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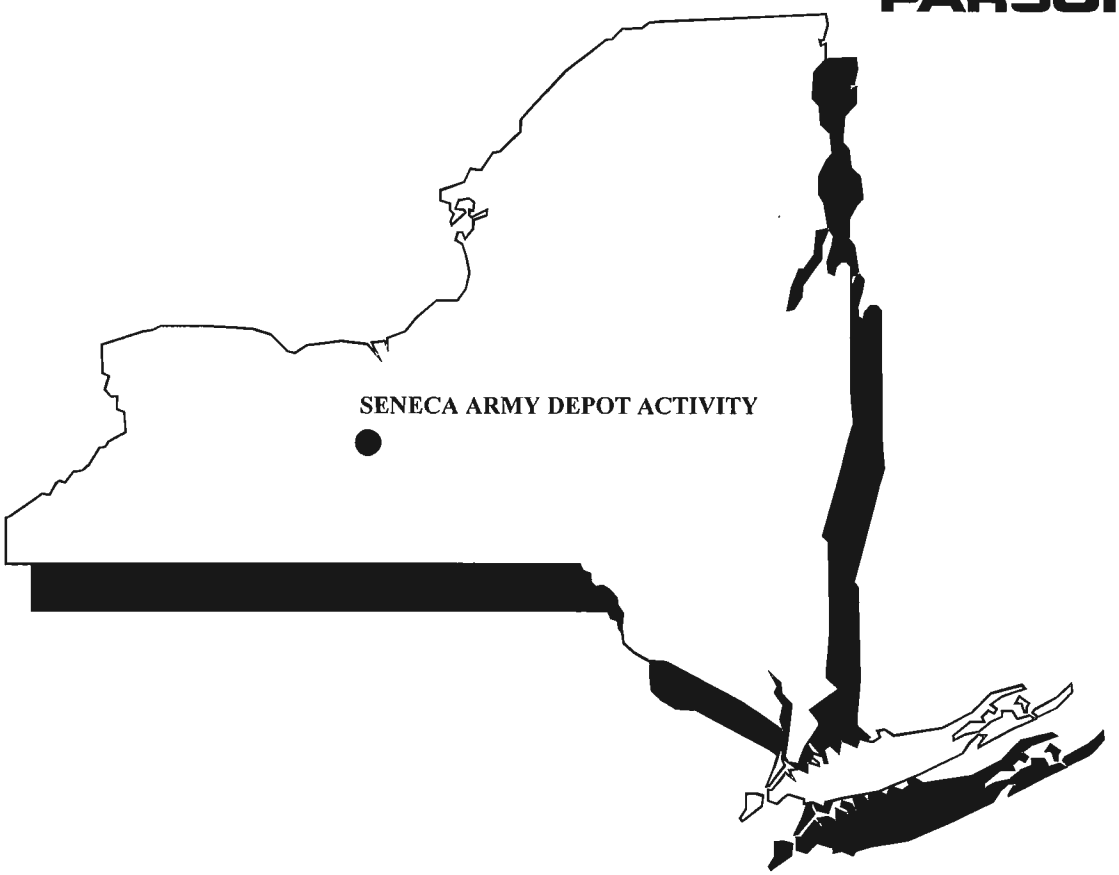

FINAL

PROPOSED PLAN
FOR THE TANK FARM (SEAD-50 and SEAD-54)

SENECA ARMY DEPOT ACTIVITY (SEDA)

EPA Site ID# NY0213820830
NY Site ID# 8-50-006
Contract daca87-02-D-0005 - DO#22

March 2004

FINAL Proposed Plan
No Further Action for SWMUs SEAD 50/54 at the
SENECA ARMY DEPOT ACTIVITY (SEDA)
Romulus, New York

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

##########

Proposed Plan –Final

No Further Action for SWMUs SEAD 50/54 at the SENECA ARMY DEPOT ACTIVITY (SEDA) Romulus New York

March 2004

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1 PURPOSE OF PROPOSED PLAN

This Proposed Plan presents and summarizes data and information that the United States Army (Army) has assembled in support of its assertion that two solid waste management units (SWMUs), designated as SEAD-50/54, within the Seneca Army Depot Activity (SEDA) require No Further Action (NFA) because threats to human health or the environment resulting from petroleum products and hazardous materials do not exist. The Proposed Plan identifies the Army's preferred and recommended remedial option (i.e., No Further Action) for SEAD-50/54, and provides the justification and rationale for its recommended alternative at the site. Representatives of the Army developed the Proposed Plan in cooperation with the U.S. Environmental Protection Agency, Region II (EPA) and the New York State Department of Environmental Conservation (NYSDEC).

The Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). This Proposed Plan is being provided to inform the public of the Army's preferred and recommended remedial alternative. The Army's preferred remedy is No Further Action as the preferred remedial alternative for SEAD-50/54. Information, provided herein, was presented to and discussed with representatives of EPA and NYSDEC and serves as the basis of the Army identifying SEAD-50/54 as No Further Action SWMUs. The Army has recommended NFA as the preferred remedial alternative since interim measures performed by the Army have resulted in the removal of soil that previously was shown to represent a potential threat to the environment and human health. Confirmation sampling and analysis results indicate that soil cleanup goals have been met, and these results have been reviewed and approved by the EPA and NYSDEC.

This Proposed Plan identifies the preferred remedy and discusses the reasons for this preference. The Army will select a final remedy for the site only after careful consideration of all comments received during the public comment period, and subsequent to final consultation with the EPA and NYSDEC.

2 COMMUNITY ROLE IN THE SELECTION PROCESS

The Army, the EPA, and the NYSDEC rely on public input to ensure that the concerns of the community

are considered in selecting an effective remedy for each Superfund site. A public comment period for SEAD-50/54 took place from December 15, 2003 through January 13, 2004. A public meeting was held at the Seneca County Office Building (Waterloo, NY) on December 16, 2003 at 7 p.m. At the public meeting, the results of the investigations and the remedial action (RA) at the sites were presented along with a summary of the preferred remedy. A question-and-answer period was held, during which the public could ask questions or submit written comments on the Proposed Plan.

Information and data summarized within this Proposed Plan for SEAD-50/54 is presented and described in greater detail within the "Final Completion Report for SEAD-50/54" (Weston Solutions, Inc., 2003); and the "Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, & 67" Report (Parsons, 2002). To better understand the sites and the investigations and studies that have been conducted at the sites, the public was encouraged to review the project documents at the Seneca Army Depot Activity during the public comment period. The building location to view the documents was given during the public meeting. Written comments could be submitted to the SEDA BRAC Environmental Coordinator (address given during public meeting) at any time during the public comment period.

Any comments received during the public meeting and throughout the comment period are documented in the Responsiveness Summary section of the Record of Decision (ROD). The ROD formalizes the selection of the remedy.

No comments were received during the public meeting or comment period in response to SEAD-50/54.

3 SITE BACKGROUND

The SEDA previously occupied approximately 10,600 acres of land that is located near the Village of Romulus in Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and approximately 2000, when the SEDA military mission ceased.

The SEDA is located in an uplands area, which forms a divide separating two of the New York Finger Lakes, Cayuga Lake on the east and Seneca Lake on the west. The elevation of the facility is approximately 600 feet above Mean Sea Level (MSL).

On July 14, 1989, the EPA proposed SEDA for inclusion on the National Priorities List (NPL). Supporting its recommendation for listing, the EPA stated "the Army identified a number of potentially contaminated areas, including an unlined 13-acre landfill in the west-central portion of the depot, where solid waste and incinerator ash were disposed of intermittently for 30 years during 1941-79; two incinerator pits adjacent to the landfill, where refuse was burned at least once a week during 1941-74; a 90-acre open burning/detonation area in the northwest portion of the depot, where explosives and related wastes have been burned and detonated during the past 30 years; and the APE-1236 Deactivation Furnace in the east-central portion of the depot, where small arms are destroyed." The EPA recommendation was approved and finalized on August 30, 1990, when SEDA was listed in Group 14 of the Federal Facilities portion of the NPL.

The Army provided EPA and NYSDEC with a proposed classification for 72 identified SWMUs at the Depot in 1989. Seneca Army Depot was a generator and Treatment, Storage and Disposal Facility regulated under the Resource, Conservation, and Recovery Act (RCRA). Under this permit system, corrective action is required at all SWMUs. Since remedial goals are the same for CERCLA and RCRA, all 72 SWMUs were classified as No Action or Areas of Concern (AOCs) in a SWMU Classification Report, finalized in 1994 (Parsons,

1994), under the Federal Facilities Agreement (FFA) established between the Army, NYSDEC, and EPA. The FFA was signed in 1993. All known potential sites were included in this list of 72 SWMUs. The Army prioritized sites as AOCs for further investigations based upon data and potential risks to the environment.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) Base Realignment and Closure (BRAC) process. With 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 non-military purposes (i.e., industrial, municipal, and residential).

Since the inclusion of the SEDA in the BRAC program, approximately 8,000 acres have been released to the community. An additional 250 acres of land have undergone a federal-to-federal transfer for use by the U.S. Coast Guard.

4 SITE DESCRIPTION

SEAD-50/54 are located at the Depot's historic Tank Farm, which is located in the southeastern portion of the SEDA in an area where the designated future land use is Warehousing. The Tank Farm was sited in a triangular-shaped tract of land encompassing approximately 22 acres, immediately west of East Patrol Road between Building 350 and Buildings 356 and 357 (**Figure 1**). At one time, approximately 160 aboveground storage tanks (silos) were located at the Tank Farm site, but all tanks have since been removed from the site. According to SEDA personnel, the tanks were always used to store dry materials such as antimony, rutile ore, and other ores and minerals.

SEAD-54 is listed as a separate SWMU under the Depot's prior submissions because it previously contained asbestos material.

The topography of SEAD-50/54 is relatively flat, with a total relief of 2 to 3 feet. There is an east-west running access road that bisects the site and connects Avenue H with the East Patrol Road. A drainage ditch is located on both sides of the access road, and water captured in these ditches flows east towards intersecting ditches bordering the East Patrol Road. North of the access road, SEAD-50/54 is generally overgrown with vegetation, exclusive of spots where the circular footprints of former tanks are located. The area south of the access road is flat and grassy. The asbestos storage tank (Tank #88) was located immediately north of the access road on the east side of the Tank Farm and the Depot's property line, designated as SEAD-54. North of the access road, the area of the Tank Farm is generally overgrown with vegetation, exclusive of spots where historic tanks were once located. The circular footprints of the former tanks are generally clear of vegetation and covered with gravel. The area south of the access road is flat and grassy. A ferro-chromate ore pile is located in the southern area of the historic Tank Farm at the border of the grassy area. There are no mapped wetlands located within the bounds of the former Tank Farm.

5 SITE INVESTIGATIONS AND STUDIES

5.1 1993 Expanded Site Investigation

An Expanded Site Investigation (ESI) was performed in the area of the Tank Farm in 1993 to determine whether a release of hazardous constituents had occurred (Parsons, 1995). The ESI included a geophysical survey, the drilling and installation of three groundwater monitoring wells, and collection of soil, sediment, surface water and groundwater samples for subsequent chemical analyses. The geophysical survey conducted included a seismic refraction survey that was initially used to estimate the direction of groundwater flow, which was determined to flow approximately west to east.

Fifteen surface soil samples, three groundwater samples, three surface water samples, and three sediment samples were collected from the area of the Tank Farm. All samples were submitted to the laboratory for chemical analysis. Collected samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) metals and cyanide according to the NYSDEC Contract Laboratory Program Statement of Work. In addition, all of the surface soil samples were analyzed for bulk asbestos by polarized light microscopy.

The fifteen surface soil samples were collected at random locations within the Tank Farm to assess potential releases from the tanks. Seven samples were collected from the 0-2 inch depth horizon, while the remaining eight samples were collected from the 0-12 inch depth horizon.

Three groundwater monitoring wells were installed in the till/weathered shale aquifer that exists in the area of the Tank Farm. One monitoring well was installed upgradient (west) of SEAD-50/54 and was used to obtain background water quality data, and two wells were installed downgradient (east), between East Patrol Road and the Depot's perimeter fence, to determine if hazardous constituents were impacting the groundwater. Three samples, one from each well, were submitted to the laboratory for chemical analysis.

Three surface water and shallow soil samples were collected from drainage culverts that run adjacent to roadway surfaces in the vicinity of the Tank Farm. One sample was collected from a drainage ditch that runs parallel to the unnamed road that bisects the Tank Farm, while the remaining two were collected from a downgradient drainage ditch that runs parallel to East Patrol Road.

5.1.1 ESI Results Summary

A summary of the ESI results is presented below. For complete results, please read the "Final Action Memorandum and Decision Document (AM/DD), Time-Critical Removal Action, Four Metal Sites (SEADs 24, 50/54, & 67" Report (Parsons, 2002).

Soil

A summary of the soil sampling program is presented in **Tables 1 and 2.** Fifty-six TCL/TAL compounds plus asbestos were detected in one or more of the shallow soils collected during the ESI. Of the 56 TCL/TAL analytes detected, one was a volatile organic compound, 20 were semivolatile organics, 13 were pesticides or PCBs, and the remaining 22 were metals. These results indicate that shallow soil at the site has been impacted by semivolatile organic compounds, predominantly polynuclear aromatic hydrocarbons (PAHs), heavy metals, and asbestos.

Concentrations measured for seven semivolatile organic compounds (including six PAHs and phenol) exceeded their respective NYSDEC cleanup objective levels. A majority of the PAH concentrations found above cleanup levels were found in three samples in the northern part of the historic Tank Farm, north of the unnamed road that bisects the area.

Eight metals (antimony, arsenic, chromium, copper, lead, magnesium, mercury, and zinc) were found in soil samples at concentrations that exceeded their respective NYSDEC cleanup objective levels. Although lead was found at concentrations that exceeded NYSDEC's recommended cleanup objective level (24.8 mg/Kg based on site background) in 13 of the 15 surface soil samples characterized, it was not found at a concentration that exceeds the US EPA's recommended soil clean-up level for residential properties (400 mg/Kg).

One sample contained the maximum concentrations measured within SEAD-50/54 for chromium, lead,

mercury, and zinc. Arsenic concentrations exceeded NYSDEC's recommended cleanup level in three of the 15 surface soil samples collected. Other concentrations measured for metals that exceeded NYSDEC's recommended cleanup levels were generally evenly distributed amongst the soil sampling locations, and typically measured concentrations did not significantly exceed their respective cleanup levels.

Results for asbestos in soil are provided in **Table 2.** The surface soil sample collected at location closest to former Tank #88, which stored asbestos, contained 10 to 15 percent chrysotile asbestos. Asbestos was not found in any of the other surface soil samples collected from the area of SEAD-50/54.

Groundwater

A summary of the groundwater sampling program is presented in **Table 3**. Generally, the data indicate that groundwater at SEAD-50/54 has not been significantly impacted by the historic storage activities that were performed in this area. One semivolatile organic compound and 18 metals were detected in one or more of the groundwater samples collected. Concentrations measured for five of the metals (aluminum, iron, manganese, sodium and thallium) exceeded their respective GA groundwater criteria levels. In three out of five cases (not including sodium and thallium), the highest concentration measured for these metals were found in the upgradient well. Additionally, none of these five metals were found at concentrations exceeding NYSDEC recommended cleanup level objectives for soil at the Tank Farm. Thus, it is presumed that the presence of these metals in the groundwater results from other sources or activities unrelated to the historic Tank Farm operations.

Surface Water

A summary of the ESI surface water sampling program is presented in **Table 4**. The results indicate that surface water at the site has not been significantly impacted by the historic storage activities that were conducted in SEAD-50/54. Only 15 metals were detected in the surface water samples collected, and only two of these metals (aluminum and iron) were found at a concentration that exceeded its NYS class C surface water criteria.

Sediment

A summary of the results from samples collected in drainage ditches that abut the Tank Farm are presented in **Table 5**. The drainage ditches that surround SEAD-50/54 are temporal, typically holding water only as a result of a storm or snowmelt event. Only under severe storm or runoff event conditions does water overflow from the ditches into downstream creeks and streams. As such, the "sediment" lining the base of the drainage ditches was evaluated as soil.

The available data suggests that chemical materials have impacted the surface soil contained in the drainage ditches at SEAD-50/54. Forty-four TCL/TAL analytes, including one volatile organic compound, 17 semivolatile organic compounds, six pesticides and PCBs and 20 metals were detected in samples collected and analyzed. Of the compounds detected, 11 were detected at concentrations that exceeded their respective NYSDEC soil cleanup objective levels. The 11 compounds found to exceed their respective NYSDEC cleanup objective levels included six SVOCs and five metals.

The PAH compound benzo(a)pyrene, and the metals arsenic, lead, and zinc, were each found at concentrations exceeding NYSDEC's soil cleanup criteria levels in two of the three samples collected from the Tank Farm area. In three of the four instances (i.e., exclusive of zinc), the highest concentration reported for each of these compounds was found at the sampling location closest to the former Tank #88 in the east-central portion of the Tank Farm. Eleven of the 16 reported soil cleanup level exceedances found in ditch soil were found in the sample collected from this location. This sample

also contained the highest concentration found in ditch soil for 22 of 23 organic compounds (i.e., SVOCs and pesticides and PCBs) detected and 12 of the 20 metals detected from the area of the Tank Farm. Conversely, ditch soil samples collected from the location where surface water flow enters the natural drainage of Hicks Gully did not show any evidence of exceedances of soil cleanup criteria for organic or inorganic constituents identified in samples.

Six pesticides/PCB compounds were detected in one or more of the drainage ditches that border the Tank Farm; however, none of the identified pesticides/PCBs were found at concentrations that exceeded NYSDEC's recommended soil cleanup objectives. All six of the identified pesticides/PCBs were detected in the sample collected from the sample closest to the former Tank #88 location. A single pesticide, endosulfan I was detected in the sample close to the northern end of the Tank Farm property, at what appears to be the most upstream end of the drainage ditch. None of the detected pesticides or PCBs were detected in the sample collected the furthest downstream location of sampling conducted in the drainage ditches.

Five metals (arsenic, lead, manganese, potassium and zinc) were detected in ditch soil samples at concentrations that exceeded NYSDEC soil cleanup criteria values. Four (excluding manganese) of the listed metals were found at concentrations that exceeded their soil cleanup criteria levels at the sampling location closest to former Tank #88, while four (excluding potassium) of the metals were found at concentrations above soil cleanup objective levels at the northern end of the Tank Farm property. Again, none of the metal concentrations measured at the furthest downstream location of sampling conducted in the drainage ditches were found at concentrations exceeding NYSDEC's soil cleanup objective levels.

5.2 2003 Time Critical Removal Action

The Action Memorandum and Decision Document for SEAD-50/54 based on the 1993 ESI recommended performing a Time Critical Removal Action (TCRA) to reduce or eliminate any potential threat to human health and the environment at SEAD-50/54 due to the presence of identified compounds, namely metals in the soil, at the site (Parsons, 2002).

The TCRA was performed in late 2002 through early 2003, and included excavation of soil in six to twelve inch increments from seven areas where high metal concentrations had previously been shown to exist (Weston Solutions, Inc., 2003). The seven excavation areas within SEAD 50/54 are presented in **Figure 2**. After each increment was excavated, confirmatory soil samples from the excavation floors and bottoms were collected and analyzed for either complete TAL metals, or for three specific TAL metals found most commonly at the site (arsenic, mercury and zinc).

Each confirmatory sample from the excavation floor was collected as a five sub-sample composite within each 30-foot by 30-foot section, or quadrant. Sidewalls samples were collected at 30-foot intervals along the outer perimeter, at a depth that was approximately halfway down the exposed face of the excavation wall.

Based on soil sample results, excavation for each grid was either halted or continued for another 6- to 12-inch increment. While the majority of the site was excavated to a six-inch depth, several quadrants were excavated to two feet below grade or greater before reaching satisfactory confirmatory soil sample results (2 quadrants in Area 1, 3 quadrants in Area 6, and 1 quadrant in Area 4).

A summary of the TCRA final confirmatory sample analytical results for metals is presented in **Table 6**. Complete results may be found in the 2003 Final Completion Report (Weston Solutions, Inc., 2003). Results indicate that the soil conditions at the site

after the TCRA are similar to the remainder of the SEDA soil conditions and that metals have been significantly decreased at the site.

5.3 Statistical analysis

The EPA National Exposure Research Laboratory (NERL) performed a statistical analysis of the confirmation sampling results obtained during the TCRA to the results of a set of SEDA-wide background soil samples. As defined in the document issued by the NERL, the objective the analysis was to determine if contaminant concentrations at SEAD-50/54 after the removal action were comparable to background concentrations. The NERL used two statistical tests and concluded that "contaminant concentrations for arsenic, mercury, and zinc at the SEAD-50/54 Site (after final excavation) are not consistent with the background level contaminant concentrations."

Parsons conducted a review of the NERL's statistical analysis procedures and conclusions, and prepared a memo to SEDA in January 2004 concluding that the difference between the SEAD-50/54 site-specific background and the Seneca Army Depot whole site background data may contribute to the inconsistencies identified by the tests (Parsons, 2004). The review indicated that even if the TAGM exceedances were replaced with TAGM cleanup objectives and the tests were re-run, the Site data would still be significantly different from the SEDA background data. Furthermore, the review stated that remaining mercury and zinc concentrations at SEAD-50/54 are not expected to pose significant risks to human health or the environment based on a preliminary risk screening.

Parsons concluded that the TCRA completed at SEAD-50/54 achieved the results set out and no further action was warranted for SEAD-50/54. The EPA and NYSDEC accepted the review of the statistical analysis performed, and concluded that the stated goals of the TCRA had been met (NYSDEC, 2003; EPA, 2004).

For complete statistical analysis, please refer to the "Seneca Army Depot Activity – Statistical Analysis of SEAD-50/54 TCRA Data and Proposed Plan" Memorandum (Parsons, 2004).

6 REGULATORY STATUS

The Army recommends that these two SWMUs be designated a "No Further Action" site under CERCLA.

7 SUMMARY OF THE REMEDIAL GOALS AND PROPOSED ACTION

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at the site. The Army believes that information and data developed for SEAD-50/54 discussed in this Proposed Plan indicate that existing conditions found at the site satisfy this objective.

Based on the results of the investigations and the RA that have been performed at the sites, the Army is proposing No Further Action as the preferred remedial alternative for SEAD-50/54.

8 REFERENCES

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

EPA, 2004 - Email from Julio Vazquez, RPM to Steve Absolom, BRAC Environmental Coordinator at the SEDA, Re: RA Completion Report for SEAD-50/54, stating that the goals for the SEAD-50/54 have been met, February 2004.

EPA, 2002 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Integrated Manual, NTIS-PB2002105715, EPA SW-846, 2002.

EPA, 2001 - National Primary Drinking Water Standards, EPA 816-F-01-007, March 2001

EPA, 1999 - A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents, EPA 540-R-98-031, OSWER 9200.1-23P, PB98-963241, July 1999.

NYSDEC, 2003 – Email from John Swartwout, Section Chief to EPA 2 Region Julio Vazquez, Re: DRAFT Completion Removal Report, stating that no additional investigation or excavation in SEAD-50/54 is necessary, October 2003.

NYSDEC, 2000 - Division of Water Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998 as amended January 1999 and April 2000.

NYSDEC, 1999 - Technical Guidance for Screening Contaminated Sediments, November 1993, as amended July 1994, March 1998, and January 1999.

NYSDEC, 1994 - Technical and Administrative Guidance Memorandum #4046, Determination of Soil Cleanup Objectives and Cleanup Levels, Jan 24, 1994.

Parsons, 2004 – Memorandum to Seneca Army Depot Activity "Seneca Army Depot Activity – Statistical Analysis of SEAD-50/54 TCRA Data and Proposed Plan", January 2004.

Parsons, 2002 – Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, & 67), Seneca Army Depot Activity, Final, August 2002.

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

Title 40, Code of Federal Regulations, Part 261, Identification and Listing of Hazardous Waste.

Title 40 Code of Federal Regulations, Part 300, National Oil and Hazardous Substances Pollution Contingency Plan.

Title 42 US Code Chapter 103, Comprehensive Environmental Response, Compensation, and Liability, Section 9620.

USATHAMA, 1988 - Update of the Initial Installation Assessment of Seneca Army Depot, NY, prepared by Environmental Science and Engineering Inc. (ESE), Report No. AMXTH-IR-A-157(U), August 1988.

USATHAMA, 1980 - Installation Assessment of Seneca Army Depot, Report No. 157, Aberdeen Proving Grounds, MD, January 1980.

Weston Solutions, Inc., 2003 – Completion Removal Report of SEAD-50/54, Seneca Army Depot Activity, Final, 2003.

GLOSSARY

Aquifer
An aquifer is a saturated permeable geologic unit or rock formation that can store significant quantities of water and transmit the water under ordinary hydraulic gradients, possibly to wells.

Area of Concern (AOC)
Areas of Concern (AOCs) include both solid waste management units where releases of hazardous substances may have occurred and locations where there has been a release or threat of a release in the environment of a hazardous substance, pollutant or contaminant (including radionuclides) under CERCLA.

Army Corps of Engineer (USACE)
The engineering organization of the U.S. Army. The districts involved in the Seneca Army Depot Activity project include the New York District (CENAN), the New England District (CENED), and the Engineering and Support Center, Huntsville (CEHNC).

Baseline Risk Assessment (BRA)
A baseline risk assessment is an assessment conducted before cleanup activities begin at a site to identify and evaluate the threat to human health and the environment. After remediation has been completed, the information obtained during a baseline risk assessment can be used to determine whether the cleanup levels were reached.

Base Realignment and Closure (BRAC)
A congressionally mandated process that involves closure of military bases. The goal of BRAC is to transition the former bases from military uses to civilian reuse, with the intent of minimizing the negative effects of base closure by spurring economic development and growth. The SEDA was listed as a base to be closed in October 1995. Base closure is in the process of being performed.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA:

Established prohibitions and requirements concerning closed and abandoned hazardous waste sites;

Provided for liability of persons responsible for releases of hazardous waste at these sites; and

Established a trust fund to provide for cleanup when no responsible party could be identified.

The law authorizes two kinds of response actions:

Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response.

Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priorities List (NPL).

CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL.

CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986

Cleanup

Cleanup is the term used for actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and or the environment. The term sometimes is used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Clean Water Act (CWA)

CWA is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to U.S. waters. This law gave EPA the authority to set wastewater discharge standards on an industry-by-industry basis and to set water quality standards for all contaminants in surface waters.

Closure (Under RCRA)

RCRA closure is a process for preventing the release of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground water, surface water, or the atmosphere from a hazardous waste management facility after the facility stops receiving waste. The closure process may involve waste removal and management, decontamination and decommissioning of equipment, application of final covers, and other release-preventing actions. The process also involves developing a closure plan, having the plan approved as part of the facility's permit, and implementing the plan when the facility closes. Closure occurs after the facility accepts the final shipment of hazardous waste (unless the facility qualities for a delay of closure). (Reference: http://tis.eh.doe.gov/oepa/guidance/rcra/closur.pdf)

Closure (Department of Defense)

Under the Department of Defense's definition, closure means that all missions of the base will cease or be relocated. All personnel (military, civilian, and contractor) will either be eliminated or relocated. The entire base will be excessed and the property disposed.
(Reference:
ttp://www.hqda.army.mil/acsimweb/brac/braco.htm)

Community Environmental Response Facilitation Act (CERFA – Public Law 102-426)

The Community Environmental Response Facilitation Act (CERFA) was passed by Congress in 1992, and amended Section 9620(h) of CERCLA, which addresses Federal real property transfers. In enacting the legislation Congress stated that the closure of Federal facilities has an adverse impact on local economies and that delays in remediating contaminated real property add to this burden by delaying the conversion of such property to productive uses. The statute applies to real property owned by the Department of Defense and on which the U.S. plans to terminate Federal government operations, as well as to real property that has been used as a military installation and which is being closed or realigned pursuant to base closure. Federal entities with control over such properties must identify those upon which no hazardous substances or petroleum products/derivatives were stored for more than one year, released, or disposed of by examining relevant sources of data such as property deeds, aerial photographs, or other similar documents. Subsequent transfers or sales of the identified properties by the limited states must contain assurances that the U.S. will assume full responsibility for any response or corrective action that may become necessary after the transfer of property is completed. Where hazardous substances or petroleum products/derivatives were stored for more than one year, released, or disposed of on the U.S.-owned real property, the Federal entity with control of the property must notify the state of any lease entered into by the controlling Federal entity that will remain in effect after operations cease. The notification must be sent to the state prior to the signing of the lease, and must inform the state of the name of the lessee, and a description of the uses permitted under the condition of the lease. (Reference:

http://www.ntc.blm.gov/learningplace/res_CERFA.html)

Completion Report
A report that documents and certifies that conditions found at an Area of Concern (AOC) do not constitute a threat to public health, welfare or the environment and that further remedial measures are not necessary. Such documentation shall meet, to the extent practicable and as necessary under the specific facts pertaining to the AOC, the requirements of EPA's RCRA Facility Investigation Guidance, EPA's Guidance for Conducting RI/FSs under CERCLA, and any subsequent amendments to these documents and all other applicable federal or state guidance.

Contaminant
A contaminant is any physical, chemical, biological, or radiological substance or matter present in any media at concentrations that may result in adverse effects on air, water, or soil.

Deactivation Furnace
A Deactivation Furnace is an incineration system designed to demilitarize obsolete of unserviceable ammunition items, and to dispose of bulk propellant, explosives, or pyrotechnic wastes generated during the process of manufacture and assembly.

Detection Limit
The lowest concentration of a chemical that can be distinguished reliably from a zero concentration.

Disposal
Disposal is the final placement or destruction of toxic, radioactive or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials from removal actions or accidental release. Disposal may be accomplished through the use of approved secure landfills, surface impoundments, land farming, deep well injection, or ocean dumping.

Environmental Protection Agency (EPA)
The Federal regulatory agency responsible for enforcing the environmental rules and regulations of the United States. Representatives from the EPA Region 2, which includes New York State, are involved in the review and oversight of the environmental work being conducted at the Seneca Army Depot Activity.

Expanded Site Investigation (ESI)
An expanded investigation that typically includes media sampling and analyses. An ESI is performed following a Preliminary Site Investigation to obtain more information regarding the concentrations of pollutants at a site.

Federal Facilities Agreement (FFA) also known as the Interagency Agreement (IAG)
An agreement signed between EPA, NYSDEC and the Army that describes the process for identifying, investigating and remediating sites at the Seneca Army Depot Activity.

GA Groundwater Standard
A water quality standard promulgated by the NYSDEC that establishes a minimum quality of a groundwater supply that could be used as a source of drinking water.

Groundwater
Groundwater is the water that flows beneath the earth's surface that fills pores between such materials as sand, soil, or gravel and that often supplies wells and springs. *See also Aquifer.*

Heavy Metal
The term heavy metal refers to a group of toxic metals including arsenic, chromium, copper, lead, mercury, silver, and zinc. Heavy metals often are present at industrial sites at which operations have included battery recycling and metal plating.

Hydrogeology
Hydrogeology is the study of groundwater, including its origin, occurrence, movement, and quality.

Incinerator
A furnace or container used for burning waste materials.

Initial Installation Assessment (IIA)
The first environmental assessment of military facilities that was performed by the Department of Defense and its contractors under the Installation Restoration Program.

Inorganic Compounds
An inorganic compound is a compound that generally does not contain carbon atoms (although carbonate and bicarbonate compounds are notable exceptions). Examples of inorganic compounds include various metals.

Landfill
A sanitary landfill is a land disposal site for non-hazardous solid wastes at which the waste is spread in layers compacted to the smallest practical volume.

Lead
Lead is a heavy metal that is hazardous to health if breathed or swallowed. Its use in gasoline, paints, and plumbing compounds has been sharply restricted or eliminated by federal laws and regulations. *See also Heavy Metal.*

Mean Sea Level (MSL)
The average height of the sea surface, based upon hourly observation of the tide height on the open coast or in adjacent waters that have free access to the sea. In the United States, it is defined as the average height of the sea surface for all stages of the tide over a nineteen year period. Mean sea level, commonly abbreviated as MSL and referred to simply as 'sea level,' serves as the reference surface for all altitudes in upper atmospheric studies.

(Reference: http://earthobservatory.nasa.gov:81/Library/glossary.php3?xref = mean%20sea%20level)

Mercury
Mercury is a heavy metal that can accumulate in the environment and is highly toxic if breathed or swallowed. Mercury is found in thermometers, measuring devices, pharmaceutical and agricultural chemicals, chemical manufacturing, and electrical equipment. *See also Heavy Metal.*

Maximum Contaminant Level (MCL)
Established under the Safe Drinking Water Act as concentrations of pollutants considered protective for drinking water.

Monitoring Well
A monitoring well is a well drilled at a specific location on or off a hazardous waste site at which groundwater can be sampled at selected depths and studied to determine the direction of groundwater flow and the types and quantities of contaminants present in the groundwater.

National Contingency Plan (NCP)
The NCP, formally the National Oil and Hazardous Substances Contingency Plan, is the major regulatory framework that guides the Superfund response effort. The NCP is a comprehensive body of regulations that outlines a step-by-step process for implementing Superfund responses and defines the roles and responsibilities of EPA, other federal agencies, states, private parties, and the communities in response to situations in which hazardous substances are released into the environment. *See also Superfund.*

National Priorities List (NPL)
The NPL is EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response under Superfund. Inclusion of a site on the list is based primarily on the score the site receives under the HRS. Money from Superfund can be used for

cleanup only at sites that are on the NPL. EP A is required to update the NPL at least once a year. *See also Hazard Ranking System and Superfund.*

New York State Department of Environmental Conservation (NYSDEC)
NYSDEC's missions include detecting and controlling sources of pollution, protecting and managing New York's natural resources, informing and educating the public about environment, natural resources, and government's actions to protect them.

NYCRR
The New York State compilation of Codes, Rules, and Regulations.

Organic Chemical or Compound
An organic chemical or compound is a substance produced by animals or plants that contains mainly carbon, hydrogen, and oxygen.

Percent Solids
A physical determination used to measure the amount of solid material (i.e., normally defined as non-volatile material at 105 °C) that is contained in a sample such as a soil or sediment.

Permeability
Permeability is a characteristic that represents a qualitative description of the relative ease with which rock, soil, or sediment will transmit a fluid (liquid or gas).

Pesticide
A pesticide is a substance or mixture of substances intended to prevent or mitigate infestation by, or destroy or repel, any pest. Pesticides can accumulate in the food chain and or contaminate the environment if misused.

Polychlorinated Biphenyl (PCB)
PCBs are a group of toxic, persistent chemicals, produced by chlorination of biphenyl, that once were used in high voltage electrical transformers because they conducted heat well while being fire resistant and good electrical insulators. These contaminants typically are generated from metal degreasing, printed circuit board cleaning, gasoline, and wood preserving processes. Further sale or use of PCBs in the United States was banned in 1979.

Polycyclic Aromatic Hydrocarbon (PAH)
A PAH is a chemical compound that contains more than one fused benzene ring. They are commonly found in petroleum fuels, coal products, and tar.

Preliminary Assessment and Site Investigation (PA/SI)
A PA/SI is the process of collecting and reviewing available information about a known or suspected hazardous waste site or release. The PA/SI usually includes a visit to the site.

Proposed Plan
The Proposed Plan is the first step in the remedy selection process. The Proposed Plan provides information supporting the decisions of how the preferred alternative was selected. It summarizes the site information and how the alternatives comply with the requirements of the NCP and CERCLA. The Proposed Plan is provided to the public for comment. The responses to the Proposed Plan comments are provided in the ROD.

Record of Decision (ROD)
A ROD is a legal, technical, and public document that explains which cleanup alternative will be used at a Superfund NPL site. The ROD is based on information and technical analysis generated during the remedial investigation and feasibility study (RI/FS) and consideration of public comments and community concerns. *See also Preliminary Assessment and Site Investigation and Remedial Investigation and Feasibility Study.*

Release
A release is any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous

substance, as defined under RCRA. *See also Resource Conservation and Recovery Act.*

Remedial Action (RA)
A RA is the actual construction or implementation of a remedy at a site or portion thereof.

Remedial Investigation and Feasibility Study (RI/FS)
The RI/FS is the step in the Superfund cleanup process that is conducted to gather sufficient information to support the selection of a site remedy that will reduce or eliminate the risks associated with contamination at the site. The RI involves site characterization through collection of data and information necessary to characterize the nature and extent of contamination at the site. The RI also determines whether the contamination presents a significant risk to human health or the environment. The FS focuses on the development of specific response alternatives for addressing contamination at a site.

Resource Conservation and Recovery Act (RCRA)
RCRA is a federal law enacted in 1976 that established a regulatory system to track hazardous substances from their generation to their disposal. The law requires the use of safe and secure procedures in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent the creation of new, uncontrolled hazardous waste sites.

Risk Assessment
The process of assessing and analyzing threats that contaminants found at a site pose to surrounding populations and the environment. The resulting analysis is used as a preliminary, conservative estimate of the potential level of threat that is posed so that appropriate and cost-effective countermeasures can be identified and implemented.

Rutile Ore
A black or reddish brown mineral in large thick crystals or a yellow mineral as inclusions or in thin crystals. Rutile is a major ore of titanium, a metal used for high tech alloys because of its light weight, high strength and resistance to corrosion. Titanium is isolated by heating a mixture of its rutile ore and charcoal with chlorine at 700 to 1000 degC:

$$2TiO2 + 3C + 4Cl2 \Longrightarrow 2TiCl4 + 2CO + CO2$$

The resulting titanium tetrachloride is then reduced with magnesium metal.

Sediment Criteria
Technical guidance provided by NYSDEC, the Division of Fish and Wildlife, that describes allowable sediment quality for a variety of chemicals. The values provided in this document have been adopted as screening levels for comparison to site data. Exceedances of these values provides that basis for further evaluation and decision making.

Seismic Refraction
Seismic refraction measures is the velocity that a compression wave travels through a material. The compression wave velocity is measured by placing sensitive motion detectors on the ground surface, then impacting the ground with an object such as a sledgehammer. An oscilloscope measures the travel time of the compression wave to each motion detector. Mathematical analysis of the travel times will produce a profile of changes in compression wave velocity, which can then determine the type of material below the ground.

Semivolatile Organic Compound (SVOC)
SVOCs, composed primarily of carbon and hydrogen atoms, have boiling points greater than 2000°C. Common SVOCs include PCBs and phenol. *See also Phenol and Polychlorinated Biphenyl.*

Seneca Army Depot Activity (SEDA)
A 10,634-acre military facility, constructed in 1941, located in central New York responsible for storage and management of military commodities, including munitions. The depot ceased military operations in 2000. Environmental cleanup activities will continue until all sites have been addressed.

Seneca County Board of Supervisors
The board that oversees Seneca County's governmental affairs.

Significant Threat
The term refers to the level of contamination that a state would consider significant enough to warrant an action. The thresholds vary from state to state.

Soil Boring
Soil boring is a process by which a soil sample is extracted from the ground for chemical, biological, and analytical testing to determine the level of contamination present.

Solid Waste
Any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous materials resulting from industrial, commercial, mining, and agricultural activities and from community activities

Solid Waste Management Unit (SWMU)
A SWMU is a RCRA term used to describe a contiguous area of land on or in which where solid waste, including hazardous waste, was managed. This includes landfills, tanks, land treatment areas, spills and other areas where waste materials were handled. Identification of all SWMUs at SEDA was performed as part of the RCRA Part B Permit Application process.

Subsurface
Underground, or beneath the surface.

Surface Water
Surface water is all water naturally open to the atmosphere, such as rivers, lakes, reservoirs, streams, and seas.

Superfund
Superfund is the trust fund that provides for the cleanup of hazardous substances released into the environment, regardless of fault. The Superfund was established under CERCLA and subsequent amendments to CERCLA. The term Superfund also is used to refer to cleanup programs designed and conducted under CERCLA and its subsequent amendments. *See also Comprehensive Environmental Response, Compensation, and Liability Act.*

Technical Administrative Guidance Memorandum (TAGM)
TAGMs are technical guidance publications provided by NYSDEC that describes various processes and procedures recommended by NYSDEC for the investigation and remediation of hazardous waste sites. One TAGM, No. 4046, provides guideline values for recommended soil cleanup levels at waste sites.

Total Petroleum Hydrocarbon (TPH)
TPH refers to a measure of concentration or mass of petroleum hydrocarbon constituents present in a given amount of air, soil, or water

Volatile Organic Compound (VOC)
A VOC is one of a group of carbon-containing compounds that evaporate readily at room temperature. Examples of VOCs include trichloroethane; trichloroethylene; and BTEX. These contaminants typically are generated from metal degreasing, printed circuit board cleaning, gasoline, and wood preserving processes.

Water Table
A water table is the boundary between the saturated and unsaturated zones beneath the surface of the

earth, the level of groundwater, and generally is the level to which water will rise in a well

Tables

TABLE 1
SUMMARY OF SOIL ANALYSIS RESULTS - ESI

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

COMPOUND	UNITS	MAXIMUM DETECT	FREQUENCY OF DETECTION	CRITERIA VALUE (a)	NUMBER ABOVE CRITERIA	NUMBER OF DETECTS	NUMBER OF SAMPLES
Volatile Organics							
Acetone	ug/Kg	83	7%	200	0	1	15
Semivolatile Organics							
4-Methylphenol	ug/Kg	310	20%	900	0	3	15
Acenaphthene	ug/Kg	930	13%	50000 (*)	0	2	15
Anthracene	ug/Kg	1500	20%	50000 (*)	0	3	15
Benzo(a)anthracene	ug/Kg	5200	40%	220	3	6	15
Benzo(a)pyrene	ug/Kg	3700	40%	61	5	6	15
Benzo(b)fluoranthene	ug/Kg	4400	40%	1100	1	6	15
Benzo(g,h,i)perylene	ug/Kg	1800	27%	50000 (*)	0	4	15
Benzo(k)fluoranthene	ug/Kg	4000	40%	1100	1	6	15
bis(2-Ethylhexyl)phthalate	ug/Kg	1800	100%	50000 (*)	0	15	15
Carbazole	ug/Kg	1100	20%	50000 (*)	0	3	15
Chrysene	ug/Kg	5500	40%	400	3	6	15
Dibenz(a,h)anthracene	ug/Kg	840	20%	14	3	3	15
Dibenzofuran	ug/Kg	260	7%	6200	0	1	15
Di-n-butylphthalate	ug/Kg	56	80%	8100	0	12	15
Fluoranthene	ug/Kg	14000	80%	50000 (*)	0	12	15
Fluorene	ug/Kg	590	13%	50000 (*)	0	2	15
Indeno(1,2,3-cd)pyrene	ug/Kg	1800	33%	3200	0	5	15
Phenanthrene	ug/Kg	7800	67%	50000 (*)	0	10	15
Phenol	ug/Kg	31	7%	30	1	1	15
Pyrene	ug/Kg	12000	73%	50000 (*)	0	11	15
Pesticides/PCB							
4,4'-DDD	ug/Kg	2.2	7%	2900	0	1	15
4,4'-DDE	ug/Kg	4.8	27%	2100	0	4	15
4,4'-DDT	ug/Kg	4.1	27%	2100	0	4	15
Aldrin	ug/Kg	1.3	7%	41	0	1	15
alpha-Chlordane	ug/Kg	3.8	7%	540	0	1	15
Aroclor-1242	ug/Kg	75	20%	1000(b)	0	3	15
Aroclor-1254	ug/Kg	75	13%	1000(b)	0	2	15
Aroclor-1260	ug/Kg	25	7%	1000(b)	0	1	15
Dieldrin	ug/Kg	59	13%	440	0	2	15
Endosulfan I	ug/Kg	13	7%	900	0	1	15
Endrin	ug/Kg	2.8	7%	100	0	1	15
Heptachlor	ug/Kg	1.3	7%	100	0	1	15
Heptachlor epoxide	ug/Kg	2.4	13%	20	0	2	15
Metals							
Aluminum	mg/Kg	15300	100%	19300	0	15	15
Antimony	mg/Kg	7.1	93%	5.9	1	14	15
Arsenic	mg/Kg	151	100%	8.2	3	15	15
Barium	mg/Kg	115	100%	300	0	15	15
Beryllium	mg/Kg	0.71	100%	1.1	0	15	15
Cadmium	mg/Kg	0.8	87%	2.3	0	13	15
Calcium	mg/Kg	120000	100%	121000	0	15	15
Chromium	mg/Kg	60.7	100%	29.6	5	15	15
Cobalt	mg/Kg	12.6	100%	30	0	15	15
Copper	mg/Kg	35.2	100%	33	1	15	15
Iron	mg/Kg	30000	100%	36500	0	15	15
Lead	mg/Kg	398	100%	24.8	13	15	15
Magnesium	mg/Kg	48300	100%	21500	1	15	15
Manganese	mg/Kg	722	87%	1060	0	13	15
Mercury	mg/Kg	0.37	100%	0.1	2	15	15
Nickel	mg/Kg	42.6	100%	498	0	15	15
Potassium	mg/Kg	2170	100%	2380	0	15	15
Selenium	mg/Kg	1.1	93%	2	0	14	15
Silver	mg/Kg	0.34	13%	0.75	0	2	15
Sodium	mg/Kg	136	80%	172	0	12	15
Vanadium	mg/Kg	26.2	100%	150	0	15	15
Zinc	mg/Kg	152	100%	110	3	15	15
Other Analyses							
Total Solids	%W/W	88	100%		0	15	15

NOTES:

a) NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046.

b) The TAGM value for PCBs is 1000 ug/Kg for surface soils and 10,000 ug/Kg for subsurface soils.

* = As per TAGM, total VOCs < 10 ppm; total Semi-VOCs < 500 ppm; individual semi-VOCs < 50 ppm.

Table obtained from Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, 67) (Parsons, 2002)

TABLE 2
SUMMARY SOIL SAMPLE ASBESTOS ANALYSIS RESULTS

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

ES Sample ID	Asbestos (% Type)	Other Material
SS50-1	10-15 % Chrysotile	Binder, Quartz, 3-5 % Organic Fiber
SS50-2	Not Detected	Binder, Quartz, 15-25 % Organic Fiber
SS50-3	Not Detected	Binder, Quartz, 10-15 % Organic Fiber
SS50-4	Not Detected	Binder, Quartz, 1-3 % Organic Fiber
SS50-5	Not Detected	Binder, Quartz, 15-25 % Organic Fiber
SS50-6	Not Detected	Binder, Quartz, 15-25 % Organic Fiber
SS50-7	Not Detected	Binder, Quartz, 15-25 % Organic Fiber
SS50-8	Not Detected	Binder, Quartz, 5-10 % Organic Fiber
SS50-9	Not Detected	Binder, Quartz, 35-45 % Organic Fiber
SS50-10	Not Detected	Binder, Quartz, 10-15 % Organic Fiber
SS50-11	Not Detected	Binder, Quartz, 10-15 % Organic Fiber
SS50-12	Not Detected	Binder, Quartz, 5-10 % Organic Fiber
SS50-13	Not Detected	Binder, Quartz, 10-15 % Organic Fiber
SS50-14	Not Detected	Binder, Quartz, 1-3 % Organic Fiber
SS50-15	Not Detected	Binder, Quartz, 5-10 % Organic Fiber
SS50-16	Not Detected	Binder, Quartz, 3-5 % Organic Fiber

Note:
Bulk Asbestos Analysis by polarized light microscopy

Obtained from Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, 67) (Parsons, 2002)

TABLE 3
SUMMARY OF GROUNDWATER ANALYSIS RESULTS -ESI

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

PARAMETER	UNITS	MAXIMUM DETECT	FREQUENCY OF DETECTION	CRITERIA VALUE (a)	NUMBER ABOVE CRITERIA
SEMIVOLATILE ORGANICS					
Di-n-octylphthalate	ug/L	5	100%	50	0
METALS					
Aluminum	ug/L	1790	100%	50 (b)	2
Arsenic	ug/L	2.2	100%	5 (c)	0
Barium	ug/L	96.5	100%	1000	0
Calcium	ug/L	153000	100%	NA	NA
Chromium	ug/L	3	100%	50	0
Cobalt	ug/L	4.9	100%	NA	NA
Copper	ug/L	1.4	100%	200	0
Iron	ug/L	5070	100%	300	2
Magnesium	ug/L	40200	100%	NA	NA
Manganese	ug/L	1040	100%	50 (b)	3
Mercury	ug/L	0.05	100%	0.7	0
Nickel	ug/L	8	100%	100	0
Potassium	ug/L	10400	100%	NA	NA
Silver	ug/L	0.76	100%	50	0
Sodium	ug/L	91200	100%	20000	2
Thallium	ug/L	3	100%	2 (d)	1
Vanadium	ug/L	3	100%	NA	NA
Zinc	ug/L	20.2	100%	5000 (b)	0

NOTES:
a) NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998), except as noted be
b) US EPA Secondary Drinking Water Regulation, non-enforceable (EPA 822-B-00-001, Sur
c) US EPA Maximum Contaminant Limit announced 10/31/01. Source http://www.epa.gov/s
d) US EPA National Primary Drinking Water Standards, EPA 816-F-01-007 March 2001

Table obtained from Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, 67) (Parsons, 2002)

TABLE 4
SUMMARY OF SURFACE WATER ANALYSIS RESULTS - ESI

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

PARAMETER	UNITS	MAXIMUM DETECT	FREQUENCY OF DETECTION	NYS CRITERIA VALUE (a,b)	NUMBER ABOVE CRITERIA
METALS					
Aluminum	ug/L	376	100%	100	1
Arsenic	ug/L	22.1	67%	150	0
Barium	ug/L	34.3	100%	NA	NA
Calcium	ug/L	85200	100%	NA	NA
Chromium	ug/L	1.3	67%	139.5	0
Copper	ug/L	2.1	100%	17.3	0
Iron	ug/L	575	100%	300	1
Lead	ug/L	0.89	33%	1.46	0
Magnesium	ug/L	13200	100%	NA	NA
Manganese	ug/L	67.9	100%	NA	NA
Nickel	ug/L	1.7	67%	99.9	0
Potassium	ug/L	3140	100%	NA	NA
Sodium	ug/L	11200	100%	NA	NA
Vanadium	ug/L	1.1	33%	14	0
Zinc	ug/L	10.5	100%	159.2	0

NOTES:
a) The New York State Ambient Water Quality Standards and Guidance Values for Class C surface wa
b) Hardness dependent values assume a hardness of 216.4 mg/L (depot site-wide average).

Table obtained from Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, 67) (Parsons, 2002)

TABLE 5
SUMMARY OF SEDIMENT ANALYSIS RESULTS - ESI

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

PARAMETER	UNITS	MAXIMUM DETECT	FREQUENCY OF DETECTION	CRITERIA VALUE (a)	NUMBER ABOVE CRITERIA	NUMBER OF DETECTS	NUMBER OF ANALYSES
Volatile Organic Compounds							
2-Butanone	ug/Kg	11	33%	2700	0	1	3
Semivolatile Organic Compounds							
4-Methylphenol	ug/Kg	110	67%	900	0	2	3
Acenaphthene	ug/Kg	160	33%	50000	0	1	3
Anthracene	ug/Kg	480	33%	50000	0	1	3
Benzo(a)anthracene	ug/Kg	1400	100%	224	1	3	3
Benzo(a)pyrene	ug/Kg	1200	100%	61	2	3	3
Benzo(b)fluoranthene	ug/Kg	1300	100%	1100	1	3	3
Benzo(g,h,i)perylene	ug/Kg	790	100%	50000	0	3	3
Benzo(k)fluoranthene	ug/Kg	1200	100%	1100	1	3	3
Carbazole	ug/Kg	250	33%		0	1	3
Chrysene	ug/Kg	1500	100%	400	1	3	3
Dibenz(a,h)anthracene	ug/Kg	260	33%	14	1	1	3
Dibenzofuran	ug/Kg	97	33%		0	1	3
Fluoranthene	ug/Kg	3500	100%	50000	0	3	3
Fluorene	ug/Kg	310	33%	50000	0	1	3
Indeno(1,2,3-cd)pyrene	ug/Kg	770	100%	3200	0	3	3
Phenanthrene	ug/Kg	2700	100%	50000	0	3	3
Pyrene	ug/Kg	4000	100%	50000	0	3	3
Pesticides and PCBs							
4,4'-DDE	ug/Kg	4.3	33%	2100	0	1	3
Aldrin	ug/Kg	2.2	33%	41	0	1	3
alpha-Chlordane	ug/Kg	8	33%	540	0	1	3
Aroclor-1242	ug/Kg	120	33%	1000	0	1	3
Aroclor-1260	ug/Kg	56	33%	1000	0	1	3
Endosulfan I	ug/Kg	15	67%	900	0	2	3
Metals							
Aluminum	mg/Kg	16300	100%	19300	0	3	3
Antimony	mg/Kg	3.3	100%	5.9	0	3	3
Arsenic	mg/Kg	62.7	100%	8.2	2	3	3
Barium	mg/Kg	117	100%	300	0	3	3
Beryllium	mg/Kg	0.75	100%	1.1	0	3	3
Cadmium	mg/Kg	0.8	100%	2.3	0	3	3
Calcium	mg/Kg	31400	100%	121000	0	3	3
Chromium	mg/Kg	25.1	100%	29.6	0	3	3
Cobalt	mg/Kg	9.3	100%	30	0	3	3
Copper	mg/Kg	25.5	100%	33	0	3	3
Iron	mg/Kg	26800	100%	36500	0	3	3
Lead	mg/Kg	49.6	100%	24.8	2	3	3
Magnesium	mg/Kg	6400	100%	21500	0	3	3
Manganese	mg/Kg	1380	100%	1060	1	3	3
Mercury	mg/Kg	0.02	33%	0.1	0	1	3
Nickel	mg/Kg	29.4	100%	49	0	3	3
Potassium	mg/Kg	2530	100%	2380	1	3	3
Sodium	mg/Kg	121	67%	172	0	2	3
Vanadium	mg/Kg	28.8	100%	150	0	3	3
Zinc	mg/Kg	243	100%	110	2	3	3
Other Analytes							
Total Solids	%W/W	78.7	1		0	3	3

NOTES:
a) NYSDEC Technical and Administrative Guidance Memeorandum # 4046, January 1994

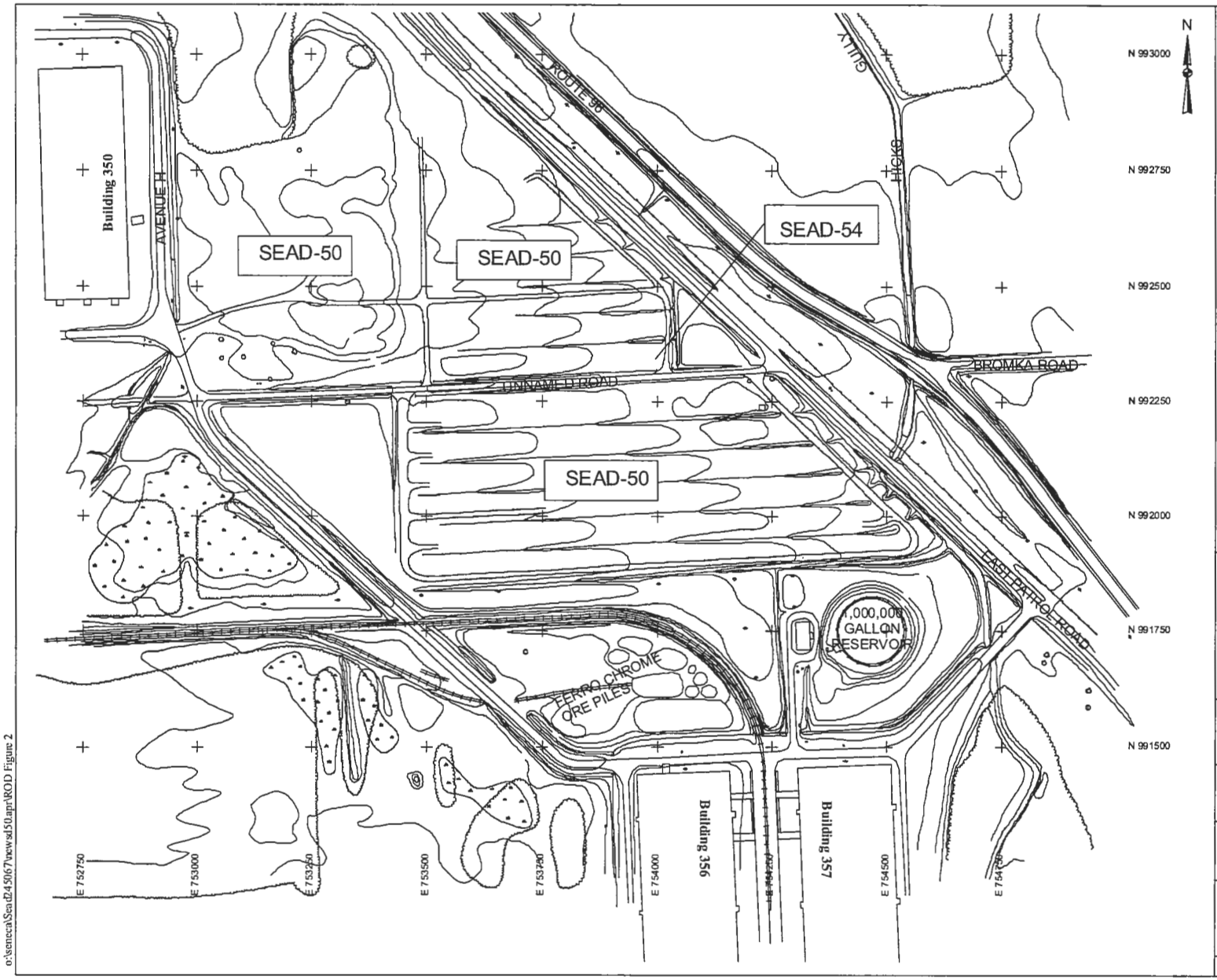
Table obtained from Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Four Metal Sites (SEADs 24, 50/54, 67) (Parsons, 2002)

TABLE 6
SUMMARY OF TCRA SOIL METAL ANALYSIS RESULTS

SENECA ARMY DEPOT ACTIVITY
REMOVAL ACTION

COMPOUND	UNITS	MAXIMUM DETECT	FREQUENCY OF DETECTION	CRITERIA VALUE	NUMBER ABOVE CRITERIA	NUMBER OF DETECTS	NUMBER OF SAMPLES
Aluminum	ug/Kg	19200	100%	13089	64	94	94
Antimony	ug/Kg	162	19%	2.63	8	18	94
**Arsenic	ug/Kg	41.9	100%	8.25	42	425	425
Barium	ug/Kg	337	100%	776	0	94	94
Beryllium	ug/Kg	1	95%	0.656	67	89	94
**Cadmium	ug/Kg	1.1	18%	1	3	17	94
Calcium	ug/Kg	64300	100%	48348	3	94	94
Chromium	ug/Kg	41.2	100%	20.05	67	94	94
**Cobalt	ug/Kg	25.4	100%	30	0	94	94
**Copper	ug/Kg	40.4	100%	25	15	94	94
Iron	ug/Kg	34700	100%	24584	50	94	94
**Lead	ug/Kg	117	100%	400	0	94	94
Magnesium	ug/Kg	21200	100%	10560	8	94	94
Manganese	ug/Kg	2510	100%	596.61	40	94	94
**Mercury	ug/Kg	2	71%	0.1	2	298	420
Nickel	ug/Kg	49.9	100%	31.025	36	94	94
Potassium	ug/Kg	3490	100%	1504.15	57	94	94
*Selenium	ug/Kg	1.1	0%	2	0	0	94
Silver	ug/Kg	0.39	0%	0.362	2	0	94
Sodium	ug/Kg	235	100%	89.023	25	94	94
Thallium	ug/Kg	3.9	0%	0.251	94	0	94
**Vanadium	ug/Kg	31.3	100%	150	0	94	94
Zinc	ug/Kg	1960	100%	110	43	418	418

Figures



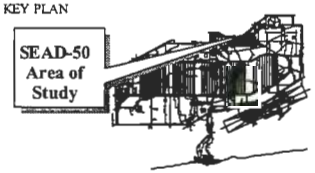
LEGEND

PAVED ROAD
GROUND CONTOUR AND ELEVATION
WETLAND
BRUSH
CHAIN LINK FENCE
UTILITY POLE
APPROXIMATE LOCATION OF FIRE HYDRANT
RAILROAD

N

100 0 100 200 300 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
TANK FARM
SEAD-50 AND SEAD-54

FIGURE 1
SITE MAP - SEAD 50 and SEAD 54

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LEGEND

PAVED ROAD

GROUND CONTOUR AND ELEVATION

WETLAND

BRUSH

CHAIN LINK FENCE

UTILITY POLE

APPROXIMATE LOCATION OF FIRE HYDRANT

RAILROAD

AREA OF EXCAVATION

AREA #	sq footage
1	105,855
2	10,669
3	10,244
4	54,196
5	23,247
6	3,511
7	9,152

N

100 0 100 200 300 Feet

KEY PLAN

PARSONS

SENECA ARMY DEPOT ACTIVITY
TANK FARM
SEAD-50 AND SEAD-54

FIGURE 2
TCRA SOIL EXCAVATION LOCATIONS

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o:\seneca\Sead\245067\news\sd50.apr\ROD Figure 3