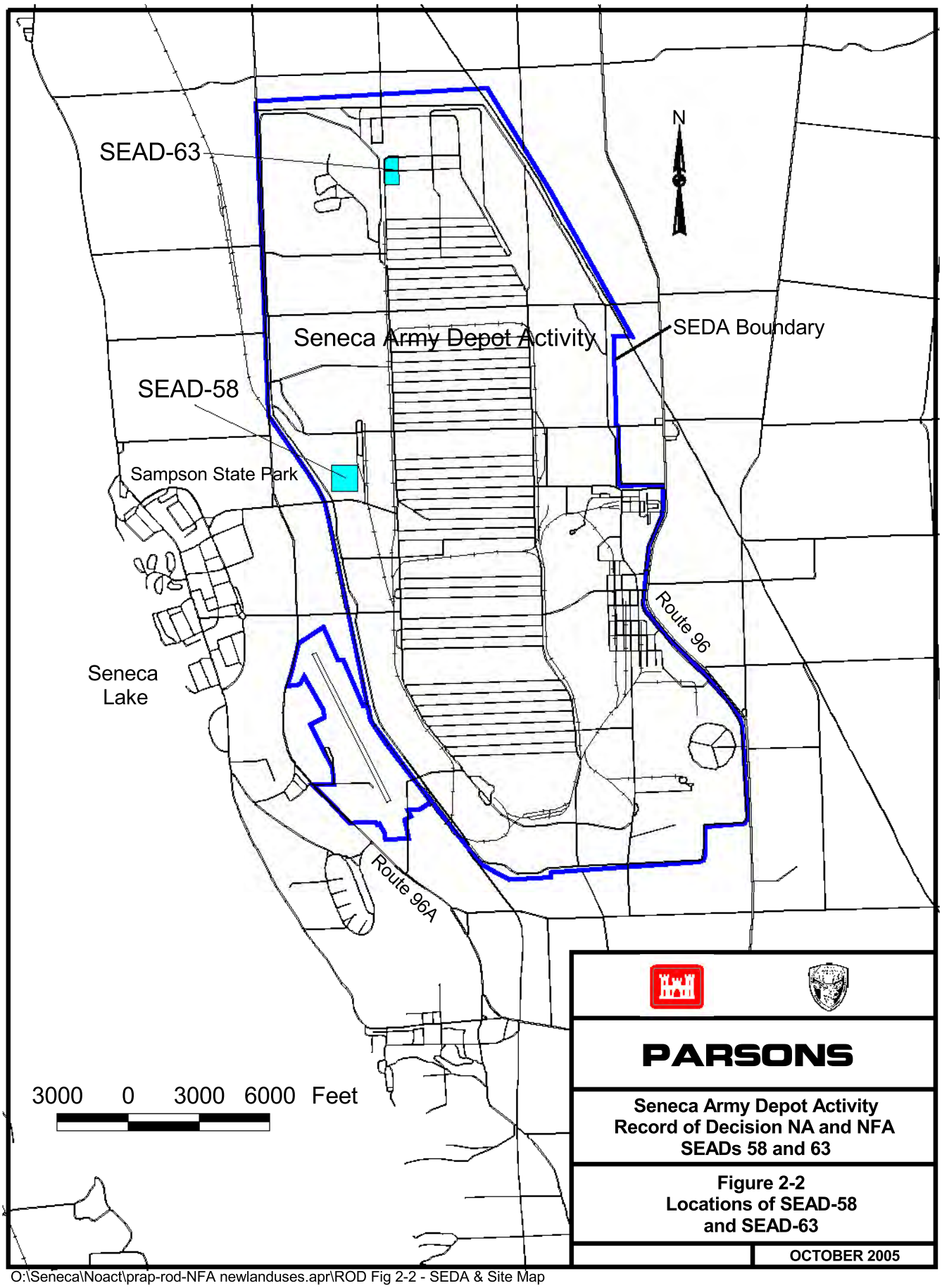
DEPT.	DWG NO.
ENVIRONMENTAL ENGINEERING	744355-01000

FIGURE 2-1

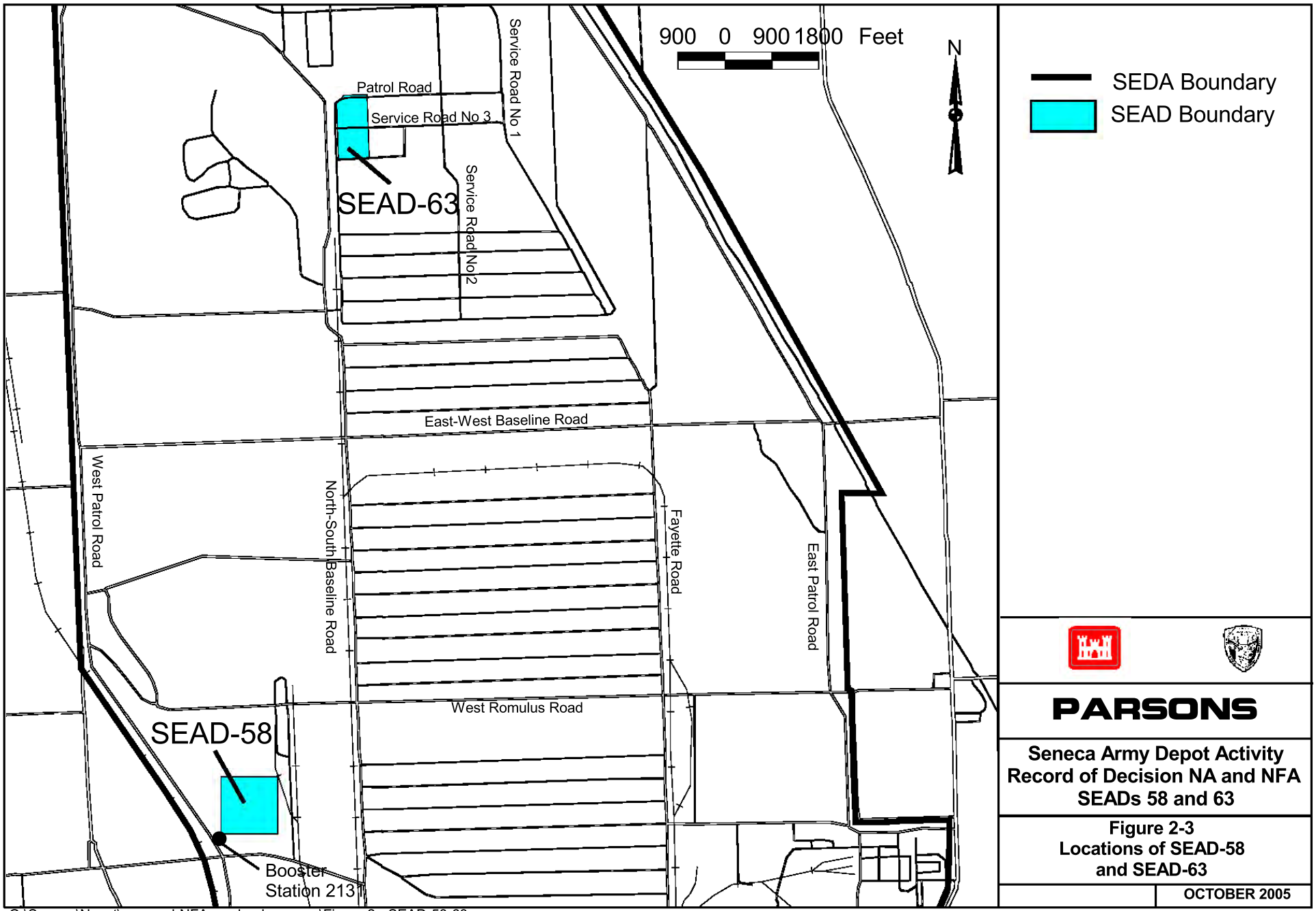
LOCATION MAP

SCALE	DATE
1 INCH = 8 MILES, APPROX.	August 2006

P:\PIT\Projects\Huntsville HTW\TO #26 Decision Docs for Completed Removals (67, 39, 40 & 122B)\ROD NFA (58, 63)\Figures\LOCMAP.CDR



O:\Seneca\Noact\prap-rod-NFA newlanduses.apr\ROD Fig 2-2 - SEDA & Site Map



PARSONS

Seneca Army Depot Activity
Record of Decision NA and NFA
SEADs 58 and 63

Figure 2-3
Locations of SEAD-58 and SEAD-63

OCTOBER 2005

O:\Seneca\Noact\prap-rod-NFA newlanduses.apr\Figure 2 - SEAD-58-63

INSTITUTIONAL

SEAD 63

INSTITUTIONAL TRAINING

N

CONSERVATION

GREEN ENERGY

RESIDENTIAL RESORT

SEAD 58

DEVELOPMENT RESERVE (Large Users)

PLANNED INDUSTRIAL/ OFFICE DEVELOPMENT

HOUSING

UTILITY

TRAINING AREA

WAREHOUSE

PRISON

FED TO FED TRANSFER

AIRFIELD SPECIAL EVENTS, INSTITUTIONAL, AND TRAINING

LEGEND

4000 0 4000 8000 Feet

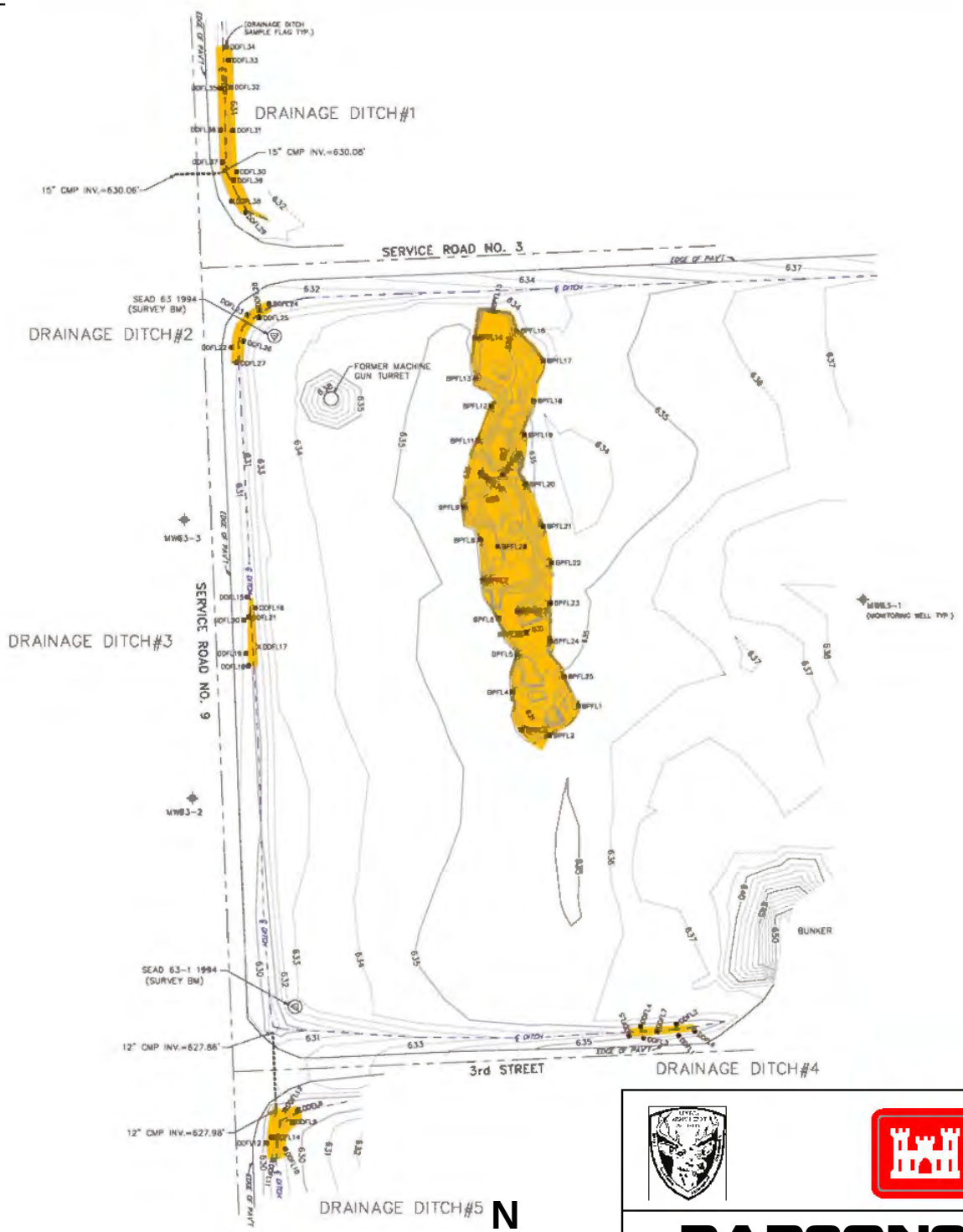
PARSONS

Seneca Army Depot Activity
Record of Decision NA and NFA
SEADs 58 and 63

Figure 3-1
Land Use Map

Scale - 1:3400 | August 2006

O:\Seneca\Noact\prap-rod-NFA newlanduses.apr\Figure 1 - Land Use & Site Locations

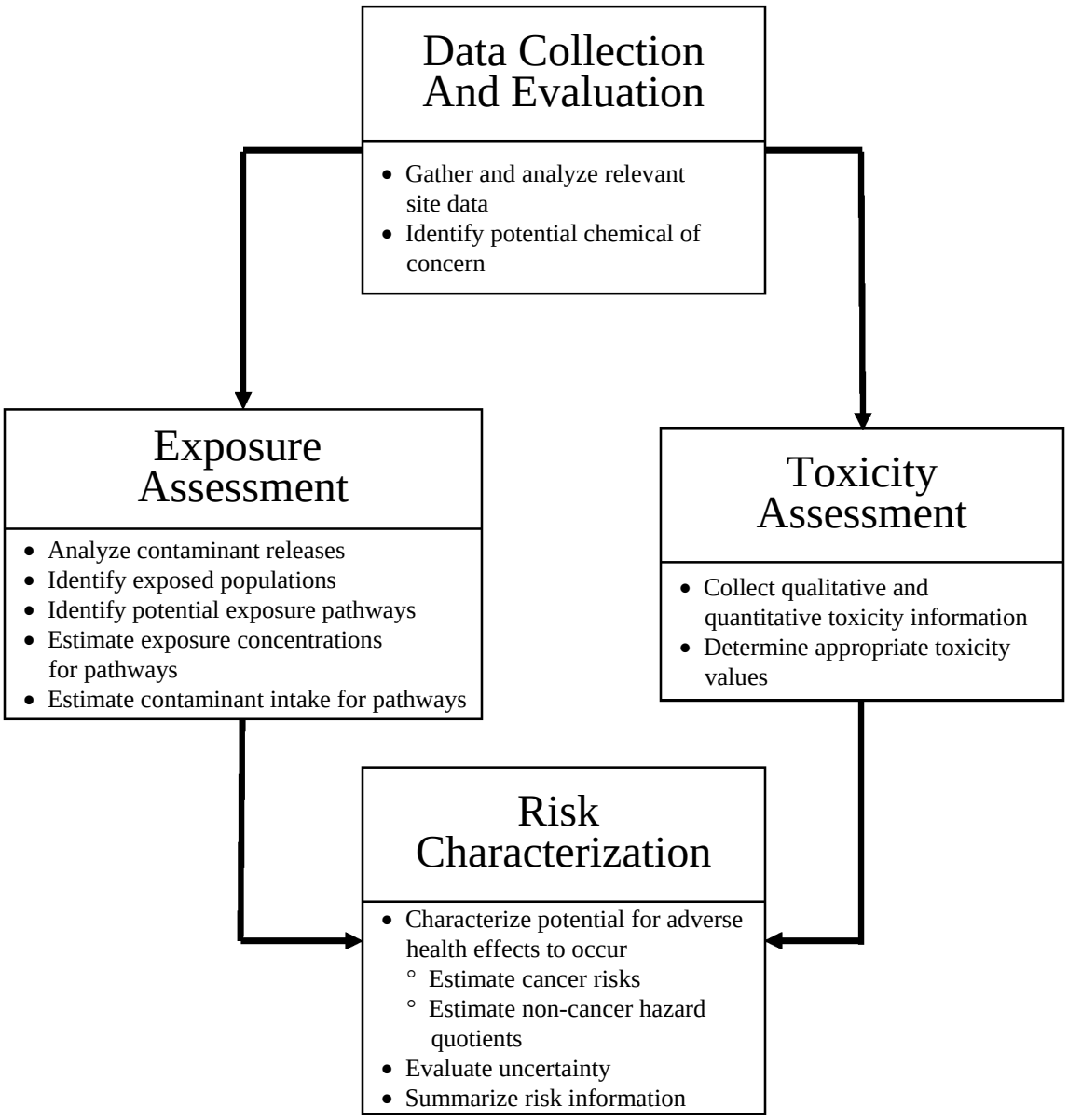


Map graphic copied from:
"Non-Time Critical Removal Action
Miscellaneous Components Burial Site (SEAD-63)"
Plexus Scientific Corporation, February 2005

PARSONS

Figure 6-1
SEAD-63 Extent of Excavation and Location of Confirmation Samples

Scale: 1inch equals approximately 85 feet.



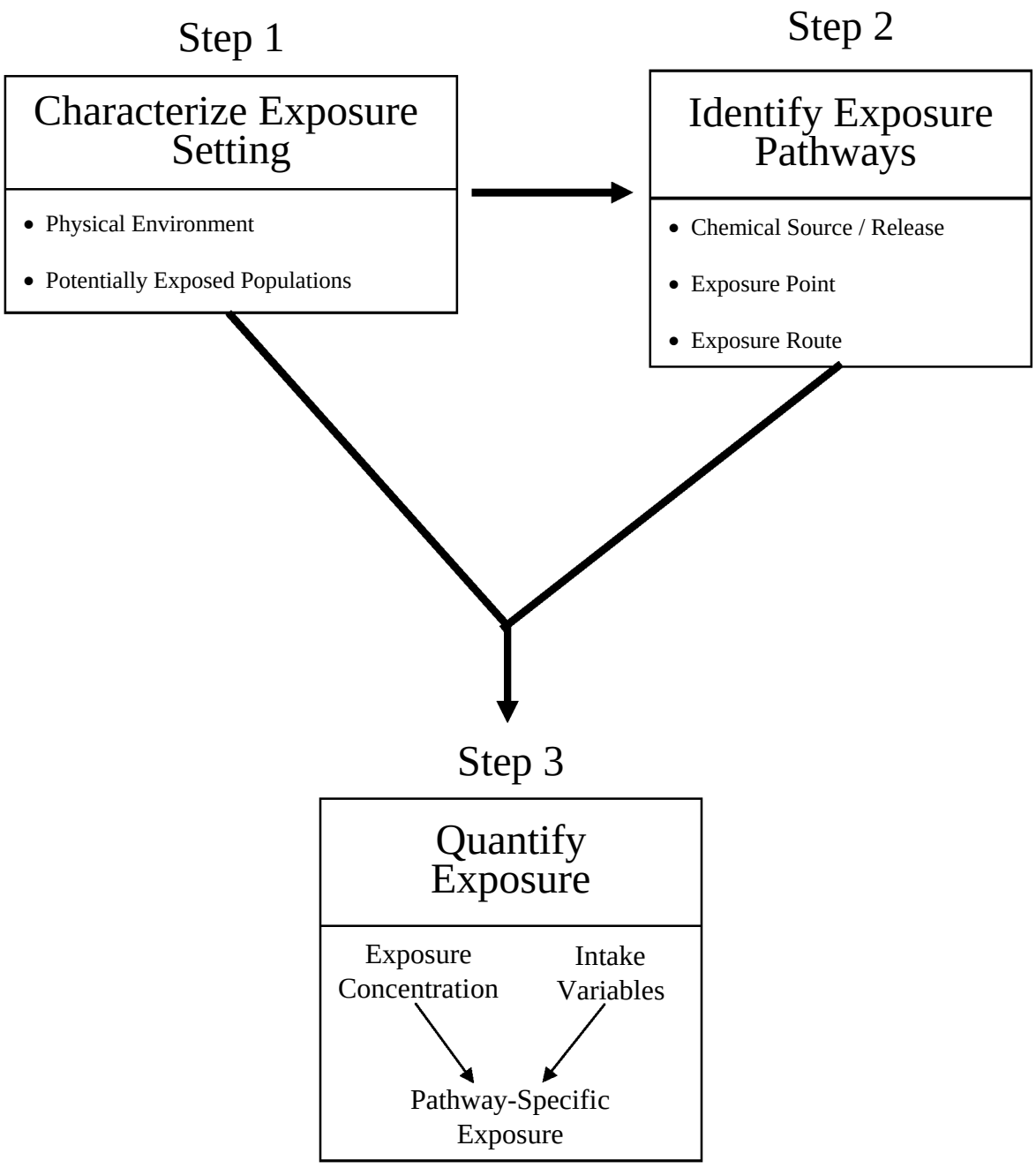
Source: US EPA 1989a

PARSONS

Seneca Army Depot Activity

Record of Decision
NA and NFA SEADs 58 and 63

Figure 7-1
HUMAN HEALTH RISK ASSESSMENT METHODOLOGY



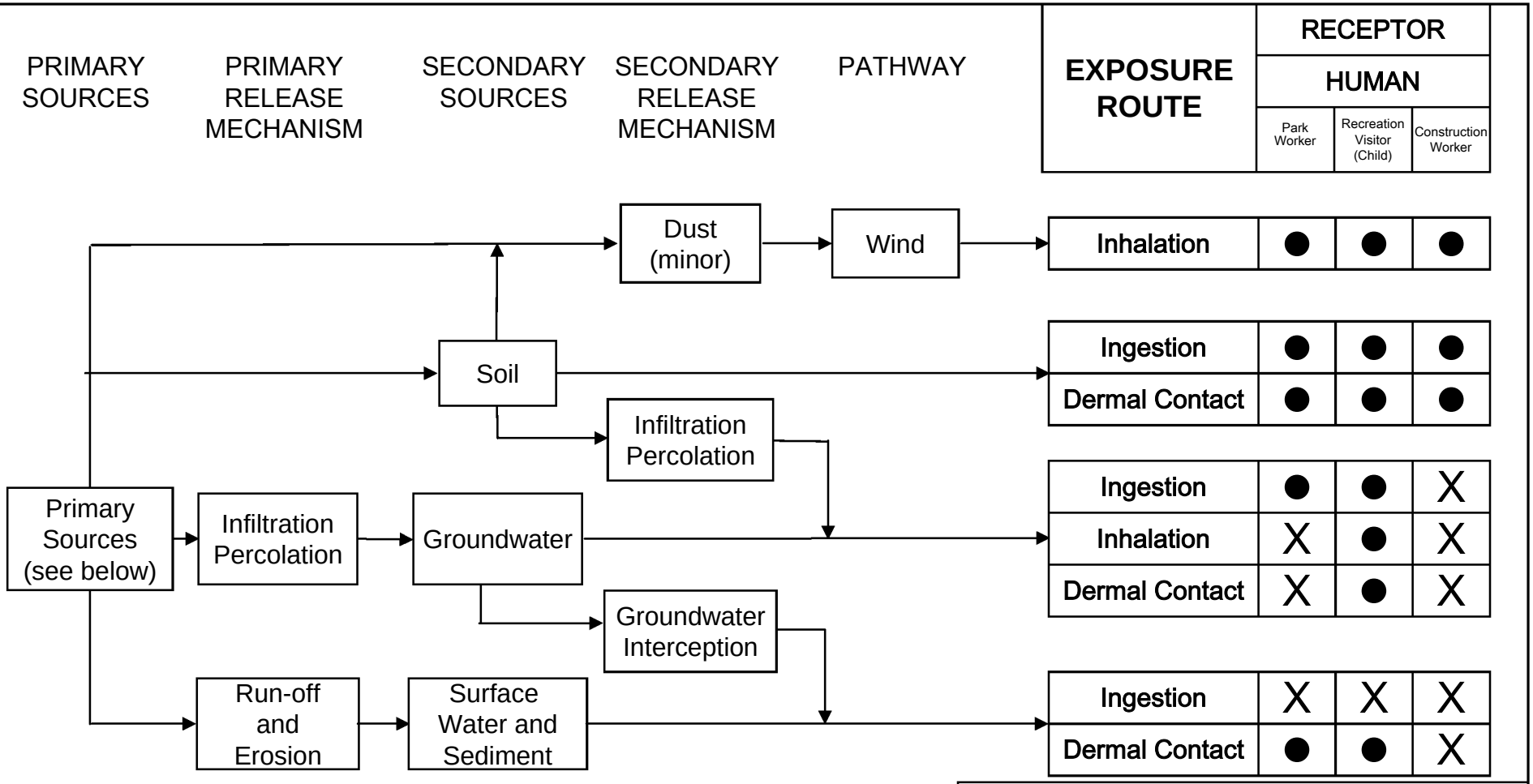
Source: US EPA 1989a

PARSONS

Seneca Army Depot Activity

Record of Decision
NA and NFA SEADs 58 and 63

Figure 7-2
EXPOSURE ASSESSMENT PROCESS



Note: Exposure routes applicable based on presence of media at site as shown below.

SEAD	Primary Source	Soil	GW	SW	SED
58	Debris Area	√	√	√	√
63	Miscellaneous Buried Components Area	√	√	√	√

● Pathway considered to Pose Potential Risk

X Pathway Considered Incomplete

PARSONS

Seneca Army Depot Activity

Record of Decision
NA and NFA SEADs 58 and 63

Figure 7-3
EXPOSURE PATHWAY SUMMARY
FOR CONSERVATION AND
RECREATIONAL SCENARIO

APPENDIX A

ADMINISTRATIVE RECORD INDEX

APPENDIX A: ADMINISTRATIVE RECORD

Parsons, "*SWMU Classification Report,*" Final, June 1994.

Parsons, "*Expanded Site Inspection Seven Low Priority AOCs SEADs 60, 62, 63, 64 (A, B, C, and D), 67, 70, and 71"*, Draft Final, April 1996.

Parsons, "*Expanded Site Inspection Eight Moderately Low Priority AOCs SEADs 5, 9, 12 (A and B), (43, 56, 69), 44 (A and B), 50, 58, and 59,*" Draft Final, December 1995.

Parsons, "*Action Memorandum for the Miscellaneous Components Burial Site (SEAD-63),*" Final, October 2001.

Parsons, "*Decision Document – Mini Risk Assessment (SEAD-9, 27, 28, 32, 33, 34, 43, 44A, 44B, 52, 56, 58, 62, 64A, 64B, 64C, 64D, 66, 68, 69, 72, and 120B),*" Final, May 2002.

Plexus, "Non-Time Critical Removal Action Miscellaneous Components Burial Site (SEAD-63)," Draft Final, February 2005.

USEPA, Army, and NYSDEC, 1993 - Federal Facility Agreement Under CERCLA Section 120, Docket Number: II-CERCLA-FFA-00202, January 1993.

Woodward-Clyde Federal Services, "U.S. Army Base Realignment and Closure 95 Program, Environmental Baseline Survey Report," Final, March 1997.

APPENDIX B

NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION DECLARATION OF CONCURRENCE

APPENDIX C

RESPONSIVENESS SUMMARY AND PUBLIC COMMENTS

APPENDIX C

PUBLIC COMMENTS AND RESPONSIVENESS SUMMARY

DEBRIS AREA NEAR BOOSTER STATION 2131 (SEAD-58) AND MISCELLANEOUS COMPONENTS BURIAL SITE (SEAD-63)

SENECA ARMY DEPOT SUPERFUND SITE
CERCLIS Site ID: NYS0213820830
NYS Site ID: 8-50-006

INTRODUCTION

A responsiveness summary is required by Superfund policy. It provides a summary of citizen's comments and concerns received during the public comment period, and the Army's responses to those comments and concerns.

OVERVIEW

Since the inception of this project, the Army has implemented an active policy of involvement with the local community. This involvement has occurred through the public forum provided by regular meetings of the Base Cleanup Team (BCT). During these meetings, representatives of the community, the Army and the regulators are brought together in a forum where ideas and concerns are voiced and addressed. The BCT has been routinely briefed by the Army in regards to the progress and the results obtained during both the investigation and remedial alternative selection process. In addition to regular project specific briefings, the Army has provided experts in various fields related to the CERCLA program that have provided lectures intended to educate the general public in the various technical aspects of the CERCLA program at SEDA. Lectures have been conducted on risk assessments, both human health and ecological, remedial alternatives, such as bioventing and natural attenuation, institutional controls, and the feasibility study process.

BACKGROUND ON COMMUNITY INVOLVEMENT

Initially, during the years from 1991 through 1995 the Army solicited community involvement through quarterly meetings with the Technical Review Committee (TRC). The TRC was formed by the Army and comprised of community leaders with an active interest in the on-goings of the CERCLA process at the Depot. These meetings were open to the public and were announced in the local newspaper and the radio. Following inclusion of the depot on the final BRAC closure list in late 1995, the Army transitioned from the TRC and formed the BCT. The BCT was comprised of several of the TRC members with the addition of additional Army and regulatory representatives. The BCT increased the frequency of the meetings to a monthly basis. Since the formation of the TRC and the

BCT, the Army has met with the local community members on a regular basis and has discussed the finding of the completion reports. In addition, the Proposed Plan has been presented to the BCT.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The SWMU Classification Report, the BRAC 95 Program Environmental Baseline Survey Report, the two Expanded Site Investigation reports, the Decision Document containing the Mini-Risk Assessment for SEAD-58, the Action Memorandum and the Completion Report for SEAD-63, and the Proposed Plan for the two sites have been released to the public for comment. These documents were made available to the public in the administrative record file at the information repositories at Building 123 within the Seneca Army Depot Activity, 5786 State Route 96, Romulus, New York, 14541-5001. The notice of availability for the above-referenced documents was published in the Finger Lake Times on March 7, 2006. The public comment period on these documents was held from March 6, 2006 to April 6, 2006.

On April 3, 2006, the Army, USEPA and NYSDEC conducted a public meeting at the Seneca Army Depot, Building 123, in Romulus, NY to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the Site, and to respond to any questions from area residents and other attendees. The meeting included presentations and provided an opportunity for the public to speak to the Army, USEPA and NYSDEC representatives involved in the process. The public was given the opportunity to provide formal comments that would be documented and become part of the official record for the selected remedy.

SUMMARY OF COMMENTS AND RESPONSES

No formal comments were received from the community during the public meeting. There is no official transcript since no comments were provided. In addition, no formal comments were received from the community during the public meeting.