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October 18, 2006

Mr. Jesse Perez
U. S. Air Force Center for Environmental Excellence
HQ AFCEE/IWA-COR
3300 Sidney Brooks, Building 532
Brooks City-Base, TD 78235-5112

SUBJECT: Final Interim Removal Action Work Plan for the Old Construction Debris Landfill (SEAD-11) at Seneca Army Depot Activity; Contract FA8903-04-D-8675, Delivery Order 0031, CDRL A004

Dear Mr. Perez:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Final Interim Removal Action Work Plan for the Old Construction Debris Landfill (SEAD-11) at the Seneca Army Depot Activity (SEDA) in Romulus, New York. Responses to USEPA comments received on September 13, 2006 were submitted on September 21, 2006, and responses to NYSDEC comments received on September 29, 2006 were submitted on October 4, 2006. Copies of these responses are included as Appendix A of the subject document. Mobilization into the field will begin the week of October 23, 2006.

This work was performed in accordance with the Scope of Work (SOW) for Contract No. FA8903-04-D-8674, Task Order No. 0031.

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

Sincerely,

Todd Heino, P.E.
Project Manager

Enclosures

cc: S. Absolom, SEDA (3 paper copies, 1 electronic copy)
K. Hoddinott, USACHPPM (2 paper copies, 1 electronic copy)
C. Boes, USAEC (1 copy, electronic and paper)
J. Fallo, USACE, NY District (1copy, electronic and paper)
T. Battaglia, USACE, NY District (1 copy, electronic and paper)
Air Force email (letter only)

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October 18, 2006

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SUBJECT: Final Interim Removal Action Work Plan for the Old Construction Debris Landfill (SEAD-11) at Seneca Army Depot Activity; Contract FA8903-04-D-8675, Delivery Order 0031, CDRL A004

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

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Final Interim Removal Action Work Plan for the Old Construction Debris Landfill (SEAD-11) at the Seneca Army Depot Activity (SEDA) in Romulus, New York (EPA Site ID# NY0213820830 and NY Site ID# 8-50-006). Responses to USEPA comments received on September 13, 2006 were submitted on September 21, 2006, and responses to NYSDEC comments received on September 29, 2006 were submitted on October 4, 2006. Copies of these responses are included as Appendix A of the subject document. Mobilization into the field will begin the week of October 23, 2006.

An electronic copy of the complete Work Plan is enclosed with this submittal.

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

Sincerely,

Todd Heino, P.E.
Program Manager

Enclosures

cc: J. Perez, AFCEE
S. Absolom, SEDA
C. Boes, USAEC
T. Battaglia, USACE, NY District
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US Army Corps of Engineers

Air Force Center for Environmental Excellence

Seneca Army Depot Activity
Romulus, New York

01463

FINAL
INTERIM REMOVAL ACTION WORK PLAN
OLD CONSTRUCTION DEBRIS LANDFILL (SEAD-11)
SENECA ARMY DEPOT ACTIVITY PBC II

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0031
CDRL A004

EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

PARSONS
OCTOBER 2006

FINAL INTERIM REMOVAL ACTION WORK PLAN FOR THE OLD CONSTRUCTION DEBRIS LANDFILL (SEAD-11)

SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

Prepared for:

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE
BROOKS CITY-BASE, TEXAS

and

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared by:

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Contract Number FA8903-04-D-8675
Task Order No. 0031
CDRL A004
EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

October 2006

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Appendix A: Response to Comments

ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
AFCEE	Air Force Center for Environmental Excellence
ARAR	Applicable or Relevant and Appropriate Requirement
BRAC	Base Realignment and Closure
BTE	Benzo(a)pyrene Toxicity Equivalence
CAMP	Community Air Monitoring Plan
CAR	Corrective Action Report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COR	Contracting Officer's Representative
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
cy	Cubic yards
C&D	Construction and demolition
DCE	Dichloroethene
DoD	Department of Defense
DOT	Department of Transportation
DQO	Data Quality Objective
ES	Engineering Science, Inc.
ESI	Expanded Site Inspection
FC/MR	Field Change/Modification Request
FFA	Federal Facility Agreement
FSP	Field Sampling Plan
ft/ft	foot per foot
HSP	Health and Safety Plan
IAG	Interagency Agreement
IRA	Interim Removal Action
NCR	Non-Conformance Report
NFA	No Further Action
NPL	National Priorities List
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbon
PCB	polychlorinated biphenyl
PHSO	Program Health and Safety Officer
PM	Project Manager
POC	Point of contact
PPE	Personal Protective Equipment
ppmV	Parts per million per volume
PRGs	Preliminary Remediation Goals
QA/QC	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SEDA	Seneca Army Depot Activity
SHSO	Site Health and Safety Officer
SM	Site Manager
SPDES	State Pollutant Discharge Elimination System

ACRONYMS AND ABBREVIATIONS (CONTINUED)

SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TOC	Table of Contents
USACE	U.S. Army Corp of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compound
WP	Work Plan

1.0 INTRODUCTION

1.1 Document Objectives

This interim removal action (IRA) work plan (WP) outlines the Army's planned approach for removing landfilled material at the Old Construction Debris Landfill (SEAD-11), which is located within the former Seneca Army Depot Activity (SEDA or the Depot) in the towns of Varick and Romulus, New York. This IRA WP provides guidance and identifies the steps that will be initiated and completed during this removal action. The IRA will be conducted under the oversight of the U.S. Environmental Protection Agency, Region II (USEPA), the New York Department of Environmental Conservation (NYSDEC), and the New York State Department of Health (NYSDOH), in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Federal Facility Agreement (FFA) that has been approved by all parties.

This document has been prepared by Parsons Infrastructure & Technology Group Inc. (Parsons) on behalf of the U.S. Army Corp of Engineers (USACE), the Army's Base Realignment and Closure (BRAC) Office, and for the Air Force Center for Environmental Excellence (AFCEE) under Contract No. FA8903-04-D-8675, Task Order No. 0031.

1.2 Site Background

SEDA previously occupied approximately 10,600 acres of land located in the Towns of Varick and Romulus, Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and 2000, when the SEDA's military mission ceased. During the Depot's military life, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment.

On July 14, 1989, the USEPA proposed SEDA for inclusion on the National Priorities List (NPL). The USEPA recommendation was approved and finalized on August 30, 1990, when SEDA was listed in Group 14 of the Federal Facilities portion of the NPL. Once listed on the NPL, the USEPA, NYSDEC, and the Army entered into a FFA, also known as the Interagency Agreement (IAG), which defined a structured approach to the identification, investigation, remediation and close out of sites that were contaminated by hazardous substances found at SEDA. This agreement was approved by all parties in January 1993 and stated that future investigations would be based on CERCLA guidelines, and that the Resource Conservation and Recovery Act (RCRA) was considered an Applicable or Relevant and Appropriate Requirement (ARAR) pursuant to Section 121 of CERCLA.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) BRAC 1995 process. With 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 release of non-affected portions of the Depot to the surrounding community for their reuse for beneficial, non-military purposes (i.e., industrial, municipal, and residential). Since SEDA's inclusion in the BRAC program, the Army has successfully transferred approximately 8,000 acres of land to the community. An additional 250 acres of land have undergone a federal-to-federal transfer for continued use by the U.S. Coast Guard.

SEAD-11, the Old Construction Debris Landfill, is retained by the Army pending the completion and close out of its environmental obligations at the site. SEAD-11 is located in the southwestern portion of the former Depot. The landfill reportedly operated in the 1940s, and today the site is abandoned. Its surface is generally vegetated with brush, grasses, and weeds, and it is characterized by an area of elevated topography that defines its general shape. Overall, the Old Construction Debris Landfill measures approximately 4 acres (595 feet by 425 feet) in size. A site plan is presented in **Figure 1-1**. There are no developed portions of the site.

The site is bound to the east by SEDA railroad tracks; beyond these tracks is an upward sloping field covered with grass and low brush. The southern perimeter of the landfill is vegetated with deciduous trees; the area further south of the site is covered with dense low brush. West of the site is an open grass field that ends at West Patrol Road and the perimeter security fence that rings the former SEDA boundary. Indian Creek is located approximately 1,000 feet west of the "toe" of the landfill. The site is bounded to the north by Indian Creek Road, beyond which is an open grass field which gives way to trees and low brush several hundred feet from the road.

The relief of the landfill is well defined on the generally west-sloping regional topography in the area. On the landfill surface, the topography slopes mostly to the northwest. A thicker fill layer is indicated in the southern and western portions of the landfill and results in steeper scarps on its south and southwestern sides. The more gently sloping hills on the north and northwestern sides suggest a thinner layer of fill. The landfill has an average thickness of 4 feet. Assorted construction debris including metal, scrap wood, and several empty 55-gallon drums were observed on the southern and southwestern edges of the landfill.

1.3 Previous Work

The results of previous investigative work are extensively reported in the “Decision Document for a Non-Time Critical Removal Action at SEAD-11, Final” (Parsons, 2003) and in “Expanded Site Inspection (ESI) Report for Three Moderately High Priority SWMUs” (Parsons ES, 1995). Information below summarizes the significant findings of previous work.

Geophysical surveys, including seismic refraction, electromagnetic and ground penetrating radar surveys, and four test pits were performed during the ESI to identify burial sites at SEAD-11. Four monitoring wells were installed. Soil (surface, subsurface), soil gas, and groundwater were collected and analyzed as part of the investigation. Additional soil and groundwater sampling, test pitting operations were performed in 2000 and 2001, during the Additional Sampling Program. Ten test pits were excavated and three additional monitoring wells were installed during the field program. Two rounds of groundwater sampling were conducted in November 2000 and February 2001.

Data and information developed from these investigations is summarized below.

1.3.1 Geophysics: Seismic Survey

Four seismic refraction profiles, each measuring 115 feet in length, were performed as part of the geophysical investigations for the ESI at locations exterior to the landfill. One profile was located exterior of the landfill to the north, east, south and west of the site, forming a cross having its imaginary

center roughly located at the center of the landfill. The results of the seismic profiles indicated that 4 to 17 feet of till (1,100 to 5,400 feet per second) overlay bedrock (11,500 to 13,100 ft/s) in the area surrounding the landfill site. Further, the till material includes layers of loose, unsaturated till (1,100 to 1,300 ft/s); compact unsaturated till (2,400 ft/s); and saturated till (5,000 to 5,400 ft/s).

Saturated till was detected only beneath the profile located east of SEAD-11, between the railroad tracks and Seneca Road. At the locations of the other profiles, either saturated till was not present or the saturated layer was too thin to detect by the seismic refraction method. The profile located west of the site suggests that a layer of compact, unsaturated till is present at a depth of 4 to 5 feet. A review of the relative elevation of bedrock demonstrates that the bedrock surface slopes to the west, generally following the slope of the surface topography.

1.3.2 Soil Gas Survey

Soil gas samples were collected at 31 of 39 sample locations developed at the site on a rough 6 line by 6 point, 100 foot grid-wise pattern. One additional point was set approximately 100 feet due east and upgradient to the landfill in the center of the eastern face, while the other two were advanced in the middle of the landfill to further define one of the identified soil gas anomalies.

Results of this survey identified two areas where elevated concentrations of volatile organic compounds (VOCs), including: vinyl chloride, 1,2-dichloroethene (DCE), trichloroethene (TCE), toluene, and ethylbenzene, were detected. The first, and largest, of the areas was located in the approximate center of the landfill, and was bounded by four soil gas points, three marking the corners of a northeasterly orientated isosceles triangle, with the fourth point located in the approximate center of the triangle. The southernmost soil gas point of this triangle exhibited the highest combined soil gas concentration observed during the survey.

The second area was associated with a single soil gas sample, which is located approximately 200 feet southwest of the center, and 200 feet west of the southern corner, of the triangular area. This soil gas sample point exhibited the second highest combined soil gas concentration recorded during the survey.

1.3.3 Contaminant Assessment

A total of 14 test pits were excavated in SEAD-11 to characterize the types of geophysical anomalies present within the landfill. Two of the test pits were also advanced above the location of soil gas anomalies. As predicted by the EM in-phase response, much of the excavated material was metallic debris, including various scrap metal, metallic rods, and metallic webbing. In addition, crushed 55-gallon drums and other metal containers were found in the landfill. Although abundant metallic material was encountered, the dominant type of fill was nonmetallic, including soil, large concrete slabs and fragments, ash material and asphalt. The predominant fill materials were construction debris (concrete, glass, and nails), dark brown soil, gravel, and boulders. The test pits dug above the soil gas anomalies did not identify sources of the observed soil gas concentration.

1.3.4 Summary of Affected Media

Soil Data

The results of the soil sampling completed during the ESI and the Additional Sampling Program, summarized in **Table 1-1**, indicate that impacts to the surface and subsurface soil have occurred at this site. Soil at the site has been impacted above relevant cleanup goals by VOCs, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals. Five nitroaromatics and three herbicides were detected in the soil, and the detected concentrations were all below the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 criteria and USEPA Region IX Preliminary Remediation Goals (PRGs) for residential soil. PCBs were not detected in any of the soil samples. Ten pesticides were detected, and one pesticide, 4,4'-DDT, exceeded the TAGM criteria (4.3 ppm vs. 2.1 ppm); however the concentration was below both the NYS Remedial Program Soil Cleanup Objectives for Restricted Residential (7.9 ppm) and Commercial (47 ppm) users. The 4,4'-DDT concentration exceeds the USEPA Region IX residential goal of 1.7 ppm but is lower than the industrial goal of 7.0 ppm.

Two areas in the landfill area were identified where elevated concentrations of VOCs (greater than 2.0 parts per million per volume [ppmV]) in soil gas were detected. The first area is located in the center of SEAD-11, while the second area is located west of this area.

Soil analytical results showed that two VOCs, acetone and TCE, were detected at concentrations above their respective TAGM criteria. A total of 16 SVOCs were found at concentrations above their TAGM values in the soil samples analyzed. Of the 24 metals reported in the soil samples analyzed, 23 of these were found in one or more samples at concentrations above their associated TAGM values. Soil concentrations of particular note in the soil at the landfill include TCE (up to 42 ppm) and lead (up to 7,210 ppm).

Groundwater Data

Groundwater at the site appears to have been impacted by metals and possibly VOCs. A summary of the groundwater results are presented in **Tables 1-2** and **1-3**. Tetrachloroethene and TCE were detected in groundwater samples at concentrations below their respective NYS Class GA standard. The results of the groundwater sampling program at SEAD-11 indicate that aluminum, antimony, iron, manganese, sodium, and thallium were present in individual wells at concentrations above groundwater standard values; however, these metals were found at levels generally consistent with background concentrations historically observed at SEDA, as shown in **Table 1-4**. No SVOCs, pesticides, PCBs, herbicides, nitrate/nitrite, or nitroaromatics were above groundwater standard values.

1.4 Summary of the Proposed Interim Removal Action

The major elements of the removal action are as follows:

- Excavation of all visible waste located in the Old Construction Debris Landfill [approximately 25,000 to 35,000 cubic yards (cy)];

- Removal of large inert construction debris, such as concrete, to be maintained on-site;
- Completion of confirmatory sampling to verify that landfilled material and soils exceeding cleanup goals were excavated. Soils represented by failed confirmatory samples will be removed and additional samples will be collected;
- Stockpiling (as necessary) and loading of the contaminated material into dump trucks for transportation and off-site disposal in a non-hazardous waste landfill;
- Management of construction waters;
- Restoration of site by seeding the disturbed areas to promote vegetation to prevent soil erosion; and
- Demobilization of personnel and equipment.

1.5 Report Organization

The first section of this report serves as an introduction to the Interim Removal Action Work Plan, including a site description and a summary of site background. **Section 2** consists of the removal action objectives. **Section 3** presents the removal action elements. **Section 4** presents a Field Sampling Plan (FSP). **Section 5** includes the remedial action schedule and the project team organization. References are provided in **Section 6**.

2.0 INTERIM REMOVAL ACTION OBJECTIVES

2.1 Objectives

The objectives of the IRA project at SEAD-11 are as follows:

- Remove the landfilled materials and contaminated soils to eliminate the potential threat that they represent to surrounding populations and to the environment;
- Remove the potential source of TCE and metals detected in the groundwater immediately downgradient of the landfill, and
- Provide documentation to support a No Further Action (NFA) finding for SEAD-11 upon completion of the IRA.

The Army considered applying other remedial alternatives at SEAD-11, such as leaving the landfill in place and covering it using a low permeability cap. In February 2002, Parsons prepared and submitted a memorandum summarizing and comparing the life-cycle costs for a low permeability cap versus excavation and off-site disposal of the landfill soils materials. In its analysis, Parsons indicated that while the costs of the two alternatives were comparable, excavation and off-site disposal of the landfill was recommended since it would allow clean closure and provide a permanent solution by removing the source of a potential TCE plume.

2.2 Cleanup Goals

As is stated above, the Army's programmatic objectives are to remove landfilled debris and contaminated soil associated with the landfill at SEAD-11. This action will remove contaminated materials that could potentially impact underlying groundwater. Based on the results of the removal action, the Army intends to prepare a Record of Decision (ROD) that recommends NFA at the site.

The interim removal action is driven by the presence of landfilled material impacted by TCE, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals. Cleanup goals have been established for the interim removal action that will address the contamination and restore the site to a condition suitable for use as a training area, the future land use for the SEAD-11 area.

The cleanup goals for the SEAD-11 removal action have been selected to be protective of future users of the site as a training area. Site-specific cleanup goals for SEAD-11 have been established for VOCs, cPAHs, and metals. Pesticides and other SVOCs were also detected in the landfilled materials at SEAD-11; however the detections were at very low levels and were located in the waste, which will be removed so that only native soil remains on-site. Accordingly, cleanup goals for these compounds will not be necessary to determine the success of the removal action. Removal of landfilled materials and soils to achieve cleanup goals for VOCs, cPAHs, and metals will simultaneously remove other collocated contaminants. The cleanup goals for SEAD-11 are as follows:

- VOCs: The New York State TAGM #4046 values will be used as the cleanup goals for Target Compound List (TCL) VOCs at SEAD-11.

- cPAHs: The New York State guidance value of 10 ppm benzo(a)pyrene toxicity equivalence (BTE) will be used. The army may also perform a risk analysis to show that the concentrations remaining on-site after the completion of the removal action are protective of human health.
- Metals: USEPA Region IX's Preliminary Remediation Goals (PRGs) for a resident will be used as the cleanup goals for Target Analyte List (TAL) metals at SEAD-11. The ultimate goal is to show that after the removal action the site does not pose a threat to human health. The PRG concentrations are protective of human health, developed by USEPA based on the 10^{-6} cancer risk value and a hazard index of one. The future use for SEAD-11 and the surrounding areas is light training. Adoption of the residential PRGs as the cleanup goal is a conservative set of cleanup goals since the exposure of future users to SEAD-11 will be less than the degree to which a resident would be exposed to the site. Like the Region XI PRGs, the NYSDEC's Soil Cleanup Objectives for restricted commercial use are conservative values developed to be protective of human health under a restricted commercial use scenario. A risk analysis will be completed, if necessary, to demonstrate that metals remaining on-site above PRG concentrations do not pose a threat to human health.

The cleanup goals are summarized in **Table 2-1**.

2.3 Basis of Document

This work plan is based on data and information that has been previously documented and reported in the following documents:

- *Solid Waste Management Classification Study*, Final, (Engineering-Science, Inc., Sept 1994).
- *Expanded Site Inspection, Three Moderate Priority SWMUs, SEAD 11, 13, and 57*, Final (Parsons Engineering Science, Inc., Dec 1995).
- *U.S. Army Base Realignment and Closure 95 Program, Environmental Baseline Survey Report*, Final (Woodward-Clyde Federal Services, 1997).
- *Decision Document for a Non-Time Critical Removal Action at SEAD-11*, Final (Parsons, April 2003).
- *Action Memorandum for Removal Action at SEAD-11*, Final (Parsons, April 2003).

2.4 Remediation Requirements and Criteria

2.4.1 Applicable and Relevant and Appropriate Requirements (ARARs)

Excavation and off-site disposal requirements and criteria include regulatory and disposal facility requirements.

2.4.1.1 Chemical-Specific Requirements

These requirements include the following:

- Transport and disposal of excavated soil to meet Federal and State of New York Department of Transportation requirements and also requirements based on the operation permit held by the disposal location;
- Discharge requirements based on the Seneca County Sewer District No. 2 discharge permit held by the entity to receive site groundwater from excavation dewatering, in compliance with New York State's State Pollutant Discharge Elimination System (SPDES); and
- Compliance with all asbestos regulations, including Emission Standards for Asbestos (40 CFR Part 61, Subpart M), OSHA Asbestos Standards (29 CFR, Part 1926.1101), and Asbestos regulations for sampling, analysis, assessment, remedial actions, operations and maintenance, plans, etc. (40 CFR, Part 763).

2.4.1.2 Location-Specific Requirements

These requirements are associated with protecting existing resources potentially impacted by site remediation activities.

Based on information obtained from the Unites States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), wetlands are not present within the immediate bounds of SEAD-11; however, there are several that are located within one half mile distance of the site. The closest identified wetland is roughly 1,000 feet upgradient of the site, while the nearest downgradient wetland is located approximately 1,000 to 1,500 feet away. All of the identified wetlands are categorized as Palustrine (swampy or marshy) and include areas classed as unconsolidated bottom, emergent, forested, and scrub-shrub. The majority, and the largest, of the identified wetland areas are located to the west-northwest, west, and west-southwest of SEAD-11 (generally downgradient of the site) near and adjacent to Indian Creek. These areas are generally classified as emergent and forested class wetlands. It is possible that surface water and groundwater originating from the area of SEAD-11 could flow to, and impact, these wetland areas. Smaller and more isolated wetlands are noted to the east-northeast, east, and southeast of SEAD-11.

Cultural resources were assessed but not found to be present at SEAD-11.

Floodplain information was reviewed from the Federal Emergency Management Agency confirming that SEAD-11 is not within the floodplain of a 100-year or 500-year flood. Flood insurance rate maps indicate the entire Depot is outside the 100-year floodplain.

USFWS indicated that no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the area of SEAD-11. The NYSDEC Natural Heritage Program Biological and Conservation Data System identified no known species of special concern living within the Depot property.

2.4.1.3 Action-Specific Requirements

A water quality certification under Section 401 of the Federal Clean Water Act is not needed for this remediation project.

2.4.2 Notification Requirements and Status

While formal permits are not needed for a CERCLA site remediation, any applicable state or local regulatory permit requirements will be met. Such requirements include disposal requirements for off-site disposal operations as well as Seneca County Sewer District No. 2 water discharge requirements. No special local Town of Romulus requirements have been identified that will need to be met other than SEDA security procedures.

2.4.3 Access Needs During Remediation

Access is being obtained from the SEDA in order for the remediation work to be completed. The construction contractor will use this gate for access and egress to and from the site. SEDA will provide the contractor with keys to the necessary gates.

3.0 INTERIM REMOVAL ACTION ELEMENTS

This section provides a summary of the elements that comprise the IRA. Performance of the planned interim removal action at SEAD-11 will require implementation and completion of numerous discrete tasks along a course that is generally sequential. Frequently, work tasks will be interlocked and overlapping, but generally the required work will follow a path that includes site preparation, site construction/excavation, verification of construction completion, site restoration, site demobilization, post completion actions, and documenting the results of the of the action. This document provides details pertinent to the planning for the action. Details of subsequent actions listed are provided below:

3.1 Site Preparation

Site preparation will be required prior to the commencement of construction activities at SEAD-11. Site preparation activities are listed below and are discussed in more detail below:

- Site health and safety;
- Site control and security requirements;
- Mobilization;
- Clearing and grubbing requirements;
- Identification of obstructions and utilities;
- Work and staging areas;
- Control of run-on and run-off waters;
- Establishment of erosion and sedimentation controls;
- Protection of monitoring wells;
- Abandonment of monitoring wells;
- Protection of wetlands;
- Identification and qualification of off-site disposal sites; and
- Site survey.

3.1.1 Site Health and Safety

All field activities conducted during the interim removal action will be performed in accordance with the site-specific health and safety plan (HSP), "Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity PBC II" (Parsons, 2006) in accordance with Parsons' Safety, Health, and Risk Program (SHARP) Manual. All subcontractors will review Parsons' HSP and develop their own HSP written specifically for remedial design activities. The HSP will protect site workers through the identification, evaluation, and control of health and safety hazards.

3.1.2 Site Control and Security Requirements

SEAD-11 is located within the portion of the Depot which is surrounded by a fence with locked gates. The Army will provide site access to the field team prior to and during the performance of construction activities. Site security is necessary to prevent exposure of unauthorized, unprotected individuals to the work area. The area immediately surrounding the work zone will be clearly marked through the use of signs, barrier rope, tape, or fencing.

Site security will be enforced by the Site Health and Safety Officer (SHSO) or a designated alternate who will ensure that only authorized personnel are allowed in the work area. This person will also ensure that entry personnel have the required level of personal protective equipment (PPE), are trained under the requirements of Title 29 Code of Federal Regulations (CFR) 1910.120, and are on a current medical monitoring program.

All visitors to the work site are required to report to the Site Manager (SM) and/or the SHSO as soon as they arrive on site. The presence of visitors on site will be recorded in the field logbook, including the visitor's name, company, date, time, and activities performed while on-site.

3.1.3 Mobilization

The removal action subcontractor shall submit, for the project manager's/engineer's approval, the proposed plan for decontamination of personnel and equipment, as well as their plan for work/staging area arrangement, a minimum of five working days prior to commencement of work.

Field personnel and equipment will be mobilized to the site. The subcontractor will bring all necessary equipment to the site, arrange for the necessary utilities, and obtain all permits needed.

Travel right-of-ways between the excavation site, support zones and equipment/material staging areas will be established and marked. Access and egress routes within the Depot will be identified and posted to direct and enhance traffic flow and to minimize the impact that construction equipment movement has on other activities underway at the Depot.

3.1.4 Clearing and Grubbing Requirements

Trees within the excavation area will be cut prior to work. The stumps remaining will be removed as the area is excavated and disposed with the rest of the material from the landfill. Brush overlying the landfill will be mulched with a brush hog, left in place, and then removed with the excavated material.

3.1.5 Identification of Obstructions and Utilities

The subcontractor will also work with Parsons and the Army to locate and mark utilities and other obstructions in the immediate areas of the excavation site and the supporting work/staging areas. All identified utilities within work/staging areas will either be terminated and disconnected, or if necessary, rerouted to ensure that service is not disrupted during site operations.

3.1.6 Work and Staging Areas

The perimeter of the site and its support zone will be marked using stakes and orange security ("snow") fencing. Entry/exit ways through the security fencing will be placed as required to support needed traffic flow. Parsons currently anticipates that the support area for the SEAD-11 activity will be established at the northeastern end of the landfill. The work support zone will be arranged to facilitate free and logical equipment movement to and from the site of the excavation work within the area, which will enhance safety, security and minimize the likelihood that known site contaminants will be introduced to new areas of the Depot.

A temporary decontamination area will be established inside SEAD-11, immediately adjacent to the point where site vehicles exit the site to Indian Creek Road. All vehicles and personnel exiting the site will pass through the decontamination area prior to site exit to ensure that loose material is not tracked beyond the bounds of the landfill site or onto Depot and local roads. A loading road will be constructed near Indian Creek Road, as shown in **Figure 3-1**. As necessary, temporary material storage pads will be established in the northeastern edge of the landfill over material that will be excavated last to support any short-term on-site staging of excavated materials pending resolution of their final disposition.

3.1.7 Control of Run-On and Run-Off Waters

The subcontractor will provide silt fencing or berms along the downgradient edge of the landfilled area to prevent sediment transport to clean areas and check dams will be installed in the swale that runs along Indian Creek Road. A pipe will be added at the entrance and exit of the loading road as to not disturb the water flow in the swale. Once the removal action work is complete, check dams and silt fencing will be eliminated.

Site excavation within the old landfill will proceed by working from the southwest section of the landfill and continuing north and east towards the staging area (lower elevation to higher site elevation). Steps will be taken in the field, such as placing hay bales and berms along the open face of the excavation, to prevent water from entering the excavated area from the landfill. Storm event water and groundwater entering the excavation and materials staging areas will be captured and pumped into frac tanks for temporary storage pending determination of final dispensation.

All temporary on-site stockpiles of staged materials will be placed on and covered with 6-mil polyethylene sheeting.

All run-on, run-off, and erosion control measures will be inspected daily and repaired as necessary. Water management and control measures will be constructed throughout the project duration and will be adjusted as field conditions warrant.

When necessary, collected run-off water will be sampled. When sample results have been received, the water will be transferred to a 20,000 gallon frac tank. If the water is suitable for disposal, it will be transferred from the holding tank for disposal to the sewer. Solids collected from holding tanks will be disposed with other contaminated soil. If pre-treatment is required, the water will be treated, allowed to settle, re-sampled, and the analytical results reassessed for their suitability for disposal.

3.1.8 Establishment of Erosion and Sedimentation Controls

Temporary erosion and sedimentation controls, such as silt fencing or hay bales, will be installed as required during operations to prevent migration of sediments and erosion. Prior to beginning any excavation work, temporary silt fencing will be erected, which will surround the downgradient sides of disturbed areas to prevent contaminated sediment transport. The temporary silt fencing will be maintained throughout the project and will not be removed until permanent vegetation has been re-established. In addition, storm water from upgradient locations will be routed away from exposed materials, and contact of exposed material with storm water will be minimized to the extent practical. Any temporary erosion control measures will be removed following remediation so as to return drainage patterns to their general conditions prior to remediation. The final grade is based on restoring pre-excavation slope and drainage.

3.1.9 Protection of Monitoring Wells

Seven monitoring wells (MW11-1 through MW11-7) at SEAD-11 will remain on-site. These wells will likely be required to perform long-term groundwater monitoring at the site. Long-term monitoring requirements, including wells used as part of that program, will be addressed in the ROD. Since it is likely that these wells will be used in the future, the wells will be protected during remediation activities by placing visible barriers around them.

3.1.10 Abandonment of Monitoring Wells

Long-term monitoring requirements will be addressed in the ROD. No wells will be abandoned as part of the interim removal action.

3.1.11 Protection of Wetlands

There are areas designated as USFWS NWI wetlands within one-half mile of SEAD-11. Two of the wetlands are located between 1,000 east and southeast of SEAD-11, and are topographically and hydrogeologically upgradient of the site. Neither of these sites is along, or immediately adjacent to, any roadway that is likely to be frequented during the planned work, so it is unlikely that there will be any deleterious impact to these sites based on the planned work. No measures to be protective of wetlands are necessary at these sites.

There are USFWS NWI defined wetlands located to the west, northwest; west; and west, southwest of the site, within 1,000 to 1,500 feet of the excavation area, and lesser distances removed from the planned action's support zone. As is documented above, silt fencing will be installed prior to the beginning of the work at the site, and maintained utile the area is regarded and re-vegetated to control the potential migration of silt or sediment to these wetlands. Additionally, ditch checks will be installed every 100 feet in the swale that runs along Indian Creek Road to restrict the movement of silt and sediment via these pathways. Finally, groundwater or storm water impacting the exposed face of the excavation or excavated materials will be captured and pumped into on-site frac tanks pending sampling and analysis and final disposal determinations.

3.1.12 Identification and Qualification of Off-Site Disposal Facilities

Samples of the landfilled materials will be collected and submitted to potential off-site disposal sites for characterization and approval prior to the initiation of the excavation activity. It is currently expected that approximately 18 test pits will be excavated in the landfill, and samples will be collected from each test pit within the landfill and analyzed to satisfy waste management facility requirements, as detailed in **Section 4**. This sampling requirement is based on the disposal facility's review of the historic sampling results at SEAD-11. The disposal facility will pre-approve acceptance of the soil based on these data. The disposal characterization sampling will be completed prior to the commencement of construction activities. The disposal samples will be tested for contaminant leaching using the Toxicity Characteristic Leaching Procedure (TCLP). The specifics of the number of samples and the analyses may vary from this Work Plan depending on the requirements of the selected landfill.

Based on previous data, it is not expected that any soil will fail the TCLP limits. In the event that soil does exceed the TCLP, that soil will be stabilized on-site and then disposed as non-hazardous waste. At other SEDA sites, soils that failed TCLP analysis have been stabilized using lime, cement, or other materials that bind the metals within the matrix. The stabilization materials have been added to the soil piles and mixed with a loader or excavator until additional TCLP analyses show that the soil has been rendered non-hazardous. If the disposal sample passes the TCLP, then the soil from the excavation will be directly loaded into dump trucks and transported to and disposed in an off-site Subtitle D landfill. Non-hazardous soil and debris will be managed by the subcontractor (to be qualified and designated by Parsons) and will be transported to either the Seneca Meadows Landfill, Waterloo, New York; Ontario County Landfill, Flint, New York; or an equivalent approved licensed off-site facility for disposal. It is not expected that any materials will be disposed as hazardous waste.

3.1.13 Site Survey

Site surveying will be accomplished by a combination of visual and instrument surveying of the site and construction features. The following surveys will be provided:

- Pre-construction area survey; and
- Post-excavation survey.

The extent of the landfill will be surveyed prior to construction. All utilities will be staked. Whenever possible, 20 feet will be cleared on either side of the work area. If this is not possible, the maximum path will be cleared and work will be coordinated to ensure constructability. All utilities will be clearly marked following the clearing.

3.2 Excavation and Processing of Contaminated Materials

The principal objective of this action is the excavation and removal of landfilled material and soil that is contaminated above site cleanup goal levels. The materials are primarily contaminated with TCE, cPAHs, and metals.

Construction Setup

Before excavation commences, the Contractor (Parsons) will stake and survey the assumed perimeter of the excavation, as shown on **Figure 3-1**. During the startup of field work, the following inspections will be completed:

- Examine the work area to ensure that all preliminary work has been accomplished in compliance with the contract documents;
- Physically examine required materials, equipment, and storage areas to ensure conformance with contract documents;
- Observe and verify that the construction methods and quality of workmanship meet the requirements set forth in the scoping documents;
- Check dimensional requirements relevant to the specific work activity and compatibility with subsequent or adjacent work; and
- Verify that safety procedures are strictly enforced and in full compliance with the HSP.

The results of all initial inspections will be documented and incorporated into the daily QC report.

Excavation of Soil and Waste Material

Soils will be excavated to the staked limits, or as directed by the Project Manager/Engineer, until all visible landfilled material is excavated and natural material is encountered. Types of landfilled material anticipated to be found in the Old Construction Debris Landfill include ashes and various debris. Further review of the site contours and test pit logs indicate that quantity of soil and waste material to be excavated may be less than the quantity previously stated in the Action Memorandum/Decision Document (Parsons, 2003). It is currently estimated that between 25,000 cy and 35,000 cy of soil and landfilled material will be excavated from the Old Construction Debris Landfill; this quantity may change based on field observations and the results of confirmatory sampling and analyses.

Soil and debris will be excavated from the Southwest section of the landfill and continue north and east to the tear drop shaped area near a location immediately adjacent to the intersection of Indian Creek Road with the north-south running SEDA railroad track. The fill area appears to extend to the northeast from for a distance of roughly 595 feet. At its widest point, the landfill appears to measure roughly 425 feet wide in the northwest-southeast axis direction. **Figure 3-1** shows the currently anticipated extent of the Old Construction Debris Landfill. The thicker fill deposits are located along the southern and western faces of the area. The depth contours on **Figure 3-1** provide an estimate of the depth of excavation expected to be encountered across the landfill based on the ground elevation contours and the test pit logs.

Excavation will start in the southwest portion of the landfill in the area with thicker fill, and proceed from the south to the north, and west towards the east. It is expected that 50-foot cuts will be advanced through the landfill during the excavation. Excavation side walls will be sloped to protect against possible collapse and cave-in. Any excavation that exceeds four feet in depth will be sloped

or benched, as necessary. Excavation will proceed until all landfilled material is removed and natural materials are observed.

Inert oversized material (i.e., greater than 24 inches), such as concrete, may be screened from soil and/or ash for placement on-site. Any inert debris remaining on-site will be managed so that it is free of soil. Empty drums determined to be RCRA clean and drum carcasses will be crushed and shipped offsite as C&D debris for disposal.

Drum Handling (if needed)

Given the significant time elapsed since any materials were placed at the Old Construction Debris Landfill, it is unlikely that any intact drums will be recovered. However, if found, intact drums that likely will not tolerate significant manipulation will be removed and placed directly into an overpack or salvage drum. Any deteriorated drums containing liquids will either have the liquids removed using an explosion-proof electric pump, or be overpacked as they are encountered to minimize, and hopefully prevent, any further release of hazardous substances. Any drums with evidence of internal pressure will be isolated as best as reasonably possible in the excavation, pierced with a bronze punch mounted on the backhoe bucket to relieve pressure and overpacked separately from other drums. Similarly, any container encountered that exhibits signs of reaction (e.g., smoking) will be allowed to fully react before they are removed and handled.

As needed, drums will be opened and sampled at a centralized, lined staging location. Contents will be sampled with a drum thief or other appropriate method depending on the characteristics of the contents. If drum contents cannot be determined in advance, Level B or C personal protection (as determined by the SHSO) will be implemented as a safety precaution. Drums will be transferred to a temporary drum staging area and placed in two rows separated so each drum is readily accessible. The drum staging area will be bermed and lined to contain drum contents in case of a spill or leak. Drums will be labeled and inventoried at the staging area and removed from SEDA as soon as reasonably possible following excavation and sampling.

Soil and Waste Material Loading

Excavated landfilled material will be stockpiled in the staging area located at the northeastern edge of the landfill along Indian Creek Road, shown in **Figure 3-1**. The staging area will be constructed of a pushed up 12-inch earthen berm surrounding the stockpile area covered with 6-mil polyethylene sheeting. Each individual pile will be covered with 6-mil polyethylene sheeting to prevent erosion by wind or rain. A pump will be placed in the stockpile area as necessary to remove ponded water. The water will be pumped to a frac tank and the water will be disposed as discussed in **Section 3.1.7**.

Dust Control and Air Monitoring Measures

Water will be utilized to keep haul roads wet to control dust and VOC emissions in active areas. Polyethylene sheeting will also be utilized as a barrier on exposed material to control emissions. An air monitoring plan has been developed to protect the workers involved in the construction at SEAD-11. Public health and safety is ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area at each site. The air monitoring will be conducted

in accordance with the air monitoring program outlined in Section A8 of the HSP (Parsons, 2006). In addition, perimeter air monitoring will be conducted in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). Based on requirements specified in the NYSDOH CAMP, the perimeter air monitoring program will consist of real-time perimeter measurements for total VOCs and respirable airborne dust particulates (particulate matter less than 10 microns – PM10).

If asbestos materials are encountered, air monitoring will be conducted to ensure that workers are not exposed to asbestos. If the material is non-friable asbestos, personal and perimeter air monitoring for a negative exposure assessment will be conducted for a few days to demonstrate that the workers are not exposed.

Confirmatory Sampling

Confirmatory samples will be collected, starting in the southwest edge of the landfill, as the excavation progresses. Prior to collecting confirmatory samples, hay bales or berms will be placed along the open face of the excavation to prevent excavation water from the landfill from infiltrating into the excavated area and potentially impacting the soil represented by the confirmatory sample. Confirmatory samples will be collected as grab samples in accordance with the Field Sampling Plan (FSP) included as **Section 4**, which specifies the frequency and layout of the confirmatory samples. Analytical results from the confirmatory sampling will be compared to the site-specific cleanup goals, summarized in **Table 2-1**. If a confirmatory sample exceeds the cleanup goals, additional excavation will be completed in the area and a new sample will be collected.

Water Management

The water collected from decontamination operations and run-on/run-off control will be sampled and discharged to the Seneca County Sewer District No. 2 main influent building of the plant. All waters will be appropriately tested and based on a review of the analytical data, the Seneca County Sewer District will approve disposal of the water to the District. In general, the water has to be non-hazardous according to 6 NYCRR Part 371 in order to receive District approval. There is no historic data to suggest that any water from SEAD-11 would be characterized as hazardous and would require treatment prior to disposal. In the event that treatment is required, an appropriate method to treat the specified contaminant would be selected. The water in the new holding tank will be sampled and the results will be reviewed by the District for acceptance. If acceptable, the water will be transported to Seneca County Sewer District No. 2 main influent building. If the results remain unacceptable, the process will be repeated.

Construction Inspections

Throughout the duration of the construction activities, regular construction inspections will be conducted to verify compliance with the work plan. These inspections will be performed by the field engineer or the site manager and include the following:

- Overseeing earthwork to confirm that all visible landfilled material is removed from the landfill.

- Documenting that the subcontractors are taking appropriate measures to control and minimize dust emissions and to control erosion at the site related to the subcontractors' work activities;
- Documenting that trucks and equipment are properly decontaminated, and decontamination spoils are properly managed and disposed;
- Documenting that security measures are being followed, including entry by authorized persons only, use of appropriate personnel protective equipment (PPE), protection of SEDA property, and use of locks and security measures to prevent unauthorized entry to the work site on non-business hours.
- Documenting the effective use of barricades and other temporary controls to prevent impacted storm water and construction-related runoff.
- Documenting the sampling procedure and chain-of custody procedure for all samples.

For the SEAD-11 removal action, the Program Health and Safety Officer (PHSO), Tim Mustard, or the SHSO, Mr. McAllister, will conduct periodic health and safety inspections in accordance with the project HSP.

3.3 Transport of Excavated Waste Material

Excavated soil and waste materials will be "packaged" for transport using the following methods:

- Non-hazardous soil and debris will be loaded into separate Department of Transportation (DOT) approved dump trucks and/or dump trailers; and
- Collected waters will be discharged via the on-site waste water influent building.

Representatives of the transportation companies will be required to attend an orientation prior to hauling the excavated soil off-site. The orientation will cover:

- Traffic patterns
- Haul and disposal procedures
- Project safety issues
- Documentation issues
- Communication issues
- SEDA specific issues

The orientation will be summarized in a handout that will be expected to be passed along to each driver involved with the hauling activities. The transportation company will be required to document that pertinent information was delivered to each driver, or drivers will not be loaded.

Coordination of the off-site disposal activities will be done by the Site Manager. Each load will be tracked utilizing a worksheet provided to them as they arrive at SEDA. The worksheet will record:

- Transportation Company
- Arrival time/date
- Truck No.
- Trailer No.
- Driver's name
- Material to be loaded
- Site name/Excavation No.
- Time loaded
- Decon – Yes

- Tarped – Yes
- Release time
- Destination
- BOL/Manifest No

All shipments to off-site facilities will be tracked utilizing the worksheet and a Parsons-developed database. The database allows for easy cross-referencing, reporting, and quantifying.

Prior to leaving an area, each truck will be inspected. Gross levels of contamination to the outside of the vehicle and tires will be swept or removed using other methods. Loads exhibiting signs of leaking materials will be held at the site until the nature of the leakage is confirmed and stopped. As necessary, waste loads will be off-loaded and allowed to "dewater" wither within the excavation site or on a staging pad constructed to capture liquids. Once the load is dewatered, it will be reloaded for subsequent inspection and transport.

3.4 Site Restoration and Demobilization

The landfill was constructed on the prior ground surface. It is not anticipated that excavation will be required below the original ground surface so it is not expected that backfill will be required. The Old Construction Debris Landfill will be seeded to allow re-vegetation. Vegetation serves to reduce erosion, enhance evapotranspiration, and improve run-off water quality. A seed mixture will be selected to blend the area with natural vegetation already existing.

Silt fence and ditch checks will be replaced or repaired, as required. Other drainage control features, such as berms, disturbed by site operations will be restored to functioning condition.

Demobilization activities include the following:

- All equipment and materials, including the decontamination pad, the frac tank, and site trailers, will be demobilized;
- A final inspection and housekeeping sweep of the work areas will be completed. All trash and waste materials will be removed; and
- All field personnel will be demobilized from the site. The shoulders of the road will be dressed and the adjacent roads will be returned to the condition as existed prior to the commencement of construction. Final topography will be recorded so as-built drawings can be produced.

3.5 Project Team Responsibilities

Parsons has dedicated, experienced, and competent personnel to manage the removal action at SEAD-11. Senior management and staff personnel have been selected based on their knowledge and abilities in areas of site remediation and civil construction; management and administration of environmental contracts; regulatory and technical expertise; and health, safety, and quality awareness.

Responsibilities of key personnel are described in the following subsections.

3.5.1 Project Manager (PM)

The Project Manager (PM), Todd Heino, will manage the project from the Boston, Massachusetts office and will be on-site periodically during construction. Mr. Heino is the final decision authority, and will receive reports from the field from the Site Manager (SM) or the Quality Control (QC) Officer. Mr. Heino will visit the work site, as necessary, to meet with the client and review work progress. Mr. Heino's responsibilities as PM are as follows:

- Managing program administration;
- Serving as primary AFCEE/Army interface on all project issues;
- Serving as primary interface with USEPA and NYSDEC on project issues;
- Resolving conflicts with AFCEE/Army or subcontractors;
- Reviewing and submitting project documentation.

3.5.2 Site Manager (SM)

The Site Manager (SM), Tom Andrews, is directly responsible for all aspects of the contractor's performance including work assignments, approval of all contractor and subcontractor costs, and approval of all subcontracts and procurements. Mr. Andrews will be on-site one or two days a week during the construction phase of this project. Mr. Andrews shall also be responsible for the resolution of all QA issues that arise during construction. Other responsibilities of the SM include:

- Reviewing all construction documents to verify compliance with remedial action objectives;
- Developing a QA program to ensure that program objectives are met through a systematic process of QC and documentation;
- Ensuring that contractor personnel are experienced, competent, and qualified for their assigned tasks;
- Coordinating constructability review of project scoping documents;
- Coordinating with the Project Engineer and the SHSO/QC Officer in developing work plan implementation procedures during pre-construction;
- Selecting the construction subcontractors, as needed, and administration of the construction subcontracts;
- Coordinating all construction activities associated with subcontractors; and
- Coordinating with the SHSO/QC Officer to ensure that inspections, tests, and records are developed and performed adequately.

3.5.3 Project Engineer

The Project Engineer, Jeff Adams, will support the PM in the office. It is not anticipated that Mr. Adams will be on-site, with the exception of an occasional visit, as necessary. The responsibilities of the Project Engineer include the following:

- Reviewing design issues;
- Modifying the design with regulators, if required;
- Reviewing analytical data to assess if results are satisfactory; and
- Preparing AFCEE and regulatory submittal documents for approval, as required.

3.5.4 Quality Assurance (QA) Manager

The QA Manager, John Lanier, will be responsible for all QA issues. Mr. Lanier's responsibilities as QA Manager are as follows:

- Implementing the QA program, including conducting audits and/or surveillance of project and construction activities, as needed, to verify that project personnel are performing their duties in accordance with this work plan. Scope audits will include verification that project and construction activities are being properly performed and documented, and that health and safety-related or quality-related concerns, nonconformances, and deficiencies are being resolved in a satisfactory manner.

3.5.5 Site Health and Safety Officer (SHSO) & Quality Control (QC) Officer

Ben McAllister will serve in the dual role as Site Health and Safety Officer (SHSO) and as the Site Quality Control (QC) Officer. Mr. McAllister will be on-site full time and will be responsible for all daily operations. Mr. McAllister's key responsibilities are as follows:

- Implementing the work plan;
- Supervising and coordinating all activities relating to field remediation operations on a daily basis and serving as the subcontractors' primary point of contact for daily and routine operations;
- Completing daily reporting tasks and review of any daily or weekly reports;
- Requisitioning labor, materials, and equipment to perform construction activities;
- Making routine field decisions;
- Identifying problems that cannot be resolved in the field, and reporting them to the SM or PM, as appropriate;
- Communicating QA/QC policies, objectives, and procedures to project personnel and subcontractors during project meetings and informal discussions;
- Conducting sampling and QA testing;
- Monitoring, controlling, and documenting the quality of on-site construction activities;
- Verifying that QC personnel are properly qualified and trained in specified plans and testing procedures;

- Verifying and documenting that construction QC activities involving inspection, testing, and records are complete, accurate, and in accordance with site-specific documents;
- Enforcing site health and safety policies and procedures as defined in this report and in the site-specific HSP (Parsons, 2006);
- Conducting and documenting health and safety orientation and daily meetings, as required, prior to construction;
- Determining the appropriate levels of PPE for each construction activity; and
- Overseeing construction QC operations performed by subcontractors.

Mr. McAllister will have the authority to stop work on any project activity due to nonconformance with this work plan. All on-site personnel will be encouraged to discuss any quality-related concerns with Mr. McAllister. In the event that Mr. McAllister detects or is informed of a potential nonconformance, he will investigate the matter, determine the corrective action required, document the incident, and report the incident to the SM or Project Engineer.

3.6 Subcontractor Quality Control

All subcontractors and material suppliers involved with on-site construction activities shall comply with this plan. Subcontractor personnel qualifications, technical performance levels, QA/QC procedures, acceptability levels, and documentation and submittal requirements will be clearly defined in the subcontractor's scope of work and procurement documents. The PM will review the scope of work and procurement documents to verify that all of the relevant QA/QC requirements have been adequately communicated to the subcontractor.

Each subcontractor shall identify a qualified individual within their organization to be responsible for QC and performance of QC testing. Mr. McAllister will coordinate all QC functions with the designated subcontractor QC representative. Mr. McAllister has authority over all subcontractor QC requirements. These activities will be documented on inspection reports, checklists, audit reports, field logs, or other forms appropriate to the function performed.

3.7 Quality Control Documentation

An effective QA/QC program depends on thorough monitoring of all construction activities. This is most effectively accomplished by observation and documentation during all phases of construction. Documentation shall consist of project submittals, daily QC inspection reports, weekly QC summary reports, non-conformance and corrective action reports, work plan clarifications or modifications, photographic records, observation and testing data sheets, as-built documentation, and a summary report. This section describes the requirements of each of these aspects of the QC documentation.

3.7.1 Daily QC Inspection Reports

Mr. McAllister will prepare a Daily QC Report and submit it to the SM, who will sign it to acknowledge non-conformances and observations, and place it in the project files or begin the corrective action request. The Daily QC Report will include the following information:

- Project name, location, and date;
- Personnel and equipment used;
- Estimated volume of excavated material shipped off-site during the day;
- Weather conditions;
- Narrative description of inspections, tests, and sampling;
- Description of kinds and types of material delivered and used;
- Narrative description of work performed, problems encountered, and corrective measures taken; and
- Record of any data or measurements collected.

3.7.2 Weekly QC Summary Reports

The Site QC Officer will draft the Weekly QC Summary Report and submit it to the SM. The SM will review the report, and then submit it to the AFCEE and Army contacts.

The Weekly QC Summary Report will include the following information:

- Date, project name, and location;
- Summary of construction-related activities;
- Summary of QC activities;
- Attached inspection reports;
- Test results;
- Volume of soil shipped for disposal;
- Volume of soil shipped for disposal to other locations (e.g., off-site, if necessary);
- Non-Conformance Reports (NCRs);
- Non-Conformance/Corrective Action Tracking Log; and
- Corrective Action Reports.

3.7.3 Non-Conformance Documents

As the Site QC Officer, Mr. McAllister will report each nonconforming item on a NCR form. The NCR form will include the information listed below:

- Name and job title of the individual who identified the non-conformance;
- Description of the non-conformance;
- Effect of non-conformance on suitability of the work for the intended purpose;
- Immediate corrective measures taken; and

- Recommended corrective action or variance/field change to the project documents.

The Site QC Officer will describe the NCR in the Daily QC Report, and then log it on the Non-Conformance/Corrective Action Tracking Log. The Site QC Officer will include the revised log in the Weekly QC Report. The SM will review this list and initiate a Corrective Action Report (CAR) if a non-conformance is not satisfactorily corrected in a timely manner. The CAR will include the following and will be signed by all responsible parties:

- Summary of the affected project requirements;
- The nature of the non-conformance;
- The corrective action to be taken;
- Action items/responsibilities for each affected individual;
- A schedule for completion of the corrective action; and
- Recommendations for preventing recurrence of the problem.

The PM will review unresolved CARs and take appropriate measures to ensure that the corrective actions are completed on schedule. The Site QC Officer will conduct an inspection to verify that the CAR is resolved, update the Non-Conformance/Corrective Action Tracking Log, and document the resolution in the Daily and Weekly QC Reports.

3.7.4 Photographic Documentation

All phases of construction will be documented with photographs taken by QA/QC personnel. All photographs will be identified as to location, time, date, and initials of the person taking the photograph.

3.7.5 As-Built Drawings

The Site QC Officer will establish and maintain a set of project drawings in the project office for the purpose of noting changes. Changes will be noted in red ink or pencil and referenced to the approved Field Change/Modification Request (FC/MRs). New drawings will be added to the set if required for major or extensive changes. Copies of all FC/MRs, change orders, notes, sketches, and memoranda will be available for reference in the project field office. As-built drawings will be available for review in the project field office at all times.

4 FIELD SAMPLING PLAN

4.1 Introduction

This Field Sampling Plan (FSP) describes the approach to completing the soil and water sampling necessary to complete the interim removal action at SEAD-11. The sampling proposed in this FSP has been designed to provide the information necessary (1) to confirm the removal of all soils and landfilled materials exceeding site cleanup goals from the Old Construction Debris Landfill; (2) to characterize excavated soils for disposal; (3) to characterize any water generated during the excavation activity for disposal; and (4) to characterize the contents of intact drums, if found. Project specific data quality objectives (DQOs) for sampling are described throughout this section. For each type of work, this FSP specifies the following:

- Types of sampling required;
- Number of required samples;
- List of required analyses;
- Acceptance criteria for analytical results; and
- Sample labeling and recording system.

This FSP is supplemented by the "Draft Sampling and Analysis Plan for Seneca Army Depot Activity (SAP)" (Parsons, 2006). This SAP was provided to the agencies under separate cover. The SAP specifies the following:

- Data quality objectives;
- Specific field sampling procedures;
- Sample preservation methods, container volumes, and holding times;
- Sample custody and management;
- QC sample collection;
- Analytical methods;
- Data validation;
- Laboratory analytical requirements;
- Data management and evaluation;
- Performance assessment and system audits; and
- Preventative maintenance.

The SAP provides additional detail on the required reporting limits and method detection limits for each analyte. The laboratory selected to analyze samples associated with this Interim Removal Action is Severn-Trent Laboratory located in Buffalo, New York. The anticipated turnaround time is three business days.

4.2 Project Scope and Objectives

This project focuses on the excavation and disposal of contaminated soil and landfilled materials from SEAD-11, the Old Construction Debris Landfill. In order to accomplish this project, several different sampling tasks are required. These are outlined below and discussed in further detail in the SAP.

4.2.1 Task Description

The tasks required to complete field sampling for SEAD-11 are presented in this section. Field sampling details are presented in **Section 4.3**.

4.2.1.1 Confirmatory Sampling of Excavation

All landfilled materials at SEAD-11 will be excavated. Depths of fill excavated are expected to range from 0 to 2 feet in the northeast corner to 9 feet or more in the southwest corner of the site, but will vary based on conditions encountered during the work. Prior to the commencement of excavation, the lateral limits of excavation will be outlined by stakes placed by the engineer. As the excavation progresses from the southwest edge trending upgradient, confirmatory grab samples will be collected from the base and sidewalls (or perimeter if there is no sidewall) of the excavation and tested for compliance with the site-specific cleanup goals as shown in **Table 2-1**. The analytical results of the confirmatory sampling will determine if excavation is complete or if more soil must be removed.

4.2.1.2 Disposal Characterization Sampling

The disposal facility requires disposal characterization samples for analyses prior to the acceptance of waste materials. Parsons currently expects that approximately 18 test pits will be excavated in the landfill, and samples will be collected from each test pit within the landfill and analyzed to satisfy waste management facility requirements to characterize the waste material for disposal prior to its acceptance at any qualified disposal facility. This sampling requirement is based on the disposal facility's review of the historic sampling results at SEAD-11. The disposal facility will pre-approve acceptance of the soil based on these data. Prior to the commencement of the excavation activity at SEAD-11, composite soil samples will be collected from areas within the landfill. The resulting analytical data from each sample will determine whether the excavated soil will be directly loaded into trucks for off-site disposal to a Subtitle D non-hazardous facility. The specifics of the number of samples and the analyses may vary from this Work Plan depending on the requirements specified by the selected landfill.

4.2.1.3 Sampling of Excavation Water

During the site work, any excavation water (run-on and run-off) will be collected in 20,000-gallon frac tanks. Water and soapy water from the decontamination of various pieces of equipment or any other water generated during construction will also be collected in these frac tanks. A sample of the water will be collected from the excavation and analyzed for parameters requested by the Seneca County Sewer District No. 2 (the District) wastewater treatment facility that will be receiving the water. If the analytical results meet the District's discharge requirements, the water will be discharged to the main influent building of the waste water plant. Solids settled in the tank will be disposed off-site with the excavated soils.

4.2.1.4 Drum Characterization Sampling

During the excavation, it is not anticipated that intact drums will be encountered. However, if they are recovered, the drums will be staged on a lined processing pad and sampled to characterize their

contents. Based on the analytical results, the contents of the drum will be emptied and disposed appropriately.

4.2.1.5 Monitoring Well Installation

No new monitoring wells will be installed at SEAD-11, unless one or more of the existing wells are destroyed or abandoned during the excavation work. Currently all of the wells located at the site are located exterior to the identified extent of the excavation. All existing wells will be protected, to the fullest extent practical, during the site and excavation work. If these wells are disturbed during excavation activities, replacement wells will be installed once excavation and backfilling activities are completed. A long-term monitoring plan for SEAD-11 will be developed after the ROD has been signed.

4.2.1.6 Waste Residuals

Waste residuals generated during the field sampling activities, including disposable sampling tools, plastic sheeting, and disposable personal protective equipment will be bagged and disposed in an on-site trash dumpster.

4.2.1.7 Air Monitoring

An air monitoring plan has been developed to protect the workers involved in the construction at SEAD-11. Public health and safety is ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area at each site. The air monitoring will be conducted in accordance with the air monitoring program outlined in Section A8 of the "Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity PBC II" (Parsons, 2006). In addition, perimeter air monitoring will be conducted in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP). Based on requirements specified in the NYSDOH CAMP, the perimeter air monitoring program will consist of real-time perimeter measurements for total VOCs and respirable airborne dust particulates (particulate matter less than 10 microns – PM_{10}).

4.3 Field Sampling Detail

This section provides a detailed description of the field activities that were outlined in the previous section. Refer to the SAP (Parsons, 2006) for a more detailed description of the analytical program, including sample custody, sample management, and data validation. Quality control (QC) samples will be collected in accordance with the SAP.

4.3.1 Confirmatory Sampling of Excavation

Confirmatory sampling of the excavation will be performed to show that excavation is complete, site-specific cleanup goals are met, and the site can be restored.

4.3.1.1 Sample Collection

Confirmatory grab samples will be collected from the base of the excavation of the landfill at a frequency of one sample per 50-foot by 50-foot grid, or one sample every 2,500 square feet. A template for the layout of the specified grid spacing is shown in **Figure 4-1**. Perimeter samples (or

sidewall samples, if sidewalls exist) will be collected for every 50-foot length of excavation perimeter (or sidewall). If the edge of excavation extends 2 feet or more below the adjacent ground surface, a sidewall sample will be collected at a depth halfway between the ground surface and the base of the excavation, or at a location that appears contaminated based on visual or olfactory observations. If the edge of the excavation is less than 2 feet below the natural ground surface, a perimeter confirmatory sample will be collected. Each confirmatory sample will be collected as a grab sample from a unique location.

It is anticipated that confirmatory sampling will consist of approximately 60 base samples plus perimeter or sidewalls samples. The exact number of confirmatory samples will be determined in the field based on the actual excavation area and results.

QC samples will be collected in accordance with the SAP.

4.3.1.2 Sample Analysis

All confirmatory soil samples collected at SEAD-11 will be analyzed for TCL VOCs by USEPA SW846 Method 8260B, cPAHs by USEPA SW846 Method 8270C, and TAL metals by USEPA SW846 Method 6010B. If the site-specific cleanup goals (**Table 2-1**) are not met, additional excavation will be performed based on visual observations and best professional judgment by the field engineer, and additional confirmatory samples will be collected based on the frequencies discussed above. Sampling frequency and required parameters are presented in **Table 4-1**.

4.3.1.3 Sample Numbering

As a means to track the location of confirmatory samples, 50-foot by 50-foot grids will be layed out over the excavation area. Beginning at the northeast corner of the landfill, which is where excavation will begin, the east-west grids are labeled alphabetically, moving from east to west, and the north-south grids area labeled numerically, trending from north to south, shown in **Figure 4-1**.

Confirmatory samples from SEAD-11 will be labeled as follows:

11EXYYZZXX

11 is the SEAD number. EX designates that the sample is from an excavation. YY designates the type of sample: “FL” denotes a sample collected from the floor (or base) of excavation; and “SW” denotes a sample collected from the sidewall; and “PR” denotes a sample collected from the perimeter of the excavation. ZZ is the grid name. XX is the sample number.

For example, a base sample collected from the first grid would be labeled 11EXFLA101 and a perimeter sample collected from that grid would be 11EXPRA101.

Every label will be unique. In the field, the engineer will keep a log of the sample locations and sketch a diagram of sampling grids and the sample locations.

4.3.2 Disposal Characterization Sampling

For disposal characterization, the disposal facility requires approximately one sample per 2,000 tons of material from the area anticipated to be excavated at SEAD-11 be sampled and submitted for

analysis to pre-qualify for disposal. This sampling requirement is based on the disposal facility's review of the historic sampling results at SEAD-11 and their specific sampling requirements. The disposal facility will pre-approve acceptance of the soil based on these data. Disposal characterization samples will be collected and analyzed to determine if the excavated soils can be disposed as non-hazardous waste.

4.3.2.1 Sample Collection

At SEAD-11, approximately one sample for every 2,000 tons of material to be excavated will be collected from grab samples taken from the areas to be excavated. The samples will be collected from test pits. Each test pit will be dug through the full depth of the waste and one composite made from five discrete locations will be collected from each pile of excavated material.

4.3.2.2 Sample Analysis

It is likely that each sample will be analyzed for TCLP metals, reactivity, flashpoint, and pH. The specific analyses required are subject to the landfill's requirements. Sampling frequency and required parameters are presented in **Table 4-1**.

4.3.2.3 Sample Numbering

The disposal samples collected from test pits at SEAD-11 will be labeled as 11WCTPZZYY. WC designates the sample as a disposal (or waste) characterization sample. TP notes that the sample is from a test pit. ZZ is the test pit number, and YY is the sample number, starting with 01.

In the unlikely event that additional disposal characterization samples are required from excavated soil that is staged on-site, the sample from the windrow would be labeled as 11WCWRZZYY. WC designates the sample as a disposal (or waste) characterization sample. WR notes that the sample is from a windrow. ZZ is the windrow designation, and YY is the sample number, starting with 01.

4.3.3 Sampling of Excavation Water

Excavation water, including run-off, run-on, and decontamination water, will be allowed to collect in the open excavation. After allowing the water to settle, the excavation water will be sampled directly from the open excavation. After the sample is collected, the water will be pumped into an on-site in 20,000 gallon frac tank.

4.3.3.1 Sample Collection

Water will be allowed to settle in the open excavation. Before the water is pumped into the frac tank, a sample will be collected from the water in the excavation using a dedicated disposable polyethylene bailer lowered into the excavation with nylon rope.

4.3.3.2 Sample Analysis

Seneca County Sewer District No. 2 requires that the following list of parameters are analyzed: VOCs, SVOCs, and metals. If the analytical results are acceptable to the District, the contents of the frac tank will be emptied directly into the on-site sewer for disposal. For acceptance by the District, the waste stream must be non-hazardous according to 6 NYCRR Part 371. It is anticipated that all

collected water will be suitable for discharge to the main influent building of the plant. Sampling frequency and required parameters are presented in **Table 4-1**.

4.3.3.3 Sample Numbering

The water samples will be numbered as follows:

11WWMMDD

11 is the SEAD number. WW designates that it is a water sample. MMDD is the month and the day that the sample is collected.

4.3.4 Drum Characterization Sampling

It is not expected that any intact drums will be identified during the excavation of the Old Construction Debris Landfill. However, in the event that intact drums are recovered from the landfill during construction activities, drums will be opened and analyzed for hazardous waste characteristics. During this process, level B or C PPE, as determined by the SHSO, will be used since the contents of the drums are unknown. Based on the analytical results, the drums will be grouped together based on compatibility and disposed of at the appropriate disposal facilities either in bulk or as individual drums.

4.3.4.1 Sample Collection

The contractor will open each recovered intact drum and collect a composite sample from multiple grab samples within the same drum, and submit it to the selected laboratory for analysis.

4.3.4.2 Sample Analysis

The sample will be analyzed for TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP pesticides, TCLP herbicides, PCBs, reactivity, flashpoint, and pH.

4.3.4.3 Sample Numbering

The drum characterization samples will be designated as follows:

11DRYY

11 denotes that the drum was recovered from SEAD-11. DR indicates that the sample is from a drum. YY is the sample number, assigned sequentially.

5.0 REMEDIAL ACTION SCHEDULE AND ORGANIZATION

5.1 Schedule

A schedule for the interim removal action is presented as **Figure 5-1**. The schedule allows 30 days for the Army, NYSDEC, and USEPA to review and provide comments on the Work Plan. It also allows 14 days for Parsons to incorporate comments into the Final Work Plan. The construction bidding process will begin immediately after approval. This schedule will be updated on a continuing basis. The current schedule projects the commencement of construction activities in September 2006. This schedule would allow for construction during favorable drier weather conditions and would meet the Army's land transfer goals.

5.2 Organization

The various tasks outlined herein are being implemented by the Army with Parsons as its remediation engineer. Parsons will provide constant site oversight during the remedial action. Parsons will also interface with Seneca County, as needed, to address management of contaminated water during the remedial action.

Parsons will use the design documentation herein to hire a construction subcontractor, a laboratory subcontractor, and a surveying subcontractor. The work effort at SEAD-11 is overseen and reviewed by USEPA, NYSDEC, and NYSDOH. The project organization is summarized below:

Name	Title	Phone/Fax Number	Address
Jesse Perez	AFCEE Contracting Officer's Representative (COR)	Office: (210) 536-5269 Fax: (210) 536-4330	HQ AFCEE/TDE 3300 Sidney Brooks Brooks City-Base, TX 78235 jesse.perez@brooks.af.mil
Stephen Absolom	Seneca Army Depot Activity's Point of Contact (POC)	Office: (607) 869-1309 Fax: (607) 869-1362	SEDA Building 123 Romulus, NY 14541 Attn: SMASE-BEC stephen.m.absolom@ us.army.mil
Thomas Battaglia	Seneca Army Depot Activity's COR Representative	Office: (607) 869-1353 Fax: (607) 869-1251	SEDA Building 125 Romulus, NY 14541 Thomas.c.battaglia@ nan02.usace.army.mil
Todd Heino	Parsons Project Manager (PM)	Office: (617) 449-1405 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 todd.heino@parsons.com

Name	Title	Phone/Fax Number	Address
John Lanier	Parsons Quality Assurance Manager	(B) Office: (716) 633-7074 (B) Fax: (716) 633-7195 (S) Office: (315) 451-9560 (S) Fax: (315) 451-9570 Cell: (716) 998-3485	Off-site [Buffalo (B) and Syracuse (S), NY] John.lanier@parsons.com
Tim Mustard	Program Health and Safety Officer (PHSO)	Office: (303) 764-8810 Fax: (303) 831-8208	Parsons 1700 Broadway, Suite 900 Denver, CO 80290 Tim.mustard@parsons.com
Tom Andrews	Site Manager (SM)	Office: (716) 633-7074 Cell: (716) 998-7473 Fax: (716) 633-7195	Parsons 180 Lawrence Bell Dr, Ste 104 Williamsville, NY 14221 Tom.andrews@parsons.com
Jeff Adams	Project Engineer	Office: (617) 449-1570 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 jeff.adams@parsons.com
Ben McAllister	Site Health and Safety Officer (SHSO) / Site QC Officer	Office: (617) 449-1592 Cell: (207) 409-6151 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 benedict.McAllister@ parsons.com

6.0 REFERENCES

Engineering Science, Inc, 1994. Solid Waste Management Classification Study, Final. September 1994.

Parsons, 2003. Decision Document for a Non-Time Critical Removal Action at SEAD-11, Final. April 2003.

Parsons, 2003. Action Memorandum for a Removal Action at SEAD-11, Final. April 2003.

Parsons, 2006. Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity PBC II. August 2006.

Parsons Engineering Science, 1995. Expanded Site Inspection, Three Moderate Priority SWMUs, SEAD 11, 13, and 57, Final. December 1995.

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

Table 1-1
Summary Statistics of Compounds Detected in Soil
During the ESI and Additional Sampling
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NUMBER ABOVE TAGM	NUMBER OF DETECTS	NUMBER OF ANALYSES
VOLATILE ORGANICS							
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37
Acetone	UG/KG	3200	22%	200	3	8	37
Benzene	UG/KG	45	19%	60	0	7	37
Carbon disulfide	UG/KG	26	16%	2700	0	6	37
Ethyl benzene	UG/KG	3	3%	5500	0	1	37
Methylene chloride	UG/KG	4	16%	100	0	6	37
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37
Toluene	UG/KG	25	27%	1500	0	10	37
Total Xylenes	UG/KG	14	14%	1200	0	5	37
Trichloroethene	UG/KG	42000	86%	700	14	32	37
SEMIVOLATILE ORGANICS							
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15
Acenaphthene	UG/KG	84000	60%	50000	1	9	15
Anthracene	UG/KG	150000	73%	50000	1	11	15
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15
Carbazole	UG/KG	81000	53%		0	8	15
Chrysene	UG/KG	170000	73%	400	8	11	15
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15
Fluoranthene	UG/KG	350000	80%	50000	5	12	15
Fluorene	UG/KG	88000	67%	50000	1	10	15
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15
Naphthalene	UG/KG	100000	67%	13000	3	10	15
Phenanthrene	UG/KG	350000	73%	50000	4	11	15
Pyrene	UG/KG	280000	73%	50000	4	11	15
EXPLOSIVES							
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15
PESTICIDES/PCBs							
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15
Alpha-BHC	UG/KG	24	7%	110	0	1	15
Alpha-Chlordane	UG/KG	190	27%		0	4	15
Delta-BHC	UG/KG	15	20%	300	0	3	15
Dieldrin	UG/KG	29	20%	44	0	3	15
Endosulfan II	UG/KG	66	40%	900	0	6	15
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15
Endrin	UG/KG	49	27%	100	0	4	15

Table 1-1
Summary Statistics of Compounds Detected in Soil
During the ESI and Additional Sampling
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NUMBER ABOVE TAGM	NUMBER OF DETECTS	NUMBER OF ANALYSES
HERBICIDES							
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15
2,4-DB	UG/KG	550	13%		0	2	15
Dalapon	UG/KG	2500	7%		0	1	15
METALS							
Aluminum	MG/KG	37500	100%	19300	2	37	37
Antimony	MG/KG	285	70%	5.9	22	26	37
Arsenic	MG/KG	23.2	92%	8.2	20	34	37
Barium	MG/KG	6560	100%	300	16	37	37
Beryllium	MG/KG	1.4	97%	1.1	1	36	37
Cadmium	MG/KG	16	73%	2.3	17	27	37
Calcium	MG/KG	104000	100%	121000	0	37	37
Chromium	MG/KG	462	100%	29.6	21	37	37
Cobalt	MG/KG	40.5	100%	30	1	37	37
Copper	MG/KG	1230	100%	33	30	37	37
Cyanide	MG/KG	1.7	5%	0.35	2	2	37
Iron	MG/KG	135000	100%	36500	19	37	37
Lead	MG/KG	7210	84%	24.8	29	31	37
Magnesium	MG/KG	44600	100%	21500	2	37	37
Manganese	MG/KG	3000	97%	1060	3	36	37
Mercury	MG/KG	6	68%	0.1	17	25	37
Nickel	MG/KG	221	100%	49	15	37	37
Potassium	MG/KG	5870	100%	2380	6	37	37
Selenium	MG/KG	3.7	76%	2	10	28	37
Silver	MG/KG	11.3	73%	0.75	24	27	37
Sodium	MG/KG	1700	92%	172	22	34	37
Thallium	MG/KG	8.8	59%	0.7	22	22	37
Vanadium	MG/KG	1940	100%	150	1	37	37
Zinc	MG/KG	7980	92%	110	32	34	37

Table 1-2
Summary Statistics of Compounds Detected in Groundwater
Round 1 - November 2000
SEAD-11 Interim Removal Action Work Plan
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	LOWEST GW STANDARD	APPLICABLE GW STANDARD[1]	NUMBER ABOVE STANDARD	NUMBER OF DETECTS	NUMBER OF ANALYSES
Volatile Organic Compounds								
Tetrachloroethene	UG/L	2	25%	5	GA	0	2	8
Trichloroethene	UG/L	2	25%	5	GA	0	2	8
Semivolatile Organic Compounds								
2,4,5-Trichlorophenol	UG/L	0.073	13%			0	1	8
2,4,6-Trichlorophenol	UG/L	0.098	13%			0	1	8
Butylbenzylphthalate	UG/L	0.16	25%			0	2	8
Dimethylphthalate	UG/L	3.3	38%			0	3	8
Pyrene	UG/L	0.082	13%			0	1	8
Pesticides/PCBs								
4,4'-DDT	UG/L	0.006	13%	0.2	GA	0	1	8
Metals								
Aluminum	UG/L	184	75%	50	MCL	5	6	8
Antimony	UG/L	8	13%	3	GA	1	1	8
Barium	UG/L	68.9	100%	1000	GA	0	8	8
Beryllium	UG/L	0.27	25%	4	MCL	0	2	8
Cadmium	UG/L	0.35	13%	5	GA	0	1	8
Calcium	UG/L	236000	100%			0	8	8
Cobalt	UG/L	1.8	13%			0	1	8
Copper	UG/L	19.2	25%	200	GA	0	2	8
Iron	UG/L	302	75%	300	GA	1	6	8
Magnesium	UG/L	41000	100%			0	8	8
Manganese	UG/L	772	100%	50	SEC	3	8	8
Nickel	UG/L	2.5	13%	100	GA	0	1	8
Potassium	UG/L	6750	100%			0	8	8
Sodium	UG/L	36800	100%	20000	GA	3	8	8
Zinc	UG/L	9.2	25%	5000	MCL	0	2	8

Notes:
1. GA = New York State GA Groundwater Standards
   MCL = Federal Maximum Contaminant Level
   SEC = Federal Secondary Drinking Water Regulation guidance values

Table 1-3
Summary Statistics of Compounds Detected in Groundwater
Round 2 - February 2001
SEAD-11 Interim Removal Action Work Plan
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	LOWEST GW STANDARD	APPLICABLE GW STANDARD [1]	NUMBER ABOVE STANDARD	NUMBER OF DETECTS	NUMBER OF ANALYSES
Volatile Organic Compounds								
Tetrachloroethene	UG/L	2	38%	5	GA	0	3	8
Trichloroethene	UG/L	2.2	38%	5	GA	0	3	8
Semivolatile Organic Compounds								
Di-n-octylphthalate	UG/L	0.072	25%			0	2	8
Metals								
Aluminum	UG/L	284	88%	50	MCL	5	7	8
Arsenic	UG/L	3.9	88%	5	MCL	0	7	8
Barium	UG/L	71.2	100%	1000	GA	0	8	8
Cadmium	UG/L	0.32	13%	5	GA	0	1	8
Calcium	UG/L	193000	100%			0	8	8
Chromium	UG/L	1.8	50%	50	GA	0	4	8
Copper	UG/L	2	25%	200	GA	0	2	8
Iron	UG/L	533	100%	300	GA	1	8	8
Lead	UG/L	2.1	13%	15	MCL	0	1	8
Magnesium	UG/L	35800	100%			0	8	8
Manganese	UG/L	294	100%	50	SEC	3	8	8
Nickel	UG/L	1.9	38%	100	GA	0	3	8
Potassium	UG/L	6500	100%			0	8	8
Silver	UG/L	1.6	50%	50	GA	0	4	8
Sodium	UG/L	28900	100%	20000	GA	2	8	8
Thallium	UG/L	4.2	50%	2	MCL	4	4	8
Vanadium	UG/L	1.3	13%			0	1	8
Zinc	UG/L	33.4	88%	5000	MCL	0	7	8

Notes:
1. GA = New York State GA Groundwater Standards
   MCL = Federal Maximum Contaminant Level
   SEC = Federal Secondary Drinking Water Regulation guidance values

Table 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-1 GW 112101 11/21/2000 SA SEAD-11 EECA	SEAD-11 MW11-2 GW 112100 11/21/2000 SA SEAD-11 EECA	SEAD-11 MW11-3 GW 112102 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-4 GW 112104 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-5 GW 112107 11/21/2000 DU SEAD-11 EECA	SEAD-11 MW11-5 GW 112103 11/21/2000 SA SEAD-11 EECA
Parameter	**Units**	**SEAD-11 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)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**53.9** J	27.2 J	12.4 U	12.4 U	**107** J	**184** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	7.9 U	7.9 U	7.9 U	7.9 U	7.9 U	7.9 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	32.5 J	49.9 J	62.5 J	48.7 J	68.4 J	68.9 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.1 U	0.16 J	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.35 J	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	UG/L	236000	181000	6	116000	11			11	89000	103000	122000	193000	133000	132000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	3.3 U	3.3 U	4.6 J	3.3 U	3.3 U	19.2 J
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	67 J	102	21.2 U	21.2 U	196	**302**
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	UG/L	41000	58200	0	28600	7			7	24600	20200	19200	32900	23200	23000
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	47.7	26.8	3.1 J	12.1 J	**150**	**152**
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Potassium	UG/L	6750	10200	0	3830	5			5	2220 J	2160 J	3700 J	3470 J	2790 J	2820 J
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	4520 J	**36800**	15300	10200	**24200**	**22900**
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	2 U	2 U	2 U	2 U	2 U	2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	7.9 J	9.2 J	3.5 U	3.5 U	3.5 U	3.5 U

Notes:
(1) GA = New York State GA Groundwater Standards
MCL = Federal Maximum Contaminant Level
SEC = Federal Secondary Drinking Water Regulation guidance values
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 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-6 GW 112105 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-7 GW 112106 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-1 GW 112200 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-2 GW 112201 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-3 GW 112202 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-4 GW 112203 2/27/2001 SA SEAD-11 EECA
Parameter	**Units**	**SEAD-11 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)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**51.4** J	**147** J	**103** J	46.7 J	28.4 U	**52.8** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	7.9 U	**8** J	2.4 U	2.4 U	2.4 U	2.4 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	4.2 U	4.2 U	2.9 J	2.8 J	3 J	3.1 J
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	48.9 J	55.2 J	30.7 J	50.4 J	39.8 J	55.1 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.1 U	0.27 J	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	UG/L	236000	181000	6	116000	11			11	184000	236000	87800	106000	175000	104000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.1 U	1.1 U	0.84 J	0.96 J	0.7 U	1.3 J
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	1.6 U	1.8 J	0.9 U	0.9 U	0.9 U	0.9 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	3.3 U	3.3 U	1.5 UJ	1.5 UJ	1.5 UJ	1.7 J
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	59.7 J	223	181	107	42.1 J	85.7 J
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.8 U	1.8 U	1.6 U	1.6 U	1.6 U	1.6 U
Magnesium	UG/L	41000	58200	0	28600	7			7	32200	41000	24600	19300	31500	16900
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	13.8 J	**772**	26.2	8.4 J	**63.4**	5.1 J
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	2.1 U	2.5 J	1.3 U	1.3 U	1.3 U	1.3 U
Potassium	UG/L	6750	10200	0	3830	5			5	6750	4160 J	2100 J	2850 J	3260 J	3370 J
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	3.7 UJ	3.7 U	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.6 U	1.6 U	1.1 U	1.3 J	1.1 U	1.6 J
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	12800	16500	4160 J	**26500**	9760	13000
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	4.5 U	4.5 U	**2.5** J	**3.3** J	1.9 U	**2.6** J
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	2 U	2 U	1.2 U	1.2 U	1.2 U	1.2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	3.5 U	3.5 U	3.2 J	5.9 J	33.4	2.2 J

Notes:
(1) GA = New York State GA Groundwater Standards
MCL = Federal Maximum Contaminant Level
SEC = Federal Secondary Drinking Water Regulation guidance values
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 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-5 GW 112204 2/27/2001 SA	SEAD-11 MW11-6 GW 112205 2/28/2001 SA	SEAD-11 MW11-7 GW 112206 2/27/2001 SA	SEAD-11 MW11-6 GW 112207 2/28/2001 DU
Parameter	**Units**	**SEAD-11 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**	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**284**	46.4 J	**165** J	**73.5** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	2.4 U	2.4 U	2.4 U	2.4 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	2.5 U	3.9 J	3.8 J	3.4 J
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	71.2 J	41.1 J	39.6 J	43.9 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.3 U	0.3 U	0.32 J
Calcium	UG/L	236000	181000	6	116000	11			11	117000	184000	193000	192000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.8 J	0.7 U	0.7 U	0.7 U
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	0.9 U	0.9 U	0.9 U	0.9 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	2 J	1.5 UJ	1.5 UJ	1.5 UJ
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	**533**	95.1 J	245	135
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.6 U	1.6 U	1.6 U	2.1 J
Magnesium	UG/L	41000	58200	0	28600	7			7	21600	33200	35800	34600
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	**182**	6.7 J	**294**	7.2 J
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	1.8 J	1.3 U	1.9 J	1.4 J
Potassium	UG/L	6750	10200	0	3830	5			5	4050 J	6080	3150 J	6500
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	2.3 U	2.3 UJ	2.3 UJ	2.3 UJ
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.5 J	1.6 J	1.1 U	1.1 U
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	**28900**	9060	13300	9680
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	1.9 U	**4.2** J	1.9 U	1.9 U
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	1.3 J	1.2 U	1.2 U	1.2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	13.5 J	0.8 U	2.1 J	1.1 J

Notes:
(1) GA = New York State GA Groundwater Standards
MCL = Federal Maximum Contaminant Level
SEC = Federal Secondary Drinking Water Regulation guidance values
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 2-1
Site-Specific Cleanup Goals for Soil
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

	Cleanup Goals
TCL Volatile Organic Compounds	NYSDEC TAGMs
Total Carcinogenic PAHs[1]	10 ppm benzo(a)pyrene Toxicity Equivalence
TAL Metals[2]	USEPA Region IX PRGs - residential

Notes:

1. Carcinogenic PAHs include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.
2. The ultimate goal for metals remaining on-site after the removal action is to meet USEPA Region IX PRG concentrations. A risk analysis may be completed to demonstrate that metals remaining on-site do not pose a risk to human health.

Table 4-1
Field Sampling Matrix
SEAD-11 Interim Removal Action Work Plan
Seneca Army Depot Activity

Sample Type	Matrix	Sampling Frequency	Analytical Requirements (Method)	Acceptance Criteria	Field Quality Assurance/Quality Control Sample Requirement
Confirmatory Excavation Grab Samples	Soil	Base - every 2,500 SF Sidewalls/perimeter - every 50 LF	TCL VOCs (SW846 Method 8260B) cPAHs (SW846 Method 8270C) TAL Metals (SW846 Method 6010B)	TAGMs cPAHs - 10 ppm BTE Region IX PRGs (residential)	One field duplicate every 20 project samples One MS/MSD for VOCs and cPAHs and one MS for metals per 20 project samples Rinsate Blank *
Excavation Water	Water	1 sample per holding container	Metals (SW846 Method 6010B) VOCs (SW846 Method 8260B) SVOCs (SW846 Method 8270C)	Evaluated by Seneca County Sewer District No. 2's discharge requirements 6 NYCRR Part 371	Not Required
Disposal Characterization **	Soil	1 sample per 2,000 tons of material to be excavated	TCLP VOCs (EPA Method 1311) TCLP SVOCs (EPA Method 1311) TCLP Metals (EPA Method 1311) TCLP Pesticides (SW846 Method 8081) PCBs (SW846 Method 8082) TCLP Herbicides (SW846 Method 8151) Ignitability (EPA Method 1030) pH (Field Measurement) Reactivity (SW846 - lab's discretion)	RCRA definition of non-hazardous material	Not Required
Drum Characterization	Soil or water	1 composite sample from each recovered intact drum	TCLP VOCs (EPA Method 1311) TCLP SVOCs (EPA Method 1311) TCLP Metals (EPA Method 1311) TCLP Pesticides (SW846 Method 8081) PCBs (SW846 Method 8082) TCLP Herbicides (SW846 Method 8151) Ignitability (EPA Method 1030) pH (Field Measurement) Reactivity (SW846 - lab's discretion)	RCRA definition of non-hazardous material	Not Required

Notes:
* If sampling equipment is not reused, no rinsate blank is required. However, when sampling equipment is decontaminated and reused, rinsate blank sample will be collected one per sampling event or one per 20 project samples, whichever is more frequent.
** The exact number of samples and the specific analyses may vary depending on the requirements of the selected landfill.

N

E 743250
E 743500
E 743750
E 744000
E 744250
N 98800
N 98775
N 98750
N 98725

650
660
662
664
666
668
670

MW11-2
MW11-5
MW11-6
MW11-7
MW11-3
MW11-1

INDIAN CREEK ROAD

UPDATED LANDFILL EXTENT

TP11-1
TP11-2
TP11-3
TP11-4
TP11-5
TP11-6
TP11-7
TP11-8
TP11-9
TP11-10
TP11-11
TP11-12
TP11-13
TP11-14

LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- 650 CONTOUR ELEVATION
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- PREVIOUS DELINEATION OF LANDFILL EXTENT
- UPDATED LANDFILL EXTENT
- DECIDUOUS TREE
- MW11-6 MONITORING WELL
- TP11-2 HISTORIC TEST PIT LOCATION

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT
REMEDIAL ACTION WORK PLAN
SEAD-11

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734543-01000

FIGURE 1-1
SEAD-11
SITE PLAN

SCALE	DATE	REV
1" = 100'	JULY 2006	-

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N

E 743250
E 743500
E 743750
E 744000
E 744250
N 98800
N 98775
N 98750
N 98725

INDIAN CREEK ROAD
LOADING ROAD
DISPOSAL TRUCK ROUTE
STAGING/STOCKPILE AREA
APPROXIMATE AREA TO BE EXCAVATED
EXCAVATION DIRECTION WORKING IN NORTH-SOUTH STRIPS

MW11-1
MW11-2
MW11-3
MW11-4
MW11-5
MW11-6
MW11-7

TP11-1
TP11-2
TP11-3
TP11-4
TP11-5
TP11-6
TP11-7
TP11-8
TP11-9
TP11-10
TP11-11
TP11-12
TP11-13
TP11-14

LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- 650 CONTOUR ELEVATION
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- PREVIOUS DELINEATION OF LANDFILL EXTENT
- DECIDUOUS TREE
- MW11-6 MONITORING WELL
- TP11-2 HISTORIC TEST PIT LOCATION
- 3 APPROXIMATE DEPTH OF EXCAVATION CONTOURS

NOTES:

1. THE DEPTH OF EXCAVATION ARE APPROXIMATIONS BASED ON TEST PIT LOGS AND GROUND ELEVATIONS. THE ACTUAL DEPTH OF EXCAVATION WILL BE DETERMINED IN THE FIELD BASED ON VISIBLE LANDFILLED MATERIAL AND CONFIRMATORY SOIL SAMPLING RESULTS.

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT
REMOVAL ACTION WORK PLAN
SEAD-11

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734543-01000

FIGURE 3-1
SEAD-11
PROPOSED LIMITS OF REMOVAL ACTION

SCALE	DATE	REV
1" = 100'	OCTOBER 2006	A

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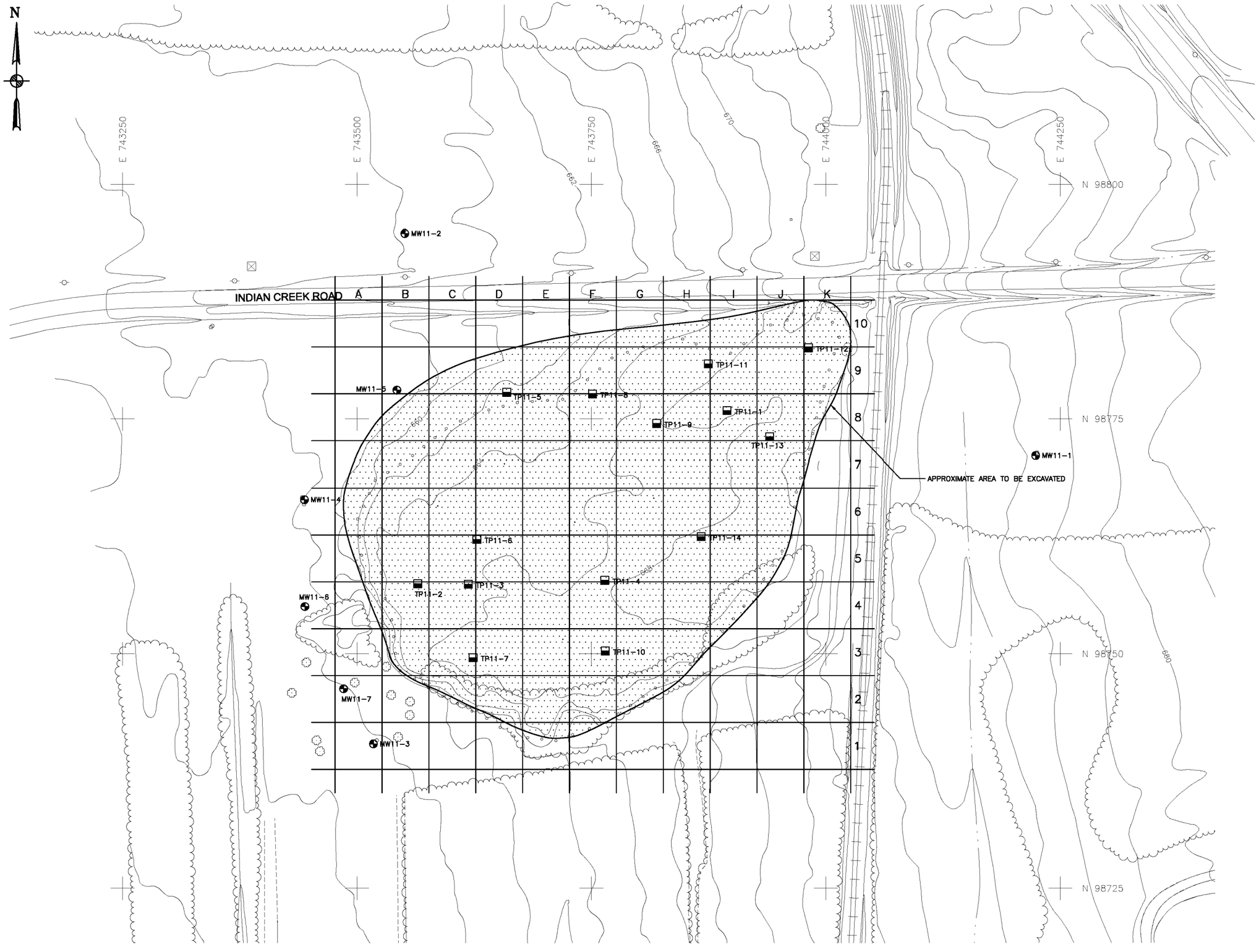


LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- 650 CONTOUR ELEVATION
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- PREVIOUS DELINEATION OF LANDFILL EXTENT
- UPDATED LANDFILL EXTENT
- DECIDUOUS TREE
- MW11-6 MONITORING WELL
- TP11-2 HISTORIC TEST PIT LOCATION

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT
REMOVAL ACTION WORK PLAN
SEAD-11

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734543-01000

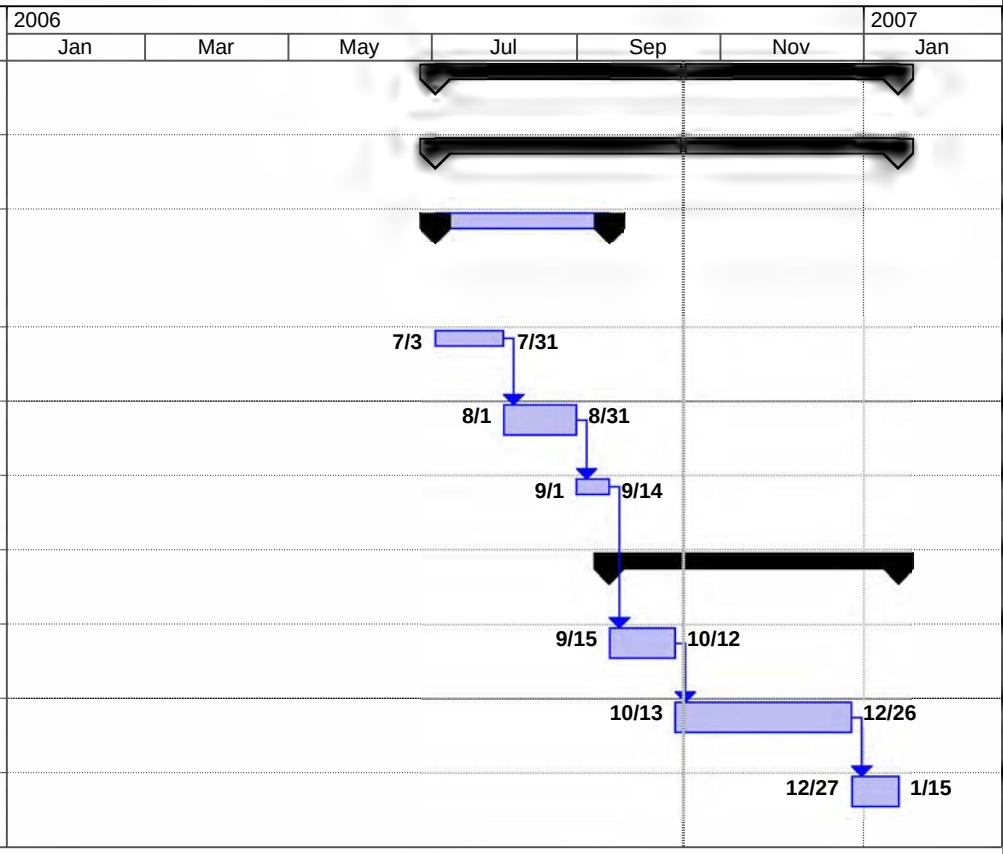
FIGURE 4-1
SEAD-11
CONFIRMATORY SAMPLING GRID TEMPLATE

SCALE	DATE	REV
1" = 100'	OCTOBER 2006	A

P:\PIT\Projects\Seneca PBC II\SEAD-11\IRA Work Plan\Draft\Figures\Figure 4-1.dwg

Figure 5-1
Interim Removal Action Schedule
SEAD-11 Removal Action Work Plan
Seneca Army Depot Activity, Romulus, New York

ID	Task Name
1	**Interim Removal Action for SEAD-11**
2	**Removal Action Work Plan**
3	**Interim Removal Action Work Plan**
4	Prepare Draft Interim Removal Action Work Plan
5	Army/Regulator Review of Draft WP
6	Final Work Plan Approved and Submittal of Response to Comments on Draft WP
7	**Interim Removal Action**
8	Mobilization
9	Complete excavation of landfill
10	Demobilization



Project: SEAD-11 Interim Removal Action
Date: Mon 10/16/06

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Group By Summary
Deadline

Appendix A

Response to Comments

Army's Response to Comments from the New York State Department of Environmental Conservation

Subject: Draft Interim Removal Action Work Plan
Old Construction Debris Landfill (SEAD-11)
Seneca Army Depot
Romulus, New York

Comments Dated: September 29, 2006

Date of Comment Response: October 5, 2006

Army's Response to Comments

GENERAL COMMENTS

Comment 1: Section 1.3.4, Page 1-4: Soil data and Groundwater data – referenced in previous submission, please provide in Table form.

Response 1: Summary tables of historic soil and groundwater data (Tables 1-1 through 1-3) have been added to the Work Plan.

Comment 2: Section 2.2, page 2-1: Cleanup Goals – It is stated that site-specific cleanup goals for SEAD-11 have been established for volatile organic compounds (VOCs), carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals. Specifically, TAGM #4046 will be used as cleanup goals for VOCs, a guidance value of 10 ppm benzo(a)pyrene toxicity equivalence (BTE) will be used for cPAHs, and the United States Environmental Protection Agency (USEPA) Region IX's Preliminary Remediation Goals (PRGs) will be used for metals. However, in the Final Action Memorandum for Removal Action at SWMU SEAD-11 (April 2003, Parsons), the text indicates TAGM #4046 values will be used as soil cleanup goals for VOCs, semivolatile organic compounds (SVOCs), pesticides, and PCBs. Please explain this change. It is not clear what cleanup levels have been selected to be protective for future users of the sites. Please provide further clarification.

Response 2: During the selection of appropriate cleanup goals for a specific site, the current and future land use is considered. Seneca County Industrial Development Authority (SCIDA) designated the future use of SEAD-11 as a training area, which is consistent with light industrial or commercial use. SEAD-11 is bounded to the east and southwest by active railroad tracks and bounded to the north by Indian Creek Road; the roads and rail road spurs are within 25 feet of SEAD-11.

USEPA's Region IX Preliminary Remediation Goals (PRGs) have been selected as the cleanup goals for metals at SEAD-11 since they are based on the protection of human health, and are more appropriate than the background levels for NYSDEC TAGM #4046 values. As a conservative measure, the Army recommends adopting residential PRGs for metals, even though the future use is training. The Region IX residential PRGs are generally consistent with NYSDEC's Remedial Program Soil Cleanup Objectives for the Protection of Public Health under Restricted Commercial Use [Table 375-6.8(b)] (July 2006).

As indicated in Table 4-1, the cleanup goals for VOCs are NYSDEC TAGM #4046 values, and the cleanup goals for cPAHs remains NYSDEC's 10 ppm benzo(a)pyrene toxicity equivalence (BTE).

Cleanup goals for PCBs and pesticides are not warranted. PCBs were not detected in any samples, and statements in the Action Memorandum that indicated otherwise, were in error (A summary of the soil data has been added to the Work Plan as Table 1-1, which shows this). With the exception of 4,4'-DDT, no pesticides were detected at concentrations that exceeded NYSDEC TAGMs. 4,4'-DDT exceeded residential standards at one location, however, it did not exceed cleanup goals for commercial/industrial future use which is more closely aligned with the true future use of this site (training area) than residential. All waste material will be removed during the removal action and only native material will remain which meet the selected cleanup goals for metals, PAHs, and VOCs.

Comment 3: Section 2.2, page 2-2: Cleanup Goals – The draft Work Plan indicates that USEPA Region IX's PRGs are consistent with the NYSDEC, Division of Environmental Remediation's (DER) soil cleanup objectives (SCOs) for Brownfield sites for unrestricted use. Please provide a table showing the comparison of these PRGs with Part 375-6.8(a) (June 2006). Please provide more detailed information about cleanup goals and the use of Area of Concern in a Table form.

Response 3: The statement on page 2-2 was intended to indicate that the Region IX residential PRGs are generally consistent with NYSDEC's DER's SCOs for restricted commercial use [Table 375-6.8(b)]. The Army did not intend to compare the Region XI PRGs to the NYSDEC unrestricted cleanup goals. Like the Region XI PRGs, the NYSDEC's SCOs are also conservative values developed to be protective of human health under a restricted commercial use scenario. A table is attached which compares the Region IX PRGs and the commercial use SCOs.

Comparison of USEPA Region IX and NYSDEC Soil Cleanup Goals
SEAD-11 Interim Removal Action
Seneca Army Depot

		Region IX	NYSDEC[1]
		Residential	Restricted
Compound	Unit	PRG	Commercial
Aluminum	MG/KG	76,000	
Antimony	MG/KG	31	
Arsenic	MG/KG	0.39	16
Barium	MG/KG	5,400	400
Beryllium	MG/KG	150	590
Cadmium	MG/KG	37	9.30
Calcium	MG/KG		
Chromium	MG/KG	100,000	1,500
Cobalt	MG/KG	900	
Copper	MG/KG	3,100	270
Iron	MG/KG	23,000	
Lead	MG/KG	400	1,000
Magnesium	MG/KG		
Manganese	MG/KG	1,800	10,000
Mercury	MG/KG	23	2.80
Nickel	MG/KG	1,600	310
Potassium	MG/KG		
Selenium	MG/KG	390	1,500
Silver	MG/KG	390	1,500
Sodium	MG/KG		
Thallium	MG/KG	5	
Vanadium	MG/KG	78	
Zinc	MG/KG	23,000	10,000

1. NYSDEC Division of Environmental Remediation's (DER) soil cleanup objectives (SCOs) for brownfield sites for retricted commercial use. Table 375-6.8(b).

Army's Response to Comments from the US Environmental Protection Agency

Subject: Draft Interim Removal Action Work Plan for SEAD-11
Seneca Army Depot
Romulus, New York

Comments Dated: September 13, 2006

Date of Comment Response: September 21, 2006

Army's Response to Comments

GENERAL COMMENTS

Comment 1: Appendix A of the Draft Contract-Specific Sampling and Analysis Plan for Remedial Actions at Six Sites (SEADS-4, 11, 16, 17, 38, and 121C) (Contract-Specific SAP), dated July 2006, includes the Revised Final Generic Site-Wide Sampling and Analysis Plan (Generic Site-wide SAP) for Seneca Army Depot Activity (Parsons, July 2006). This Generic Site-wide SAP includes the most comprehensive descriptions of the proposed sampling methods and decontamination procedures that will be utilized for the activities described in the SEAD-11 Work Plan. Section 17 of the Generic Site-wide SAP also includes a list of key elements that should be included in a site-specific work plan such as the SEAD-11 Work Plan. Several of these items, primarily associated with quality control/quality assurance sampling, have apparently not been included in the SEAD-11 Work Plan. The rationale for not including this information has also not been provided. The listed items include the following:

- An Analytical Methods/Quality Assurance Summary Table, which should include the following information for all environmental, performance evaluation, and quality control samples:
    - matrix type;
    - number or frequency of samples to be collected per matrix;
    - number of field or trip blanks per matrix;
    - analytical parameters/methods to be used per matrix;
    - the number and type of matrix spike and matrix spike duplicate samples to be collected;
    - the number and type of duplicate samples to be collected;
    - the number and type of split samples to be collected, if warranted;
    - the number and type of performance evaluation samples to be collected, if warranted;
    - sample preservation method, sample container volume and type, and holding time to be used per matrix and analytical method.
- A summary of QC activities needed for each sampling, analysis, or measurement technique
- Information on the laboratory that will perform the analyses

- Analytical turnaround time for the specific project
- Requirement for laboratory reporting limits or method detection limits

Please revise the SEAD-11 Work Plan to address the above-noted elements as described in the Generic Site-wide SAP.

Response 1: Elements that have been omitted will be added to Table 4-1 or a specific reference to the information specified in the SAP will be provided. The laboratory is Severn-Trent Laboratory located in Buffalo, New York. This information has been added to the text.

Comment 2: The Contract-Specific SAP, dated July 2006, stated that subcontractors for each specific site would be specified in the site-specific work plan. The Work Plan for SEAD-11 has not identified specific subcontractors. Please address this deviation from the Contract-Specific SAP, and update the SEAD-11 Work Plan with the construction, laboratory, surveying, and other site subcontractors, if available.

Response 2: Bids will not be requested from subcontractors until the Work Plan has been conditionally approved since we need to ensure that the scope of work is reasonably finalized. Once the final Work Plan is approved and prior to commencement of construction activities, the Army will inform the regulators of the subcontractors selected for work at SEAD-11 under separate cover.

SPECIFIC COMMENTS

Comment 1: Section 1.3.4: Summary of Affected Media, Soil Data, Page 1-4. This section provides a general summary of surface and subsurface soil impacts, and identifies volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and metals as the primary constituents of concern in soil at the site. Pesticides, polychlorinated biphenyls (PCBs), herbicides, nitroaromatics, and nitrate/nitrite nitrogen were also detected in soil but are considered "less significant." A data summary table of the soil results has not been provided so the significance of any detection of specific constituents in relation to soil cleanup goals is unclear. Additionally, it is noted that a small number of samples in which the "less significant" constituents were detected may exceed or slightly exceed their respective soil cleanup goals. These constituents should be identified so that they can be included in any cleanup objectives. Please provide a summary table of the previously collected soil analytical results. The locations and depths of any soil samples should also be identified so that those samples specifically identified above cleanup goals will be removed during excavation activities.

Response 1: For your reference, summary tables of soil data and groundwater data from the ESI and the Additional Sampling Program have been added to the Work Plan as Tables 1-1 through 1-3. The text in the above referenced paragraph in Section 1.3.4 has been clarified as follows:

> The results of the ESI and the Additional Sampling Program, summarized in **Table 1-1**, indicate that impacts to the surface and subsurface soil have occurred at this site. Soil at the site has been impacted above relevant cleanup goals by VOCs, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals. Five nitroaromatics and three herbicides were detected in the soil, and the detected concentrations were all lower than the New York State TAGM cleanup goals and USEPA

> Region IX Preliminary Remediation Goals for residential soil. PCBs were not detected in any of the soil samples. Ten pesticides were detected, and one pesticide, 4,4'-DDT, exceeded the TAGM criteria (4.3 ppm vs. 2.1 ppm); however the concentration is below both the NYS Remedial Program Soil Cleanup Objectives for Restricted Residential (7.9 ppm) and Commercial (47 ppm) users. The 4,4'-DDT concentration exceeds the USEPA Region IX residential goal of 1.7 ppm but is lower than the industrial goal of 7.0 ppm.

4,4'-DDT was detected at two depths (0 to 2 feet and 2 to 4 feet) in test pit 11-3. The waste extends up to 8 feet in this area and these two samples will be removed during waste excavation since all waste will be removed.

Comment 2: Section 1.3.4: Summary of Affected Media, Groundwater, Page 1-4. Several metals were detected in groundwater above applicable groundwater standards, but the specific wells which reported these exceedances have not been identified. Please provide a summary table of the groundwater analytical results so that a comprehensive picture of groundwater impacts to the site prior to the interim removal action can be evaluated.

Response 2: Summary tables of groundwater results from sampling conducted in 2000 and 2001 have been added to the Work Plan as Tables 1-2 and 1-3, respectively. The metals detected in groundwater above their respective standards (aluminum, antimony, iron, manganese, sodium, and thallium) were found at levels generally consistent with background concentrations historically observed at SEDA, as shown in Table 1-4, which has been added to the Work Plan.

Comment 3: Section 2.2: Cleanup Goals, Page 2-1. Although pesticides, PCBs, herbicides, nitroaromatics, and nitrate/nitrite nitrogen were detected in soil during previous investigations, cleanup goals have not been identified for these constituents since the "detections [were] bounded by the detections of VOCs, cPAHs, and metals" for which cleanup goals have been established. This approach appears to be flawed due to the heterogeneous nature of a landfill and the limited sampling that was previously conducted. According to the information presented in Section 1.3.4, some of those constituents considered "less significant" exceeded their respective soil cleanup goals during previous investigations (although the specific constituents have not been identified). These constituents may exist at levels of concern in areas of the landfill that have yet to be evaluated. If they are left in place without proper evaluation, the potential risk to human health and the environment is unknown. At a minimum, those compounds which previously exceeded cleanup goals should be identified and analyzed for in the post-excavation confirmatory soil sampling. Cleanup goals for those compounds should also be established and identified in the Work Plan.

Response 3: The Army should have been specific in comparing contaminant concentrations to established NYSDEC and USEPA cleanup criteria. This discussion would have shown that cleanup goals for additional compounds are not warranted. PCBs were not detected in any samples. Nitroaromatics, and herbicides were detected but at levels that did not exceed even residential standards (NYSDEC TAGMs and Remedial Program Soil Cleanup Standards and USEPA Region IX. With the exception of 4,4'-DDT, no other pesticides were detected at concentrations that exceeded NYSDEC TAGMs. 4,4'-

DDT exceeded residential standards at one location, however, it did not exceed cleanup goals for commercial/industrial future use which is more closely aligned with the true future use of this site (training area) than residential. All waste material will be removed during the removal action and only native material will remain which meet the cleanup goals for metals, PAHs and VOCs will be left on-site.

Samples were not analyzed for nitrate/nitrite nitrogen, therefore, were not identified as detected compounds at SEAD-11.

Comment 4: Section 2.4.1.1: Chemical-Specific Requirements, Page 2-3. It is noted that a chemical-specific requirement for this removal action includes compliance with asbestos regulations. It is not clear how these requirements will be satisfied since it does not appear that asbestos sampling or other assessment of asbestos has been proposed in this Work Plan. Please indicate whether asbestos sampling has been conducted during prior investigations at the site, and summarize the results of that sampling, if available. Additionally, please provide additional information on the circumstances that would require compliance with applicable asbestos regulations and summarize any activities that will be conducted to satisfy these requirements.

Response 4: As part of disposal characterization efforts, 20 test pits were excavated at SEAD-11 in September 2006. Roofing materials previously identified as potentially containing asbestos were uncovered in the test pits, and two samples were collected from the material. The sample results showed less than 1% chrysotile so that the roofing material is non-regulated asbestos. No other potentially containing asbestos materials were found in the new test pitting activities. During the excavation of the waste material, in the event that different types of suspect building material are discovered, additional samples will be collected and analyzed. If encountered, non-friable material will be disposed in a C&D landfill. If any friable material containing asbestos is encountered, it will be set aside for disposal in an appropriate off-site facility.

If sampling indicates that asbestos materials have been encountered, air monitoring will be conducted to ensure that workers are not exposed to asbestos. If the material is non-friable asbestos, personal and perimeter air monitoring for a negative exposure assessment will be conducted for a few days to demonstrate that the workers are not exposed. If the material is friable asbestos, it will be stockpiled and covered with polyethylene sheeting, and then loaded separately into double lined trucks for transport to an appropriate landfill.

Comment 5: Section 3.1.6: Work and Staging Areas, Page 3-3. Although a general description of the proposed staging and work areas is presented in this section, a figure depicting the approximate locations of these areas (including entry/exitways, support zones, decontamination zones) should also be provided to show these areas in relation to one another and the excavation area. Please provide a figure that depicts the important staging and work areas.

Response 5: Figure 3-1 has been revised to include additional details. The staging/stockpile area will be located over material that will be excavated last. All stockpiling, staging, and decontamination activities will be performed here. Excavation will begin in the southwest section of the landfill and continue north

and east towards the staging area. Once all waste material outside of the staging area has been removed, the staging area will be excavated and direct loaded into trucks.

Comment 6: Section 3.1.7: Control of Run-On and Run-Off Waters, Page 3-3. Diversion berms to divert run-on waters around the excavation will be constructed of clean soil, but the source of this clean soil is not clearly presented. If soil from the area surrounding the site is planned for use, the location of this soil should be identified to assure that it has not been impacted by landfill activities. Alternatively, if clean fill will be transported to the site, the source of this soil should be identified. Please provide further clarification on the source of the clean soil used to create diversion berms around the excavation.

Response 6: Diversion berms will not be required. The excavation plan has been revised so that excavation will start from the most downgradient end (southwest end) and proceed north and east so that any water will either contact the current vegetated cover or its contact will be limited to previously excavated areas before migrating to downgradient areas. The Army will provide silt fence along the downgradient edge of the landfilled area to prevent sediment transport and check dams will be installed in the swale that runs along Indian Creek Road. A pipe will be added at the entrance and exit of the loading road (see Figure 3-1) as to not disturb the water flow in the swale.

Comment 7: Section 3.1.7: Control of Run-On and Run-Off Water, Page 3-3. It appears that groundwater is expected to enter the excavation; however, the anticipated depth to groundwater has not been provided. Please indicate an approximate depth to groundwater in the excavation area, based on groundwater elevation data collected from upgradient and downgradient monitoring wells or other information.

Response 7: There are no monitoring wells located within the waste material that can be used to approximate the level of water that will be encountered within the excavations. However, during test pitting activities, water levels in the test pits were observed to range from no water to one foot of water. Most of the water that will be found in the excavations will occur from precipitation events.

Comment 8: Section 3.1.7: Control of Run-On and Run-Off Waters, Page 3-3. The last paragraph on this page states that "when necessary, collected run-off water will be sampled." The circumstances that necessitate sampling of the run-off water have not been specified. Additionally, it is noted that pre-treatment may be required for run-off water transferred to the holding tank. The circumstances that necessitate pre-treatment of this water, and the types of treatment proposed for use have not been specified. Please provide further clarification on the circumstances that necessitate sampling and pre-treatment of run-off waters. If pre-treatment depends on the discharge criteria for the Seneca County Sewer District No. 2, please provide the applicable criteria.

Response 8: Run-off water that is in contact with waste material will be collected for analysis. In order to receive approval to discharge water to the Sewer District, the results will be submitted to the Seneca County Water/Sewer District for their review and approval. Though unlikely, if the water is not approved for discharge, it will be treated before discharging. This process is consistent with all other removal action work at Seneca including SEAD-25 and SEAD-26.

Comment 9: Section 3.1.11: Protection of Wetlands, Page 3-4. It is noted that ditch checks will be installed in perimeter drainage ditches and swales to restrict movement of silt and sediment. The locations of these ditches and swales have not been identified on a site figure, although they may be regarded as potential migration pathways. Revise the Work Plan to clarify the locations of these ditches and swales in relation to the proposed excavation area.

Response 9: There is one swale that runs along Indian Creek Road outside of the waste material. Ditch checks will be installed every 100 feet in the swale to restrict the movement of silt and sediment.

Comment 10: Section 3.1.12: Identification and Qualification of Off-Site Disposal Facilities, Page 3-5. Soil that fails the Toxicity Characteristic Leaching Procedure (TCLP) requirements will be stabilized on-site, but additional detail on the stabilization process has not been provided. Please clarify how the soil will be stabilized on site, if necessary. Include the materials necessary for this stabilization, the areas of the site where the stabilization will be conducted, the process by which stabilization will be carried out and assessed, and any other relevant details of this process.

Response 10: The waste material will be accepted by the landfill for non-hazardous disposal based on previous analysis and new reactivity, ignitability and corrosivity results. No other waste profiling will be required so stabilization of metals will not be required. See Response No. 15 for additional details. For information, soils that fail TCLP analysis at other Seneca sites have been stabilized using lime, cement, or other materials that bind the metals within the matrix. The stabilization materials have been added to the soil piles and mixed with a loader or excavator until additional TCLP analyses show that the soil has been rendered non-hazardous.

Comment 11: Section 3.2: Excavation and Processing of Contaminated Materials, Water Management, Page 3-8. It is noted that an activated carbon treatment unit may be needed to treat water that is not accepted by the Seneca County Sewer District No. 2. Activated carbon is typically used to treat water impacted by VOCs, and is typically not as effective at treating water impacted by inorganics. Since lead and other metals are potential contaminants of concern for this removal action, please discuss what treatment options may be used if water is impacted with metals above the Sewer District's acceptance criteria.

Response 11: Based on a review of the analytical data, the Seneca County Sewer District will approve disposal of the water to the District. In general, the water has to be non-hazardous according to 6 NYCRR Part 371. There is no data to suggest that any water from the site would be characterized as hazardous and would require treatment prior to disposal. In the event that treatment is required, an appropriate method to treat the specified contaminant would be selected. The text has been revised according.

Comment 12: Section 3.2: Excavation and Processing of Contaminated Materials, Water Management, Page 3-8. The discharge point for any water collected during the interim removal action is unclear. The first sentence of this paragraph on Page 3-8 notes that the water will be discharged to the Seneca County Sewer District No. 2 main influent building of the plant. It is also noted that the water will be transported

to the Sewer District's on-site sanitary sewer. Please clarify whether the water will need to be transported in a frac tank or other tank to an on-site location or off-site location for discharge or whether the water will be discharged into a nearby sanitary sewer without the need for vehicular transportation. If the water will be pumped to a nearby sanitary sewer directly from SEAD-11, please identify that location on a site figure.

Response 12: The water will be pumped from its holding container to a tanker truck and transported and released to the main influent building of the waste water plant, which was the discharge location identified by the plant operator during the remedial action completed at SEAD-25 and SEAD-26. The text has been clarified.

Comment 13: Section 4.3.1.1: Sample Collection, Page 4-3. Confirmatory soil samples are anticipated to be collected from the base of the excavation and from the sidewalls of the excavation at a depth halfway between the ground surface and the base of the excavation. This approach may not adequately assess potential contamination, particularly if soil screening results or other visual observations indicate the potential for contamination. As noted on Page 16-84 of the Generic Site-wide SAP, which was provided as Appendix A of the Contract-Specific SAP, the locations of confirmatory sampling should be biased towards areas that are most likely to be contaminated. Please address the discrepancy between the SAP and this site-specific Work Plan. Also, provide further justification for collecting sidewall samples at a pre-determined depth or update the Work Plan to include the caveat that if screening results or visual or olfactory evidence of contamination is observed, the confirmatory samples will be biased towards these areas.

Response 13: The sidewall samples will be collected at a depth halfway between the ground surface and the bottom of excavation, or at a location that appears contaminated, based on visual or olfactory observations. This information has been added to the text of the Work Plan.

Comment 14: Section 4.3.1.3: Sampling Number, Page 4-4. The confirmatory sample numbering system presented in this Work Plan differs from that proposed in the Contract-Specific SAP (Page 14). While the sampling identification scheme in the Work Plan identifies the sample by its location within the excavation and the number of that sample, the sampling identification scheme in the Contract-Specific SAP identifies the sample by a number only, which differs depending on the type of sample (trip blank, field blank, soil sample, etc.). It also appears that the sample identification schemes for the disposal samples and the excavation water samples also differ from that presented in the Contract-Specific SAP. Please revise the Work Plan to address these deviations from the Contract-Specific SAP.

Response 14: The sample numbering system presented in the SAP provides a general guideline. Based on the system established in the SAP, a more specific numbering system has been developed and is presented in this Work Plan, which will provide more organization for the project.

Comment 15: Section 4.3.2: Disposal Characterization Sampling, Page 4-4. Approximately five samples of material from the area to be excavated at SEAD-11 are required to be submitted for the disposal facility's specific sampling parameters. Insufficient detail has been provided to address how

these five samples will be collected. Section 4.3.2.1 notes that the samples will be grab samples, but there is no further information on the proposed depths of these samples, the locations of these samples, or how these samples will be collected (i.e. via direct push methodology, hand augers, etc.). It is also not clear whether the five grab samples will be composited into one sample, or whether five composite samples will be collected (as noted in Table 4-1). Please provide further detail on the proposed disposal characterization sampling.

Response 15: After further consultation with the potential disposal facilities, disposal characterization samples will be collected at a frequency of one sample for every 2,000 tons of material anticipated to be excavated. We estimate that 20 samples will be required. These samples will be analyzed for corrosivitiy, reactivity, and ignitability only. The samples will be collected from 20 test pits. Each test pit will be dug through the full depth of the waste and one composite made from five discrete locations will be collected from each pile of excavated material. The text has been revised. The previous analyses for metals, pesticides, VOCs, etc. have been accepted by the disposal facilities and no other sampling for these parameters is required.

Comment 16: Section 4.3.3.2: Sample Analysis, Page 4-5. This section specifies the list of parameters required to be analyzed by the Seneca County Sewer District No. 2. It is stated that the sampling frequency are presented in Table 4-1; however, Table 4-1 does not appear to include a complete list of the proposed analyses. For example, Section 4.3.3.2 notes that pH, total dissolved solids, total suspended solids, biological oxygen demand, and ammonia as nitrogen are some of the required analyses but these analytical parameters and the appropriate laboratory methods are not included on Table 4-1. Additionally, Table 4-1 notes that only one sample is required for characterization of excavation water. Please clarify whether only one sample is required for the entire interim removal action or whether one sample is required per frac tank or some other means of measurement. Also, update Table 4-1 to include all of the proposed analyses and methods.

Response 16: Table 4-1 has been updated to include all of the required analyses and corresponding methods for the excavation water. The sampling frequency is one sample per holding container.

Table 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-1 GW 112101 11/21/2000 SA SEAD-11 EECA	SEAD-11 MW11-2 GW 112100 11/21/2000 SA SEAD-11 EECA	SEAD-11 MW11-3 GW 112102 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-4 GW 112104 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-5 GW 112107 11/21/2000 DU SEAD-11 EECA	SEAD-11 MW11-5 GW 112103 11/21/2000 SA SEAD-11 EECA
Parameter	**Units**	**SEAD-11 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)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**53.9** J	27.2 J	12.4 U	12.4 U	**107** J	**184** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	7.9 U	7.9 U	7.9 U	7.9 U	7.9 U	7.9 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	32.5 J	49.9 J	62.5 J	48.7 J	68.4 J	68.9 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.1 U	0.16 J	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.35 J	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	UG/L	236000	181000	6	116000	11			11	89000	103000	122000	193000	133000	132000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	3.3 U	3.3 U	4.6 J	3.3 U	3.3 U	19.2 J
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	67 J	102	21.2 U	21.2 U	196	**302**
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	UG/L	41000	58200	0	28600	7			7	24600	20200	19200	32900	23200	23000
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	47.7	26.8	3.1 J	12.1 J	**150**	**152**
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Potassium	UG/L	6750	10200	0	3830	5			5	2220 J	2160 J	3700 J	3470 J	2790 J	2820 J
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	4520 J	**36800**	15300	10200	**24200**	**22900**
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	2 U	2 U	2 U	2 U	2 U	2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	7.9 J	9.2 J	3.5 U	3.5 U	3.5 U	3.5 U

Notes:
(1) GA = New York State GA Groundwater Standards
MCL = Federal Maximum Contaminant Level
SEC = Federal Secondary Drinking Water Regulation guidance values
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 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-6 GW 112105 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-7 GW 112106 11/20/2000 SA SEAD-11 EECA	SEAD-11 MW11-1 GW 112200 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-2 GW 112201 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-3 GW 112202 2/27/2001 SA SEAD-11 EECA	SEAD-11 MW11-4 GW 112203 2/27/2001 SA SEAD-11 EECA
Parameter	**Units**	**SEAD-11 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)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**51.4** J	**147** J	**103** J	46.7 J	28.4 U	**52.8** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	7.9 U	**8** J	2.4 U	2.4 U	2.4 U	2.4 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	4.2 U	4.2 U	2.9 J	2.8 J	3 J	3.1 J
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	48.9 J	55.2 J	30.7 J	50.4 J	39.8 J	55.1 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.1 U	0.27 J	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	UG/L	236000	181000	6	116000	11			11	184000	236000	87800	106000	175000	104000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.1 U	1.1 U	0.84 J	0.96 J	0.7 U	1.3 J
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	1.6 U	1.8 J	0.9 U	0.9 U	0.9 U	0.9 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	3.3 U	3.3 U	1.5 UJ	1.5 UJ	1.5 UJ	1.7 J
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	59.7 J	223	181	107	42.1 J	85.7 J
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.8 U	1.8 U	1.6 U	1.6 U	1.6 U	1.6 U
Magnesium	UG/L	41000	58200	0	28600	7			7	32200	41000	24600	19300	31500	16900
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	13.8 J	**772**	26.2	8.4 J	**63.4**	5.1 J
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	2.1 U	2.5 J	1.3 U	1.3 U	1.3 U	1.3 U
Potassium	UG/L	6750	10200	0	3830	5			5	6750	4160 J	2100 J	2850 J	3260 J	3370 J
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	3.7 UJ	3.7 U	2.3 UJ	2.3 UJ	2.3 UJ	2.3 UJ
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.6 U	1.6 U	1.1 U	1.3 J	1.1 U	1.6 J
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	12800	16500	4160 J	**26500**	9760	13000
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	4.5 U	4.5 U	**2.5** J	**3.3** J	1.9 U	**2.6** J
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	2 U	2 U	1.2 U	1.2 U	1.2 U	1.2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	3.5 U	3.5 U	3.2 J	5.9 J	33.4	2.2 J

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MCL = Federal Maximum Contaminant Level
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Table 1-4
Groundwater Results Compared to SEDA Sitewide Background Groundwater Data
SEAD-11 Interim Removal Action Work Plan
SENECA ARMY DEPOT ACTIVITY

			Comparison to Seneca Army Depot Sitewide Background Groundwater Quality Levels				Comparison to State / Federal Standards / Guideline Criteria			SEAD-11 MW11-5 GW 112204 2/27/2001 SA	SEAD-11 MW11-6 GW 112205 2/28/2001 SA	SEAD-11 MW11-7 GW 112206 2/27/2001 SA	SEAD-11 MW11-6 GW 112207 2/28/2001 DU
Parameter	**Units**	**SEAD-11 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**	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)	SEAD-11 EECA Value (Q)
Aluminum	UG/L	284	42400	0	2730	0	SEC	50	0	**284**	46.4 J	**165** J	**73.5** J
Antimony	UG/L	8	52.7	0	8.2	0	GA	3	0	2.4 U	2.4 U	2.4 U	2.4 U
Arsenic	UG/L	3.9	10	0	1.7	7	MCL	5	7	2.5 U	3.9 J	3.8 J	3.4 J
Barium	UG/L	71.2	337	0	78.2	0	GA	1000	0	71.2 J	41.1 J	39.6 J	43.9 J
Beryllium	UG/L	0.27	2.2	0	0.21	1	MCL	4	1	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	UG/L	0.35	1.45	0	0.5	0	GA	5	0	0.3 U	0.3 U	0.3 U	0.32 J
Calcium	UG/L	236000	181000	6	116000	11			11	117000	184000	193000	192000
Chromium	UG/L	1.8	69.4	0	4.7	0	GA	50	0	1.8 J	0.7 U	0.7 U	0.7 U
Cobalt	UG/L	1.8	34.6	0	3.7	0			0	0.9 U	0.9 U	0.9 U	0.9 U
Copper	UG/L	19.2	32.5	0	3.3	2	GA	200	2	2 J	1.5 UJ	1.5 UJ	1.5 UJ
Cyanide	UG/L	ND		0		0	GA	200	0	10 U	10 U	10 U	10 U
Iron	UG/L	533	69400	0	4480	0	GA	300	0	**533**	95.1 J	245	135
Lead	UG/L	2.1	34.8	0	2.5	0	MCL	15	0	1.6 U	1.6 U	1.6 U	2.1 J
Magnesium	UG/L	41000	58200	0	28600	7			7	21600	33200	35800	34600
Manganese	UG/L	772	1120	0	224	2	SEC	50	2	**182**	6.7 J	**294**	7.2 J
Mercury	UG/L	ND	0.1	0	0.04	0	GA	0.7	0	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	UG/L	2.5	99.8	0	7.3	0	GA	100	0	1.8 J	1.3 U	1.9 J	1.4 J
Potassium	UG/L	6750	10200	0	3830	5			5	4050 J	6080	3150 J	6500
Selenium	UG/L	ND	3.6	0	1.5	0	GA	10	0	2.3 U	2.3 UJ	2.3 UJ	2.3 UJ
Silver	UG/L	1.6	4.5	0	1	4	GA	50	4	1.5 J	1.6 J	1.1 U	1.1 U
Sodium	UG/L	36800	59400	0	14600	7	GA	20000	7	**28900**	9060	13300	9680
Thallium	UG/L	4.2	4.7	0	1.5	4	MCL	2	4	1.9 U	**4.2** J	1.9 U	1.9 U
Vanadium	UG/L	1.3	70.8	0	5.2	0			0	1.3 J	1.2 U	1.2 U	1.2 U
Zinc	UG/L	33.4	143	0	23.1	1	SEC	5000	1	13.5 J	0.8 U	2.1 J	1.1 J

Notes:
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