
**NON-TIME CRITICAL REMOVAL ACTION
MISCELLANEOUS COMPONENTS BURIAL SITE (SEAD-63)**

**SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK**

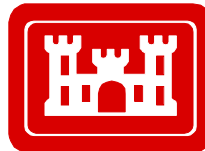
REMOVAL ACTION COMPLETION REPORT

01063

Final

November 2005

Prepared for:



U.S. ARMY CORPS OF ENGINEERS, BALTIMORE & NEW YORK DISTRICTS
Contract Number DACA31-01-D-0032, Delivery Order 0007

Prepared by:

Plexus Scientific Corporation
8808 Centre Park Drive
Suite 300
Columbia, MD 21045

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EXECUTIVE SUMMARY

Plexus Scientific Corporation (Plexus) completed a Non-Time Critical Removal Action (NTCRA or Removal Action) at the Miscellaneous Components Burial Site (designated SEAD-63) at Seneca Army Depot Activity (SEDA), Romulus, New York (NY).

Scope

The Removal Action consisted of:

- Establishing temporary support zone facilities, including decontamination and waste processing/storage pads;
- Collection of ground water from existing SEAD-63 monitoring wells using low flow sampling methods and performing laboratory analysis;
- Conducting a baseline topographic survey of the SEAD-63 site to define surface features prior to excavation;
- Staking estimated boundaries of the SEAD-63 burial pits based on previous geophysical surveys performed by others;
- Staking portions of drainage ditches adjacent to the SEAD-63 site the *Action Memorandum* (Parsons Engineering Science, Inc., 2001) identified for removal of surface material;
- Excavating test pits, collecting soil samples and performing laboratory analysis for preliminary disposal characterization purposes;
- Excavating debris and soil from the former SEAD-63 burial pits;
- Collecting and laboratory analysis of soil samples to confirm the burial pits soil cleanup goal of 2.3 milligrams per Kilogram (mg/Kg) cadmium was met at the limits of excavation;
- Excavating surface material (i.e., the upper six inches) from staked portions of drainage ditches adjacent to the SEAD-63 site;
- Collecting soil samples from the limits of excavated areas of the drainage ditches and SEAD-63 burial pits and performing laboratory analysis to document conditions following excavation;
- Segregating large debris and stone greater than four inches in diameter from material excavated from the burial pits using a screen plant;
- Defining background radioactivity for soil at SEDA locations outside the limits of the SEAD-63 burial pits;
- Physical inspection by a representative of the United States (US) Army to confirm that debris did not contain radioactive sources and to segregate classified items requiring further disposition by the Army;
- On-site screening of excavated debris and soil to confirm that radioactivity levels were at or below background levels;
- Collecting and laboratory analysis of samples of excavated soil and debris, and waste acceptance by the off-site disposal facility, Ontario County Landfill in Stanley, NY;

- Loading, transport, and off-site disposal at Ontario County Landfill of the excavated/processed debris and soil, as well as materials used to construct the temporary storage and decontamination pads;
- Identifying the location of bedrock in the bottom of the burial pits excavation;
- Topographic surveying to document the limits of excavation of the burial pits and drainage ditch areas;
- Backfilling the burial pits excavation using soil from areas adjacent to the SEAD-63 site, machine compaction, and grading those areas and the support zone to approximate pre-Removal Action grades; and
- Re-seeding the restored excavation and support zone areas, and placing straw near drainage ditches to minimize erosion and sedimentation.

Summary of Work Performed

The Removal Action was conducted in a single mobilization from 5 April and 1 June 2004. Using low flow methods, Plexus collected ground-water samples from overburden monitoring wells on the SEAD-63 site previously installed by others. Laboratory analysis results for those samples indicated downgradient concentrations of radioactivity were lower than upgradient concentrations. None of the laboratory results exceeded New York State Department of Environmental Conservation (NYSDEC) water quality criteria for any of the parameters analyzed, with the exception of Radium (Ra)-226 in one sample. The concentration of RA-226 in the upgradient ground-water sample was slightly above the NYSDEC drinking water-based criteria of 3.00 picocuries per liter (pCi/L).

The U.S. Army Corps of Engineers (USACE) discussed these ground-water monitoring results with the NYSDEC and USEPA on 14 June 2004 at a BCT meeting and secured their agreement that installation and sampling of additional ground-water monitoring wells originally proposed in Plexus' Work Plan were not necessary (USACE, 2004). Based on that agreement, the USACE directed Plexus not to install the additional ground-water monitoring wells. No additional post-closure monitoring is planned.

Debris and fill material was excavated from the burial pits until natural soils were observed or bedrock was observed. Off-site laboratory analysis results confirmed the cleanup goal of 2.3 mg/Kg cadmium was met at the limits of excavation at locations where soil was present. Samples collected from the limits of excavation were also analyzed for other parameters for documentation purposes. Soil sampling was not performed in areas where excavation proceeded to bedrock. At the request of the US Army, the former burial pits were backfilled to approximately original grade with soil graded from areas adjacent to the SEAD-63 site. The backfill material was machine compacted, graded and the area seeded.

Six inches of surface soil was excavated from portions of drainage ditches surrounding the SEAD-63 site identified in the *Action Memorandum* (Parsons Engineering Science, Inc., 2001). Samples were collected from the limits of the drainage ditch excavations and submitted for off-site laboratory analysis for documentation purposes. The excavated areas of the drainage ditches were not backfilled.

Excavated soil and debris were segregated into four-inch plus and four-inch minus material. No radioactive sources were found during the US Army's inspection of excavated material. On-site radiological screening and off-site laboratory analysis of excavated/segregated material confirmed its classification as non-radioactive, non-Resource Conservation and Recovery Act (RCRA) hazardous solid waste. Laboratory results were submitted to and the wastes were approved for disposal at the Ontario County Landfill in Stanley, NY. A total of 5,131.54 tons of solid wastes were subsequently transported to the Ontario County Landfill, consisting of 987.37 tons of four-inch plus and 4,144.17 tons of four-inch minus material.

Ambient air monitoring performed during the Removal Action confirmed that particulate concentrations were below action levels established in the project *Removal Action Work Plan* (Plexus Scientific Corporation, 2004).

Wastewater and stormwater generated during the Removal Action were collected and conveyed to a fractionation (frac) tank and several drums. Samples of the wastewater were collected and laboratory analysis provided to the Seneca County Sewer District. The wastewater was discharged on-Based to the sanitary sewer system at a location designated by the County following their review of the laboratory results and approval to discharge.

Conclusions and Recommendations

Laboratory results for ground-water samples collected using low flow methods indicated that radiochemical concentrations downgradient of the SEAD-63 site that were below NYSDEC drinking water quality criteria and/or background (upgradient) concentrations. These results better reflect ambient conditions than previous ground-water monitoring performed by others, which may have been impacted by elevated suspended solids in samples collected using non-low flow methods.

Evidence of radioactive contamination was not found during excavation of the SEAD-63 burial pits. Laboratory results for post-excavation soil samples confirmed the burial pits soil cleanup goal of 2.3 mg/Kg cadmium was met at the limits of the burial pits excavation. Accordingly, no further action is recommended for the SEAD-63 burial pits.

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ACRONYMS AND ABBREVIATIONS

AMRO	AMRO Environmental Laboratories, Inc.
BGS	below ground surface
BRAC	Base Realignment and Closure
Cabrera	Cabrera Services, Inc.
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
COR	Contracting Officer's Representative
CQC	Contractor Quality Control
CPM	Critical Path Method
DCGL	Derived Concentration Guideline Level
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
ELAP	Environmental Laboratory Approval Program
EM	electromagnetic
ESI	Expanded Site Investigation
FFA	Federal Facilities Agreement
frac	fractionation
FSS	Final Status Survey
GEL	General Engineering Laboratories, Inc.
i.e.	that is to say
MARSSIM	Multi-Agency Radiological Survey and Site Investigation Manual
mg/Kg	milligrams per Kilogram
mg/ℓ	milligram per liter
mrem/yr	milli roentgen equivalent man per year
NPL	National Priority List
NTCRA	Non-Time Critical Removal Action
NY	New York

ACRONYMS AND ABBREVIATIONS (CONT)

NYS AWQS	New York State Ambient Water Quality Standard
NYSDEC	New York State Department of Environmental Protection
%	percent
PCB	Polychlorinated biphenyls
PID	Photoionization Detector
Plexus	Plexus Scientific Corporation
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SEDA	Seneca Army Depot Activity
SSHP	Site Safety and Health Plan
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

REFERENCES

Multi-Agency Radiological Site and Survey Investigation Manual, NUREG-1975. EPA 402-R-97-016. August 2000.

New York State Department of Environmental Protection, Division of Environmental Remediation. *Technical and Administrative Guidance Memorandum # 4046, Determination of Soil Cleanup Objectives and Cleanup Levels.* January 24, 1994.

New York State Department of Environmental Protection, Division of Environmental Remediation. *Technical and Administrative Guidance Memorandum # 4031, Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.* October 27, 1989.

New York State Department of Environmental Protection, Division of Environmental Remediation. *Technical and Administrative Guidance Memorandum # 4003, Soil Cleanup Guideline for Soils Contaminated with Radioactive Materials.* September 14, 1993.

Parsons Engineering Science, Inc., 1995a. *Expanded Site Investigation Report for Seven Low Priority AOCs – SEADs 60, 62, 63, 64, (A, B, C and D), 67, 70 and 71 – Draft Final.* April 1995.

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Plexus Scientific Corporation, 2004. *Removal Action Work Plan, Non-Time Critical Removal Action, Miscellaneous Components Burial Site (SEAD-63),*

United States Environmental Protection Agency-Region II, United States Department of the Army and the New York State Department of Environmental Conservation. 1993. *Federal Facilities Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus New York.* February 21, 1993.

United States Army Corps of Engineers, New York District. Personal communications with Mr. Thomas Enroth. November 26, 2003.

United States Army Corps of Engineers, New York District. Personal communications with Mr. Thomas Battaglia. June 18, 2004.

1. BACKGROUND AND PURPOSE

Seneca Army Depot Activity (SEDA), located in Romulus, New York (NY), was officially closed by the Department of Defense (DoD) and the United States (US) Army and in accordance with the Base Realignment and Closure (BRAC) process. Portions of the depot are in the process of being released to the public and private sectors for reuse. As increased access to the former Depot property is afforded, the potential for exposure to contamination that may be present at the SEAD-63 site will increase.

Two *Expanded Site Inspections* (ESIs) (Parsons Engineering Science, Inc., 1995a and 1995b) and an *Engineering Evaluation/Cost Analysis* (EE/CA) (Parsons Engineering Science, Inc., 2001a) were performed for the Miscellaneous Components Burial Site (designated SEAD-63) at SEDA. The ESIs and EE/CA documented the presence of burial pits at the SEAD-63 site ("site") which were found to contain miscellaneous military components. The ESIs and EE/CA also reported that soil in and surrounding the burial pits that exceeded background for several chemical constituents, the primary one being cadmium. Material in portions of drainage ditches adjacent to the site were also reported as having chemical and/or radiological constituents/levels slightly higher than background.

The EE/CA and an *Action Memorandum* for the SEAD-63 site were completed in July 2000 as part of the BRAC closure process. The *Action Memorandum* documented the Army's selection of a Non Time-Critical Removal Action (NTCRA). Those documents were amended in July and October 2001 in response to New York State Department of Environmental Conservation (NYSDEC) and US Environmental Protection Agency (USEPA) comments (Parsons Engineering Science, Inc., 2001a and 2001b, respectively). The purpose of the NTCRA for SEAD-63, as described in the EE/CA and *Action Memorandum*, is to:

- (1) Eliminate an identified source of residual materials in the soil, and
- (2) Remove or at least lessen the magnitude of the potential impact that it represents to surrounding populations and the environment.

The EE/CA and *Action Memorandum* indicated the primary goal of the NTCRA as removal of buried debris (miscellaneous military components) from the SEAD-63 site. Soil containing low concentrations of chemical constituents in and immediately surrounding the burial pits and a small quantity of surface material in portions of drainage ditches adjacent to the site were also identified for removal as part of the SEAD-63 Removal Action.

This report documents completion of the NTCRA performed by Plexus Scientific Corporation (Plexus) on behalf of the U.S. Army Corps of Engineers (USACE) under Contract Number (#) DACA31-01-D-0032, Delivery Order 0007. The work described herein was conducted in general accordance with a Work Plan and supporting accompanying project plans (Plexus, 2004), including: Contractor Quality Control (CQC) Plan, Site Safety and Health Plan (SSHP), Air Monitoring Plan, Sampling and Analysis Plan (SAP), and contingent Final Status Survey (FSS) Plan. Those documents were submitted to the Army, NYSDEC, and USEPA prior to execution of fieldwork in accordance with the *Federal Facilities Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus, New York* (USEPA, US Department of the Army, and NYSDEC, 1993) (FFA) for SEDA. Minor deviations from the Work Plan and supporting project plans are identified herein.

2. FACILITY AND SITE INFORMATION

2.1 FACILITY LOCATION

SEDA is a US Army facility located in Seneca County, NY, occupying approximately 10,600 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 50 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming. A locus map is presented as Figure 2-1.

2.2 FACILITY DESCRIPTION

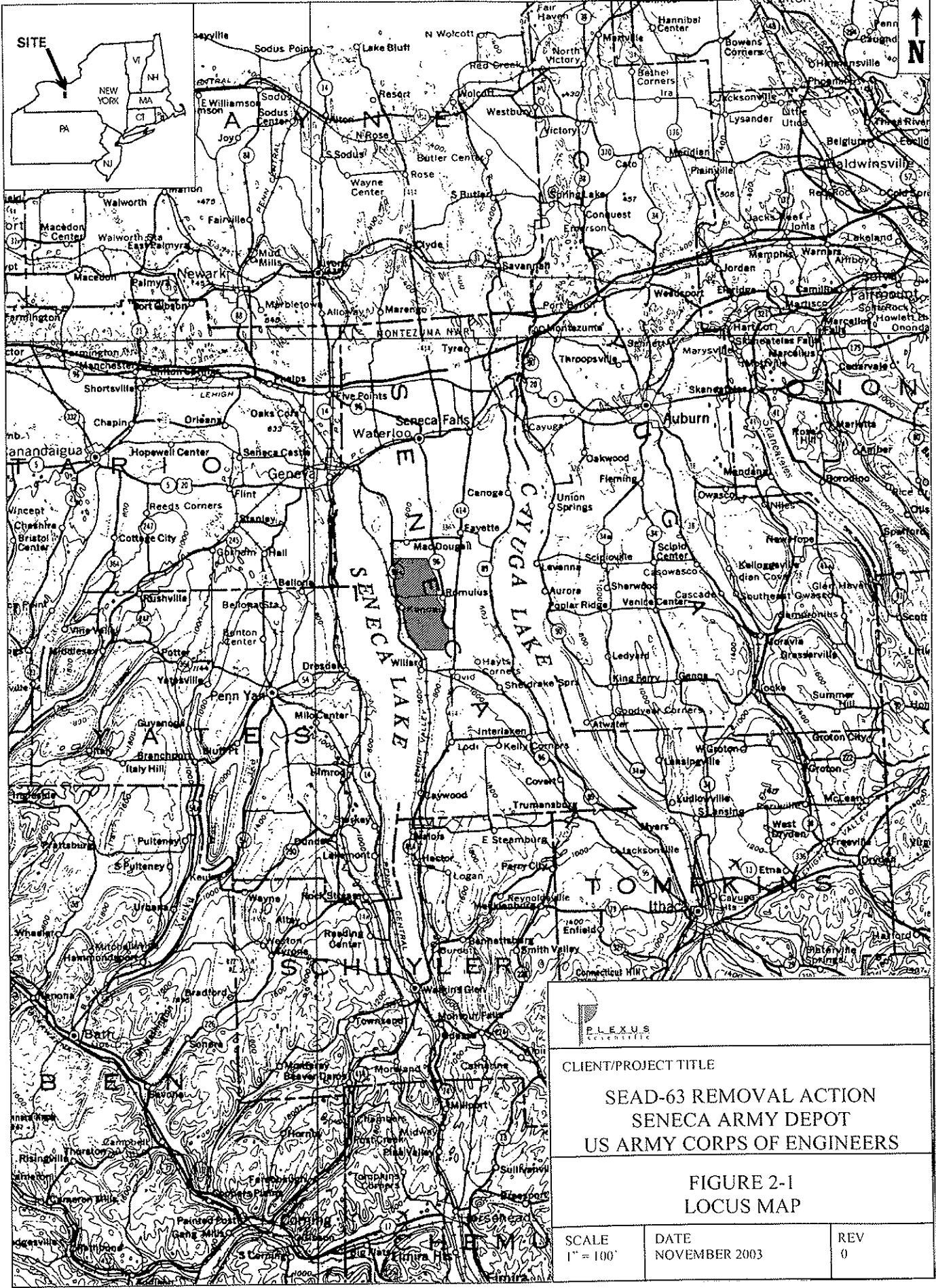
The SEDA facility is situated on the western flank of a topographic high between Cayuga and Seneca Lakes in the Finger Lakes region of central New York. SEDA was constructed in 1941 and has been owned by the US Government and operated by the Department of the Army since that time. The depot generally consists of an elongated central area formerly used for storage of ammunitions and weaponry in Quonset-style buildings, an operations and administration area in the eastern portion, and a former army barracks area at the north end of the depot. The depot was later expanded to encompass a 1,524-meter airstrip, formerly the Sampson Air Force Base.


The mission of SEDA has primarily been the management of munitions. SEDA was used for: (1) receiving, storing, and distributing ammunition and explosives, (2) providing receipt, storage, and distribution of items that support special weapons, and (3) performing depot-level maintenance, demilitarization, and surveillance on conventional ammunition and special weapons.

SEDA was included on the National Priorities List (NPL) in 1989. Consequently, all work on this project will be performed in accordance with Comprehensive Environmental Response and Liability Act (CERCLA) guidance and the *Federal Facilities Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus, New York* (FFA) (USEPA, US Department of the Army, and NYSDEC, 1993).

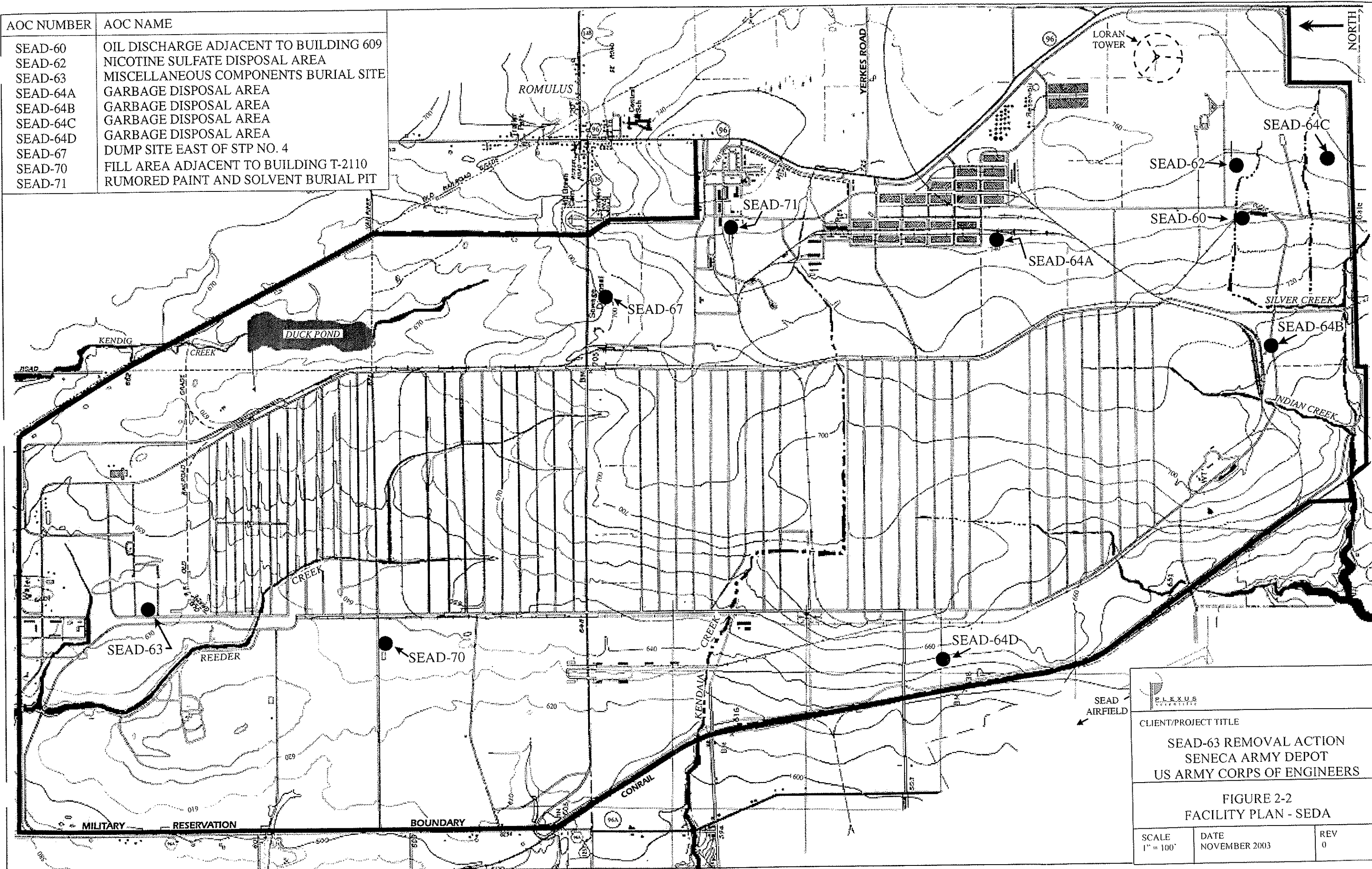
2.3 SEAD-63 DESCRIPTION


SEAD-63 is located on the east side of North-South Baseline Road in the northwestern part of SEDA (Figure 2-2). The site is approximately 480 by 300 feet and is bounded by paved roads on the north, south and west and by open grassland to the east (Figure 2-3). The SEAD-63 site is mostly undeveloped except for a grass-covered bunker in the southeast corner and an elevated soil area in the northwest corner that formerly supported a machine-gun turret. A crushed shale road enters the site via Patrol Road. In general, the western half of the site is less vegetated and has been physically worn by vehicular traffic. The site is located within a secure, double-fenced area within SEDA.



		
CLIENT/PROJECT TITLE SEAD-63 REMOVAL ACTION SENECA ARMY DEPOT US ARMY CORPS OF ENGINEERS		
FIGURE 2-1 LOCUS MAP		
SCALE 1" = 100'	DATE NOVEMBER 2003	REV 0

AOC NUMBER	AOC NAME
SEAD-60	OIL DISCHARGE ADJACENT TO BUILDING 609
SEAD-62	NICOTINE SULFATE DISPOSAL AREA
SEAD-63	MISCELLANEOUS COMPONENTS BURIAL SITE
SEAD-64A	GARBAGE DISPOSAL AREA
SEAD-64B	GARBAGE DISPOSAL AREA
SEAD-64C	GARBAGE DISPOSAL AREA
SEAD-64D	GARBAGE DISPOSAL AREA
SEAD-67	DUMP SITE EAST OF STP NO. 4
SEAD-70	FILL AREA ADJACENT TO BUILDING T-2110
SEAD-71	RUMORED PAINT AND SOLVENT BURIAL PIT



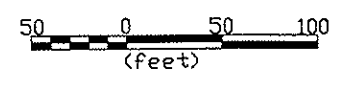
		
CLIENT/PROJECT TITLE SEAD-63 REMOVAL ACTION SENECA ARMY DEPOT US ARMY CORPS OF ENGINEERS		
FIGURE 2-2 FACILITY PLAN - SEDA		
SCALE 1" = 100'	DATE NOVEMBER 2003	REV 0



LEGEND

	MINOR WATERWAY
	MAJOR WATERWAY
	FENCE
	UNPAVED ROAD
	BRUSH LINE
	APPROXIMATE LANDFILL EXTENT
	RAILROAD
	GROUND SURFACE ELEVATION CONTOUR
	ELECTRIC UTILITY LINE
	UNDERGROUND WATER UTILITY LINE
	ROAD SIGN
	DECIDUOUS TREE
	GUIDE POST
	FIRE HYDRANT
	MANHOLE
	COORDINATE GRID (250' GRID)
	POLE
	UTILITY BOX
	MAILBOX/RR SIGNAL
	OVERHEAD UTILITY POLE
	SURVEY MONUMENT
(NOT ALL SYMBOLS MAY APPEAR ON MAP)	
	APPROXIMATE AOC EXTENT

APPROXIMATE EXTENT OF OPERATIONS PAD (FROM SEDA SITE MAPS)



P.L.E.X.U.S.
CORPORATION

CLIENT/PROJECT TITLE
SEAD-63 REMOVAL ACTION
SENECA ARMY DEPOT
US ARMY CORPS OF ENGINEERS

FIGURE 2-3
SEAD-63 SITE PLAN

SCALE 1" = 100'	DATE NOVEMBER 2003	REV 0
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ACAD\SENECA\7LPSW\MU\SD63S1.DWG

Topography on site is generally flat with only a small westward slope. Drainage ditches adjacent to Patrol Road and the east-west trending roads that bound the site to the north and south. A slight ground depression, sloping south to north, was located in the northeastern portion of the site. Reeder Creek is located approximately 1,500 feet southwest of the site where it flows west into Seneca Lake.

The SEAD-63 site was used during the 1960s through 1980s as a disposal area for classified military parts. Multiple disposal pits were between 10 and 30 feet long and were reportedly excavated to depths as deep as the surface of the weathered shale about eight to nine feet below ground surface (BGS), with competent bedrock underlying the weathered material. The EE/CA reported SEDA personnel having identified the types of materials disposed at this site as inert metal parts (also referred to therein as “miscellaneous components”).

3. OBJECTIVES

As stated in the EE/CA and *Action Memorandum*, the primary objective of the NTCRA was removing debris (i.e., miscellaneous military components) from the SEAD-63 burial pits to eliminate a contamination source and reduce potential further soil and ground-water contamination. The approximate location of the former burial pits relative to other site features is shown in Figure 3-1.

Other, secondary NTCRA objectives included:

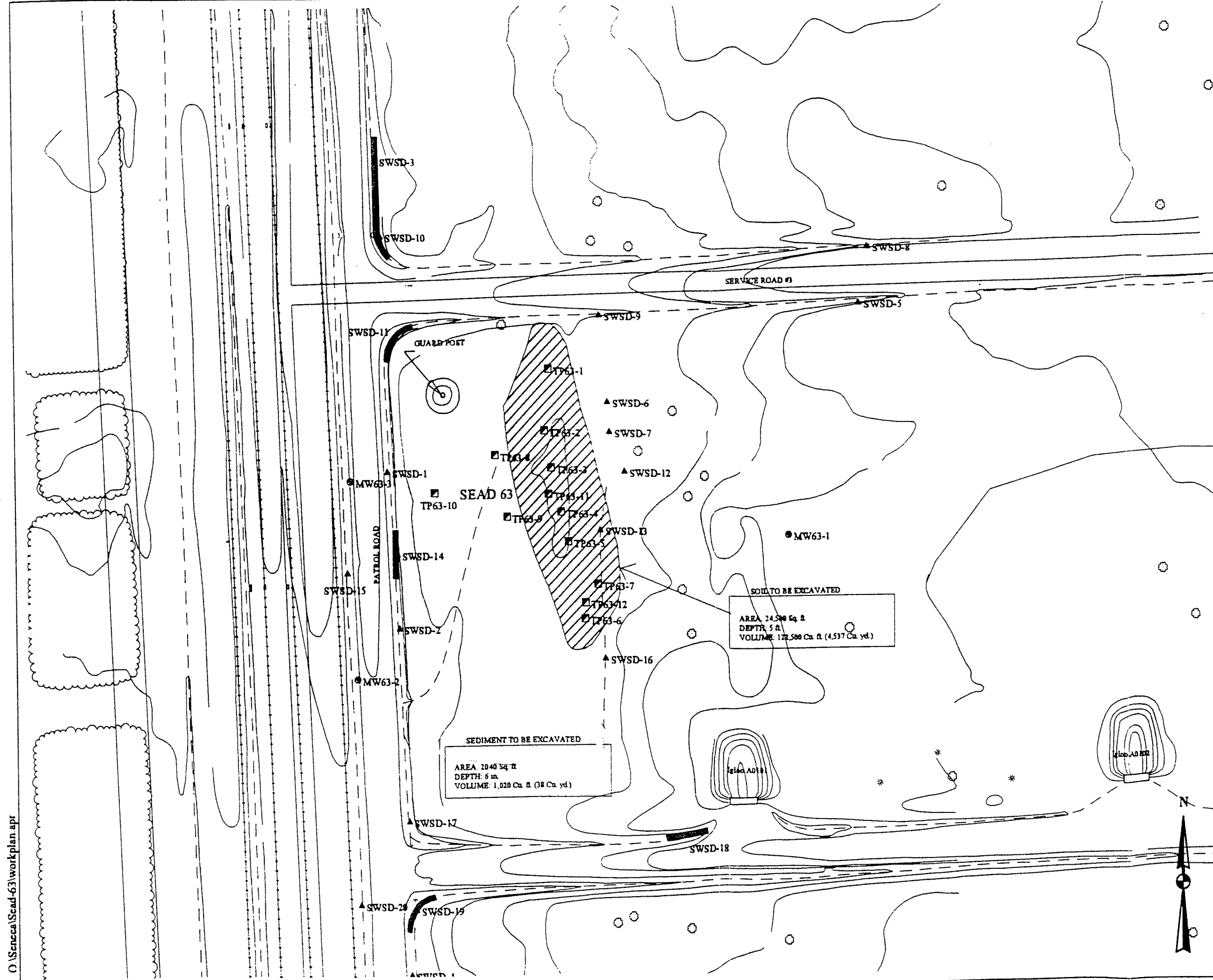
- Removing contaminated soil associated with the buried miscellaneous components in/surrounding the burial pits that exceeds cleanup goals;
- Removing surface material (0-6 inches BGS) from portions of drainage ditches near the perimeter of the SEAD-63 site (see Figure 3-1); and
- Perform ground-water monitoring at SEAD-63.

The EE/CA and *Action Memorandum* concluded that cadmium was the only metallic constituent of concern in soil at SEAD-63. Two cleanup goals were developed for cadmium in soil, one based on a streamlined risk evaluation and the other on NYSDEC guidance values as described in *Technical and Administrative Guidance Memorandum (TAGM) # 4046, Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC, 1994). The streamlined risk evaluation was based on the assumption that all constituents at the site other than cadmium remain at their present levels. The 50 milligrams per Kilogram (mg/Kg) risk-based value in soil represents the highest concentration of cadmium that could exist at the site, all other constituents being present at current levels, and still result in acceptable risk.















The TAGM # 4046 cleanup guidance for cadmium in soil is 1.0 mg/Kg or site background, whichever is greater. The US Army, NYSDEC, and USEPA have recently agreed that background consists of the 95th percentile of SEDA-wide background levels. SEDA-wide background for cadmium in soil is 2.3 mg/Kg (USACE, 2003).

The US Army selected the 2.3 mg/Kg TAGM value as the cleanup goal for cadmium in soil at the SEAD-63 site. This cleanup goal is more conservative than the risk-based value.

The EE/CA and *Action Memorandum* recommended removal of surface material (i.e., 0-6 inches BGS) from portions of drainage ditches at and adjacent to the SEAD-63 site. Cleanup goals for those areas of the drainage ditches were not identified in the EE/CA and *Approval Memorandum*. The drainage ditches were not the primary focus of the NTCRA.

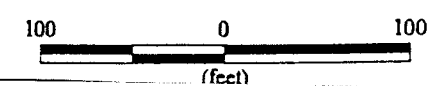


LEGEND

-  SOIL TO BE EXCAVATED TO AVERAGE DEPTH OF 5 FEET
-  SEDIMENT TO BE EXCAVATED TO AVERAGE DEPTH OF 6 INCHES, WIDTH OF 6 FEET, AND 25 FEET UP AND DOWN GRADIENT
-  SURFACE WATER/SEDIMENT SAMPLE (ESI, 1994)
-  APPROXIMATE SURFACE WATER/SEDIMENT SAMPLE (DEC, 1997)
-  MONITORING WELL (ESI, 1994)
-  TEST PIT (ESI, 1994)
-  PAVED ROAD
-  GROUND CONTOUR AND ELEVATION
-  WETLAND
-  BRUSH
-  CHAIN LINK FENCE
-  UTILITY POLE
-  APPROXIMATE LOCATION OF FIRE HYDRANT
-  RAILROAD

SOIL TO BE EXCAVATED
 AREA: 24,500 Sq. ft.
 DEPTH: 5 ft.
 VOLUME: 122,500 Cu. ft. (4,537 Cu. yd.)

SEDIMENT TO BE EXCAVATED
 AREA: 20,400 Sq. ft.
 DEPTH: 6 in.
 VOLUME: 1,020 Cu. ft. (38 Cu. yd.)



CLIENT/PROJECT TITLE
 SEAD-63 REMOVAL ACTION
 SENECA ARMY DEPOT
 US ARMY CORPS OF ENGINEERS
 FIGURE 3-1
 REMOVAL ACTION AREAS
 SEAD-63 SOIL & DRAINAGE DITCH
 MATERIAL

SCALE 1" = 100'	DATE NOVEMBER 2003	REV 0
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The ESI (Parsons Engineering Science, Inc., 1995a) indicated that radionuclides were not present in soil in SEAD-63 burial pits above background levels. The EE/CA and *Action Memorandum* indicated site-specific radiological soil cleanup goals [known as derived concentration guideline levels (DCGLs)] would be established if radiological contamination is found during the Removal Action. Preliminary DCGLs were reported in the EE/CA using RESRAD and site-specific information for SEAD-63, based on an exterior dose limit of 10 mrem/yr (milli-roentgen equivalent man per year) above background in accordance with TAGM # 4003.

A FSS Plan was developed during the work planning process for the SEAD-63 NTCRA (Plexus, 2004). The FSS Plan, which included procedures for development of final DCGLs, was developed as a contingency, to be implemented only if radioactive contamination were found.

4. SCOPE OF WORK

The scope of the NTCRA as outlined in the Work Plan and accompanying project plans was to:

- Collect low turbidity samples from the three existing monitoring wells on the SEAD-63 site and perform laboratory analysis to determine if radioactivity is of concern in ground water at the site;
- Excavate and remove the SEAD-63 burial pits, including both miscellaneous components and soil exceeding the cleanup goal for cadmium selected for this site;
- Separate the military parts (components) from the excavated soil;
- Facilitate the Army's inspection of the excavated components, and segregate, package and turn over to the Army those components it determines may be classified and will require further disposition by the Army;
- Remove the remaining components and dispose at off-site landfill(s);
- Remove the excavated soil and dispose at appropriate off-site landfill(s);
- Excavate surface material from portions of adjacent drainage ditches identified in the EE/CA and Action Memorandum, and dispose at appropriate off-site landfill(s);
- Collect confirmatory soil samples from the former burial pits and drainage ditches and perform laboratory analysis to confirm that cleanup goals for chemical constituents were met at the limits of excavation;
- Perform a *Multi-Agency Radiological Site and Survey Investigation Manual* (US EPA, 2000) (MARSSIM) complaint Class 3 FSS of the limits of the burial pits excavation to confirm radiological cleanup goals have been met if radioactivity is detected above background levels/levels of significance in material excavated from the burial pits;
- Remove temporary facilities for off-site reuse and disposal as appropriate;
- Backfill and restore the excavated areas to pre-Removal Action grades and reseed the site;

- At locations directed by the USACE, advance up to four soil borings, and install and develop overburden ground-water monitoring wells in each of the borings for later post-closure monitoring (by others); and
- Document the results of the above efforts in a Removal Action Completion Report.

The following deviations from the planned scope of work and/or work plans were required or observed.

Nature of the Deviation from Work Plan	Discussion	Outcome
Burial pit confirmatory samples analyzed for VOCs	The work plan did not call for the analysis of these samples for VOCs. However, at the request of the USACE, these samples were analyzed for VOCs. The results of the analysis are presented in the appendices	There is no discernable impact on the successful outcome of the project.
Confirmatory samples not collected from excavation bottom	The work plan calls for confirmatory samples to be collected from the sidewalls and <i>bottom</i> of the excavations. However, in some cases excavation was completed to bedrock such that there were no soils remaining in the bottom of the excavation to be sampled. Sidewall samples were collected in these locations as described in the plan.	There is no discernable impact on the successful outcome of the project.
Backfill not taken from an off-site source	The work plan contains a specification that gravel delivered from an off-site source would be used to backfill excavations. However, it was observed that there were areas of the site at higher elevations than the burial pits and that based on historical data these materials would not violate the remedial standards established for the work. As there were safety issues that made rapid backfilling of the trenches desirable, the USACE directed the contractor to use those higher elevation materials as backfill.	There is no discernable impact on the successful outcome of the project.
Drainage ditches no backfilled	The work plan contains a reference to backfilling drainage ditches after excavation. This specification, however, was erroneous. The drainage ditches had only a small amount of material removed from them and confirmatory samples show that the remaining soils meet the remedial goals. However, the drainage ditches were intended to remain in place, continuing to serve their original drainage purposes post-excavation. For this reason, backfilling was not performed.	There is no discernable impact on the successful outcome of the project.

5. SUMMARY OF REMOVAL ACTION

Plexus conducted the NTCRA between 5 April and 1 June, 2004. We were able to complete work in one rather than two mobilizations as envisioned during Work Plans preparation. Major activities performed during the Removal Action, described herein, included:

- Mobilization and site preparation;
- Collection and laboratory analysis of groundwater samples;
- Establishing background radioactivity in soil;
- Excavation and waste segregation;
- Sampling and laboratory analysis to confirm the limits of excavation;
- Identification and management of debris for disposal and debris requiring further disposition by the Army;
- Disposal characterization and waste acceptance;
- Loading, transport, and disposal of solid wastes;
- Collection, characterization, and discharge of wastewater; and
- Backfilling, site restoration, and demobilization; and
- Ambient air monitoring for particulate matter (fugitive dust) during SEAD-63 Removal Action excavation and waste loading activities.

These activities are described in Sections 5.1 through 5.11.

5.1 MOBILIZATION AND SITE PREPARATION

Mobilization and site preparation activities took place between 5 and 15 April 2004. Personnel, equipment, and materials were mobilized to the site immediately prior to their intended first use. Mobilized equipment included: excavators, front end loader, dozer, vibrating screen plant, dump truck, water truck, 23,000-gallon fractionation (frac) tank, transfer pumps and piping, office trailer, portable generator, and monitoring equipment.

Temporary facilities were constructed and the site prepared for the NTCRA, including:

- Placement of straw for erosion and sedimentation control;
- Construction of impermeable waste processing and storage pads;
- Construction of an impermeable equipment decontamination pad; and
- Installation of piping to convey wastewater from the pads and excavation dewatering effluent to the frac tank.

Land surveying was also performed during mobilization to:

- Establish and stake approximate boundaries of the SEAD-63 burial pits using coordinates from geophysical testing performed during studies described in the EE/CA;
- Stake areas of the SEAD-63 drainage ditches for later excavation in accordance with the EE/CA and Action Memorandum; and
- Document surface topography in areas of the SEAD-63 site prior to beginning excavation.

Topographic features of the SEAD-63 site prior to beginning excavation are shown on Figure 5-1 and in Appendix A.

5.2 GROUNDWATER SAMPLING & LABORATORY ANALYSIS

5.2.1 Previous Groundwater Characterization

The ESI (1995a) presented laboratory results for one round of ground-water samples collected from three overburden monitoring wells at the SEAD-63 site in 1994 and concluded that radioactivity in ground water downgradient from the site was slightly elevated above background. However, low-flow methods were not used to collect those unfiltered ground-water samples. Variable turbidity may have been present in the unfiltered samples and could have produced laboratory results that are not representative of ambient conditions. The lack of detection of radionuclides above background in SEAD-63 burial pit soil samples collected during the ESI further supports that radioactivity may not be an issue in ground water at the site.

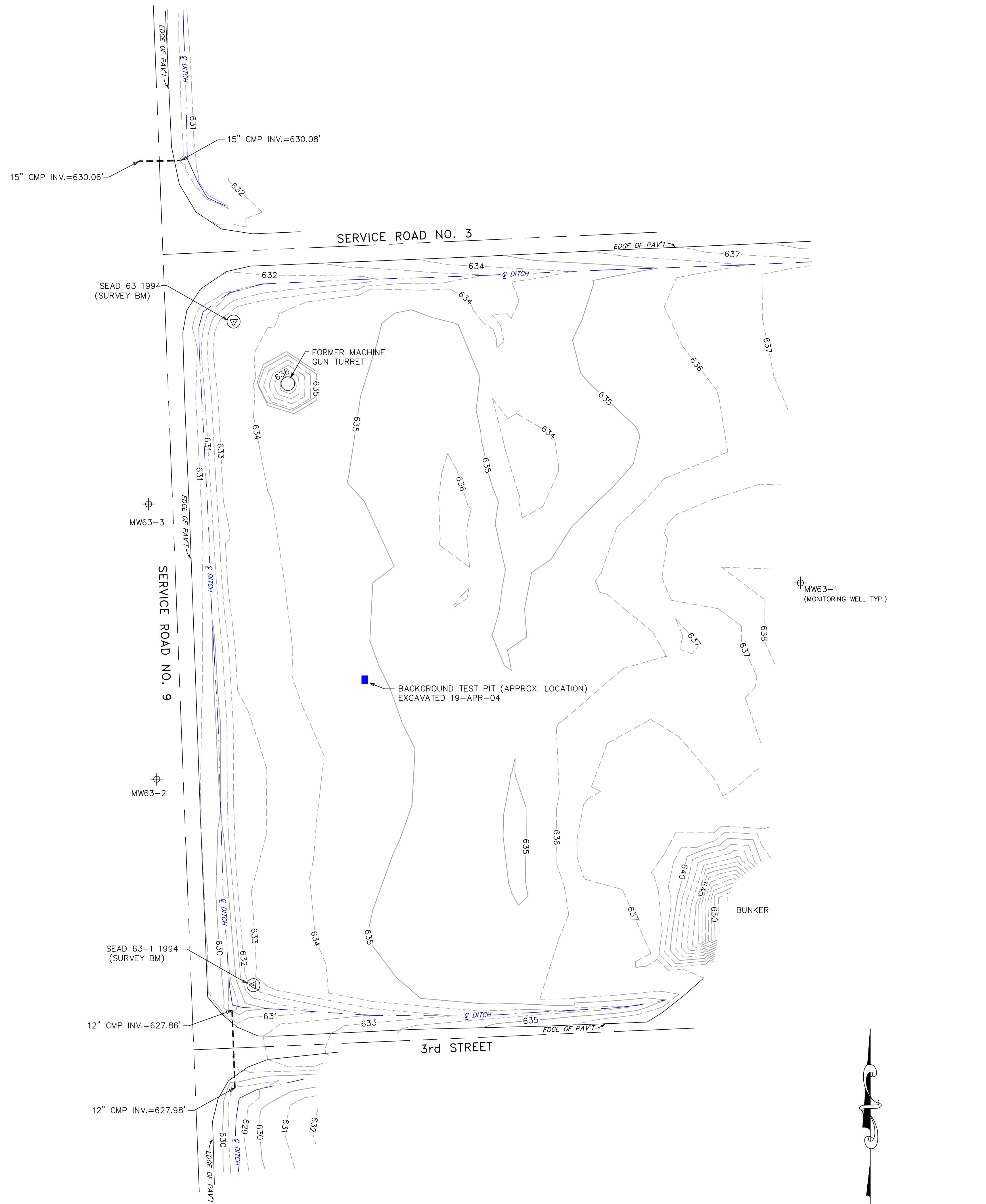
5.2.2 Supplemental Groundwater Characterization During Removal Action

Plexus collected one round of ground-water samples from the three existing SEAD-63 monitoring wells during the Removal Action to further evaluate whether radioactivity is a concern in ground water at the site. The ground-water sampling was performed in April 2004 using low flow methods in accordance with the procedures outlined in the SAP. Sampling logs are presented in Appendix B. Monitoring well locations are shown on Figure 5-1.

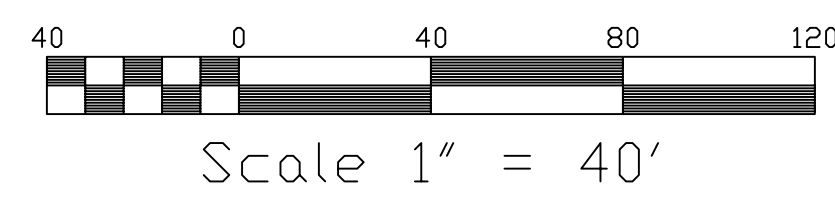
The ground-water samples were analyzed by GEL for Total Uranium, Gross Alpha, Gross Beta, Ra-226, Ra-228, and Tritium. The basis for selecting these parameters is presented in the SAP. Laboratory results from this sampling round are summarized in Table 5-1 and Appendix C.1. Laboratory reports and chain-of-custody records for those samples are presented in Appendix D.1. Data validation reports are included in Appendix E.

PRE-REMOVAL ACTION TOPOGRAPHY, MONITORING WELL LOCATIONS, AND REFERENCE AREA/BACKGROUND SOIL SAMPLING LOCATIONS

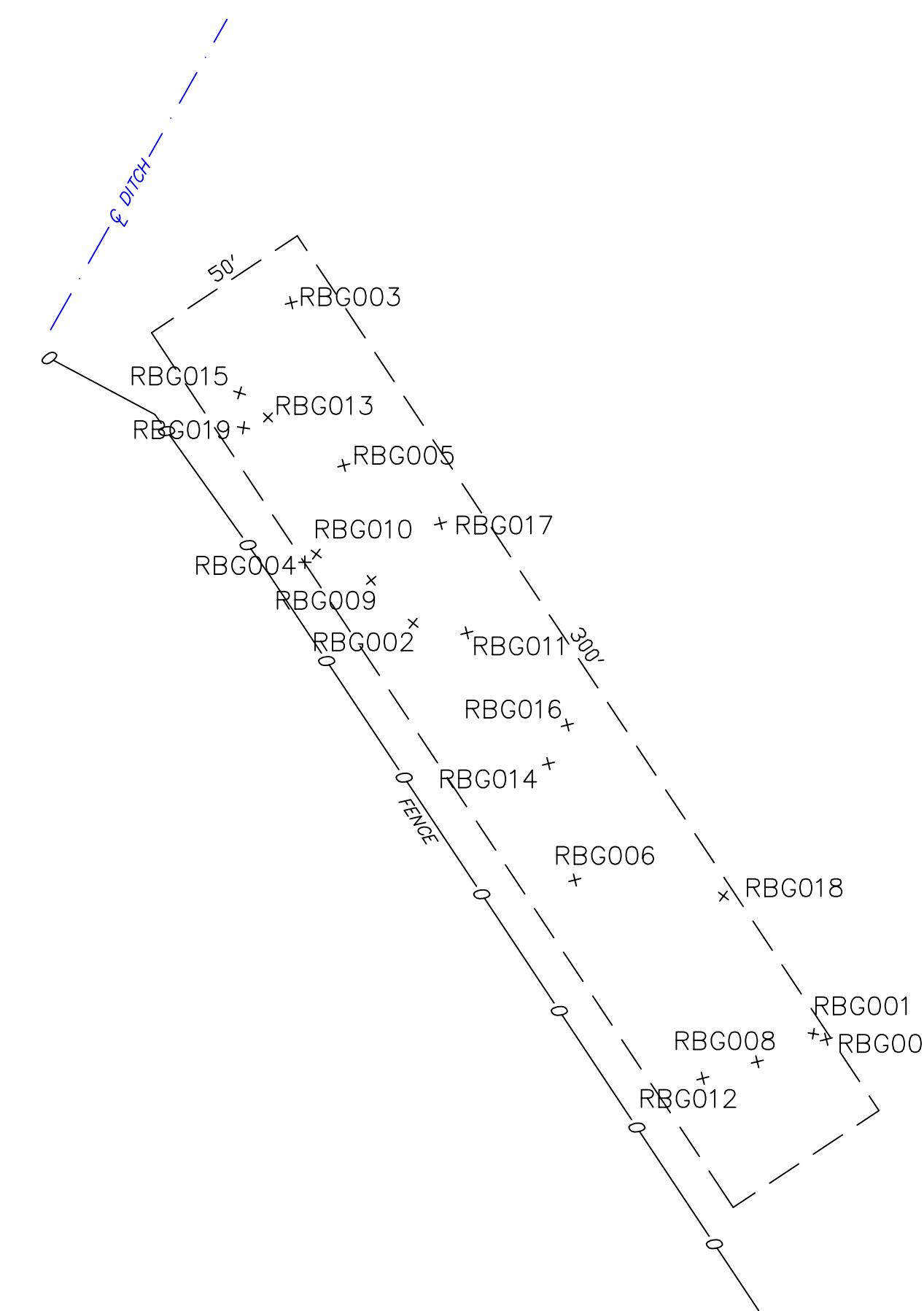
PRE-REMOVAL ACTION CONDITIONS, SEAD-63 BURIAL AREA



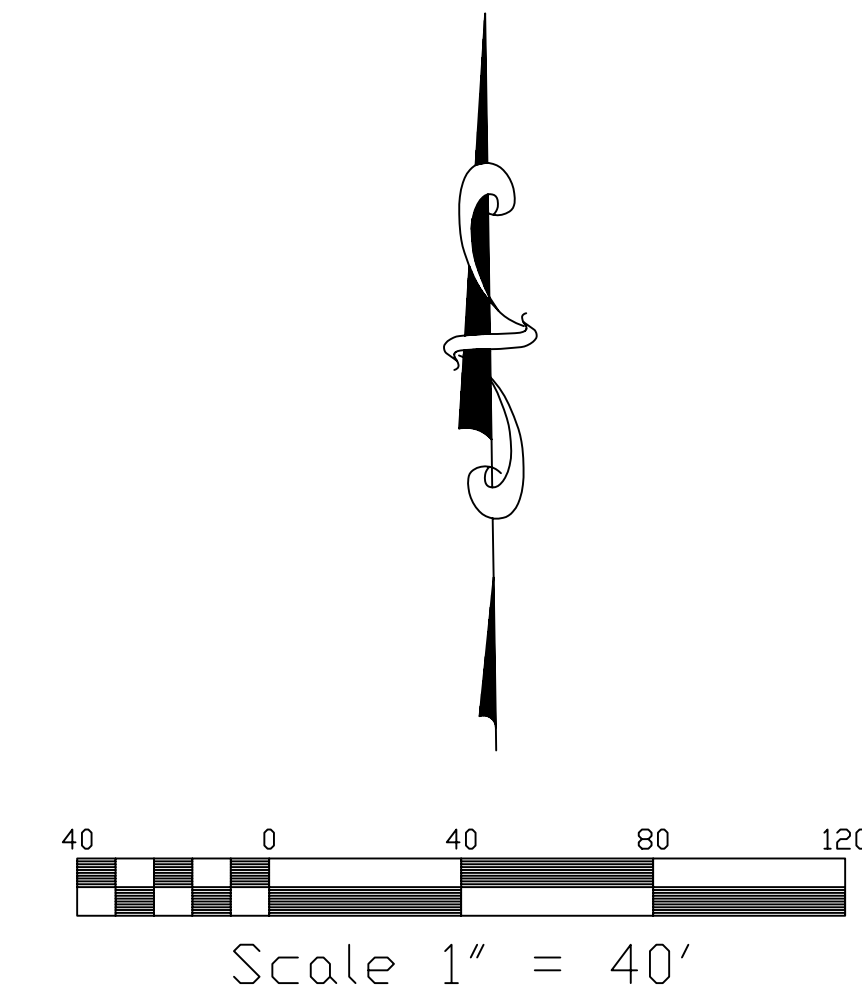
- NOTES**
- HORIZONTAL DATUM: NEW YORK STATE PLANE CENTRAL ZONE COORDINATES ARE PROVIDED ON THE NORTH AMERICAN DATUM OF 1983 BASED ON THE PUBLISHED VALUES OF SEAD 63 MONUMENT CARDS PROVIDED BY PARSON'S ENGINEERING SCIENCE ON 2/9/98.
 - VERTICAL DATUM: ELEVATIONS ARE PROVIDED ON NORTH AMERICAN VERTICAL DATUM OF 1988 BASED ON THE PUBLISHED VALUES OF SEAD 63 MONUMENT CARDS PROVIDED BY PARSON'S ENGINEERING SCIENCE ON 2/9/98.
 - FIELD SURVEY WAS COMPLETED APRIL OF 2004. ELEVATIONS ARE FT. ABOVE MEAN SEA LEVEL.
 - FIELD SURVEY WAS COMPLETED USING A TOPCON GPT-8005A INSTRUMENT WITH A RANGER DATA COLLECTOR.
 - SURVEY BM DENOTES SURVEY BENCHMARK AS PROVIDED IN 1) & 2) ABOVE.



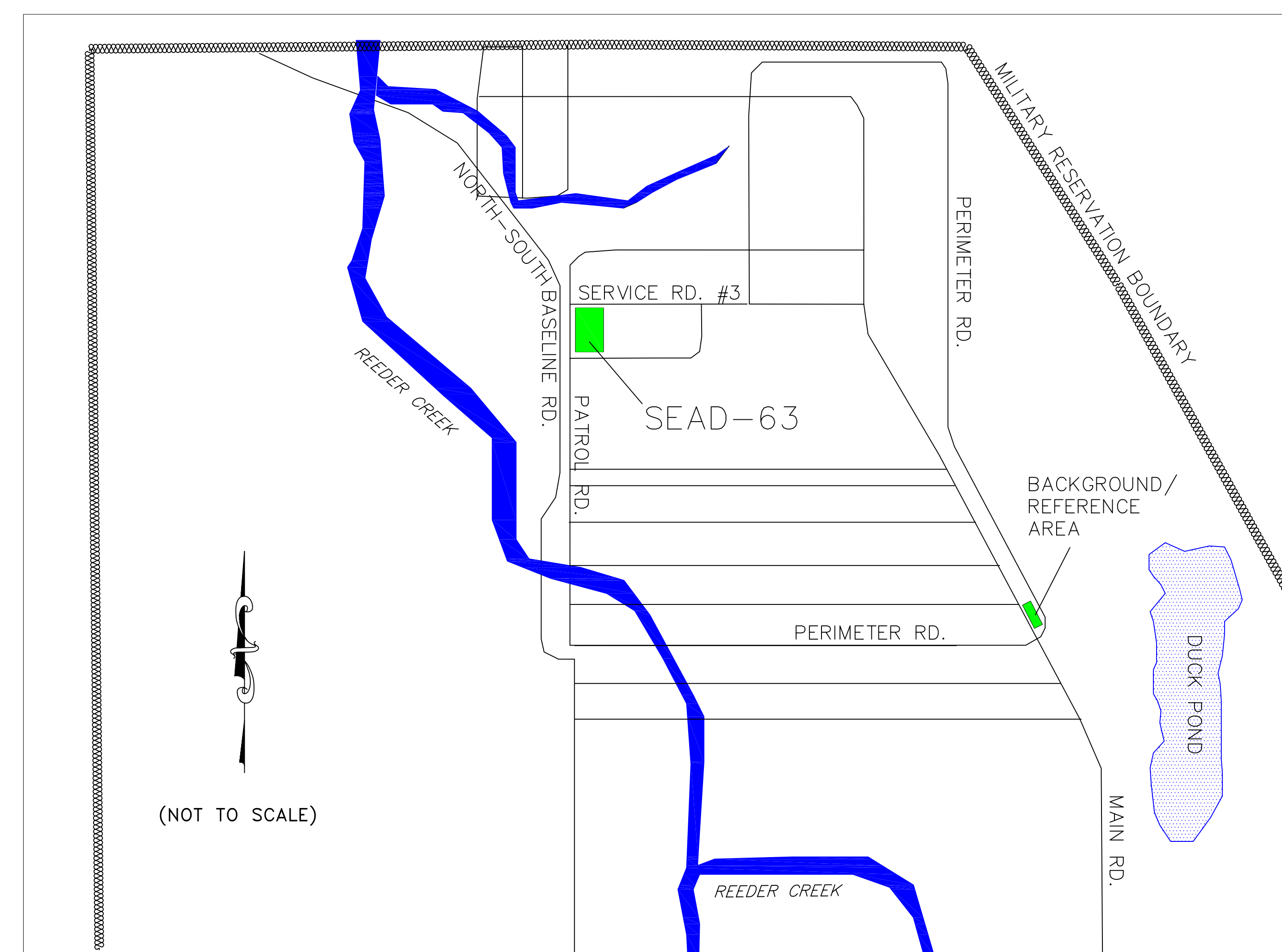
SOIL SAMPLE LOCATIONS IN BACKGROUND/REFERENCE AREA



- NOTES**
- HORIZONTAL AND VERTICAL DATUM ASSUMED.
 - FIELD SURVEY WAS COMPLETED APRIL OF 2004. ELEVATIONS ARE FT. ABOVE MEAN SEA LEVEL.
 - FIELD SURVEY WAS COMPLETED USING A TOPCON GPT-8005A INSTRUMENT WITH A RANGER DATA COLLECTOR.
 - BACKGROUND/REFERENCE AREA SITE LOCATION SELECTED BY USACE COR.
 - REFER TO REMOVAL ACTION COMPLETION REPORT FOR DETAILS ON BACKGROUND SAMPLING. BACKGROUND SAMPLES DESIGNATED AS RBG0XX IN ABOVE FIGURE WHERE XX IS NUMBERED 01 TO 19.



LOCATION MAP - SEAD-63 AND BACKGROUND/REFERENCE AREA



File Name: C:\PROJECT FOLDER\SENECA AMP\CADD\sead_63_background.dwg

DATE	REVISION



FIGURE 5 - 1
PRE-REMOVAL ACTION TOPOGRAPHY, MONITORING WELL LOCATIONS, AND REFERENCE AREA/BACKGROUND SOIL SAMPLING LOCATIONS
APRIL 2004

SEAD-63
SENECA ARMY DEPOT
SENECA COUNTY
STATE OF NEW YORK

SCALE: 1"=40'
DRAWN BY: MAJ
REVIEWED BY: TWP/CLJ
FILE NO.:
SCALE: BACKGROUND.DWG

RAMIE SURVEYING, P.C.
7730 FRONT ST. ROAD
CICEERD, NEW YORK 13039
PH: 315 458-8980 FAX: 315 458-8978

SCALE: 1"=40'
DESIGNED BY: JPR
DRAWN BY: JPR
FILE NO.:
SCALE: SEAD.DWG

DATE: APRIL 14, 2004
SHEET 1 OF 1
JOB NO.:
04.08

**Table 5-1
Radiological Laboratory Results
SEAD-63 - Ground Water (April 2004)**

Sample Identification Number (Monitoring Well Designation or Sample Type)	Parameter	Units	NYSDEC Ambient Water Quality Criteria ¹	Laboratory Results	
				Result	Uncertainty
SEAD63-GW-01 (Monitoring Well MW63-1)	Total Uranium	µg/L	5,000	0.739	
	Gross Alpha	pCi/L	15	1.59	U
	Gross Beta	pCi/L	1,000	3.44	U
	Radium-226	pCi/L	3	3.28	
	Radium-228	pCi/L	5	-2.18	U
	Tritium	pCi/L	20,000	-72.9	U
SEAD63-GW-01 EB (Equipment/Rinsate Blank)	Total Uranium	µg/L	5,000	0.00	U
	Gross Alpha	pCi/L	15	0.364	U
	Gross Beta	pCi/L	1,000	0.937	U
	Radium-226	pCi/L	3	0.695	
	Radium-228	pCi/L	5	-0.539	U
	Tritium	pCi/L	20,000	-116	U
SEAD63-GW-02 (Monitoring Well MW63-2)	Total Uranium	µg/L	5,000	1.57	
	Gross Alpha	pCi/L	15	2.58	U
	Gross Beta	pCi/L	1,000	2.66	U
	Radium-226	pCi/L	3	0.547	U
	Radium-228	pCi/L	5	0.795	U
	Tritium	pCi/L	20,000	74.0	U
SEAD63-GWFD-02 (Field Duplicate of SEAD63-GW-02)	Total Uranium	µg/L	5,000	1.38	
	Gross Alpha	pCi/L	15	1.46	U
	Gross Beta	pCi/L	1,000	2.60	U
	Radium-226	pCi/L	3	0.202	U
	Radium-228	pCi/L	5	0.0307	U
	Tritium	pCi/L	20,000	6.50	U
SEAD63-GW-03 (Monitoring Well MW63-3)	Total Uranium	µg/L	5,000	2.00	
	Gross Alpha	pCi/L	15	2.18	U
	Gross Beta	pCi/L	1,000	2.51	U
	Radium-226	pCi/L	3	0.604	U
	Radium-228	pCi/L	5	2.46	
	Tritium	pCi/L	20,000	-108	U

NOTES:

µg/L - micrograms per liter

pCi/L - picocuries per liter

U - parameter not detected above MDL

UI - uncertain identification for gamma spectroscopy

“MDL” means minimum detection limit

“NYSDEC” means New York State Department of Environmental Conservation

3.28 - Green-shaded value indicates exceedance of NYSDEC ambient water quality criterion for drinking water protection

Total Uranium analyzed in accordance with ASTM D 5174

Gross Alpha analyzed in accordance with EPA 900.0

Gross Beta analyzed in accordance with EPA 900.0

Radium-226 analyzed in accordance with EPA 903.1 Modified

Radium-228 analyzed in accordance with EPA 904.0 Modified

Tritium analyzed in accordance with EPA 906.0 Modified

1. NYSDEC Ambient Water Quality Criteria for human consumption (drinking water) found in 6 NYCRR Part 703.5, as follows:

NYSDEC drinking water standard for Gross Alpha, excluding Radon and Uranium

NYSDEC drinking water standard for Gross Beta, excluding Strontium-90 and alpha emitters

NYSDEC drinking water standard for Ra-226 is 3 pCi/L; combined Ra-226 and Ra-228 standard <5 pCi/L

NYSDEC drinking water standard for Tritium is 20,000 pCi/L; if 2 or more radionuclides are present, sum of annual dose equivalent to total body or any one organ <4 millirem per year

Laboratory results for the Removal Action sampling round were compared to NYSDEC ambient water quality criteria to assess their significance. As indicated in Table 5-1, none of the laboratory results for these ground-water samples exceeded water quality criteria for any of the parameters, with the exception of Ra-226 in Sample SEAD63-GW-01. Ra-226 was present at 3.28 pCi/L in the SEAD63-GW-01 sample, slightly above the NYSDEC drinking water-based water quality criteria of 3.00 pCi/L. Sample SEAD63-GW-01 was collected from monitoring well MW63-1, which is upgradient of the SEAD-63 site.

The USACE discussed the above findings with the NYSDEC and USEPA on 16 June 2004 during the BCT meeting (USACE, 2004) and secured their agreement that installation and sampling of additional ground-water monitoring wells originally proposed in Plexus' Work Plan were not necessary. At the direction of the USACE Contracting Officer's Representative (COR), Plexus did not install the additional ground-water monitoring wells.

5.3 ESTABLISHING BACKGROUND FOR RADIOACTIVITY IN SOIL

According to the EE/CA, a radiation survey covering 50 percent (%) of the grounds of SEAD-63 was performed as part of field investigation efforts conducted in 1997. The EE/CA indicated that no hot spot areas were detected during that survey of low energy gamma emitters that required further investigation. All readings were reported to be within 50% of background levels. The EE/CA indicated that levels greater than 200-300% of background may indicate the need for additional surveying and investigation.

Field radiation surveys were performed on material excavated during the SEAD-63 Removal Action prior to loading and transport for off-site disposal to confirm the 1997 results. Results of the field radiation surveys of soil excavated from the burial pits were compared to background. Background radiation surveys were performed on samples of: (1) surface soil collected from a "reference area" located on SEDA, near but outside the limits of the SEAD-63 site (see Figure 5-1), and (2) subsurface soil collected from a test pit excavated outside and approximately 65 feet southwest of the SEAD-63 site. Those field measurements, conducted by Cabrera Services, Inc. (Cabrera), were performed in general accordance with Plexus' SAP. Results of those radiation field surveys are presented in Appendix F.

Cabrera also collected grab samples of soil from the background/reference area, which were submitted to an off-site radiological laboratory and analyzed for radionuclides in general accordance with the SAP. These, as well as other radiological laboratory analyses performed on the SEAD-63 NTCRA project, were performed by General Engineering Laboratories, Inc. (GEL). GEL has passed and maintains USACE Center of Excellence laboratory validation and has current State of NY Environmental Laboratory Approval Program (ELAP)

certification, as documented in the SAP. Laboratory results for background/reference area soil samples are summarized in Appendix C.2. Laboratory reports and chain-of-custody documentation for those samples are presented in Appendix D.2.

5.4 EXCAVATION & WASTE SEGREGATION

The *Action Memorandum* established a cleanup goal of 2.3 mg/Kg cadmium for the SEAD-63 burial pits. A cleanup goal was not established for the drainage ditches adjacent to the SEAD-63 site but the *Action Memorandum* prescribed removal of the upper six inches of material in select areas of those ditches. Excavation to achieve these project objectives and on-site waste segregation to facilitate disposition of debris and fill material are discussed below.

5.4.1 Excavation

Excavation of the burial pits and drainage ditch areas took place between 19 April and 6 May 2004. Debris and fill material were initially excavated from the burial pits until visual observations indicated the presence of natural soils or bedrock (shale). Natural soils were identified by visible change in color, texture, relative degree of compaction, and depositional environment.

Soil samples were then collected from select, broadly-spaced locations at the limits of excavation and submitted for rush-turnaround laboratory analysis to assess whether the cadmium cleanup goal was likely to have been met. These "interim" laboratory analysis results were used to guide the extent of excavation, minimizing over-excavation and the potential for multiple mobilizations. Excavation and interim laboratory analyses were performed in an iterative manner until laboratory results indicated concentrations were below the cadmium cleanup goal of 2.3 mg/Kg. Laboratory results for the interim limits of excavation soil samples are summarized in Appendix C.3. Laboratory reports and chain-of-custody records for those samples are presented in Appendix D.3. These, as well as other chemical and physical laboratory analyses performed on the SEAD-63 NTCRA project, were performed by AMRO Environmental Laboratories, Inc. (AMRO). AMRO has passed and maintains USACE Center of Excellence laboratory validation and has current State of NY ELAP certification, as documented in the SAP.

The final limits of excavation for the burial pits were established by land surveying, performed following receipt of final confirmation sampling and laboratory analysis results. The surveyed limits of the burial pits excavation are shown on Figure 5-2.

Bedrock was evident in most of the bottom of the burial pits excavation. The approximate limits of bedrock in the bottom of the burial pits excavation are

shown on Figure 5-3. Surface topography in the burial pits area prior to and following excavation is presented in Appendix A.

The upper six inches of select portions of drainage ditches adjacent to the SEAD-63 site were excavated as indicated in the *Action Memorandum*. The surveyed limits of excavation for these areas are shown on Figure 5-2. Surface topography in the area of the drainage ditches prior to excavation is shown on Figure 5-1.

5.4.2 Waste Segregation

Excavated material was segregated into three wastes: classified military parts requiring further demilitarization by the Army, other debris and rock exceeding four inches in diameter (four-inch plus material), and fill material less than four inches in diameter (four-inch minus material). Drums of military parts and large pieces of debris were segregated during excavation and directly placed on a lined pad for inspection and field screening. The remaining excavated material was segregated into four-inch plus and four-inch minus material using a shaker screen. Four-inch plus and four-inch minus material were placed in separate windrows on lined storage pads on site for confirmatory characterization prior to transport and off-site disposal.

Debris was inspected by the Army. Evidence of radioactive sources was not found in excavated material. Classified parts were segregated for later disposition by the Army (see Section 5.3).

Debris (four-inch plus material) was scanned for radioactivity in the field. Results of the field scanning, which did not detect radiation above background, are presented in Appendix F.

Samples of debris were also submitted to laboratories for disposal characterization analyses. Disposal characterization laboratory analyses, which confirmed field screening results, and waste disposal acceptance are discussed in Section 5.6.

Samples of soil (four-inch minus material) were scanned for radioactivity in the field. Results of field scanning of soil samples, which did not detect radiation above background, are presented in Appendix F.

Soil samples were also submitted to off-site laboratories for disposal characterization analyses. Off-site radiological laboratory results for soil samples collected from excavated material were statistically compared with SEDA background laboratory results (Section 5.3) to evaluate significance (Appendix G). Results of that evaluation were consistent with field radiological screening results indicating that radioactive contamination was not apparent in material excavated from the SEAD-63 burial pits. Disposal characterization laboratory analyses and waste disposal acceptance are discussed further in Section 5.6.

Stockpiles of the excavated materials were covered with tarps prior to loading for transport for off-site disposal to minimize fugitive dust.

5.5 CONFIRMING LIMITS OF EXCAVATION

5.5.1 Sampling

The final limits of the burial pits excavation were confirmed by performing laboratory analysis on grab samples of soil. Confirmatory soil samples were generally collected from the first six inches at the approximate midpoint of the excavation sidewalls (at depths varying from about two and five feet below grade, depending on sample location). The depths of confirmatory samples for the excavation sidewalls correspond to depths where the majority of the debris was excavated. Samples for volatile organic compound (VOC) analysis were collected from six to 12 inches below the surface. Final limits of excavation samples were collected at the minimum frequencies and in general accordance with the SAP and *Draft DER-10, Technical Guidance for Site Investigation and Remediation* (Draft DER-10) (NYSDEC, 2002) and in general accordance with the SAP:

- One field sample per 900 square feet the bottom of each excavation; and
- One field sample per 30 linear feet of each sidewall of each excavation.

The only exception to the above sampling frequencies was that bottom soil samples could not be collected from those portions of the SEAD-63 burial pits where excavation was completed to bedrock because all soils were removed to bare rock.

Soil samples were also collected from the limits of the drainage ditch excavations. These grab samples were collected at the same minimum frequencies and depths.

The location of final limits of excavation soil samples are shown in Figures 5-2 and 5-3. The approximate location of bedrock in the burial pits excavation is shown on Figure 5-3.

5.5.2 Laboratory Analysis

Final limits of excavation samples were analyzed for cadmium, the only parameter with a cleanup goal for the SEAD-63 burial pits. As indicated in Table 5-2, cadmium concentrations in all of the soil samples collected from the final limits of the burial pits excavation were below the SEAD-63 cleanup goal of 2.3 mg/Kg.

Soil samples collected from the final limits of burial pit and drainage ditch excavations were also analyzed for other metals, VOCs, semi-volatile organic compounds (SVOCs), Polychlorinated biphenyls (PCBs), and pesticides for documentation purposes. Laboratory analyses were performed in general accordance with the SAP (Plexus, 2004). Laboratory results for soil samples collected from the final limits of excavation are summarized in Appendix C.4. Laboratory results for soil samples collected from the final limits of the drainage ditch excavations are summarized in Appendix C.5. Laboratory reports and chain-of-custody records for the final limits of the burial pits and drainage ditch excavations are presented in Appendices D.4 and D.5, respectively.

A FSS was not performed because: (a) radioactive sources were not found in debris removed from the burial pit excavations, and (b) evidence of radioactive contamination was not detected in excavated material (see Section 5.4.2).

Data validation reports for laboratory analysis of soil samples collected from the final limits of the burial pits excavation are provided in Appendix E.

5.6 IDENTIFYING AND MANAGING DEBRIS REQUIRING FURTHER DISPOSITION BY THE US ARMY

A representative of the US Army inspected material excavated from the SEAD-63 site prior to final disposition. Items the Army determined to be classified parts were segregated from other wastes and placed in an on-site bunker for their later disposition. SEDA's Radiation Safety Officer inspected the excavated debris and concluded that none of the parts pose a radiological concern. No radioactive sources were evident. The debris did not exhibit radioactivity levels above background in field screening performed by Plexus' radiological subcontractor, Cabrera Services, Inc. Field radiological screening results for excavated debris, including items for later disposition by the Army, are summarized in Appendix F.

Table 5-2 Cadmium in Soil Samples Final Limits of SEAD-63 Burial Pits Excavation					
Sample Identification Number	Sample Collection Date	Units	Laboratory Result	Cleanup Goal ¹	
				NYSDEC TAGM	SEDA Background
SEAD63-BPFL-01	05/11/04	mg/Kg	0.25 J	1.0	2.3
SEAD63-BPFL-02	05/10/04	mg/Kg	0.26 J	1.0	2.3
SEAD63-BPFL-03	05/11/04	mg/Kg	0.2 J	1.0	2.3
SEAD63-BPFL-04	05/11/04	mg/Kg	0.19 J	1.0	2.3
SEAD63-BPFL-05	05/11/04	mg/Kg	0.24 J	1.0	2.3
SEAD63-BPFL-06	05/10/04	mg/Kg	0.15 J	1.0	2.3
SEAD63-BPFL-07	05/10/04	mg/Kg	0.12 J	1.0	2.3
SEAD63-BPFL-08	05/10/04	mg/Kg	0.57 J	1.0	2.3
SEAD63-BPFL-09	05/10/04	mg/Kg	0.58 J	1.0	2.3
SEAD63-BPFL-10	05/11/04	mg/Kg	0.24 J	1.0	2.3
SEAD63-BPFL-11	05/10/04	mg/Kg	0.17 J	1.0	2.3
SEAD63-BPFL-12	05/11/04	mg/Kg	0.13 J	1.0	2.3
SEAD63-BPFL-13	05/10/04	mg/Kg	0.16 J	1.0	2.3
SEAD63-BPFL-14	05/10/04	mg/Kg	0.58 J	1.0	2.3
SEAD63-BPFL-15	05/10/04	mg/Kg	0.67 J	1.0	2.3
SEAD63-BPFL-16	05/11/04	mg/Kg	0.28 J	1.0	2.3
SEAD63-BPFL-17	05/11/04	mg/Kg	0.22 J	1.0	2.3
SEAD63-BPFL-18	05/11/04	mg/Kg	0.33 J	1.0	2.3
SEAD63-BPFL-19	05/11/04	mg/Kg	0.45 J	1.0	2.3
SEAD63-BPFL-20	05/11/04	mg/Kg	0.28 J	1.0	2.3
SEAD63-BPFL-21	05/11/04	mg/Kg	0.39 J	1.0	2.3
SEAD63-BPFL-22	05/11/04	mg/Kg	0.27 J	1.0	2.3
SEAD63-BPFL-23	05/11/04	mg/Kg	0.55 J	1.0	2.3
SEAD63-BPFL-24	05/11/04	mg/Kg	0.33 J	1.0	2.3
SEAD63-BPFL-25	05/11/04	mg/Kg	0.68 U	1.0	2.3
SEAD63-BPFL-26	05/12/04	mg/Kg	0.12 J	1.0	2.3
SEAD63-BPFL-27	05/12/04	mg/Kg	0.73 U	1.0	2.3
SEAD63-BPFL-28	05/12/04	mg/Kg	0.75 U	1.0	2.3
SEAD63-BPFL-29	05/12/04	mg/Kg	0.19 J	1.0	2.3

NOTES:

mg/Kg – milligrams per Kilogram

“PQL” means Practical Quantitation Limit

“J” is a Quality Control (QC) qualifier indicating detection below PQL (estimated concentration)

“MDL” means Minimum Detection Limit

“u” is a QC qualifier indicating Not Detected above MDL

¹Cleanup goal is the higher of New York State Department of Environmental Conservation (NYSDEC) TAGM soil cleanup goal (1 mg/Kg) or Seneca Army Depot Activity (SEDA) background (2.3 mg/Kg)

“TAGM” means Technical and Guidance Memorandum Number 4046 – Determination of Soil Cleanup Objectives and Cleanup Goals (NYSDEC)

Sample locations shown on Figures 5-2 and 5-3 of Plexus’ *Removal Action Completion Report* (February 2005)

5.7 DISPOSAL CHARACTERIZATION AND WASTE ACCEPTANCE

Samples of soil and debris were collected from test pits prior to beginning the Removal Action and from stockpiles following Removal Action waste excavation/segregation, and were submitted for disposal characterization analyses by off-site laboratories. Excavated stockpile samples were collected at a minimum frequency of one per 200 cubic yards. Samples of the stockpiled wastes were also screened in the field for VOCs using a portable photoionization detector (PID) and for radioactivity. Laboratory results for the test pit samples were used to evaluate waste classification and secure approval for off-site disposal, prior to beginning excavation. Laboratory and field screening results for stockpile samples were used to confirm waste classification prior to loading for transport and off-site disposal.

The test pit grab samples were collected from broadly-spaced locations throughout the burial pits. Five-point composite samples were collected on a frequency of approximately one per each 200 CY stockpile of excavated material, except for samples for VOC analysis which were grab samples. Disposal characterization sampling was performed in general accordance with the SAP.

Physical/chemical and radiological laboratory analyses were performed. Laboratory results for debris (i.e., four-inch plus) and soil (i.e., four-inch minus) disposal characterization samples are summarized in Appendix C.6. Laboratory reports and chain-of-custody records for disposal characterization samples are presented in Appendix D.6. PID screening did not detect any volatile organics above background. Results of radiological field screening of excavated waste material are included in Appendix F.

Laboratory results were compared with two criteria in evaluating suitability for off-site disposal at a NYSDEC-permitted solid waste landfill:

- Resource Conservation and Recovery Act (RCRA) hazardous waste thresholds for chemical and physical parameters; and
- SEDA background levels for radioactivity.

Laboratory results were below the RCRA thresholds and evidence of radioactive contamination was not found, supporting classification of the SEAD-63 materials as non-RCRA hazardous, non-radioactive solid waste. Field screening did not detect the presence of VOCs or radioactivity above background levels, consistent with the laboratory results.

Ontario County Landfill in Stanley, NY was selected for disposal of solid wastes excavated from the SEAD-63 site; the selection was based on overall lowest transport and disposal cost, proximity to SEDA, and ability to readily handle the

quantity and timing of waste shipments. A copy of the Ontario County Landfill NYSDEC disposal permit is included in Appendix H.

5.8 LOADING, TRANSPORT AND OFF-DISPOSAL OF SOLID WASTES

Two types of solid wastes excavated from the SEAD-63 site were disposed off site:

- Four-inch plus material (debris and rock) separated from other material during excavation and from operation of the on-site shaker screen; and
- Material passing through the shaker screen (i.e., four-inch minus material).

Segregation of these two waste types allowed for reuse of the four-inch minus waste as alternate daily cover material at the off-site landfill, at a lower cost than disposal of the remaining, larger diameter waste disposed at the landfill.

Wastes were loaded into 10-wheel dump trucks on site, the loaded truck beds were covered with tarps, and waste materials were transported to Ontario County Landfill for disposal. Loading took place within the SEAD-63 work zone. Soil was washed off truck wheel wells on the equipment decontamination pad prior to vehicles leaving the SEAD-63 site. Riccelli Enterprises, Inc. and Seneca Pipe and Paving Company, Inc. transported the waste to the landfill. Copies of their NYSDEC transporter permits are included in Appendix H.

A total of 5,131.54 tons of solid wastes were transported to the Ontario County Landfill between 4 and 18 May 2004, consisting of 987.37 tons of four-inch plus and 4,144.17 tons of four-inch minus material. Tables 5-3 and 5-4 summarize waste shipments of the four-inch minus and four-inch plus wastes to the landfill, respectively. Bills-of-lading for these shipments are included in Appendix I.

5.9 WASTEWATER COLLECTION, CHARACTERIZATION AND DISCHARGE

Approximately 23,000 gallons of wastewater generated from excavation dewatering, collection of stormwater within the work zone, and decontamination of construction/remediation equipment was conveyed to the frac tank. Wastewater from purging the monitoring wells during sampling was collected in several 55-gallon steel drums.

Representative samples of wastewater were collected and submitted for disposal characterization laboratory analyses. Laboratory results for the wastewater samples are summarized in Appendix C.7. Laboratory reports and chain-of-custody records for those samples are included in Appendix D.7.

Laboratory results were provided to the Seneca County Sewer District. The collected wastewater was discharged to the public sewer system at a manhole on SEDA for conveyance to and treatment at the county wastewater treatment

facility following approval by the Seneca County Sewer District. Solids removed from the bottom of the frac tank were added to excavated soil and disposed at the Ontario County Landfill.

5.10 BACKFILLING, SITE RESTORATION, AND DEMOBILIZATION

Backfilling and restoration were performed following receipt of laboratory results confirming the cadmium cleanup goal was met at the limits of the burial pits excavation. At the request of the USACE COR, backfilling and site restoration were conducted immediately following receipt of final limits of excavation laboratory results for safety reasons because of the possibility of unauthorized visitors entering the work zone.

Temporary facilities were dismantled and removed from the site, including waste processing and storage pads, equipment decontamination pads, frac tank, wastewater conveyance piping, office trailer, portable generator, and portable above-ground fuel tank.

The burial pits were backfilled with soil removed from higher elevation areas located adjacent to the SEAD-63 site on SEDA. Backfill material was not obtained from off-SEDA sources. The material graded from adjacent high areas was not sampled and analyzed by a laboratory prior to backfilling the SEAD-63 burial pits. The USACE has indicated that previous site investigation results did not indicate the potential presence of contamination in the high areas where material was graded for backfilling the SEAD-63 burial pits. The excavations were backfilled using an excavator, front end loader, and dozer, and machine-compacted in approximately one-foot thick lifts. The ground surface in the backfilled burial pits excavation and the support zone was graded to near pre-Removal Action contours.

The graded area was seeded using a commercial mix of native grass species. Straw was placed adjacent to drainage ditches for sedimentation and erosion control. All equipment, temporary facilities, and labor were demobilized from the site by 1 June 2004.

5.11 AMBIENT AIR MONITORING

Real time ambient air monitoring for particulate (fugitive dust) less than ten microns in diameter (PM_{10}) was performed during active portions of the Removal Action. The air monitoring was performed during excavation, screening, and truck loading operations in accordance with the project Air Monitoring Plan (Plexus, 2004). The Air Monitoring Plan was based on real-time monitoring of PM_{10} in accordance with Appendix A1 of Draft DER-10 and TAGM # 4041.

Table 5-3
Summary of Solid Waste Shipments
4-Inch Plus Material
SEAD-63 Removal Action

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type**	Weight (Tons)***
166	05/13/04	Ontario County Landfill	Riccelli	71	Debris	21.15
167	05/13/04	Ontario County Landfill	Riccelli	35	Debris	23.24
168	05/13/04	Ontario County Landfill	Riccelli	32	Debris	19.28
169	05/13/04	Ontario County Landfill	Riccelli	74	Debris	21.88
170	05/13/04	Ontario County Landfill	Riccelli	97	Debris	21.64
171	05/13/04	Ontario County Landfill	SPP	25-77	Debris	20.27
172	05/13/04	Ontario County Landfill	SPP	17-77	Debris	20.68
173	05/13/04	Ontario County Landfill	Riccelli	71	Debris	21.87
174	05/13/04	Ontario County Landfill	Riccelli	32	Debris	21.68
175	05/13/04	Ontario County Landfill	Riccelli	35	Debris	24.34
176	05/13/04	Ontario County Landfill	Riccelli	74	Debris	21.46
177	05/13/04	Ontario County Landfill	Riccelli	97	Debris	22.59
178	05/13/04	Ontario County Landfill	SPP	25-77	Debris	21.03
179	05/13/04	Ontario County Landfill	SPP	17-77	Debris	21.19
180	05/13/04	Ontario County Landfill	Riccelli	32	Debris	21.57
181	05/13/04	Ontario County Landfill	Riccelli	71	Debris	22.04
182	05/13/04	Ontario County Landfill	Riccelli	35	Debris	25.03
183	05/13/04	Ontario County Landfill	Riccelli	97	Debris	22.5
184	05/13/04	Ontario County Landfill	SPP	25-77	Debris	22.06
185	05/13/04	Ontario County Landfill	SPP	17-77	Debris	20.63
186	05/13/04	Ontario County Landfill	Riccelli	74	Debris	21.76
187	05/13/04	Ontario County Landfill	Riccelli	71	Debris	24.25
188	05/13/04	Ontario County Landfill	Riccelli	35	Debris	24.31
189	05/13/04	Ontario County Landfill	Riccelli	97	Debris	22.06
190	05/13/04	Ontario County Landfill	SPP	25-77	Debris	21.14
191	05/13/04	Ontario County Landfill	SPP	17-77	Debris	23.49
192	05/13/04	Ontario County Landfill	Riccelli	74	Debris	23.81
193	05/17/04	Ontario County Landfill	Riccelli	35	Debris	24.75
194	05/17/04	Ontario County Landfill	Riccelli	32	Debris	25.00
195	05/17/04	Ontario County Landfill	Riccelli	74	Debris	24.75
196	05/17/04	Ontario County Landfill	Riccelli	35	Debris	28.87
197	05/17/04	Ontario County Landfill	Riccelli	32	Debris	30.97
198	05/17/04	Ontario County Landfill	Riccelli	74	Debris	29.12
199	05/17/04	Ontario County Landfill	SPP	17-77	Debris	24.10
200	05/17/04	Ontario County Landfill	SPP	25-77	Debris	23.01
201	05/17/04	Ontario County Landfill	Riccelli	71	Debris	22.58
202	05/17/04	Ontario County Landfill	Riccelli	97	Debris	23.99
203	05/17/04	Ontario County Landfill	Riccelli	35	Debris	20.74
204	05/17/04	Ontario County Landfill	Riccelli	74	Debris	18.57
205	05/17/04	Ontario County Landfill	Riccelli	32	Debris	21.00
206	05/17/04	Ontario County Landfill	SPP	25-77	Debris	18.35
207	05/17/04	Ontario County Landfill	Riccelli	71	Debris	18.05
208	05/17/04	Ontario County Landfill	Riccelli	97	Debris	18.68
209	05/17/04	Ontario County Landfill	SPP	2-77	Debris	17.89
TOTAL WEIGHT OF 4-INCH PLUS WASTE TRANSPORTED TO LANDFILL (Tons)						987.37
Notes:						
* SPP is Seneca Pipe and Paving Company						
** Consists of debris, rock, small percentage of soil						
*** Weight measured at landfill scale						

Table 5-4
Summary of Solid Waste Shipments
4-Inch Minus Material
SEAD-63 Removal Action

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type	Weight (tons)**
001	05/04/04	Ontario County Landfill	Riccelli	71	Soil	22.72
002	05/04/04	Ontario County Landfill	Riccelli	74	Soil	24.12
003	05/04/04	Ontario County Landfill	Riccelli	95	Soil	23.61
004	05/04/04	Ontario County Landfill	Riccelli	76	Soil	23.10
005	05/04/04	Ontario County Landfill	Riccelli	97	Soil	24.42
006	05/04/04	Ontario County Landfill	SPP	17-77	Soil	24.51
007	05/04/04	Ontario County Landfill	SPP	25-77	Soil	21.89
008	05/04/04	Ontario County Landfill	SPP	11-77	Soil	23.09
009	05/04/04	Ontario County Landfill	Riccelli	35	Soil	24.17
010	05/04/04	Ontario County Landfill	Riccelli	32	Soil	22.48
011	05/04/04	Ontario County Landfill	Riccelli	71	Soil	21.88
012	05/04/04	Ontario County Landfill	Riccelli	74	Soil	20.89
013	05/04/04	Ontario County Landfill	Riccelli	95	Soil	19.20
014	05/04/04	Ontario County Landfill	Riccelli	76	Soil	21.35
015	05/04/04	Ontario County Landfill	Riccelli	97	Soil	22.38
016	05/04/04	Ontario County Landfill	SPP	17-77	Soil	19.68
017	05/04/04	Ontario County Landfill	SPP	25-77	Soil	20.67
018	05/04/04	Ontario County Landfill	SPP	11-77	Soil	21.55
019	05/04/04	Ontario County Landfill	Riccelli	32	Soil	20.68
020	05/04/04	Ontario County Landfill	Riccelli	35	Soil	23.21
021	05/04/04	Ontario County Landfill	Riccelli	71	Soil	21.66
022	05/04/04	Ontario County Landfill	Riccelli	74	Soil	20.20
023	05/04/04	Ontario County Landfill	Riccelli	95	Soil	21.23
024	05/04/04	Ontario County Landfill	Riccelli	76	Soil	19.63
025	05/04/04	Ontario County Landfill	Riccelli	97	Soil	21.02
026	05/04/04	Ontario County Landfill	SPP	17-77	Soil	19.59
027	05/04/04	Ontario County Landfill	SPP	11-77	Soil	21.97
028	05/04/04	Ontario County Landfill	SPP	25-77	Soil	20.99
029	05/04/04	Ontario County Landfill	Riccelli	32	Soil	20.96
030	05/04/04	Ontario County Landfill	Riccelli	35	Soil	24.92
031	05/04/04	Ontario County Landfill	Riccelli	74	Soil	22.71
032	05/04/04	Ontario County Landfill	Riccelli	71	Soil	22.25
033	05/04/04	Ontario County Landfill	Riccelli	95	Soil	21.49
034	05/04/04	Ontario County Landfill	Riccelli	76	Soil	21.30
035	05/04/04	Ontario County Landfill	Riccelli	97	Soil	20.35
036	05/04/04	Ontario County Landfill	SPP	17-77	Soil	20.65
037	05/04/04	Ontario County Landfill	SPP	25-77	Soil	20.82
038	05/04/04	Ontario County Landfill	SPP	11-77	Soil	21.87
039	05/04/04	Ontario County Landfill	Riccelli	32	Soil	21.91
040	05/04/04	Ontario County Landfill	Riccelli	35	Soil	22.10

Table 5-4
Summary of Solid Waste Shipments
4-Inch Minus Material
SEAD-63 Removal Action

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type	Weight (tons)**
041	05/05/04	Ontario County Landfill	Riccelli	32	Soil	20.82
042	05/05/04	Ontario County Landfill	Riccelli	35	Soil	23.00
043	05/05/04	Ontario County Landfill	Riccelli	71	Soil	21.74
044	05/05/04	Ontario County Landfill	Riccelli	76	Soil	21.76
045	05/05/04	Ontario County Landfill	Riccelli	97	Soil	23.29
046	05/05/04	Ontario County Landfill	Riccelli	86	Soil	20.14
047	05/05/04	Ontario County Landfill	Riccelli	95	Soil	22.05
048	05/05/04	Ontario County Landfill	SPP	17-77	Soil	19.69
049	05/05/04	Ontario County Landfill	SPP	11-77	Soil	20.81
050	05/05/04	Ontario County Landfill	SPP	14-77	Soil	20.86
051	05/05/04	Ontario County Landfill	Riccelli	32	Soil	23.09
052	05/05/04	Ontario County Landfill	Riccelli	35	Soil	21.48
053	05/05/04	Ontario County Landfill	Riccelli	71	Soil	21.28
054	05/05/04	Ontario County Landfill	Riccelli	76	Soil	19.68
055	05/05/04	Ontario County Landfill	SPP	17-77	Soil	21.21
056	05/05/04	Ontario County Landfill	SPP	11-77	Soil	22.81
057	05/05/04	Ontario County Landfill	SPP	14-77	Soil	21.47
058	05/05/04	Ontario County Landfill	Riccelli	95	Soil	20.27
059	05/05/04	Ontario County Landfill	Riccelli	86	Soil	19.68
060	05/05/04	Ontario County Landfill	Riccelli	97	Soil	23.69
061	05/05/04	Ontario County Landfill	Riccelli	32	Soil	21.79
062	05/05/04	Ontario County Landfill	Riccelli	35	Soil	26.49
063	05/05/04	Ontario County Landfill	Riccelli	71	Soil	21.70
064	05/05/04	Ontario County Landfill	Riccelli	76	Soil	22.62
065	05/05/04	Ontario County Landfill	SPP	11-77	Soil	21.03
066	05/05/04	Ontario County Landfill	SPP	17-77	Soil	21.20
067	05/05/04	Ontario County Landfill	SPP	14-77	Soil	19.86
068	05/05/04	Ontario County Landfill	Riccelli	95	Soil	20.74
069	05/05/04	Ontario County Landfill	Riccelli	97	Soil	19.78
070	05/05/04	Ontario County Landfill	Riccelli	86	Soil	21.38
071	05/05/04	Ontario County Landfill	Riccelli	32	Soil	21.96
072	05/05/04	Ontario County Landfill	Riccelli	35	Soil	22.70
073	05/05/04	Ontario County Landfill	Riccelli	71	Soil	21.20
074	05/05/04	Ontario County Landfill	Riccelli	76	Soil	19.19
075	05/05/04	Ontario County Landfill	SPP	11-77	Soil	20.09
076	05/05/04	Ontario County Landfill	SPP	14-77	Soil	20.20
077	05/05/04	Ontario County Landfill	SPP	17-17	Soil	20.26
078	05/05/04	Ontario County Landfill	Riccelli	95	Soil	20.20
079	05/05/04	Ontario County Landfill	Riccelli	86	Soil	18.97
080	05/05/04	Ontario County Landfill	Riccelli	97	Soil	21.00

Table 5-4
Summary of Solid Waste Shipments
4-Inch Minus Material
SEAD-63 Removal Action

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type	Weight (tons)**
081	05/06/04	Ontario County Landfill	Riccelli	32	Soil	22.24
082	05/06/04	Ontario County Landfill	Riccelli	35	Soil	21.45
083	05/06/04	Ontario County Landfill	Riccelli	71	Soil	20.14
084	05/06/04	Ontario County Landfill	Riccelli	76	Soil	22.99
085	05/06/04	Ontario County Landfill	Riccelli	95	Soil	21.04
086	05/06/04	Ontario County Landfill	Riccelli	74	Soil	21.69
087	05/06/04	Ontario County Landfill	Riccelli	97	Soil	19.99
088	05/06/04	Ontario County Landfill	SPP	25-77	Soil	21.68
089	05/06/04	Ontario County Landfill	SPP	17-77	Soil	19.72
090	05/06/04	Ontario County Landfill	SPP	14-77	Soil	21.74
091	05/06/04	Ontario County Landfill	Riccelli	32	Soil	22.49
092	05/06/04	Ontario County Landfill	Riccelli	35	Soil	23.04
093	05/06/04	Ontario County Landfill	Riccelli	71	Soil	21.79
094	05/06/04	Ontario County Landfill	Riccelli	74	Soil	20.65
095	05/06/04	Ontario County Landfill	Riccelli	76	Soil	21.13
096	05/06/04	Ontario County Landfill	SPP	14-77	Soil	21.00
097	05/06/04	Ontario County Landfill	Riccelli	97	Soil	21.99
098	05/06/04	Ontario County Landfill	SPP	25-77	Soil	19.46
099	05/06/04	Ontario County Landfill	SPP	17-77	Soil	20.36
100	05/10/04	Ontario County Landfill	Riccelli	35	Soil	21.27
101	05/10/04	Ontario County Landfill	Riccelli	71	Soil	21.22
102	05/10/04	Ontario County Landfill	Riccelli	74	Soil	22.02
103	05/10/04	Ontario County Landfill	Riccelli	76	Soil	19.62
104	05/10/04	Ontario County Landfill	Riccelli	97	Soil	20.39
105	05/10/04	Ontario County Landfill	Riccelli	95	Soil	19.66
106	05/10/04	Ontario County Landfill	SPP	17-77	Soil	20.33
107	05/10/04	Ontario County Landfill	SPP	14-77	Soil	20.50
108	05/10/04	Ontario County Landfill	SPP	11-77	Soil	19.09
109	05/10/04	Ontario County Landfill	Riccelli	32	Soil	21.68
110	05/10/04	Ontario County Landfill	Riccelli	35	Soil	18.99
111	05/10/04	Ontario County Landfill	Riccelli	71	Soil	19.99
112	05/10/04	Ontario County Landfill	Riccelli	74	Soil	20.62
113	05/10/04	Ontario County Landfill	Riccelli	76	Soil	20.70
114	05/10/04	Ontario County Landfill	Riccelli	97	Soil	21.28
115	05/10/04	Ontario County Landfill	Riccelli	95	Soil	20.78
116	05/10/04	Ontario County Landfill	SPP	17-77	Soil	21.81
117	05/10/04	Ontario County Landfill	SPP	14-77	Soil	21.03
118	05/10/04	Ontario County Landfill	SPP	11-77	Soil	19.83
119	05/10/04	Ontario County Landfill	Riccelli	32	Soil	22.05
120	05/10/04	Ontario County Landfill	Riccelli	35	Soil	21.67

Table 5-4
Summary of Solid Waste Shipments
4-Inch Minus Material
SEAD-63 Removal Action

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type	Weight (tons)**
121	05/10/04	Ontario County Landfill	Riccelli	71	Soil	20.70
122	05/10/04	Ontario County Landfill	Riccelli	74	Soil	19.57
123	05/10/04	Ontario County Landfill	Riccelli	76	Soil	19.12
124	05/10/04	Ontario County Landfill	SPP	17-77	Soil	18.68
125	05/10/04	Ontario County Landfill	SPP	14-77	Soil	20.39
126	05/10/04	Ontario County Landfill	Riccelli	97	Soil	20.70
127	05/10/04	Ontario County Landfill	Riccelli	95	Soil	20.51
128	05/10/04	Ontario County Landfill	SPP	11-77	Soil	21.57
129	05/10/04	Ontario County Landfill	Riccelli	32	Soil	22.18
130	05/10/04	Ontario County Landfill	Riccelli	35	Soil	25.78
131	05/10/04	Ontario County Landfill	Riccelli	71	Soil	21.85
132	05/10/04	Ontario County Landfill	Riccelli	74	Soil	23.18
133	05/10/04	Ontario County Landfill	Riccelli	76	Soil	22.00
134	05/10/04	Ontario County Landfill	SPP	17-77	Soil	21.63
135	05/10/04	Ontario County Landfill	SPP	14-77	Soil	21.09
136	05/10/04	Ontario County Landfill	Riccelli	97	Soil	22.73
137	05/10/04	Ontario County Landfill	Riccelli	95	Soil	22.15
138	05/10/04	Ontario County Landfill	SPP	11-77	Soil	19.79
139	05/10/04	Ontario County Landfill	Riccelli	32	Soil	23.08
140	05/11/04	Ontario County Landfill	Riccelli	35	Soil	25.11
141	05/11/04	Ontario County Landfill	Riccelli	71	Soil	23.92
142	05/11/04	Ontario County Landfill	Riccelli	74	Soil	23.01
143	05/11/04	Ontario County Landfill	Riccelli	76	Soil	21.45
144	05/11/04	Ontario County Landfill	Riccelli	97	Soil	22.64
145	05/11/04	Ontario County Landfill	Riccelli	95	Soil	23.3
146	05/11/04	Ontario County Landfill	Riccelli	32	Soil	22.89
147	05/11/04	Ontario County Landfill	SPP	11-77	Soil	21.79
148	05/11/04	Ontario County Landfill	SPP	14-77	Soil	20.99
149	05/11/04	Ontario County Landfill	SPP	10-77	Soil	20.28
150	05/11/04	Ontario County Landfill	Riccelli	35	Soil	24.01
151	05/11/04	Ontario County Landfill	Riccelli	71	Soil	22.34
152	05/11/04	Ontario County Landfill	Riccelli	74	Soil	22.95
153	05/11/04	Ontario County Landfill	Riccelli	76	Soil	23.02
154	05/11/04	Ontario County Landfill	Riccelli	97	Soil	22.35
155	05/11/04	Ontario County Landfill	Riccelli	95	Soil	23.09
156	05/11/04	Ontario County Landfill	SPP	11-77	Soil	21.78
157	05/11/04	Ontario County Landfill	Riccelli	32	Soil	22.44
158	05/11/04	Ontario County Landfill	SPP	14-77	Soil	21.73
159	05/11/04	Ontario County Landfill	SPP	10-77	Soil	20.73
160	05/11/04	Ontario County Landfill	Riccelli	76	Soil	23.4

**Table 5-4
Summary of Solid Waste Shipments
4-Inch Minus Material
SEAD-63 Removal Action**

Bill of Lading Number	Date	Destination	Transporter*	Truck ID Number	Waste Type	Weight (tons)**
161	05/11/04	Ontario County Landfill	Riccelli	35	Soil	22.84
162	05/11/04	Ontario County Landfill	Riccelli	71	Soil	23.71
163	05/11/04	Ontario County Landfill	Riccelli	74	Soil	22.81
164	05/11/04	Ontario County Landfill	SPP	11-77	Soil	21.33
165	05/11/04	Ontario County Landfill	SPP	14-77	Soil	21.4
210	05/17/04	Ontario County Landfill	Riccelli	35	Soil	19.9
211	05/17/04	Ontario County Landfill	Riccelli	32	Soil	20.73
212	05/17/04	Ontario County Landfill	Riccelli	74	Soil	20.33
213	05/17/04	Ontario County Landfill	SPP	25-77	Soil	19.33
214	05/18/04	Ontario County Landfill	SPP	2-77	Soil	16.04
215	05/18/04	Ontario County Landfill	Riccelli	74	Soil	21.24
216	05/18/04	Ontario County Landfill	Riccelli	32	Soil	20.36
217	05/18/04	Ontario County Landfill	Riccelli	35	Soil	22.65
218	05/18/04	Ontario County Landfill	SPP	11-77	Soil	19.85
219	05/18/04	Ontario County Landfill	Riccelli	71	Soil	22.06
220	05/18/04	Ontario County Landfill	Riccelli	97	Soil	20.69
221	05/18/04	Ontario County Landfill	Riccelli	74	Soil	21.50
222	05/18/04	Ontario County Landfill	Riccelli	32	Soil	19.82
223	05/18/04	Ontario County Landfill	Riccelli	35	Soil	24.42
224	05/18/04	Ontario County Landfill	SPP	11-77	Soil	23.80
225	05/18/04	Ontario County Landfill	SPP	17-77	Soil	20.19
226	05/18/04	Ontario County Landfill	Riccelli	71	Soil	21.39
227	05/18/04	Ontario County Landfill	Riccelli	97	Soil	22.71
228	05/18/04	Ontario County Landfill	Riccelli	74	Soil	20.99
229	05/18/04	Ontario County Landfill	Riccelli	32	Soil	23.43
230	05/18/04	Ontario County Landfill	Riccelli	35	Soil	24.75
231	05/18/04	Ontario County Landfill	SPP	11-77	Soil	21.44
232	05/18/04	Ontario County Landfill	SPP	17-77	Soil	18.73
233	05/18/04	Ontario County Landfill	Riccelli	71	Soil	20.91
234	05/18/04	Ontario County Landfill	Riccelli	97	Soil	18.70
235	05/18/04	Ontario County Landfill	Riccelli	74	Soil	20.34
236	05/18/04	Ontario County Landfill	Riccelli	32	Soil	21.54
237	05/18/04	Ontario County Landfill	Riccelli	35	Soil	20.80
TOTAL WEIGHT OF 4-INCH MINUS WASTE TRANSPORTED TO LANDFILL (Tons)						4,144.17
Notes:						
* SPP is Seneca Pipe and Paving Company						
** Weight measured at landfill scale						

Particulate levels were monitored upwind and downwind of work activities on the SEAD-63 site and integrated over a period of 15 minutes. Monitoring was performed using model # PDR-1000N Thermo-Electron Personal Dataram digital dust meters. Air monitoring results are summarized in Appendix J. None of the results exceeded the action level of 150 µg/cubic meter during excavation, screening/stockpiling, or loading of material for transport and off-site disposal.

6. CONCLUSIONS AND RECOMMENDATIONS

Laboratory results for ground-water samples collected using low flow methods indicated that radiochemical concentrations downgradient of the SEAD-63 site that were below NYSDEC drinking water quality criteria and/or background (upgradient) concentrations. These results better reflect ambient conditions than previous ground-water monitoring performed by others, which may have been impacted by elevated suspended solids in samples collected using non-low flow methods. No further overburden ground-water monitoring is recommended on the SEAD-63 site based on the recent ground-water results and the lack of radioactive contamination in soil and debris removed from the SEAD-63 burial pits.

Evidence of radioactive contamination was not found during excavation of the SEAD-63 burial pits. Laboratory results for post-excavation soil samples confirmed the burial pits soil cleanup goal of 2.3 mg/Kg cadmium was met at the limits of the burial pits excavation. Accordingly, no further action is recommended for the SEAD-63 burial pits.